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Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: **DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)**	**Docket No. 21-CRB-0001-PR (2023-2027)**

CORRECTED WRITTEN DIRECT STATEMENT OF SPOTIFY USA INC.

Witness Testimony

Volume 2 of 3

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October 29, 2021

TAB A

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The Library of Congress

In the Matter of DETERMINATION OF RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (PHONORECORDS IV)	Docket No. 21-CRB-0001-PR (2023–2027)

CORRECTED WRITTEN DIRECT TESTIMONY OF JOSEPH FARRELL, D.PHIL.

(On Behalf of Spotify USA Inc.)

October 29, 2021

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I. Introduction

I.A. Qualifications

(1) I am Professor of the Graduate School in the Department of Economics at the University of California, Berkeley. I am also a Partner with Bates White, LLC. I received my DPhil, MSc, and BA degrees from Oxford University.

(2) From 2009 to 2012, I served as Director of the Bureau of Economics at the Federal Trade Commission (FTC), where I supervised approximately 70 PhD-level economists and reported directly to the Chairman and Commissioners. I was responsible for economic analysis relating to the Commission's broad antitrust and consumer protection portfolios. As part of these responsibilities, I was a member of the six-person FTC-Department of Justice (DOJ) team that drafted the 2010 revision of the Horizontal Merger Guidelines.

(3) Earlier, from June 2000 to May 2001, I served as Deputy Assistant Attorney General for Economic Analysis for the Antitrust Division of the DOJ. In this position, which is the Chief Economist position at the Division, I supervised approximately 50 PhD-level economists and reported directly to the Assistant Attorney General for Antitrust. Earlier, in 1996–1997, I served as Chief Economist for the Federal Communications Commission (FCC), where I reported directly to the Chairman and Commissioners.

(4) I have taught undergraduate and PhD-level courses on microeconomic theory, industrial organization, and game theory at the University of California at Berkeley, the Massachusetts Institute of Technology, and the University of Michigan.

(5) I have published extensively in peer-reviewed academic journals and elsewhere on topics centering on the economics of competition, industrial organization, and innovation. "Industrial organization" is the field in economics that includes the analysis of regulation and competition.

(6) I have served on the editorial boards of professional journals, including serving as Editor of the *Journal of Industrial Economics* from 1995 to 2000 and on the Board of Editors of *Information Economics and Policy* from 2004 to 2007. I am a Fellow of the Econometric Society, past President of the Industrial Organization Society, and former Board Member for the National Academies' Computer Science and Telecommunications Board. In 2016, I received the Distinguished Service Award from the Industrial Organization Society.

(7) I have been retained as a consultant or expert witness in a variety of matters involving mergers, antitrust, telecommunications, and intellectual property analysis. I have served as a

consultant to DOJ, FTC, Canadian Bureau of Competition, Reserve Bank of Australia, Organisation for Economic Co-operation and Development (OECD), and many private parties. I have testified on matters related to economic policy in hearings before the Senate Judiciary Committee, FCC, FTC, DOJ, OECD, International Trade Commission, and the Copyright Royalty Board (testimony on behalf of SiriusXM in *SDARS III*). See Appendix A for my curriculum vitae.

(8) Bates White is being compensated for my time in this matter at a rate of $1,250 per hour. Bates White, and myself, have no financial interest in the outcome of this proceeding.

I.B. Scope of charge

(9) I was retained by Spotify USA Inc. ("Spotify") to help determine a reasonable range of royalty rates and terms for interactive streaming services to pay copyright owners under Section 115 of the U.S. Copyright Act.[1]

(10) Section 115 was amended in 2018 by the Music Modernization Act (MMA) and now operates under a rate-setting standard colloquially termed the "willing buyer/willing seller" standard.[2] In my determination of a reasonable range of royalty rates, I was asked to (1) explore how the current industry structure departs from the willing buyer/willing seller standard (which I interpret as effective and efficient competition) and (2) propose and implement a methodology to provide a range of royalty rates consistent with the new rate-setting standard.

I.C. Materials relied upon

(11) In forming my opinion, I reviewed documents and data from Spotify and those made available through the Participants' negotiated preliminary disclosures, as well as publicly available documents. These materials contain facts and data that experts in my field (i.e., economists) would reasonably rely on in forming an opinion on the subject matter of this report. All documents cited in this report are listed in Appendix B. I reserve the right to incorporate into my analysis additional information or data that may become available during

[1] Section 115 grants a blanket compulsory license that allows for the making and distributing of digital phonorecords of a songwriter's work (i.e., "mechanical rights" for a musical work), once a phonorecord of that work has been distributed to the public with the permission of work's copyright owner. Songwriters or their representatives are due "mechanical royalties" under the compulsory license.

[2] In previous proceedings, the rate-setting standard operated under the 801(b)(1) factors.

the course of discovery and the proceeding. I further reserve the right to modify my testimony and any specific proposals provided in this statement.

I.D. Summary of opinions

(12) The Copyright Royalty Judges (CRJs) will apply a standard (colloquially termed the "willing buyer/willing seller standard") to set mechanical royalty rates for musical works paid by interactive streaming services.[3] In the sections that follow, I will discuss the following topics that inform my opinion regarding a reasonable range of royalty rates:

- First, I provide background on interactive streaming services and an overview of the key players in the music licensing landscape—including rights-holders—and the ways in which music royalties are currently paid to these entities by interactive streaming services (see Section II):
  - In order to reproduce and distribute a "track,"[4] a music service (such as an interactive streaming service) should compensate those who collectively created it, who can be thought of as a team including the songwriter(s) and the performer(s).[5]
  - Toward that goal, for interactive streaming services, as regards a given track, two distinct copyrights have been defined: (1) the musical work (i.e., the underlying notes and lyrics of the track); and (2) the sound recording (i.e., the physical embodiment of a performance of the musical work, usually a master recording). These copyrights can

[3] Specifically, under this standard, the CRJs "shall establish rates and terms that most clearly represent the rates and terms that would have been negotiated in the marketplace between a willing buyer and a willing seller. In determining such rates and terms for digital phonorecord deliveries, the Copyright Royalty Judges shall base their decision on economic, competitive, and programming information presented by the parties, including—

(i) Whether use of the compulsory licensee's service may substitute for or may promote the sales of phonorecords or otherwise may interfere with or may enhance the musical work copyright owner's other streams of revenue from its musical works; and

(ii) The relative roles of the copyright owner and the compulsory licensee in the copyrighted work and the service made available to the public with respect to the relative creative contribution, technological contribution, capital investment, cost, and risk.

See 17 U.S.C. § 115(c)(1)(F). The rate-setting standards for mechanical royalty rates for interactive streaming services and other mechanical license users were revised in 2018. *See* US Copyright Office, "Amendments to the Copyright Act as a Result of the Orrin G. Hatch – Bob Goodlatte Music Modernization Act," Oct. 2018, p. 13, *available at* https://www.copyright.gov/music-modernization/amendments.pdf.

[4] In this report, I use the term "track" to describe a sound recording of a composition, which incorporates the contributions of the composer(s)/songwriter(s) and the performer(s). I use the term "song" to describe the composition and lyrics, i.e., the underlying musical work for a given track.

[5] Each track is a joint product of contributions from multiple suppliers, such as composers, songwriters, singers, drummers, janitors, sound engineers and technicians, all of whom should be appropriately rewarded for their contributions.

be broadly identified with the interests of the songwriter and the recording artist, respectively. Within each of these rights, there are two sub-categories of rights relevant to interactive streaming platforms: (1) public performance rights, and (2) mechanical (or reproduction and distribution) rights.

- Songwriters and recording artists often assign their rights to intermediaries (e.g., record labels and music publishers). Other intermediaries (e.g., performing rights organizations (PROs) or the Mechanical Licensing Collective (MLC)) may also collect royalties on behalf of the rights-holders.[6]
- While this proceeding involves setting the royalty rate paid by interactive streaming services to license the mechanical rights for musical works, the other rights and intermediaries discussed above are relevant to my analyses and conclusions.

- Second, I provide my interpretation of the willing buyer/willing seller rate setting standard, effective/efficient competition, and two features of the market—horizontal consolidation and vertical fragmentation—that both hinder effective competition and raise total royalty rates (see Section III):
  - I interpret the willing buyer/willing seller standard as the objective to set prices (i.e., royalty rates) in a way that is consistent with efficient and effective competition.
  - Efficient and effective competition in intellectual property rights to recorded music would reward the creative contributors in reasonable alignment with their incremental contributions, and would be welfare-enhancing. At the same time, it would ensure the proper level of overall copyright royalty payments so that innovative and efficient music services are also rewarded commensurate with their incremental contributions to overall listener satisfaction, and do not face undue market power in collections of copyrights, as for instance through horizontal consolidation of otherwise substitutable rights.
  - As a consequence of such horizontal consolidation, the major labels are acknowledged to be "must-haves" for interactive streaming services, and this, together with some of their contracting practices, eliminates or sharply limits competition among them. Each major label thus has a monopoly position in licensing sound recordings to those services. Sound recording rates alone can therefore be expected to be above competitive levels for the full set of rights. Musical works rates further increase the total payment beyond even that level. Thus (even) setting mechanical musical works royalties at a fully competitive level would not solve the overall issue of supra-competitive total royalties for a full set of rights.

[6] Contributors (i.e., composers, songwriters, singers, drummers, janitors, sound engineers, and technicians) can be rewarded out of copyright revenues without necessarily having their own separate copyrights.

- While the "complementary oligopoly," or succession of monopolies, among the major labels is a failure of competition that has been especially clearly recognized by the CRJs, [redacted]
- Thus a number of different horizontally consolidated intermediaries with market power control and license multiple legally separate copyrights that are perfect complements for an interactive streaming service. In order to stream one track, an interactive streaming service must typically obtain at least three, and often many more, separate licenses from different rights-holders—mechanical license(s) from one or more publishers, performance license(s) from one or more PROs, and a sound recording license (bundling mechanical and performance rights) from a record label. This vertical fragmentation, combined with horizontal market power, causes a number of Cournot complements problems, in addition to the well-recognized one among the major labels. Such complementarities among entities with market power bias the total royalty rate upward relative to vertically coordinated rates, even given the level of horizontal market power.
- One way to understand the competitive problems with must-have major labels and with Cournot complements is that a copyright owner can threaten, by withholding a license, to block a disproportionate share of a service's business.
- Market power due to consolidation of rights in otherwise potentially substitutable (competing) tracks can be distinguished from any market power inherent in awarding intellectual property to those who create the music.
- While an appropriate focus on long-run consumer welfare (consistent with competition policy and economics) fully embraces the importance of properly rewarding creative efforts, this does not justify supra-competitive total rates that economic logic indicates are likely to be near or above monopoly levels. Both long-run economic profits and consumer satisfaction suffer when prices are set at above-monopoly levels.
- As a general matter, Cournot complements problems can sometimes be alleviated by altering the economic institutions under which multiple complementary rights-holders extract separate payments. For example, rights-holders could agree to offer full rights for a single price. Similarly, complementary sellers could compensate one another for keeping their separate prices below separately profit-maximizing levels. But these opportunities for alleviation do not appear to be fully exploited in the recorded music licensing industry, and I am not aware that the scope of this proceeding allows for the promotion of such opportunities.

- Third, I describe a benchmarking approach to suggest ranges of effective royalty rates under efficient and effective competition (see Section IV):
  - Because unregulated rate-setting leads to excessive rates, the same applies to benchmarks derived directly or indirectly from such unregulated rate-setting. However, a market-determined "all-in" rate may avoid some (though not all) of the Cournot complements problems and thus be less distorted upward than the sum of rates determined separately for each of two or more smaller sub-categories of rights. Benchmarks consisting of settlements in the shadow of a regulatory rate determination may be less apt to bake-in the influence of undue market power, and can also offer an opportunity for sophisticated parties to choose a jointly beneficial rate structure.
  - I have analyzed three potential benchmarks, each of which points to or enables a calculation of an effective "all-in rate" for musical works; because of the Cournot complements problems it is better to determine an all-in rate.[7] These benchmarks are: (1) the 2012 Interactive Streaming Settlement effective rates;[8] (2) [redacted]; and (3) [redacted].
  - These benchmarks collectively indicate that a reasonable *effective* all-in rate for musical works paid by interactive streaming services would range from [redacted] to [redacted].[9] The top end of the range is the 2012 Interactive Streaming Settlement benchmark, [redacted]. I note that the *Phonorecords III* determination adopted a modification of that approach, [redacted].[10]

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[7] In this industry it appears that the term all-in rate includes both payments to publishers for "mechanical" rights and payments to PROs for "performance" rights; confusingly, it excludes payments to recording artists and their intermediaries, and is thus not a rate for the "full set of rights." "Total Content Cost" (TCC) is an industry term, codified in Section 115, to describe the amount paid to record companies for the Section 114 right to perform sound recordings. *See Phonorecords III*, 84 Fed. Reg. at 1923, n.38.

[8] I also consider the rates to license the copyrights of musical works made and distributed via permanent digital downloads [hereinafter "the digital downloads benchmark"] that were determined through settlements reached as part of *Phonorecords II, III,* and *IV*.

[9] These figures are expressed in terms of the *effective* royalty rate, rather than the headline rate. [redacted]

[10] For additional discussion, see Section IV.A.

- In interpreting these benchmarks, it is important to keep in mind that because of complementary oligopoly or monopoly power held by the labels, the total royalty burden (for sound recordings and musical works together, i.e., for "full rights") is already likely above monopoly levels and biased upward relative to the rate that would result from efficient and effective competition for full rights; in addition some of the benchmarks are themselves infected by such market power. Thus I would recommend a rate in the lower part, or at least not near the top, of that range.
- I also consider the structure of rate payments in previous interactive streaming settlements. A classic result in economics indicates that a percentage of revenue structure creates less incentive to reduce output and raise prices than does a per-play royalty structure. Prongs in the payment structure that supplant the percent-of-revenue structure may be distortionary, perhaps especially if they were initially designed to rein in, or were not designed with a view to encouraging, innovative business strategies and, in particular, product line extensions designed for listeners with lower willingness to pay.

- Finally, I use a game theoretic bargaining framework to model the range of royalty rates that would result from negotiations between a willing buyer (or interactive streaming service such as Spotify) and a willing seller (or publisher) under certain assumptions regarding an effectively competitive and efficient market (see Section V).
  - [redacted]
  - Thus I analyze the bargaining model assuming small publishers and values of the power ratio between [redacted] and [redacted]. The model predicts an all-in royalty rate for musical work rights of [redacted] to [redacted] (inclusive of performance royalties). I view these results as supportive and confirmatory of the reasonableness of the benchmarks considered, rather than as putting forward a proposal or a fully independent benchmark.
    - I do not adjust for any promotional effects of interactive streaming on publisher revenues from alternative sources, [redacted] These factors would tend to bias calculated rates upward.

(13) Spotify reports that its specific rate and terms proposal in this proceeding would yield effective all-in musical works royalties for Spotify ranging from [redacted] to [redacted] for the years 2018 to 2021.[11] Those effective rates are consistent with my analysis of reasonable effective all-in musical works royalty rates for interactive services. Spotify's proposal also preserves the desirable all-in percent-of-revenue headline rate structure, while addressing certain aspects of the *Phonorecords II* rate structure that leads to distortionary effects on the effective rate paid by interactive services for newer product line extensions designed for listeners with lower willingness to pay.[12]

[11] Corrected Written Direct Testimony of Benjamin Kung, *Phonorecords IV*, Oct. 22, 2021, ¶ 44.

[12] Spotify Proposed Rates and Terms (October 13, 2021), *Phonorecords IV*, 21-CRB-0001-PR (2023-2027).

II. Music industry background

(14) This proceeding concerns interactive streaming services and the compulsory license associated with the right to make and distribute phonorecords of musical works—specifically, Section 115 of the U.S. Copyright Act.[13]

(15) In this section, I provide: (1) background on interactive streaming services (see Section II.A); and (2) an overview of the key players in the music licensing landscape, including rights-holders, and the ways in which music royalties are currently paid to these entities by interactive streaming services (see Section II.B).

II.A. Interactive streaming services

(16) A variety of recorded music distribution channels compete for consumers' listening time and thereby facilitate musicians getting their music to listeners. Listeners can access music through physical media such as CDs and vinyl records, satellite or terrestrial radio, digital downloads, streaming services, and other channels. Rapid advances in technology over the past twenty years have changed the way that consumers listen to recorded music, and therefore the way in which the creators of such music are compensated via payments to copyright owners.[14]

(17) For example, the introduction of peer-to-peer file sharing platforms such as Napster and LimeWire around the turn of the century led to an increase in piracy.[15] Piracy platforms and

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[13] *See* 37 CFR § 385. Following *Phonorecords III*, the rates and terms set in this proceeding are contained within Title 37, Part 385 of the Code of Federal Regulations (CFR). Subpart C pertains to interactive streaming, limited downloads, limited offerings, mixed service bundles, bundled subscription offerings, locker services, and other delivery configurations. Subpart B pertains to physical phonorecord deliveries, permanent digital downloads (PDDs), ringtones, and music bundles. Prior to 2019, what is now known as Subpart C was Subpart B, and what is now known as Subpart B was Subpart A. The shift in subparts occurred due to the addition of a new Subpart A, "Regulations of General Application." *See* 37 CFR § 385 (2018) and 37 CFR § 385 (2019).

However, the CRJs' Final Determination of royalty rates and terms for making and distributing phonorecords was vacated by the District of Columbia Circuit Court of Appeals in August 2020. This effectively resulted in the reinstatement of *Phonorecords II* regulations while the *Phonorecords III* remand is pending judgment. *See George Johnson v. Copyright Royalty Board and Librarian of Congress et al.* 969 F.3d 363 (D.C. Cir. 2020).

[14] Jacob Ganz, "The Decade in Music: The Way We Listen Now," *NPR*, Dec. 2, 2009, https://www.npr.org/2009/12/02/121023882/the-decade-in-music-the-way-we-listen-now; Elena Rubin, "11 Ways the Music Industry has Changed over the Past Decade," *Insider*, Dec. 18, 2019, https://www.insider.com/how-music-industry-changed-2010s-decade-2019-12.

[15] Stephen Dowling, "Napster Turns 20: How It Changed the Music Industry," BBC, May 1, 2019, *available at* https://www.bbc.com/culture/article/20190531-napster-turns-20-how-it-changed-the-music-industry; Recording Industry Association of America, "About Piracy," accessed June 17, 2021,

software, in combination with the digitization of sound recordings, enabled widespread free access to and sharing of recorded music. Because such distribution channels do not contribute directly to the flow of funds to songwriters and recording artists (or to music industry revenue), piracy led to major losses in such revenue.[16] Figure 1 illustrates the dramatic decline in industry revenues immediately following the launch of Napster in 1999.[17] Furthermore, while physical purchases of the past tended to bundle an album of songs onto one CD or record, digital purchases allowed for the option of per song purchasing (depicted by "digital downloads" below).[18]

(18) As shown below, a comparably dramatic reversal of this decline corresponded with rapid growth in streaming services, like Spotify.[19] [redacted]

https://www.riaa.com/resources-learning/about-piracy/.

[16] Kristin Robinson, "15 Years of Spotify: How the Streaming Giant Has Changed and Reinvented the Music Industry," *Variety*, Apr. 23, 2021, *available at* https://variety.com/2021/music/news/spotify-turns-15-how-the-streaming-giant-has-changed-and-reinvented-the-music-industry-1234948299/. [redacted]

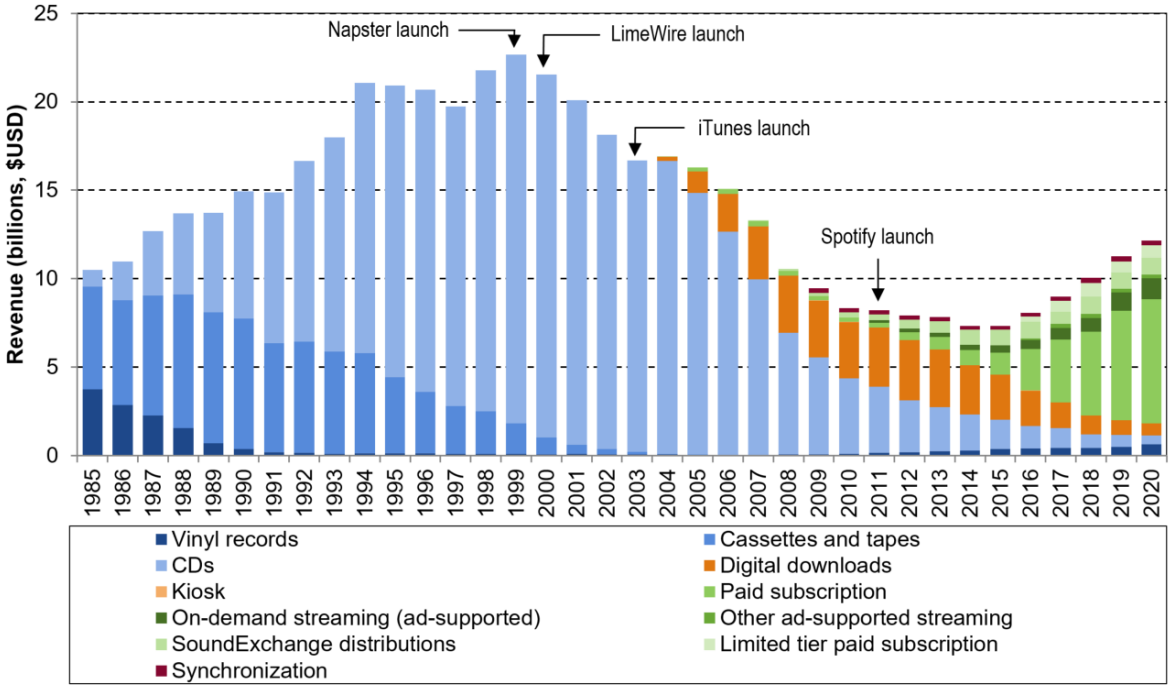
[17] Napster was created in 1999, but soon thereafter faced litigation from the music industry over copyright infringement. Although Napster was shut down in 2001, online file sharing services began to proliferate in the industry. *See* Stephen Dowling, "Napster Turns 20: How It Changed the Music Industry," BBC, May 1, 2019, *available at* https://www.bbc.com/culture/article/20190531-napster-turns-20-how-it-changed-the-music-industry. ("On 1 April 2000, Metallica filed a lawsuit against Napster for copyright infringement, racketeering and unlawful use of digital audio interface devices at a district court in Northern California […] The music industry's litigation worked, at least on paper—it was served with an injunction and shut down its server in July 2001. It reopened in September the same year, after paying $26m toward past and future royalties.")

[18] Dominik Papies and Harald J. van Heerde, "The Dynamic Interplay between Recorded Music and Live Concerts: The Role of Piracy, Unbundling, and Artist Characteristics," *Journal of Marketing* 81 (July 2017): 67 ("Another key development is unbundling, wherein firms can 'offer individual products that were previously only (or primarily) sold as part of bundles' […] The unbundling of music allows consumers to cherry-pick their favorite songs rather than buy the entire album."); Cherie Hu, "Unbundling the Song: Inside the Next Wave of Recorded Music's Disruption," *Forbes*, May 13, 2018, *available at*, https://www.forbes.com/sites/cheriehu/2018/05/13/unbundling-the-song-inside-the-next-wave-of-recorded-musics-disruption/?sh=42ce60e09cae.

[19] Charlie Sorrel, "Spotify Launches in the U.S at Last," *Wired*, July 14, 2011, *available at* https://www.wired.com/2011/07/spotify-launches-in-the-u-s-at-last/; Ben Sisario, "Spotify Hits 10 Million Subscribers, a Milestone," *New York Times*, May 21, 2014, https://www.nytimes.com/2014/05/22/business/media/spotify-hits-milestone-with-10-million-paid-subscribers.html.

[redacted] Revenues from recorded music began to rise starting in 2016 and have continued to do so.[21]

Figure 1. U.S. recorded music industry revenues by format (1985–2020)



Source: Recording Industry Association of America U.S. Sales Database, "U.S. Recorded Music Revenues by Format," accessed June 22, 2021, https://www.riaa.com/u-s-sales-database/.
Notes: [1] Vinyl record category includes LPs, EPs, and vinyl singles. Cassettes and tapes includes 8-tracks, cassettes, cassette singles, and other tapes. CDs include CD singles, SACDs, DVD audio, and physical music videos. Digital downloads includes downloaded albums, singles, ringtones & ringbacks, downloaded music videos, and other digital content. [2] SoundExchange collects and distributes public performance royalties on behalf of sound recording rights-holders, i.e., record labels, for sound recordings played through non-interactive streaming services and satellite radio. SoundExchange distributions are defined as "Estimated payments to performers and copyright holders for digital and customized radio services [i.e., non-interactive streaming services and satellite radio] under statutory licenses" relating to sound recordings.

(19) At the same time as music industry revenues were increasing, revenue composition was changing. As shown in Figure 2, between 2015 and 2020 alone, the share of industry revenues attributed to streaming increased from 35% to 83%.

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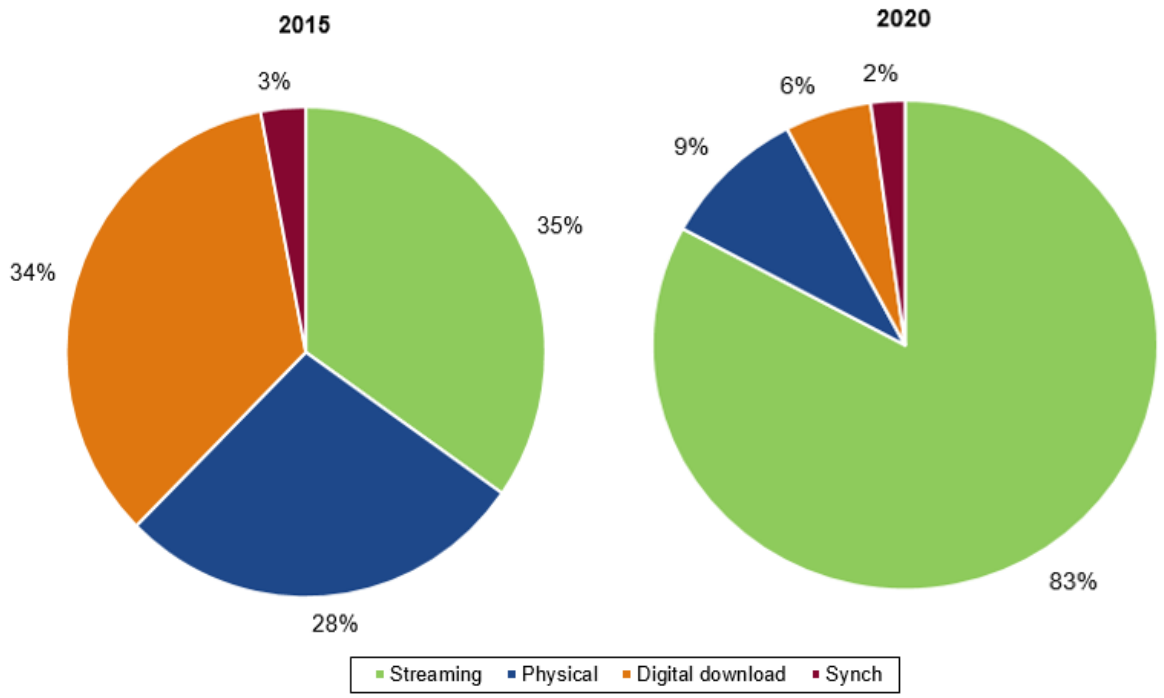
20 [redacted]

21 Between 2016 and 2020, the number of U.S. paid music subscriptions (annual average) has grown from 22.7 million to 75.5 million. Recording Industry Association of America (RIAA), "Year-End 2020 RIAA Revenue Statistics," Feb. 2021, 2, *available at* https://www.riaa.com/wp-content/uploads/2021/02/2020-Year-End-Music-Industry-Revenue-Report.pdf.

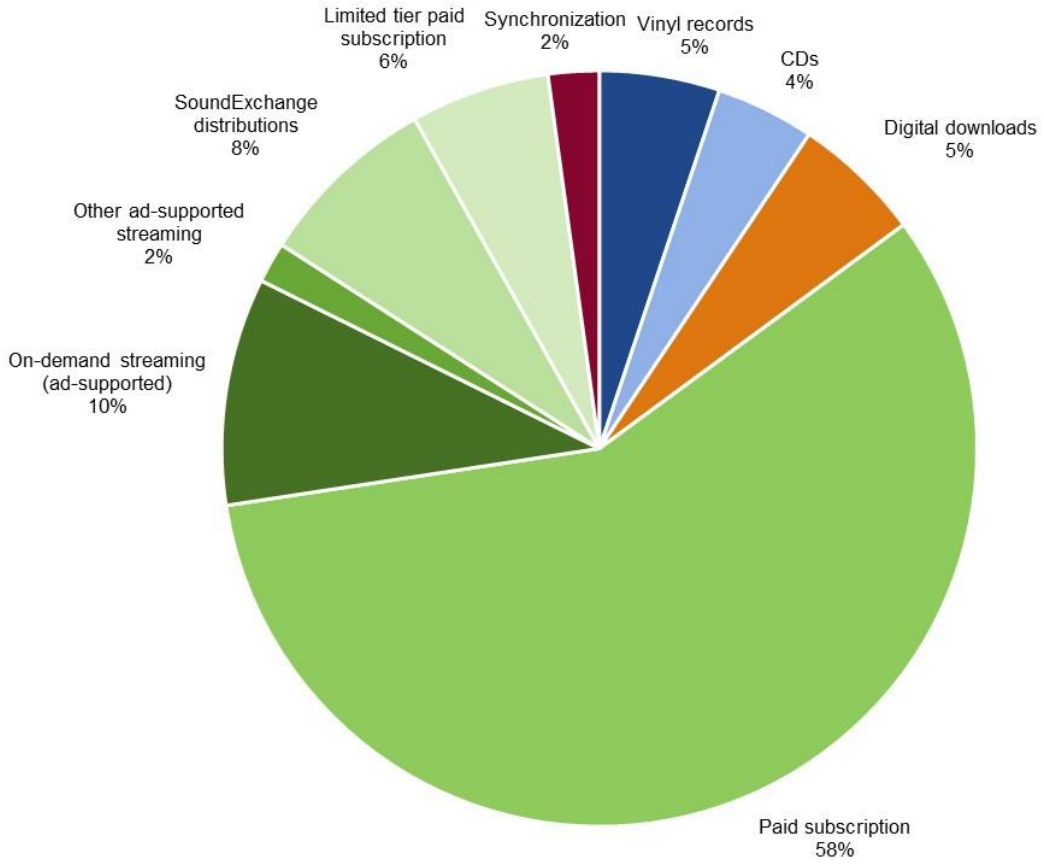
Figure 2. U.S. music industry revenue share by listening category (2015, 2020)



Source: Recording Industry Association of America U.S. Sales Database, "U.S. Recorded Music Revenues by Format," accessed June 22, 2021, https://www.riaa.com/u-s-sales-database/.
Notes: [1] Revenue is U.S. estimated retail dollar value (net after returns), adjusted for inflation. [2] Streaming category includes paid subscriptions and ad-supported streaming, both interactive and non-interactive streaming. [3] Physical category includes LPs, EPs, vinyl singles, CDs including CD singles, SACDs, DVD audio, and physical music videos. [4] Digital downloads includes downloaded albums, singles, ringtones & ringbacks, downloaded music videos, kiosks, and other digital content.

(20) Figure 3 below provides a more disaggregated view of the various music distribution channels and their share of recorded music revenue in 2020. Brief descriptions of other distribution channels are provided in Appendix C.

Figure 3. U.S. recorded music industry revenues by format (2020)



Source: Recording Industry Association of America U.S. Sales Database, "U.S. Recorded Music Revenues by Format," accessed June 22, 2021, https://www.riaa.com/u-s-sales-database/.
Notes: [1] Revenue is U.S. estimated retail dollar value (net after returns). [2] Limited tier paid streaming subscription is defined as "Paid streaming services with interactivity limitations by availability, device restriction, catalogue limitations, on demand access, or other factors." [3] SoundExchange collects and distributes public performance royalties on behalf of sound recording rights-holders, i.e., record labels, for sound recordings played through non-interactive streaming services and satellite radio. SoundExchange distributions defined as "Estimated payments to performers and copyright holders for digital and customized radio services under statutory licenses." [4] Vinyl record category includes LPs, EPs, and vinyl singles. Cassettes and tapes includes 8-tracks, cassettes, cassette singles, and other tapes. CDs include CD singles, SACDs, DVD audio, and physical music videos. Digital downloads includes downloaded albums, singles, ringtones & ringbacks, downloaded music videos, and other digital content.

(21) In 2020, interactive streaming services made up approximately 74% of recorded music industry revenue.[22] Usage patterns in the first half of 2021 suggest that interactive streaming services accounted for 84% of all revenues, up 26% year-over-year to $5.9 billion.[23]

[22] Interactive streaming service share includes paid subscriptions, on-demand streaming (ad-supported), and limited tier paid subscription categories. Recording Industry Association of America U.S. Sales Database, "U.S. Recorded Music Revenues by Format," accessed June 22, 2021, https://www.riaa.com/u-s-sales-database/.

[23] Keith Caulfield, "Drake's 'Certified Lover Boy' Debuts at No. 1 on Billboard 200 Chart with Biggest Week

However, music piracy has not disappeared. [redacted]

(22) "Interactive streaming services" are broadly comprised of the paid subscription, on-demand streaming (ad-supported), and limited tier paid subscription categories.[25] Interactive streaming services are provided by Spotify, Apple Music, Amazon Prime Music and Amazon Music Unlimited, YouTube Music and YouTube Premium, Pandora Plus and Premium, iHeartRadio Plus and iHeartRadio All Access, and Tidal. I provide additional background on company-specific interactive streaming services in Appendix D. Multi-homing (accessing music through multiple channels or platforms) across interactive streaming services and other distribution channels also exists among music listeners.[26]

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for an Album in Over a Year," *Billboard Bulletin*, Sept. 1, 2021, p. 9, *available at* https://static.billboard.com/files/2021/09/september-13-2021-billboard-bulletin-1631570706.pdf.

[24] [redacted]

[25] For example, Spotify provides an ad-supported service for listeners, which offers more limited playback features. Spotify's ad-supported service does not allow listeners to download music for offline listening, limits pick-and-play offerings, includes ads between songs, and offers lower sound quality than Spotify's Premium tier product. *See* Spotify, "Premium Plans," accessed June 22, 2021, https://support.spotify.com/us/article/premium-plans/.

Some interactive streaming companies, such as Tidal and Apple Music, offer *only* paid tiers. *See* Tidal, "Subscription Types," accessed Oct. 1, 2021, https://support.tidal.com/hc/en-us/articles/115003662825-Subscription-Types; Apple Music, "Start Your Free Trial," accessed Aug. 9, 2021, https://music.apple.com/subscribe?ign-itscg=20200&ign-itsct=rv_eve&ls=1&mttnagencyid=2433&mttncc=US&mttnpid=305109&mttnsiteid=125115&mttnsubad=mus-109925018303&mttnsubkw=ag-109925018303-ad-472505434961.

[26] Rochet and Tirole adapted the term "multihoming" (originally an Internet-centric term "used to describe a host that is connected to two or more networks or having two or more network addresses") to describe the phenomenon by which "a fraction of end users on one or the two sides connect to several platforms." *See* Jean-Charles Rochet and Jean Tirole, "Platform Competition in Two-Sided Markets," *Journal of European Economic Association* 1, no. 4 (2003): 991. https://www.rchss.sinica.edu.tw/cibs/pdf/RochetTirole3.pdf.

See also Vardit Landsman, Stefan Stremersch, "Multihoming in Two-Sided Markets: An Empirical Inquiry in the Video Game Console Industry," *Journal of Marketing* 75, no. 6 (Nov. 2011): 39–54, https://journals.sagepub.com/doi/abs/10.1509/jm.09.0199; Donato Cutolo, Andrew Hargadon, and Martin Kenney, "New Strategies for the Platform Economy," *MITSloan Management Review* (Spring 2021), *available at* https://humanecology.ucdavis.edu/sites/g/files/dgvnsk161/files/media/documents/MITSMR-Compunnel-New-Strategies-0321.pdf.

Written Direct Testimony of John R. Hauser, *Phonorecords IV*, Oct. 13, 2021, at p. 53 ("In QS15, I asked respondents whether they subscribed to any other paid on-demand music streaming services in addition to Spotify. Appendix R shows the distribution of responses to this question (QS15). The most common on-demand music streaming service to which respondents had a paid subscription was Amazon Music Prime, with 31 percent of respondents in the Remove Spotify Premium Hypothetical and 35 percent of respondents in the Remove All Spotify Hypothetical. The second and third most common responses were Apple Music and YouTube Music Premium, with 20–25 percent of respondents.")

(23) Interactive streaming services often allow listeners to request and receive the transmission of a particular sound recording.[27] These services offer a variety of ways for users to engage with their various features. For example, listeners on services such as Spotify Premium, Apple Music, and Tidal can access tracks and playlists without Wi-Fi or mobile service while their subscriptions are active.[28] Further, users of these three services can play any track at any time with unlimited skips and very limited ad interruptions.[29]

(24) In addition to user-created playlists, interactive streaming services also feature playlists curated by service editors, algorithms, or a combination of the two ("algotorial playlists").[30] These playlists, especially those curated by the service, have emerged as a powerful force in

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[27] Whether or not a service is "interactive" has no naturally clear dividing line, but because it matters for regulatory treatment and compulsory licenses (e.g., interactive streaming services are granted compulsory mechanical licenses for musical work rights, while non-interactive streaming services are granted compulsory licenses for sound recording rights), a legal definition can be given. For example, according to Section 114 of the Copyright Act, an "interactive service" is "one that enables a member of the public to receive a transmission of a program specially created for the recipient, or on request, a transmission of a particular sound recording, whether or not as part of a program, which is selected by or on behalf of the recipient. The ability of individuals to request that particular sound recordings be performed for reception by the public at large, or in the case of a subscription service, by all subscribers of the service, does not make a service interactive, if the programming on each channel of the service does not substantially consist of sound recordings that are performed within 1 hour of the request or at a time designated by either the transmitting entity or the individual making such request. If an entity offers both interactive and noninteractive services (either concurrently or at different times), the noninteractive component shall not be treated as part of an interactive service." *See* 17 U.S.C. § 114(j)(7).

According to a Morgan Stanley survey from 2020, Spotify subscribers spent approximately 26% of their time listening to service-curated playlists, 46% of their time listening to user-generated playlists, and 28% of their time listening to music found through unique searches. Benjamin Swinburne, Katy L. Huberty, Brian Nowak, Cameron Mansson-Perrone, and Thomas Yeh, "The Year of the Podcast: 6th Annual Audio Entertainment Survey," Morgan Stanley, Jan. 6, 2020, p. 20.

[28] Spotify, "Listen Offline," accessed Oct. 2, 2021, https://support.spotify.com/us/article/listen-offline/; Apple Music, accessed Oct. 2, 2021, https://www.apple.com/apple-music/features/; Tidal, "Offline Mode on Android," accessed June 22, 2021, https://support.tidal.com/hc/en-us/articles/201315081-Offline-Mode-on-Android.

[29] Spotify, "Why Go Premium?" accessed June 18, 2021, https://www.spotify.com/us/premium/.

A "skip" is the process by which a listener voluntarily abandons a song before the song is complete, allowing them to move to the next item in a playlist, album, radio station, etc. Paul Lamere, "The Skip," *Music Machinery*, May 2, 2014, *available at* https://musicmachinery.com/2014/05/02/the-skip/.

[30] Ben Popper, "Tastemaker: How Spotify's Discover Weekly Cracked Human Curation at Internet Scale," *Verge*, Sept. 30, 2015, *available at* https://www.theverge.com/2015/9/30/9416579/spotify-discover-weekly-online-music-curation-interview ("Today, the world of curation in streaming music is a spectrum, with each service offering its own blend of human editorial and algorithmically generated selections."); Oskar Eichler, "The Ultimate Spotify Playlist Guide," *Songstats*, Oct. 20, 2020, *available at* https://lab.songstats.com/the-ultimate-spotify-playlist-guide-e3dab9826419 ("Personalized Playlists are an extremely interesting hybrid between editorial and algorithmic playlists. They are essentially "personalized editorial playlists" that have different tracks for different listeners, but are still curated and influenced by Spotify's team of editors. That's why Spotify internally calls them: 'Algotorial Playlists'!").

See also Written Direct Testimony of David Kaefer, Phonorecords IV, Oct. 13, 2021, ¶¶ 25–26.

music discovery for users.[31] In a Morgan Stanley study from 2020, respondents reported higher satisfaction scores for the music discovery features available on streaming services such as Spotify and Apple Music versus those available on terrestrial and satellite radio platforms.[32] Further, such curated playlists contribute to the promotion of new tracks and emerging artists.[33] Songwriters and recording artists have also seen positive trends in the streaming and popularity of their songs and tracks after promotion through these playlists.[34]

II.B. Music rights-holders and royalties

(25) In order for a music service (such as an interactive streaming service) to reproduce and distribute a "track," i.e., the sound recording of a composition, which incorporates the contributions of both the songwriter and the recording artist,[35] it should in some fashion appropriately compensate those who created it, a team including the songwriter and the recording artist. One might initially expect that this would be done by recognizing and enforcing a property right (e.g., copyright) in the joint product (the track), to be managed and priced as the team agrees internally and in competition with the teams that created other tracks.

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[31] Ben Popper, "Tastemaker: How Spotify's Discover Weekly Cracked Human Curation at Internet Scale," *Verge*, Sept. 30, 2015, *available at* https://www.theverge.com/2015/9/30/9416579/spotify-discover-weekly-online-music-curation-interview ("Streaming services know [discovering new music remains a very powerful experience], and since most have very similar pricing and catalogs, curation has emerged as one of the most important areas of differentiation between them […] they all use a mix of human curators and computer algorithms to target their suggestions.")

See also Spotify, "Spotify Users Have Spent over 2.3 Billion Hours Streaming Discover Weekly Playlists Since 2015," July 9, 2020, https://newsroom.spotify.com/2020-07-09/spotify-users-have-spent-over-2-3-billion-hours-streaming-discover-weekly-playlists-since-2015/.

[32] Benjamin Swinburne, Katy L. Huberty, Brian Nowak, Cameron Mansson-Perrone, and Thomas Yeh, "The Year of the Podcast: 6th Annual Audio Entertainment Survey," Morgan Stanley, Jan. 6, 2020, p. 49.

[33] Written Direct Testimony of David Kaefer, *Phonorecords IV*, Oct. 13, 2021, ¶ 31 ("Spotify has innovated its curated playlists and playlist-related features to further bridge the gap between songwriters and fans. For instance, in December 2020, Spotify launched the Songwriters Hub, which provides Spotify users with opportunities to specifically discover songwriter content. Spotify users can listen to podcasts about songwriting, visit hundreds of dedicated songwriter pages, stream songwriter-centric playlists, and find music released by featured songwriters.")

[34] *See, e.g.*, David Pierce, "The Secret Hit-Making Power of the Spotify Playlist," *Wired*, May 3, 2017, *available at* https://www.wired.com/2017/05/secret-hit-making-power-spotify-playlist/; Ross Sandler, Julien Roch, and Kannan Venkateshwar, "In the Sweet SPOT," Barclays, June 26, 2018, p. 10 ("Curated playlists account for 15% of the total listening hours on Spotify. Over the last two years, Spotify's curated playlists such as RapCaviar have emerged as a powerful force in music discovery. […] Given the huge follower base, artists that get featured on these curated playlists see their following and streaming increase significantly.")

[35] In this report, I use the term "track" to describe a sound recording of a composition, which incorporates the contributions of the songwriter(s) and the recording artist(s). I use the term "song" to describe the composition and lyrics, i.e., the underlying musical work for a given track.

(26) Instead, the property right in each track is (a) divided into multiple rights that are strictly complementary for the music service but are often by default managed and priced separately from one another, yet at the same time (b) consolidated with many parallel rights from other tracks that might well otherwise compete against those from this track. I discuss implications of this structure in Section III below.

(27) For interactive streaming services, as regards a given track, the mechanism that seeks to ensure appropriate compensation involves the creation of two distinct copyrights: (1) the musical work (i.e., the underlying notes and lyrics of the track); and (2) the sound recording (i.e., the physical embodiment of a performance of the musical work, usually a master recording).[36] These copyrights can be broadly identified with the interests of the songwriter and the recording artist, respectively.[37] Within each of these rights, there are two sub-categories of rights relevant to interactive streaming platforms: (1) public performance rights, and (2) mechanical (or reproduction and distribution) rights.[38]

(28) Depending on the copyright, the sub-category of rights, the specific (in some cases) identity of an intermediary holder of the rights, and the type of music distribution service, a music service needs to acquire a subset of those multiple rights for each track it distributes. Acquiring a right may be a matter of negotiation, or there may be a compulsory license available with regulated terms (and then negotiation may occur in the shadow of a regulatory framework or even of a regulatory determination).

(29) Music services obtain these rights by paying royalties to the people and entities that hold these rights, each category of rights having typically been transferred to and become agglomerated in intermediaries (record labels, music publishers, and PROs).

(30) Figure 4 below provides an illustration of the typical flow of money from interactive streaming services to songwriters and recording artists. As shown below, these services deliver royalty payments to the MLC and PROs for the musical works rights (or directly to the music publishers), and the record labels for the sound recording rights in the United

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[36] *See SoundExchange, Inc. v. Librarian of Congress*, 571 F.3d 1220, 1222 (D.C. Cir. 2009).

See also Music Choice v. Copyright Royalty Bd., 774 F.3d 1000, 1004 (D.C. Cir. 2014); *Johnson v. Copyright Royalty Bd*, 969 F.3d 363, 367 (2020).

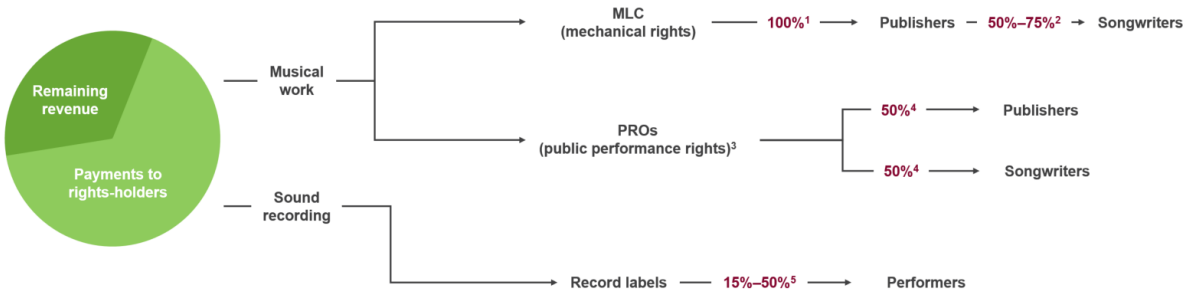
[37] As I discuss in Sections II.B.1 and II.B.2, these copyrights may be managed or owned by publishers or labels.

[38] US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, pp. 6, 9, https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf; *See also Johnson v. Copyright Royalty Bd*, 969 F.3d 363, 367 (2020).

Services that include audiovisual components must also obtain licenses for synchronization rights. *See* US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, p. 25, https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf.

States. These agglomerated intermediaries then usually pass on a portion of these royalties to songwriters and recording artists.[39]

Figure 4. Flow of money from interactive streaming services to rights-holders and musicians



Source: [1] *see infra n.60*; [2] *see infra n. 61*; [3] *see infra n.185*; [4] *see infra n.66*; [5] *see infra n.71*.

(31) In this section, I describe the rights an interactive streaming service obtains to "play" a given track, including the intermediaries involved in the licensing these rights and/or facilitating payments of royalties for these rights, and additional background information.

II.B.1. Musical work

(32) Songwriters and composers (hereinafter "songwriters") are the authors and initial owners of a musical work, where a musical work is defined as "the notes, lyrics, embedded performance directions, and related material composed by the creator of a song."[40] The "mechanical right" gives the copyright owner of a musical work a right to charge either an agreed-upon or a statutory royalty when others make and distribute phonorecords (for example, CDs, vinyl records, or digital audio files) of a work.[41] The "public performance right" gives the copyright owner of a musical work a right to prevent others (absent an agreement) from performing the work "publicly," including by digital transmission of the work in the case of

[39] For musical works rights, a publisher may purchase catalogs from songwriters. Notable examples include BMG and Tina Turner, Bob Dylan and Universal, among others. *See* Sisaro, Ben, "Bob Dylan Sells His Songwriting Catalog in Blockbuster Deal," *New York Times*, Dec. 7, 2020, *available at* https://www.nytimes.com/2020/12/07/arts/music/bob-dylan-universal-music.html.

[40] *George Johnson v. Copyright Royalty Board and Librarian of Congress et al.* 969 F.3d 363 (D.C. Cir. 2020), 4.

[41] US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, p. 25, https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf.

interactive streaming services.[42] This right is typically exercised by charging a royalty for such "public performance."

(33) The majority of songwriters assign ownership and representation of their works to a music publisher,[43] who in part finances a songwriter's efforts, provides promotional services, and administers copyrights and royalty payments.[44] Typically, 50% of the musical work royalty is assigned to the publisher, though it depends on the bargaining power of the songwriter.[45] The "mechanical right" is covered under a blanket compulsory license and royalty payments are typically distributed through the MLC,[46] whereas songwriters and publishers often delegate licensing of and collection of royalty payments for "public performance right" to a PRO.[47]

(34) In 2017, the Congressional Research Service reported that the three largest publishers accounted for 53.2% of publisher revenue share in the United States: Sony/ATV Music Publishing (25.5%), Universal Music Publishing Group (22.4%), and Warner/Chappell Music (5.3%).[48] Publisher market shares as reported by Professor Michael Katz in the *Phonorecords*

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[42] 17 U.S.C. § 106(5).

See also 17 U.S.C. § 101.

[43] Jimmy Stone, "The State of the Music Industry in 2020," Toptal, accessed Feb. 4, 2021, https://www.toptal.com/finance/market-research-analysts/state-of-music-industry ("The musical composition copyright is owned by a songwriter, who often assigns ownership and representation to a music publisher.")

However, certain publishing services allow songwriters to self-publish. *See e.g.,* Greg Majewski, "Music Publishing Explained," CD Baby, Apr. 26, 2021, https://diymusician.cdbaby.com/music-rights/music-publishing-explained/.

[44] US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, p. 19 ("Songwriters often enter into publishing agreements with music publishers. Under such an arrangement, the publisher may pay an advance to the songwriter against future royalty collections to help finance the songwriter's writing efforts. In addition, the publisher promotes and licenses the songwriter's work and collects royalties on the songwriter's behalf. In exchange, the songwriter assigns a portion of the copyright in the compositions he or she writes during the deal term to the publisher—traditionally 50%, but sometimes less—and the publisher is compensated by receiving a royalty share.").

See also Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, June 7, 2018, 5, *available at* https://crsreports.congress.gov/product/pdf/R/R43984/22.

The collection of royalty payments for songwriters and publishers are often delegated to intermediaries (e.g., MLC and PROs). For more information, *See infra* n. 53 and 61.

[45] Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, Feb. 23, 2021, 8, *available at* https://sgp.fas.org/crs/misc/R43984.pdf ("In a traditional publishing deal, a songwriter assigns the publisher's share to the publisher in return for the publisher's creative and promotional services. The songwriter and publisher split the royalties 50/50. Well-known songwriters may have the bargaining power to negotiate a copublishing agreement and retain up to 75% of the total publishing royalties.")

[46] US Copyright Office, "Musical Works Modernization Act," accessed Oct. 11, 2021, https://www.copyright.gov/music-modernization/115/.

[47] *See infra* (38)–(43).

[48] Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research

III Final Determination (hereinafter "*Phonorecords III*") proceeding, using Billboard data on top 100 radio songs tracked as of the second quarter in 2016, were "Sony/ATV [redacted]), Warner/Chappell ([redacted]), Universal Music Publishing Group (UMPG) ([redacted]), and Kobalt Music Publishing ([redacted]).",[49]

(35) Several mid-sized publishers, such as Kobalt, BMG, and Downtown Music Publishing, also operate in the industry. Songwriters may also choose to publish through one of many smaller music publishers, or to self-publish their music through a self-publishing firm.[50] The Nashville Songwriters Association International and National Music Publishers' Association represent songwriters and music publishers in the industry and are participants in this proceeding.[51] Other prominent music publisher and songwriter trade associations include the Songwriters Guild of America and the Association of Independent Music Publishers.[52]

(36) While the economic purpose of licensing copyrights is to reward songwriters for the use of their works, the legal and institutional structure creates overlapping rights in each musical work, and partially overlapping institutions that price and administer the collection of fees for those rights.

(37) Figure 5 depicts how royalties for mechanical and public performance rights are typically collected by the MLC and PROs, respectively.

Service, June 7, 2018, 6, *available at* https://crsreports.congress.gov/product/pdf/R/R43984/22.

Music & Copyright reported 2019 worldwide publisher revenue shares as follows: Sony/ATV (25%), Universal (21%), and Warner Chappell (11.6%). Music & Copyright, "Increases Record-Music Market Share Lead, Indies Enhance Publishing Dominance," May 20, 2020, *Music & Copyright* (blog), https://musicandcopyright.wordpress.com/2020/05/20/umg-increases-recorded-music-market-share-lead-indies-enhance-publishing-dominance/.

[49] *Phonorecords III* Final Determination Dissent Opinion at p. 34 (citing to [redacted]).

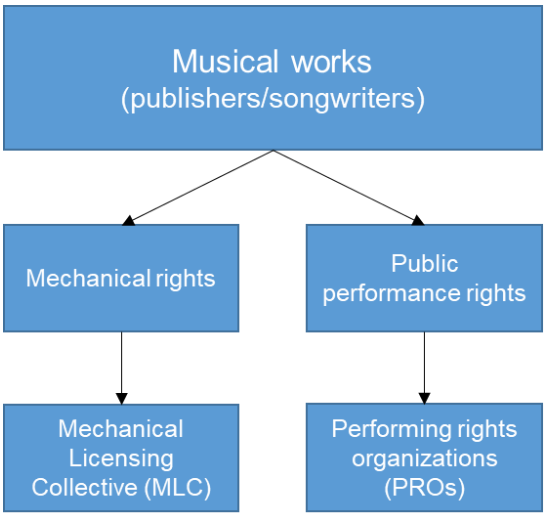
[50] *See* Songwriter Universe, "Music Publishers Directory," accessed July 16, 2021, https://www.songwriteruniverse.com/publisherlist.htm.

Companies such as CD Baby offer publishing services that allow songwriters to self-publish. Greg Majewski, "Music Publishing Explained," CD Baby, Apr. 26, 2021, https://diymusician.cdbaby.com/music-rights/music-publishing-explained/.

[51] National Music Publishers' Association "Our Mission," accessed Oct. 9, 2021, https://www.nmpa.org/mission/; Nashville Songwriters Association International, "About NSAI," accessed Oct. 9, 2021, https://www.nashvillesongwriters.com/about-nsai.

[52] Songwriters Guild of America, "About Us," accessed Oct. 9, 2021, https://www.songwritersguild.com/site/home/about-us; Association of Independent Music Publishers, "About Us," accessed Oct. 9, 2021, https://www.aimp.org/about.

Figure 5. Existing musical work licensing framework for interactive streaming services



Source: Adapted from US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, Appendix D, available at https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf. See also Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, Feb. 23, 2021, 12, *available at* https://sgp.fas.org/crs/misc/R43984.pdf.
Note: As of January 1, 2021, the Mechanical Licensing Collective (MLC) began administering blanket mechanical licenses to eligible streaming and download services in the United States. MLC, "About the MLC," accessed July 16, 2021, https://www.themlc.com/our-story.

(38) The MLC was created by the Music Modernization Act (MMA) to collect royalties for mechanical rights from interactive streaming services and distribute them to publishers and songwriters.[53]

(39) The rights for this use are governed under Section 115 of the Copyright Act, which provides a blanket compulsory license for mechanical rights to music services that satisfy certain conditions, including the payment of royalties.[54] The Copyright Act charges the Copyright Royalty Board (CRB) with setting the statutory rates and terms for the compulsory license approximately every five years through the *Phonorecords* proceedings (this report is submitted as part of *Phonorecords IV*).[55] Under Section 115, licenses between the copyright

[53] Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, Feb. 23, 2021, 16–17, *available at* https://sgp.fas.org/crs/misc/R43984.pdf.

See generally Orrin G. Hatch–Bob Goodlatte Music Modernization Act, H.R. 1551, Publ. Law 115–264, Oct. 11, 2018.

[54] *See* Orrin G. Hatch–Bob Goodlatte Music Modernization Act, H.R. 1551, Publ. Law 115–264, Oct. 11, 2018, 3687. MLC, "DSP Obligations under the Music Modernization Act of 2018," accessed Oct. 11, 2021, https://themlc.com/sites/default/files/2021-01/DSP%20Obligations%20under%20The%20MMA%20of%202018_V2.pdf.

[55] 17 U.S.C. § 801(b).

US Copyright Office, "Compulsory License for Marking and Distributing Phonorecords," Circular 73, revised Jan. 2018, *available at* https://www.copyright.gov/circs/circ73.pdf; US Copyright Royalty Board, "About Us," accessed Oct. 6, 2021, https://www.crb.gov/.

owner and the music service can also be voluntarily negotiated in lieu of the rates and terms set by the CRB.[56] I provide an illustration of the calculation of royalties for mechanical rights paid by interactive streaming services in Appendix E (using the structure under the *Phonorecords II* proceeding).

(40) Following the passage of the MMA, and beginning in January 2021, the MLC began processing and distributing the payments of royalties for mechanical rights.[57] The Harry Fox Agency (HFA) and Consensys are the entities designated by the MLC to "manag[e] the matching of digital uses to musical works, distribut[e] mechanical royalties and onboard[ ] songwriters, composers, lyricists and music publishers and their catalogs to the portal."[58] The MLC is funded by the music services by means of an administrative fee (i.e., the MLC's operational costs are not passed on to publishers and songwriters, unlike the PROs' operational costs).[59] The MLC first distributes the mechanical royalties to publishers, who then pass on—according to the agreement between the publisher and songwriter—a percentage of the mechanical royalties to the songwriter (after deducting any advance payments).[60]

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[56] For example, the rate levels and structure agreed upon in *Phonorecords I* and *Phonorecords II* were the result of negotiated settlements. *See generally Phonorecords I* Final Determination; *Phonorecords II* Final Determination; 17 U.S.C. § 115(c)(1)(D).

Publishers can also directly license mechanical rights to services, outside the MLC. Digital Licensee Coordinator, "FAQ," accessed Oct. 11, 2021, *available at* https://digitallicenseecoordinator.org/faq/ ("Can digital music providers still have direct licenses with copyright owners? Yes. Pursuant to the Music Modernization Act, licensees can continue any existing direct licenses and can enter new ones. A licensee does not have to pay royalties to The Mechanical Licensing Collective ("The MLC") for uses of a musical work covered by a voluntary license, but it still must report those works in monthly usage reports to the MLC. In fact, a digital music provider can execute direct licenses with some copyright owners and use the blanket license for those musical works that are not directly licensed.").

[57] MLC, "The Mechanical Licensing Collective Begins Full Operations as Envisioned by The Music Modernization Act of 2018," Jan. 1, 2021, https://www.themlc.com/press/mechanical-licensing-collective-begins-full-operations-envisioned-music-modernization-act.

[58] MLC, "The MLC: History & Milestones," 2020, *available at* https://www.themlc.com/milestones.

[59] Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, Feb. 23, 2021, 17, *available at* https://sgp.fas.org/crs/misc/R43984.pdf; US Copyright Office, "Music Modernization: Frequently Asked Questions," accessed Oct. 6, 2021, https://www.copyright.gov/music-modernization/faq.html.

17 U.S.C. § 115(d) (D) *Determination of administrative assessment*—(ii) Separate proceeding before copyright royalty judges.—The amount and terms of the administrative assessment shall be determined and established in a separate and independent proceeding before the Copyright Royalty Judges, according to the procedures described in clauses (iii) and (iv). The administrative assessment determined in such proceeding shall—(I) be wholly independent of royalty rates and terms applicable to digital music providers, which shall not be taken into consideration in any manner in establishing the administrative assessment;

[60] MLC, "Frequently Asked Questions," accessed Sept. 3, 2021, https://www.themlc.com/faqs/categories/mlc ("The MLC pays out the mechanical royalties to music publishers, administrators, and self-administered songwriters, composers, and lyricists.")

(41) In addition to mechanical rights, in many cases, songwriters and publishers collect royalties for public performance rights from PROs.[61] Unlike songwriters, publishers can join multiple societies.[62] PROs facilitate the licensing of performance rights for interactive streaming services.[63] The licensee will typically pay a flat fee or percentage of revenue to acquire a blanket license to perform any of the musical works within a given PRO's catalog.[64] The PRO then generally splits these public performance royalties 50/50 between the songwriter(s) and the publisher(s) after deductions.[65]

Digital Media Association, "Who Gets Paid and How Much?" Aug. 2020, *available at* https://dima.org/wp-content/uploads/2020/08/DiMA_Who-Gets-Paid_Infographic.pdf ("Mechanical royalties are typically split as follows after they are collected by the music publisher: 50% of the revenue is considered the music publisher share, and 50% of the revenue is considered the songwriter share…The timing of these payments to the songwriter will be impacted by whether or not they received an advance payment from the music publisher, and when the advance is fully recouped against royalties due.").

In the *Phonorecords III* proceeding, Copyright Owners stated that songwriters typically receive 75% or more of mechanical royalty income. *Phonorecords III* Final Determination at p. 27.

[61] Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, Feb. 23, 2021, pp. 8–9, *available at* https://sgp.fas.org/crs/misc/R43984.pdf.

There are instances in which a songwriter or publisher can directly license with services irrespective of PRO affiliation. There are also songwriters and publishers that do not affiliate with a PRO at all. *See* ASCAP Consent Decree, S.D.N.Y. 41-1395, Second Amended Final Judgment, June 11, 2011, Section IV, p. 6; BMI Consent Decree, S.D.N.Y 64-civ-3787, Final Judgment, Dec. 29, 1966, Section IV, p. 2; *Broad Music, Inc. v. Columbia Broad. Sys., Inc*., 441 U.S. 1, 1558, §§ 11–12 (1979). ("Under the amended decree, which still substantially controls the activities of ASCAP, members may grant ASCAP only nonexclusive rights to license their works for public performance. Members, therefore, retain the rights individually to license public performances, along with the rights to license the use of their compositions for other purposes.").

[62] ASCAP, "My ASCAP Membership," accessed Sept. 2, 2021, https://www.ascap.com/help/my-ascap-membership ("You can only belong to one society at a time as a writer for licensing public performances in the United States; however, you can be a publisher at multiple societies.")

[63] US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, pp. 32–33, *available at* https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf.

The relevant "performance rights" give venues and services the ability to "perform" works publicly, including via digital audio transmission. *See* Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, Feb. 23, 2021, 5, *available at* https://sgp.fas.org/crs/misc/R43984.pdf; 17 U.S.C. § 106(5).

[64] US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, p. 33, *available at* https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf. ("Most commonly, licensees obtain a blanket license, which allows the licensee to publicly perform any of the musical works in a PRO's repertoire for a flat fee or a percentage of total revenues.")

[65] *See, e.g.,* BMI, "Royalties," accessed Oct. 2, 2021, https://www.bmi.com/faq/category/royalties. ("How does BMI split royalties between songwriters and publishers? One half is designated for the songwriter(s), and the other half is designated for the publisher(s) or copyright holder(s)."); ASCAP, "Frequently Asked Questions," ASCAP, accessed May 28, 2021, https://www.ascap.com/help/ascap-licensing. ("Where does the money go? Quite simply, to our members. All the fees we collect are distributed as royalties, after deducting operating expenses (currently 11.3%).")

(42) In the United States, the four notable PROs are the American Society of Composers, Authors, and Publishers (ASCAP), Broadcast Music, Inc. (BMI), the Society of European Stage Authors and Composers (SESAC), and Global Music Rights (GMR).

(43) ASCAP and BMI are not-for-profit businesses that are subject to federal antitrust consent decrees which constrain their membership and licensing practices (e.g., the royalty rates and terms set between them and a given streaming service).[66] BMI and ASCAP are the largest PROs, representing approximately 90% of public performances within the U.S. market.[67] SESAC and GMR are smaller, for-profit organizations that are not subject to the same regulatory oversight and, therefore, rates and terms for public performance royalties are set through unregulated negotiations with the services.[68]

II.B.2. Sound recording

(44) Recording artists typically sign with record labels, which facilitate the production, distribution, and promotion of their recorded music. Traditionally, "when a performer signs a record deal […] they assign the copyright of their recordings to the label."[69] Services pay the label to license the recordings. The label retains a part, often the majority, of these earnings and passes on 15% to 50% of royalties to the artist (with the exact rate depending on the popularity and bargaining power of the recording artist).[70]

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[66] ASCAP Consent Decree, S.D.N.Y. 41-1395, Second Amended Final Judgment, June 11, 2011, Section IV, p. 6; BMI Consent Decree, S.D.N.Y 64-civ-3787, Final Judgment, Dec. 29, 1966, Section IV, p. 2.

[67] *Phonorecords III* Final Determination Dissent Opinion at p. 143, n. 67 ("Also, the performance rights collectives are highly concentrated, with ASCAP and BMI representing over 90% of the songs available for licensing in the United States."); *See also* [redacted]

[68] [redacted]

Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, Feb. 23, 2021, 20, *available at* https://sgp.fas.org/crs/misc/R43984.pdf. ("While the rates charged by ASCAP and BMI are subject to oversight by the federal district court judges, pursuant to their respective consent decrees, the rates charged by SESAC and GMR are based on marketplace negotiations.")

[69] Helienne Lindvall, "Why Artists Should Retain Ownership of Their Recordings," *Guardian*, Jan. 29, 2009, *available at* https://www.theguardian.com/music/musicblog/2009/jan/29/recording-copyright-ownership. ("Traditionally, when an artist signs a record deal (particularly with a major label), they assign the copyright of their recordings to the label.")

See also US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, pp. 19–22, *available at* https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf.

[70] Digital Media Association, "Who Gets Paid and How Much?" Aug. 2020, *available at* https://dima.org/wp-

(45) There are currently three "major" record labels, which account for a majority of revenues in the market. As of 2017, revenue shares of the U.S. market were: Universal Music Group (UMG) (29.4%), Warner Music Group (WMG) (21.2%), and Sony Corporation (14.4%).[71] In 2019, worldwide revenue shares for physical- and digital-revenue were as follows: UMG (31.8%), Sony (19.8%), and WMG (16.0%).[72]

(46) Independent or "indie" record labels include BMG, Glassnote Records, Blackened Recordings, XL Recordings, Ghostly International, Brainfeeder, and Big Machine.[73] Together, indie labels represented 35.1% of the U.S. market in 2019.[74] In addition, some recording artists choose to distribute their music through aggregators such as CD Baby, Believe, TuneCore, and DistroKid that allow artists to fully retain their copyrights rather than transferring them to a label.[75]

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content/uploads/2020/08/DiMA_Who-Gets-Paid_Infographic.pdf. ("Artist royalty rates in a typical recording agreement are in the range of 15-20% for newly signed artists, leaving the record company with 80–85% of revenue. Superstar artists with leverage may receive a much greater percentage of the amount paid to the record label, such as 50% of the net profits….")

[71] Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, June 7, 2018, 7, *available at* https://crsreports.congress.gov/product/pdf/R/R43984/22. There are alternative ways to calculate market share, including by "label ownership." *See, e.g.,* 2019 figures from Statista, which assign the following shares: Universal Music Group (UMG) (28.8%), Warner Music Group (WMG) (15.9%), and Sony Music Entertainment, Inc. (SME) (20.2%). Statista, "Market Share of Record Companies in the United States from 2011 to 2019, by Label Ownership," Jan. 8, 2021, https://www.statista.com/statistics/317632/market-share-record-companies-label-ownership-usa/.

[72] Music & Copyright, "UMG Increases Record-Music Market Share Lead, Indies Enhance Publishing Dominance," *Music & Copyright* (blog), May 20, 2020, https://musicandcopyright.wordpress.com/2020/05/20/umg-increases-recorded-music-market-share-lead-indies-enhance-publishing-dominance/.

[73] BMG, "Recordings," accessed Oct. 2, 2021, 2021, https://www.bmg.com/us/recording.html; Glassnote Records, "About," accessed Oct. 2, 2021, https://glassnotemusic.com/about/; Rolling Stone, "Metallica Launch New Record Label," Nov. 30, 2012, *available at* https://www.rollingstone.com/music/music-news/metallica-launch-new-record-label-174244/; Joyce, Joe Price, and Alex Gardner, "33 Independent Record Labels You Should Know," *Complex*, July 26, 2017, *available at* https://www.complex.com/pigeons-and-planes/2017/07/independent-record-labels-you-should-know/.

[74] Figures from 2019 by label ownership. Statista, "Market Share of Record Companies in the United States from 2011 to 2019, by Label Ownership," Jan. 8, 2021, https://www.statista.com/statistics/317632/market-share-record-companies-label-ownership-usa/.

[75] Record Union, "Do I Give Up Any Ownership Rights when Using Record Union?" accessed May 18, 2021, https://intercom.help/record-union/en/articles/1052721-do-i-give-up-any-ownership-rights-when-using-record-union; CD Baby, "Does CD Baby Pro Claim Any Ownership of My Music?" accessed Oct. 2, 2021, https://support.cdbaby.com/hc/en-us/articles/203823119-Does-CD-Baby-Pro-claim-any-ownership-of-my-music-; DistroKid, "Who Owns My Music?," accessed May 18, 2021, https://distrokid.zendesk.com/hc/en-us/articles/360013535234-Who-Owns-My-Music-; TuneCore, "By Hiring TuneCore, Will I Give Up Ownership of my Copyrights?" accessed May 18, 2021, https://support.tunecore.com/hc/en-us/articles/115006688808-By-hiring-TuneCore-will-I-give-up-ownership-of-my-copyrights-; EmuBands, "Do I Keep All of My Rights?" accessed Oct. 2, 2021, https://www.emubands.com/faqs/do-i-keep-all-of-my-rights/; Tim Ingham, "Believe Digital Fully Acquires Rival TuneCore," *Music Business Worldwide*,

(47) Thousands of independent labels and digital distributors are members of Merlin, an independent collective licensing agency which negotiates sound recording deals on their behalf with digital platforms such as Spotify, Apple, Pandora, Facebook/Instagram, Deezer, YouTube Music, and TikTok.[76] Merlin charges an administrative fee for its services.[77] As of June 2019, the member-owned organization had over 20,000 independent label and distributor members across 63 countries.[78] Today, Merlin reports its *global* market share to be 15%.[79]

(48) Like the musical work, a sound recording has two types of rights implicated by interactive streaming services: (1) public performance rights; and (2) reproduction and distribution rights. As depicted in Figure 6 below, record labels generally handle the licensing of the reproduction, distribution, and public performance rights and collection of royalties for their sound recordings.[80]

Apr. 16, 2015, *available at* https://www.musicbusinessworldwide.com/believe-digital-acquires-rival-tunecore/.

[76] Merlin, "Who We License," accessed Aug. 11, 2021, https://merlinnetwork.org/.

See also Merlin, "Amuse Joins Merlin to 'Secure the Most Artist-Friendly Terms' from Spotify, TikTok, and More," *Merlin*, July 8, 2020, https://merlinnetwork.org/amuse-joins-merlin-to-secure-the-most-artist-friendly-terms-from-spotify-tiktok-and-more/.

[77] Merlin charges a 3% admin fee for its services. If a Merlin member is also the member of a trade association (in the United States, this would be the American Association of Independent Music), Merlin charges a discounted rate of 1.5%. If there are no active trade associations available in an independent label's home country, it will be charged the 1.5% admin fee. Merlin, "Joining a Trade Association Helps Members to Maximize their Merlin Membership," Jan. 8, 2021, https://merlinnetwork.org/joining-a-trade-association-helps-members-to-maximize-their-merlin-membership/.

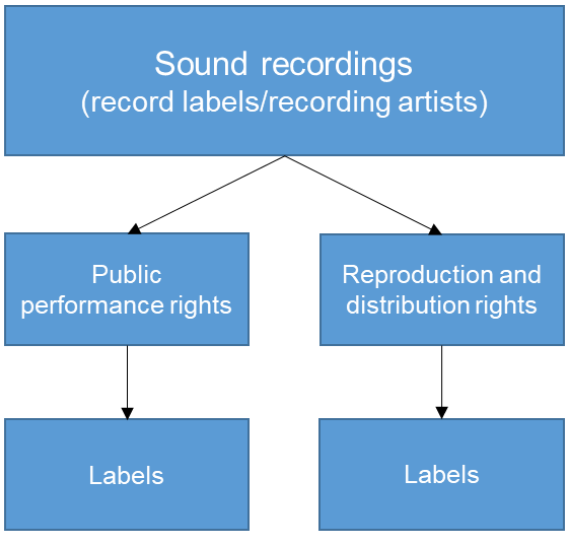
[78] Tim Ingham, "Merlin Paid Indie Labels and Distributors $845M in the Past Year, Showing Strong Growth," *Music Business Worldwide*, June 18, 2019, *available at* https://www.musicbusinessworldwide.com/indie-label-annual-revenues-hit-845m-via-merlin-showing-strong-growth/.

[79] Merlin, "Who We Are," accessed Aug. 11, 2021, https://merlinnetwork.org/ ("Merlin's collective approach has enabled our membership to grow to represent 15% of the global market share.")

[80] US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, Appendix D, *available at* https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf.

There is one exception to this general model, albeit in the non-interactive streaming space. Under Section 114 of the Copyright Act, the statutorily designated collective SoundExchange (not record labels) is responsible for collecting and paying out royalties to recording artists, non-featured artists, and record companies for the use of sound recordings over non-interactive streams. SoundExchange, "Licensing 101," accessed Oct. 2, 2021, *available at* https://www.soundexchange.com/service-provider/licensing-101/.

Figure 6. Existing sound recording licensing framework for interactive streaming services



Source: Adapted from United States Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, Appendix D, *available at* https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf.

(49) Related royalties and terms are negotiated directly between the labels (which control the sound recording copyright) and the streaming services (which must obtain licenses to stream these sound recordings). This negotiation is unregulated.[81] Interactive streaming services must obtain a license for the public performance and reproduction and distribution rights through the labels (these rights are typically bundled in the agreements).[82]

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[81] US Copyright Office, "Copyright and the Music Marketplace: A Report of the Register of Copyrights," Feb. 2015, p. 43, *available at* https://www.copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf. Interactive streaming services were required to negotiate in an unregulated market with record labels because of "the concerns expressed by representatives of the music community, namely that certain types of subscription and interactive audio services might adversely affect sales of sound recordings and erode copyright owners' ability to control and be paid for use of their work." Digital Performance Right in Sound Recordings Act of 1995, Publ. Law 104-39, 109 Stat. 336, p. 15, *available at* https://www.congress.gov/104/crpt/srpt128/CRPT-104srpt128.pdf.

[82] US Copyright Office, "Copyright and the Music Marketplace," May 2016, https://foxrothschild.gjassets.com/content/uploads/2017/03/Developments-in-Music-Publishing.pdf, p. 43 ("Except in the limited case of noninteractive streaming services that qualify for compulsory licensing under sections 112 and 114, licenses to reproduce and distribute sound recordings—such as those necessary to make and distribute CDs, transmit DPDs and ringtones, or operate an interactive music service—are obtained through direct negotiation between a licensee and the sound recording owner (usually a record label) in the open market.")

US Copyright Office, "Copyright and the Music Marketplace," May 2016, https://foxrothschild.gjassets.com/content/uploads/2017/03/Developments-in-Music-Publishing.pdf, p. 103 ("There appears to be broad agreement among stakeholders that PROs and other licensing entities should be able to bundle performance rights with reproduction and distribution rights, and potentially other rights, to meet the needs of modern music services.")

III. The willing buyer/willing seller standard and effective efficient competition

(50) In this section, I provide my interpretation of the willing buyer/willing seller rate setting standard and effective/efficient competition (see Section III.A) and two seemingly opposing features of the market—horizontal consolidation and vertical fragmentation—that work against effective competition and tend to raise total royalty rates (see Sections III.B).

III.A. Interpretation of willing buyer/willing seller and effective competition

(51) The first three *Phonorecords* proceedings governing interactive streaming services occurred subject to four policy objectives set forth in what was 17 U.S.C. Section 801(b)(1).[83] The Music Modernization Act in 2018 revised the rate-setting standard for musical works mechanical royalty rates for interactive streaming services and other mechanical license users.[84] Under this standard, the CRJs "shall establish rates and terms that most clearly represent the rates and terms that would have been negotiated in the marketplace between a willing buyer and a willing seller."[85] The CRJs are directed to consider:

> [E]conomic, competitive, and programming information presented by the parties, including: (i) whether use of the compulsory licensee's service may substitute for or may promote the sales of phonorecords or otherwise may interfere with or may enhance the musical work copyright owner's other streams of revenue from its musical works; and (ii) the relative roles of the

[83] The "801(b)(1)" factors were as follows:

A. To maximize the availability of creative works to the public.

B. To afford the copyright owner a fair return for his or her creative work and the copyright user a fair income under existing economic conditions.

C. To reflect the relative roles of the copyright owner and the copyright user in the product made available to the public with respect to relative creative contribution, technological contribution, capital investment, cost, risk, and contribution to the opening of new markets for creative expression and media for their communication.

D. To minimize any disruptive impact on the structure of the industries involved and on generally prevailing industry practices.

See Phonorecords III, 84 Fed. Reg. at 1955.

[84] Orrin G. Hatch–Bob Goodlatte Music Modernization Act, H.R. 1551, Publ. Law 115–264, Oct. 11, 2018, 3680.

See also 17 U.S.C. § 115(c)(1)(F).

[85] US Copyright Office, "Amendments to the Copyright Act as a Result of the Orrin G. Hatch–Bob Goodlatte Music Modernization Act," Oct. 2018, p. 5, *available at* https://www.copyright.gov/music-modernization/amendments.pdf.

> copyright owner and the compulsory licensee in the copyrighted work and the service made available to the public with respect to the relative creative contribution, technological contribution, capital investment, cost, and risk.[86]

(52) The present proceeding is the first time the willing buyer/willing seller standard will be used for setting mechanical royalty rates for interactive streaming services and other mechanical license users.[87] The physical phonorecords, permanent digital downloads, and ringtones standard also switched to willing buyer/willing seller in the *Phonorecords IV* proceeding.[88] The CRJs have a longer history of using the willing buyer/willing seller standard in other proceedings such as *Webcasting.*[89] The Second Circuit and the Southern District of New York have also applied a version of the willing buyer/willing seller standard in connection with PRO rate-setting cases under the ASCAP and BMI consent decrees.[90]

(53) As interpreted by the CRJs and the Courts, the willing buyer/willing seller standard requires the presence of effective competition. For example, as summarized in *Webcasting V*, "the D.C. Circuit found reasonable the Judges' construction of the statutory 'willing seller/willing buyer-marketplace' standard as calling for the establishment of rates that would have been set in an effectively competitive market."[91] Effective competition is not easily defined in a few phrases, and the D.C. Circuit recognized that the standard is "inherently ambiguous,"[92] but in spirit it requires that sellers vie, and have ample scope to vie, for additional business by

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[86] 17 U.S.C. § 115(c)(1)(F).

[87] US Copyright Office, "Frequently Asked Questions," accessed Sept. 28, 2021, *available at* https://www.copyright.gov/music-modernization/faq.html. ("The [Music Modernization Act] does establish a new rate setting standard to be applied by the Copyright Royalty Judges. The new market-based willing buyer/willing seller rate setting replaces the policy-oriented 801(b)(1) rate-setting standard. The Copyright Royalty Judges will apply the new standard to rate determination proceedings that commence on or after October 11, 2018.")

[88] US Copyright Office, "Frequently Asked Questions," accessed Sept. 28, 2021, *available at* https://www.copyright.gov/music-modernization/faq.html.

[89] *See, e.g., Webcasting V* Final Determination at p. 292 ("The Judges employ the willing buyer/willing seller standard to establish terms for the administration of royalty rates.")

[90] *See, generally,* ASCAP Consent Decree, S.D.N.Y. 41-1395, Second Amended Final Judgment, June 11, 2001; BMI Consent Decree, S.D.N.Y 64-civ-3787, Final Judgment, Dec. 29, 1966.

See also In re Application of MobiTv, Inc., 712 F. Supp. 2d 206, 232–33 (S.D.N.Y. 2010), aff'd sub nom. *Am. Soc'y of Composers, Authors & Publishers v. MobiTV, Incorporation*, 681 F.3d 76 (2d Cir. 2012) ("Governing precedent dictates, however, that in determining the reasonableness of a licensing fee, a court 'attempts to make a determination of the fair market value—the price that a willing buyer and a willing seller would agree to in an arm's length transaction.'"); *United States v. BMI (In re Application of Music Choice)*, 316 F.3d 189, 194 (2d Cir.2003) ("*Music Choice II*") (quoting *ASCAP v. Showtime/The Movie Channel*, 912 F.2d 563, 569 (2d Cir.1990)).

[91] *Webcasting V* Final Determination at p. 6.

[92] *Webcasting V* Final Determination at p. 6.

improving on each other's offers.[93] That in turn requires that no buyer or seller is "must-have" and that the opportunity to gain more business and benefit end users by making better offers should not be blocked by contract or otherwise.[94] As I describe below in Section III.B.1, seller market power deviates from effective and efficient competition.

(54) Must-have status can be worse than monopoly, creating instead a complementary oligopoly. Each must-have seller can threaten to deny the service *all* of its listeners, thus wielding commensurate strong bargaining power, even though the seller controls only *some* of the

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[93] In *Webcasting IV* Final Determination, the CRJs recognize the economist J.M. Clark as the individual who introduced the concept of effective competition into microeconomic analysis, a term which Clark originally described as "workable competition." *Webcasting IV* Final Determination, May 2, 2016, 26341 at n. 96.

In his work, "Toward a Concept of Workable Competition" (1940), Clark writes, "Competition is rivalry in selling goods, in which each selling unit normally seeks maximum net revenue, under conditions such that the price or prices each seller can charge are effectively limited by the free option of the buyer to buy from a rival seller or sellers of what we think of as 'the same' product, necessitating an effort by each seller to equal or exceed the attractiveness of the others' offerings to a sufficient number of sellers to accomplish the end in view." J.M. Clark, "Toward a Concept of Workable Competition," *American Economic Review* (1940).

[94] In his written direct testimony on behalf of Pandora in *Webcasting IV*, economist Carl Shapiro defines the concept of workable competition as follows: "A market is workably competitive if two conditions hold: (1) there are multiple suppliers who are capable of offering buyers meaningful alternatives, so that no single supplier has substantial unilateral market power; and (2) these suppliers do not engage in coordinated interaction. When both of these conditions are met, competition among the sellers in the market generates substantial benefits for buyers in the market." Written Direct Testimony of Carl Shapiro, *Webcasting IV* proceeding, Oct. 6, 2014, p. 10. In his written direct testimony, also on behalf of Pandora, in *Webcasting IV*, Michael Katz discusses the willing buyer/willing seller standard as follows: "The creation of a rate-determination process and its willing-buyer/willing-seller standard can best be reconciled with economic principles and common sense by interpreting willing buyers as those who have meaningful choices among competing sellers, rather than facing a single, all-or-nothing offer from a monopolist. This interpretation is fully consistent with the Librarian of Congress's recognition in Web I that the willing-buyer/willing-seller standard calls for rates that would have been set in a 'competitive marketplace.' In related proceedings, an economist repeatedly retained by SoundExchange agreed that, in order for a privately negotiated licensing agreement to serve as an appropriate benchmark there should not be excessive market power on either the buyer side or the seller side of the market, and in a similar proceeding testified that, [']for an economist, absent a public policy decision actually to *distort* pricing structure (through taxes or subsidies), the fundamental objective in a rate setting proceeding such as [SDARS I] should be to 'mimic' what an effectively competitive marketplace accomplishes in an unregulated setting…[']" Written Direct Testimony of Michael Katz, *Webcasting IV* proceeding, Oct. 7, 2014, ¶ 17.

In his written direct testimony in *Webcasting V*, Professor Robert Willig describes effective competition as follows: "It is my understanding that the standard in this *Webcasting V* proceeding requires the Copyright Royalty Judges to set rates and terms 'that most clearly represent the rates and terms that would have been negotiated in the marketplace between a willing buyer and a willing seller.' In past proceedings, I understand the relevant marketplace has been defined as a 'hypothetical marketplace, free of the influence of compulsory, statutory licenses.' Moreover, this hypothetical marketplace is one that is 'effectively competitive,' meaning that any 'holdout' value associated with a seller's property that exists because it 'is a necessary complement' to the property of other sellers (i.e., 'complementary oligopoly' value) should not be included in the statutory rates determined by the Judges." Corrected Written Direct Testimony of Robert Willig, *Webcasting V* proceeding, Dec. 11, 2019, ¶ 6.

rights and represents musicians who supplied only *some* of the music.[95] Such disproportionate threat points can easily lead to unreasonable or non-competitive outcomes.

(55) Effective competition further requires adequate substitutability among goods in the market. In particular, it requires that substitution effects should ensure no must-have suppliers and should dominate or render harmless any complementarity that would otherwise create Cournot problems. A fundamental of competition is that one seller can (perhaps by lowering price and accepting a lower margin) acceptably serve the needs of buyers who would otherwise have bought from another seller, and that possibility hinges on substitutability. In recorded music, I might ideally prefer to listen to track A, but often if that were unavailable for any reason, I would turn to an alternative track B, perhaps controlled by different rights-holders. Because the option to turn to a substitute softens the impact of losing access to a particular good, that impact—or, to put it positively, the value of access to any one good—is less when one has a substitute than when one does not. On the other hand, if two goods are complements, then the opposite applies. The bulk of the benefit requires having both goods; one of them by itself may not be very useful.[96]

(56) By expressing that competition should be "efficient," I do not intend to add substantively to the effective competition standard, but rather to emphasize one relevant implication of effective competition. This implication is that in a competitive market sellers will find solutions to the Cournot complements problem. Thus, an effectively competitive market would avoid the vertical fragmentation of rights and subsequent Cournot complements problems that I describe below in Section III.B.2, in addition to avoiding undue horizontal market power. An effective competition regulatory standard requires the estimation of royalty rates in a "hypothetical market" for music rights in which these problems are absent or are at least ameliorated.

(57) Effective competition among appropriate intellectual property rights also tends to calibrate each creative contributor's reward to a level commensurate with its incremental contributions to listener value. As is standard in economics, that pattern of rewards corresponds to an efficient incentive system.[97] As in antitrust merger control policy, a degree of consolidation is

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[95] If consolidation has gone to the extreme such that one must-have seller in fact represents all of the musicians and rights, it would be remarkable if there were "effective competition."

[96] To illustrate with a non-musical example, if I have two hats, they are probably substitutes: if I lose one, I may be inconvenienced but much less so than if I lose my only hat. In contrast, complementarity means the opposite: the incremental value of one good is higher if the buyer already has another good, or lower if she does not. If I lose the right shoe of a pair of shoes, the left shoe is probably not very valuable to me, even if I valued the pair highly, because left and right shoes are complementary, not substitutes. Even within the overall category of clothing, some items are substitutes for one another and others are complements.

[97] *See* Carl Shapiro, "Patent Reform: Aligning Reward and Contribution," *Innovation Policy and the Economy* 8, (2007): 113 ("…economic efficiency is promoted when rewards provided to patent holders are aligned

consistent with, and may even help, effective competition, but not if it extends to the point where it creates or substantially enhances market power.

(58) Economists and policy makers highlight the benefits of effective competition for all participants in the market, especially for end consumers.[98] If the willing buyer/willing seller standard is applied correctly, then copyright owners will benefit by being compensated according to their relative contribution, and music listeners will benefit by having access to a wide variety of music services and music tracks at prices that ensure efficient on-going music production.

III.B. Factors that deviate from effective and efficient competition

III.B.1. Seller market power beyond creative differentiation

(59) In this section, I briefly describe the horizontal market power that is recognized to pervade the licensing of recorded music. As I discuss below, such market power leads to supra-competitive royalty rates, and a loss of consumer welfare.

III.B.1.a. The economics of consolidation

(60) A degree of consolidation to exploit scale economies or to expand the scope of efficient management is consistent with effective competition, provided that it stops short of substantially harming customers and consumers (here, the direct customers are the services and the final consumers are the listeners). This is the essence of horizontal merger enforcement under longstanding DOJ and FTC practice. However, consolidation can create—and is recognized to have created—market power both in itself and also by enabling and encouraging practices such as no-steering and most favored nation (MFN) provisions, which can thwart price competition.[99]

(61) Consistent with horizontal merger enforcement economics, direct adverse competitive effects of consolidation (essentially a horizontal merger of the rights to different songwriters' or

with their actual social contributions.")

[98] For example, the 2010 FTC and DOJ Horizontal Merger Guidelines state that "a merger enhances market power if it is likely to encourage one or more firms to raise price, reduce output, diminish innovation, or otherwise harm customers as a result of diminished competitive constraints or incentives." Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines,* Aug. 19, 2010, https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf.

[99] "'Steering' in this context means the presence of contract provisions by which a licensee will increase the number of plays of the counterparty record company above its historic market share, in exchange for the record company's agreement to accept a lower royalty rate than other record companies." *See Webcasting V* Final Determination at p. 9.

recording artists' catalogs) can be "unilateral" or "coordinated," although drawing sharp boundaries between those categories can be challenging and is ultimately unnecessary.

(62) Unilateral effects amount to a change in the seller's opportunity cost of incremental sales, due to consolidation, via an incentive effect essentially equivalent to adverse unilateral effects of a horizontal merger.[100] This change (increase) in opportunity costs may discourage a pro-competitive, pro-customer action, such as a price reduction, that was profit-maximizing absent the consolidation but ceases to be so with the higher opportunity cost.

(63) Coordinated effects can include the increased risk of successful explicit collusion in a more concentrated industry. In addition, they can facilitate or encourage what is often called tacit coordination,[101] through means that might include practices such as MFNs or prohibitions on steering that make it more difficult to unilaterally cut price and thereby take business from other firms, for instance.[102]

III.B.1.b. Findings of seller market power

(64) Applying the willing buyer/willing seller standard as interpreted to mean effective competition does not mean proposing a naïve textbook "price should equal marginal cost" analysis, especially if marginal cost were to be interpreted narrowly as not including promotional or opportunity cost effects. Creativity and musical differentiation generate downward-sloping demand curves for (many) tracks, legitimately enabling such tracks to be priced at a positive level without deterring all demand. One might call that legitimate market power or use some other term reflecting the fact that in fully effective competition against other tracks, such a price presumably reflects incremental value created by the songwriters and recording artists. Nor, to be clear, am I suggesting that a songwriter or recording artist should be expected to compete against herself.

(65) In recorded music, however, market power often goes beyond that legitimate differentiation. Both the CRJs and the U.S. Court of Appeals for the D.C. Circuit have recognized that some

[100] *Horizontal Merger Guidelines,* Section 6. Here, a recording artist A (or songwriter A) could strike a deal with a service to lower royalties and expand plays of the tracks to which she contributes. However, one consequence of this deal could be to reduce the plays of tracks of recording artist B (or songwriter B). If an intermediary (e.g., label or publisher) controls the rights for both recording artists, it could view this consequence (a reduction in plays for B) as a disincentive to striking the proposed deal for A, in a way that A itself would not, and that the intermediary would not if it controlled only A's rights. The disincentive consists of an additional opportunity cost (the profits on the cannibalized plays of B)

[101] *See Horizontal Mergers Guidelines*, Section 7.

[102] SoundExchange's expert witness testified in the *SDARS III* proceeding that "decision-making is unilateral, but parallel, across the record [l]abels" in rate negotiations. *SDARS III* proceeding, 83 Fed. Reg. 243, Dec. 19, 2018, p. 65231. *See also* Testimony of Robert Willig, *Webcasting V* proceeding, Sept. 23, 2019 at n.2 at p. G-5; *Webcasting IV*, SoundExchange's Second Corrected Proposed Findings of Fact and Conclusions of Law, at ¶ 526.

copyright owner intermediaries have accumulated market power inconsistent with an effectively competitive market. With respect to label market power, the *Webcasting V* Final Determination states:

> In *Web IV*, the Judges applied the concept of "effective competition" as a counterweight to the "complementary oligopoly" power of the Majors. […] Simply put, the Judges found that each Major is a "Must Have" licensor for noninteractive services (in the hypothetical unregulated market), meaning that each noninteractive service "must have" a license for the entire repertoires of Sony, Universal and Warner, in order to remain in business. Also, because the *interactive* market was proffered as a benchmark market in *Web IV* (as in the present proceeding), the Judges performed the same inquiry for that market, concluding that interactive licensees likewise "must have" access to the repertoires of each Major in order to survive commercially. […] From a more technical economic viewpoint, the "Must Have" status of the three Majors rendered each a "complementary oligopolist."[103]

(66) The three Majors, UMG, WMG, and Sony, are described above in Section II.B. However, the *Webcasting V* Final Determination also identifies Merlin as a "fourth major."[104] An FTC statement in the context of a merger investigation referred to "must-have" status and the complementary status of the Majors:[105]

> Commission staff found considerable evidence that each leading interactive streaming service must carry the music of each Major to be competitive. Because each Major currently controls recorded music necessary for these streaming services, the music is more complementary than substitutable in this context, leading to limited direct competition between Universal and EMI.

(67) [redacted] While streaming services have, in principle, the ability to steer their listeners to particular catalogs

[103] *Webcasting V* Final Determination at p. 7.

[104] *Webcasting V* Final Determination, p. 66, n. 86.

[105] *See* Richard Feinstein, "Statement of Bureau of Competition Director Richard A. Feinstein In the Matter of Vivendi, S.A. and EMI Recorded Music," news release, Federal Trade Commission, Sept. 21, 2012 https://www.ftc.gov/sites/default/files/documents/closing_letters/proposed-acquisition-vivendi-s.a.emi-recorded-music/120921emifeinsteinstatement.pdf.

[106] *Webcasting V* Final Determination at p. 25 [redacted]

of tracks or songs (introducing a form of competition between copyright owners), [redacted]

(68) In other proceedings, the CRJs have acknowledged that contractual provisions such as anti-steering or MFN clauses within the Majors' label agreements prevent price competition and can be viewed as a reflection of their market power. For instance, in *Webcasting V*, the Judges observed as follows:

> Moreover, in *Web IV*, SoundExchange provided substantial detail regarding how the Majors would respond to thwart an attempt by a service to engage in steering as a means of price competition… SoundExchange noted that each Major could insist on an MFN or similar anti-steering/anti-discrimination clause… In *Web IV*, the Judges acknowledged the capacity of the Majors to engage in such conduct, and the Judges characterized such conduct as simply alternate expressions of their complementary oligopoly power… In the present proceeding, SoundExchange has not provided a sufficient evidentiary basis to show that Spotify would be immune from such tactics…[108]

(69) The *Webcasting IV* Final Determination discussed how such anti-steering provisions prevent competition. For example, "The agreement between [REDACTED] and [REDACTED] contains an anti-steering clause that prevents [REDACTED] from steering towards lower-priced music, including on playlists, if that steering would result in lowering [REDACTED]'s share of total plays to a level that is less than [REDACTED]'s market share."[109]

(70) As discussed in *Webcasting V*, "the Services point to the Majors' imposition of [redacted]."[110]

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[107] [redacted]

[108] *Webcasting V* Final Determination at p. 38.

[109] *Webcasting IV*, 81 Fed. Reg. at 26365 (citing to SX Ex. 37; see also 6/2/15 Tr. 7202–06 (Harrison)).

[110] *Webcasting V* Final Determination at p. 29 (citing to 8/20/20 Tr. 3058 (Shapiro); *see also* 8/13/20 Tr. 1905–06 (Orszag) and 9/3/20 Tr. 5705-06 (Harrison)).

See also Written Direct Testimony of Carl Shapiro, *Webcasting V* proceeding, Jan. 10, 2020 at p. 19 [redacted]

> More particularly, the Services explain that the Majors' [redacted]). The Services also rely on the testimony by Mr. Harrison, the Universal executive appearing at trial, who agreed that "[redacted]"[111]

(71) The market power of intermediaries other than major labels has also been discussed in CRB proceedings. For example, the *Phonorecords III* Dissenting Opinion emphasizes a similar concern with accumulation of market power via consolidation on the publisher side of the market:

> The products supplied in the market (upstream and downstream) in this proceeding are not simply individual copies of discrete musical works. Rather, the product is the collection of catalogs of musical works, collectivized (through ownership, administration and distribution) by the music publishers and, in final (downstream) delivery), through the major record companies (and a constellation of smaller publishers). These collective activities are highly concentrated among only a few such publishers. […] [T]he four largest publishers—Sony/ATV ([redacted]), Warner/Chappell ([redacted]), Universal Music Publishing Group (UMPG) ([redacted]), and Kobalt Music Publishing ([redacted])—collectively accounted for just over 73 percent of the top 100 radio songs tracked by Billboard as of the second quarter in 2016. […] The collective nature of the principal music publishers is further made clear from the testimony of their witnesses in this proceeding. […] However, along with the efficiencies of collective ownership comes the market power of the collective.[112]

[redacted]).

[111] *Webcasting V* Final Determination at p. 29–30.

[112] [redacted]

(72) The *Phonorecords III* Dissent also discusses the accumulation of public performance rights for musical works among two PROs, ASCAP and BMI: "Also, the performance rights collectives are highly concentrated, with ASCAP and BMI representing over 90% of the songs available for licensing in the United States."[113] This market power explains why these two largest PROs are subject to consent decrees that require them to set rates approximating a willing buyer/willing seller standard. According to the U.S. Court of Appeals for the Second Circuit:

> Because of the inherently anti-competitive conditions under which BMI and ASCAP operate, they are regulated by court-approved consent decrees. […] [R]ate-setting courts must take seriously the fact that they exist as a result of monopolists exercising disproportionate power over the market for music rights.[114]

III.B.1.c. Seller market power leads to supra-competitive prices

(73) As discussed above, interactive streaming services must strike deals with major labels for sound recording rights and the labels have near-monopoly, if not complementary oligopoly, veto power *over the provision of the full rights implicated by the recordings in their catalogs that the services want to buy*, even though they represent only recording artists, not songwriters. As has been recognized by the CRJs, the must-have status of the three major labels "allows each Major to wield the individual economic power of a monopolist, but the exercise of that power leads to royalty rates that are even greater than those that would be set by a single monopolist."[115] This complementarity can also be understood in terms of the disproportionate threat-points described above.

(74) Consequently, when one adds in even the relatively smaller amounts earmarked for musical works rights, the total rate that interactive streaming services must pay for the total rights they need may well exceed monopoly pricing for those full rights.

(75) Consistent with the CRJs' rejection of above-monopoly pricing by the major labels as a proper benchmark, it would seem hard to justify above-monopoly pricing of total rates, but

[redacted]

[113] *Phonorecords III* Final Determination Dissent Opinion at 35, n.67.

[114] *United States of America, Music Choice, Movant v. Broadcast Music, Inc.*, Docket No. 04-3444-cv, 426 F.3d 91 (2d Cir. 2005), pp. 93, 96.

[115] *Webcasting V* Final Determination, at p. 7.

that is what results from adding a second bite (under the rubric of "musical works" licensing, i.e. publishing royalties) to the monopoly or near-monopoly royalties charged by labels (under the rubric of "sound recordings" licensing).

III.B.2. Fragmentation of complementary rights

(76) In this section, I describe vertical fragmentation of complementary rights in the recorded music rights market, and its effect on both free market and regulated rates. Vertical fragmentation exacerbates the price effects of horizontal market power, and thus provides a further reason why prices, or royalty rates, would be lower under effective and efficient competition where complementary rights would be combined and jointly priced.[116]

III.B.2.a. Fragmentation of rights in the music industry creates a Cournot complements problem

(77) Streaming services require the complete set of rights to distribute any given track. Obviously the services are well aware that in many cases a track embodies contributions from composers, songwriters, singers, drummers, sound engineers and technicians, among others.[117] But from the service's point of view, there is no particular motive to make separate payments to those contributors, nor to their intermediaries. A grocery customer buying a can of corn does not get involved in separately paying farmers, truckers, and supermarket clerks; nor does a book buyer make separate payments to the book's author and its editor and its printer.

(78) If the recorded music industry operated in that fashion, the right to stream a track would be offered for a single price by the team of creators that made it, perhaps via an intermediary or perhaps by one of the team who takes on that role. In contrast, we have a system in which that right is subdivided into multiple pieces that, when not regulated, are priced separately by different intermediaries (record labels, music publishers, and PROs) that each to some degree represent creators.

(79) Those fragmented rights have different names and payment goes via (sometimes) differing routes to (sometimes) different creative contributors, but from the service's point of view each one is a veto power over the service distributing the track. I describe the economics of

[116] The CRJs are very familiar with this problem as it applies to the "complementary oligopoly" of the major labels, but I am not aware of the CRJs having previously been presented with evidence regarding the similar inefficiencies resulting more broadly from a market in which rights are vertically fragmented.

[117] Depending on where one draws the "creative" line, some but not all of the factors that deserve to be rewarded are "creative." For example, the janitors who clean the studio probably are not, while the sound engineers might or might not be. Creativity does not require that the creator be given veto rights over the use of the joint product of a many-person team.

why this fragmentation of rights is not merely quaint but has real and harmful effects: this is the concept of "Cournot complements."

(80) The key insight of the Cournot complements analysis is that multiple sellers providing non-substitutable complementary goods leads to higher prices in comparison even to those generated by a monopolist seller with integrated production of these complementary goods.[118] The root cause of this price difference lies in the inability of these multiple sellers to appropriate the full benefit of a decrease in their own price, which the integrated monopolist is able to do.

(81) Generally a more inclusive formulation of Cournot complements is what Tirole called "the basic vertical externality": each team member would prefer that the other(s) set lower rather than higher prices, or more generally that the others better serve the interests of the customer.[119] This will often remain the case even after an imperfect attempt is made (e.g. contractually or via vertical integration) to control it.[120] It also includes the case where one joint supplier's price is regulated but another's is not: although such partial regulation can ameliorate the problem, it does not solve it: the total price remains above the joint monopoly price.[121] And it is also relevant where prices are negotiated with a buyer rather than unilaterally set.

(82) I describe the economics of Cournot complements, and provide a simple mathematical illustration of their effect on prices and consumer surplus, in Appendix M. When Cournot complements problems are unresolved, market prices will be higher than optimal from both the consumers' and the producers' perspectives.

(83) The CRJs have noted in past proceedings that Cournot complements arise because each of the major labels has a "must-have" position over interactive services such as Spotify, which gives each of them a veto power over Spotify's business model as a whole.[122] But the

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[118] *See* Augustin Cournot, *Mathematical Principles of the Theory of Wealth* (New York: The Macmillan Company, 1838), chapter 8; Joseph J. Spengler, "Vertical Integration and Antitrust Policy," *Journal of Political Economy* 58 (1950): 349–351, https://www.journals.uchicago.edu/doi/10.1086/256964.

[119] Jean Tirole, *The Theory of Industrial Organization* (Cambridge: The MIT Press, 1988): section 4.2.2, http://www.library.fa.ru/files/Tirole-Theory.pdf.

[120] Oliver E. Williamson, "The Vertical Integration of Production: Market Failure Considerations," *The American Economic Review* 61, no. 2 (1971): 112–23; Paul L. Joskow, "Vertical Integration," in *Issues in Competition Law and Policy* (American Bar Association: Section of Antitrust Law, 2006): 18–24.

[121] It can even, but need not, include the case where every component of the total price is regulated.

[122] *See, e.g.,* in *Phonorecords III,* the CRJs discuss the "inefficiently high rates that arise in [the sound recording] unregulated market through the complementary oligopoly structure of the sound recording industry and the Cournot Complements inefficiencies that arise in such a market." *Phonorecords III,* 84 Fed. Reg. at 1940.

See also, in *Phonorecords III*, "the record company profits are inflated by the inefficient rates created

fragmentation of rights to veto (or receive a statutory license payment in respect of) Spotify streaming a particular track creates multiple other Cournot complements problems that may have received less discussion.

(84) A music service wants the full rights that will authorize it to stream a track and has no particular use for "musical work" rights without "sound recording" rights, or vice versa. Thus, for any given track, those legally separated rights are strict complements. Accordingly, their separate pricing by separate intermediaries (music publishers and record labels),[123] together with monopoly or significant market power on the label side at least, and at least a substantial margin in the publisher side, generates a Cournot complements problem.

III.B.2.b. Cournot complements in payments to songwriters

(85) Another layer of Cournot complements for interactive streaming services, inside the "musical works" category, is the separation of "mechanical" and "public performance" rights,[124] both aimed at rewarding songwriters but usually represented by separate intermediaries. The duplicative flow of royalties, through separate intermediaries and channels, from services to songwriters again risks generating a Cournot complements problem, although both mechanical and public performance (for ASCAP and BMI, but not for SESAC and GMR) rates are subject to compulsory licenses on regulated terms. Below, I focus where possible on all-in rates for this reason.

(86) Still another Cournot complements problem is the fragmentation of public performance and mechanical rights themselves. In order to stream a given track, a service may need to pay several publishers and/or several PROs, because the multiple credited songwriters are represented by different intermediaries.

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through the Cournot Complements problem that affects the agreements between record companies and streaming services, as noted by the Services' experts in this proceeding, and as the Judges noted in *Web IV*." *Phonorecords III*, 84 Fed. Reg. at 1951.

[123] As discussed above in Section II.B, in application, interactive streaming services must pay labels for the "reproduction/distribution" and "public performance" rights for sound recordings (the recordings of specific songs by specific recording artists), although those are often jointly negotiated in a "total cost of content" deal with labels. They must also pay "mechanical" and "public performance" musical works rights aimed at rewarding songwriters, but usually represented by separate intermediaries (PROs and publishers).

[124] The Section 115 compulsory license includes mechanical rights but does not include the right to publicly perform a musical work. *See* 17 U.S.C. § 115. Therefore, interactive streaming services seeking to publicly perform a musical work must negotiate and obtain that permission from the appropriate right-holders. In many cases that involves reaching an agreement with a performing rights organization (PRO); the two largest PROs, ASCAP and BMI, are under a form of compulsory license enforced (if no agreement is voluntarily reached) by a New York federal court, but smaller PROs such as GMR and SESAC are not under such a constraint with respect to interactive streaming services.

(87) Because individual songwriters may choose to affiliate with one of four PROs, issues with "fractional licensing" may arise for songs with multiple co-writers. If permission must be obtained from each co-writer, then a licensee must obtain a license with each publisher and PRO that represents a fractional ownership of a given song. [redacted]

III.B.2.c. Cournot complements problems exacerbate effects of horizontal market power in causing supra-competitive prices

(88) All this indicates that, overall, listeners (through the services) are paying too much in royalties. In particular, it might be tempting to think that higher royalties hurt the services but make the creative contributors better off. But, in classic Cournot complements problems, above monopoly-level pricing makes sellers (here copyright owners) as well as buyers (the services and listeners) worse off (by decreasing demand and revenue relative to that which would prevail with lower prices). And the last increment of pricing, bringing prices up even to near-monopoly levels, costs users much more than it conveys to the copyright owners (let alone to the songwriters and performers).

(89) The fundamental Cournot complements problem or "vertical externality" is as follows, although I do not attempt to give the most general formulation. Each of two or more joint suppliers of a product has the right to prohibit its use—that is, a user must get permission from each, not only from one, of the suppliers—and each sets a price for its consent without fully coordinating with the other supplier(s). The resulting overall price to the user will normally be above the price that would maximize joint gains to the team of joint suppliers. Such a supra-monopoly price harms both users and suppliers.

125 [redacted]

IV. Benchmarks as a guide for determining interactive streaming royalties for musical works

(90) In this section, I examine several benchmarks for effective all-in musical work royalty rates under efficient and effective competition.

(91) As prior CRB proceedings have recognized, one "approach to determining what rates would apply in such a hypothetical marketplace is to look to comparable marketplace agreements as 'benchmarks' indicative of the prices to which willing buyers and willing sellers in this marketplace would agree."[126] Further, "[a]n important aspect of the benchmarking approach," according to the CRJs, "is that it credits sophisticated business entities that have carefully negotiated their agreements with an understanding of market forces."[127] The CRJs have also applied/relied on the concept of "ratio equivalency" as illuminating a comparison of rates in certain cases when a licensor supplies two distinct services with significant positive cross-elasticity of demand.[128] The Judges have emphasized that for ratio equivalency to apply, the two services should be closely substitutable for listeners.[129]

(92) Good benchmarks reflect or approximate rates that would result from negotiation between a willing buyer and a willing seller in an effectively competitive market.[130] One might identify such benchmarks by looking for:

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[126] *Webcasting II* Final Rule, 72 Fed. Reg. at 24091.

See also Webcasting IV, 81 Fed. Reg. at 26326 ("the Judges have relied upon certain marketplace agreements as benchmarks for the setting of the statutory rates").

[127] *Webcasting IV*, 81 Fed. Reg. at 26326–26327 (noting that "there is a presumption that marketplace benchmarks demonstrate how parties to the underlying agreements commit real funds and resources, which serve as strong indicators of their understanding on the market").

[128] For example, in the *Webcasting IV* proceeding, the Judges described the concept as an example of "'a fundamental economic process of profit maximization." *See Webcasting IV* 81 Fed. Reg. at 26344.

[129] For example, in the *Webcasting V* proceeding, the CRJs wrote that in that event, "[t]he concept of ratio equivalency is based on the principle that record companies, as licensors, in a hypothetical unregulated world 'would want to make sure that the marginal return that they could get in each sector [interactive and noninteractive] would be equal, because if the marginal return was greater in the interactive space than the noninteractive… you would want to continue to pour resources, recordings in this case, into the [interactive] space until that marginal return was equivalent to the return in the noninteractive space." *See Webcasting V* Final Determination at p. 103; *Webcasting IV* 81 Fed. Reg. at 26344.

[130] *In re Pandora Media, Inc.*, 6 F. Supp. 3d 317, 354 (S.D.N.Y. 2014), aff'd sub nom. *Pandora Media, Inc. v. Am. Soc. of Composers, Authors & Publishers*, 785 F.3d 73 (2d Cir. 2015). ("In rate court proceedings, a determination of the fair market value 'is often facilitated by the use of a benchmark—that is, reasoning by analogy to an agreement reached after arm's length negotiation between similarly situated parties.'")

- Results of actual negotiations in a market segment that actually is effectively competitive.[131]
- Unregulated negotiations in the presence of market power, if interpreted carefully and recognizing that those may lead to upper or lower bounds, rather than close approximations to competitive rates.[132]
- Agreements that were voluntarily negotiated in the shadow of a regulatory framework but prior to actual regulatory rate determination. Such benchmarks, especially when the regulators are striving to meet a willing buyer/willing seller or similar standard, may already incorporate the regulators' best judgments of how to meet that standard.[133]
- Previous rate determinations by regulators. Again, such benchmarks, especially when the regulators are striving to meet a willing buyer/willing seller or similar standard, may already incorporate the regulators' best judgments of how to meet that standard.

(93) Benchmarks can inform several aspects of royalty rates, including their levels, their structure, their direction of change in response to different standards (e.g., from 801(b) factors to willing buyer/willing seller), and their direction of change over time. No benchmark is perfect but as the CRJs have noted, benchmarks may still be an important ingredient of the best way forward.[134] In discussing the potential benchmarks, I consider several criteria, including:

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[131] But, by assumption, there is no need for a benchmark in that segment. And to use those negotiated rates as benchmarks in another market segment, some sort of extrapolation or analogy is likely necessary.

[132] It might be possible to identify adjustments for market power to bring a benchmark more closely in line with effective competition, but that is a challenging task. It is fundamental to competition policy that competition accomplishes more than just a calculated discount off monopoly prices.

[133] It is my understanding that the CRB has seldom or never used a regulatory determination as a benchmark, relying instead on agreements negotiated in the shadow of such determinations.

[134] In *SDARS II*, the CRB said that "the Judges begin with an analysis of proposed market benchmarks, if any, and voluntary license agreements […] then measure the rate or range of rates […] against the statutory policy objectives [of Section 801(b)(1)] to reach a determination of rates and terms." *See* Copyright Royalty Board, *Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services* [hereinafter *"SDARS II* Determination*"]*, 78 Fed. Reg. (Apr. 17, 2013), at 23055. In *Phonorecords III*, the CRJs wrote that the copyright owners' expert's "attempt to identify comparable benchmarks and corresponding ratios of sound recording rates to musical works rates appears to me to be a reasonable first step in seeking to identify usable benchmarks." *See Phonorecords III* Final Determination Dissent Opinion, p. 47;

See also Copyright Royalty Board, *Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services* [hereinafter *"SDARS I"*], 73 Fed. Reg. (Jan. 24, 2008) at 4082–4084 ("[The Judges] shall adopt reasonable royalty rates that satisfy all of the objectives set forth in Section 801(b)(1)(A)–(D). In doing so, [they will] begin with a consideration and analysis of the [market] benchmarks and testimony submitted by the parties, and then measure the rate or rates yielded by that process against the [Section 801(b)] statutory objectives to reach [a] decision.")

- The relationship of the benchmark rights to the rights-at-issue in this proceeding;
- Similarities and differences between the benchmark negotiating parties and the parties in this proceeding;
- The extent to which the benchmark either is, or reflects parties' expectations of, a determination of reasonable rates by an expert regulatory body such as the CRJs or the SDNY court.
- The extent to which a proposed benchmark reflects undue market power, and the extent to which it reflects a Cournot complements problem, as discussed above. In particular, I consider whether a benchmark can help move toward licensing of more complete rights, ameliorating the risk of Cournot complements problems.

(94) This is consistent with the CRJs' approach in *SDARS III* where "in determining whether a benchmark market is comparable, the Judges consider such factors as whether it has the same buyers and sellers as the target market and whether they are negotiating for the same rights."[135] Furthermore, in past proceedings, contracts privately negotiated without a regulatory shadow have served as benchmarks to provide a range of reasonable royalty rates; so have voluntary agreements in the shadow of regulatory determination, including under a willing buyer/willing seller standard.[136]

(95) The CRJs should consider two factors when evaluating these candidate benchmarks:

- First, because of complementary oligopoly or monopoly power held by the labels and Cournot complements problems, the total royalty burden (for sound recordings and musical works together, i.e., for "full rights") is already biased upward relative to the rate that would result from efficient and effective competition for full rights.
  - However, a market-determined all-in rate may avoid some (though not all) of the Cournot complements problems and thus be less distorted upward than the sum of

[135] *SDARS III*, 83 Fed. Reg. at 65214.

See also SDARS II Determination at 23058; *SDARS I*, 73 Fed. Reg. 4080, 4088 (noting that "comparability" is key in a benchmarking analysis); *In re Pandora Media, Inc.*, 6 F. Supp. 3d 317, 354 (S.D.N.Y. 2014), aff'd sub nom. *Pandora Media, Inc. v. Am. Soc. of Composers, Authors & Publishers*, 785 F.3d 73 (2d Cir. 2015). ("In choosing a benchmark and determining how it should be adjusted, a rate court must determine the degree of comparability of the negotiating parties to the parties contending in the rate proceeding, the comparability of the rights in question, and the similarity of the economic circumstances affecting the earlier negotiators and the current litigants, as well as the degree to which the assertedly analogous market under examination reflects an adequate degree of competition to justify reliance on agreements that it has spawned.")

[136] *See, e.g., Webcasting IV*; *Webcasting V* at p. 2.

market rates determined separately for each of two or more smaller sub-categories of rights.

- Second, because unregulated rate-setting in the actual market leads to excessive rates (for reasons I discuss in Section III), the same applies to benchmarks derived directly or indirectly from such unregulated rate-setting. Benchmarks consisting of settlements in the shadow of regulatory rate determinations may have other flaws but may be less apt to bake-in the influence of undue market power.

(96) I have analyzed three potential benchmarks, each of which points to or enables a calculation of an all-in rate for musical works (see Figure 7 below).[137]

Figure 7. [redacted]

Listening method	Musical work-related rights based off of:	
	Mechanical	Public performance
Interactive streaming services	2012 Interactive Streaming Settlement	
[redacted]		

(97) These candidate benchmarks are:

- The 2012 Interactive Streaming Settlement, which re-established an all-in rate for royalties paid by interactive streaming services to publishers, and derived a mechanical rate from that all-in rate, as the CRJs may choose to do here.[138]
- [redacted]

[137] The CRJs have recognized "perfect complementarity" in finding that "…the All-In rate is a necessary and proper element of a mechanical rate determination and conclude it must remain in the rate structure for the forthcoming rate period. Specifically, the Judges find that the deduction of performance royalties [from an all-in rate to derive a mechanical rate] accounts appropriately for the perfect complementarity of the performance and mechanical licenses." *Phonorecords III* Final Determination at 35.

[138] I have also included an updated calculation of the effective all-in musical work royalty rate for permanent digital downloads.

[139] The economically meaningful quantum is the total royalties intended to reward composers and songwriters for their contributions to the end product of each distribution service. These total musical works royalty payments, whether paid in one or two royalty streams, together constitute an all-in rate.

[redacted] under the Section 114/112 license, covering all required sound recording rights (performance and reproduction). "Pursuant to Sections 112 and 114 of the Copyright Act, the Copyright Royalties Board (the "CRB") initiated a proceeding in January 2019 to set the rates and terms by which webcasters may perform sound recordings via digital transmission over the internet and make ephemeral reproductions of those recordings…the proceeding will set the rates

[redacted]

- [redacted]

(98) Figure 8 below provides a range of benchmarks that I view as informative for setting an all-in rate for musical works.[141] As in the 2012 Settlement, the Judges can instruct that the all-in rate be converted to a mechanical rate by subtracting payments for public performance rights.

Figure 8. [redacted]]

Benchmark	Rate (all-in)
2012 interactive streaming Settlement (headline rate)	10.5%
[redacted]	

Sources: See description of individual benchmarks for more detail.
Notes: [1] Rates marked with "*" derive from benchmarks that should be viewed as biased upward by the market power of affiliated parties. [2] [redacted]. [3] 2012 interactive streaming Settlement ranges based on estimates from 2018–2020. [4] [redacted]

IV.A. 2012 Interactive Streaming Settlement (*Phonorecords II* Settlement)

(99) In 2012, the interactive streaming services and publishers reached a multi-year agreement on royalty rates and terms for interactive streaming musical works royalties (hereinafter the

that our Pandora business pays for music streaming on its free, ad-supported tier." Sirius XM, Annual Report (Form 10-K) (2020), F-37–F-38.

140 In making that comparison, observe that the MLC is separately funded by the Services and thus the whole of the royalty payments is passed through, [redacted] Depending on whether [redacted].

141 I am aware that shortly before this report was due additional data were supplied by multiple parties and that interested parties and other witnesses may discuss other benchmarks, and I reserve the right to comment on those.

"2012 Interactive Streaming Settlement").[142] This agreement is also often referred to as the *Phonorecords II* settlement.

(100) In the 2012 Interactive Streaming Settlement there are various prongs that bind using a "lesser of" and/or "greater of" framework.[143] One series of prongs calculates an all-in rate that an interactive streaming service pays to collectively license musical works rights (i.e., both mechanical and public performance rights).[144] Another prong establishes a mechanical rate that nets payments for public performance rights from the all-in rate and compares this to a per-subscriber minimum (also called the mechanical-only floor, as the higher figure is determined to be the final mechanical rate). Therefore, the 2012 Interactive Streaming Settlement benchmark can be viewed alternatively as establishing a reasonable all-in rate or as establishing a reasonable mechanical rate.

(101) I view this settlement as a useful benchmark for the following reasons:

- First, this settlement provides an all-in rate. Negotiation of an all-in rate mitigates the Cournot complements problem between mechanical and public performance rights for musical works.
- Second, this settlement resulted from negotiations between the same or similar parties as the current proceeding (interactive streaming services and musical works copyright owners).
- Third, the agreement covered the same rights that are at issue in the current proceeding (musical works royalties and more specifically musical works mechanical royalties).

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[142] The Settlement was proposed in 2012 by the parties, prior to the commencement of a CRB proceeding, and the CRB adopted it in 2013. *See generally Phonorecords II* Settlement. The Settlement includes rates and terms related to Section 115 of the U.S. Copyright Act, also known as the mechanical compulsory license, to make and distribute phonorecords, for a four-year period, January 1, 2014–December 31, 2017. The mechanical compulsory license requires a copyright owner of a musical work to grant a license to any person who wants to make and distribute phonorecords of that work. This includes digital phonorecord deliveries (i.e., for interactive streaming). *See Phonorecords II* Settlement at 67939; *Phonorecords III* Final Determination at 95.

[143] *See* Appendix E for a description of the calculation.

[144] The *Phonorecords III* decision describes the 2012 Settlement, explaining that "in the first step of the calculation, the parties determine the All-In royalty pool." *Phonorecords III* Final Determination at p. 10.

The *Phonorecords III* decision further reads as follows: "Based on the record of this proceeding, the Judges have determined that the mechanical license rate shall be an All-In rate derived from a Greater-Of rate structure. Weighing the advantages and disadvantages highlighted by the participants in this proceeding, the Judges conclude that a rate that balances a percent-of-service revenue with a percent-of-TCC (total cost of content) shall be the basis for the All-In phonorecords royalty. The mechanical portion of the royalty shall be the greater of those figures, *less* the actual amount services pay for the phonorecord performance right." *Phonorecords III* Final Determination at p. 6.

- Fourth, the 2012 Interactive Streaming Settlement carried forward many elements from the 2008 Settlement, adopted by the CRB in 2009.[145]
- Finally, this settlement was reached in the shadow of the mechanical compulsory license and presumably reflected the parties' anticipation of the rate the CRJs would set under the then-applicable rate-setting standard (801(b)(1)) and then-prevailing market conditions.[146]

(102) Spotify's payments for all-in musical works rights vary by service (e.g., Premium or ad-supported) and by year as a result of several prongs in the royalty formula that change the effective royalty rate. Using the rates and terms in the 2012 Interactive Streaming Settlement, Spotify's projected effective royalty rates from 2018 to 2020 range from [redacted] to [redacted] for its ad-supported service and from [redacted] to [redacted] for its Premium offering. Combining the Premium and ad-supported offerings, I estimate a projected effective royalty between [redacted] and [redacted].[147] The headline all-in rate, using the percent-of-revenue prong from the 2012

[145] *Phonorecords III* Final Determination at p. 4. "In 2006, with expiration of the previous settlement term nearing, the Judges commenced a proceeding to adjust the mechanical rates under section 115. On January 26, 2009, they issued a Determination, effective March 1, 2009. In that Determination, the Judges noted that the parties had settled their dispute regarding rates and terms for conditional downloads, interactive streaming, and incidental digital phonorecord deliveries (i.e., rates in the new subpart B) (2008 Settlement)."

Phonorecords III, Services' Joint Proposed Findings of Fact and Conclusions of Law, 70 ("The rates and terms agreed upon to settle *Phonorecords I* were adopted by the Board in January 2009 as Subpart B of 37 C.F.R. § 385, and the basic structure, rates, and regulations encompassed in the settlement remain the rates and terms applicable to Subpart B services today.") This suggests that the relevant parties approved of those rates and chose to carry them forward as the interactive streaming industry continued to grow.

[146] As acknowledged by the CRJs, with the option for either side to fall back on a CRJs' determined rate should negotiations fail, neither bargaining party can demand unduly favorable rates, including by wielding market power. *See Phonorecords III* Final Determination at p. 33 ("[A] purpose of the compulsory license is to prevent the licensor from utilizing or monetizing the ability to 'walk away' as a cudgel to obtain a better bargain.") *See also Phonorecords III* Final Determination at p. 33 ("[T]he agreements created under the so-called shadow thus are beneficial, to the extent that they provide one potential way in which to offset the complementary oligopoly power of the record companies, especially the Majors. Indeed, this countervailing power argument is consistent with the Judges' "shadow" analysis in *Webcasting IV*, 81 Fed. Reg., at 26330-31"); *Phonorecords III* Final Determination Dissent Opinion at p. 180 ("Because the statutory proceeding is the backstop, the power of any entity simply to refuse to strike a deal except on its own unilateral terms is effectively negated. Thus, such settlement agreements tend to eliminate complementary oligopoly inefficiencies, and provide guidance as to an effectively competitive rate.")

[147] These calculations are based on the following sources: [1] [redacted]

Interactive Streaming Settlement, is [redacted] ([redacted]).[148]

(103) However, the effective all-in rate for Spotify's premium offerings under the *Phonorecords II* settlement [redacted]. First, an appealing feature of the way that the Settlement sets an all-in rate, [redacted]. Second, the *Phonorecords II* terms do not distinguish between standalone Premium subscribers and subscribers/users of newer family and student plan offerings.[149] [redacted][150]

(104) Therefore, the top end of the range [redacted] for Spotify's Premium offerings) [redacted] Applying the *Phonorecords II* rate structure in all other respects but implementing the Judges' updated *Phonorecords III* definition of subscribers, [redacted] result in an effective all-in musical works royalty rate between [redacted] and [redacted] for Spotify's Premium offerings in the years 2018–2020.[151]

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[148] [redacted]

[149] *See, e.g.*, the mechanical floor calculation in Figure 15 of Appendix E.

[150] *See, e.g.*, [redacted]

[151] [redacted]

IV.A.1. Does the benchmark need adjustment?

(105) In general, copyright owners have benefited from the rapid growth of music streaming relative to piracy and other forms of music listening.[152] Given this rapid growth and that the 2012 Interactive Streaming Settlement is based on a headline percentage of revenue structure, copyright owner royalty streams likely grow in proportion to streaming revenues.

(106) Changes in the market and a change in the regulatory standard raise the question of whether a 2012 Interactive Streaming Settlement remains appropriate in 2021. Below, I provide reasons for carrying forward the 2012 Interactive Streaming Settlement.

(107) As regards market changes, the 2012 Interactive Streaming Settlement already accounts for significant changes brought to the music industry by technology shifts in the years before 2012.[153] Since then, an important change has been the growth of streaming relative to other forms of listening. Should the copyright owners argue that the streaming services' growth in recent years has led to increasing and problematic buyer market power,[154] this would point in favor of using a benchmark that predates this change (i.e., the 2012 Interactive Streaming Settlement).

(108) [redacted] For example:

- The mechanical royalties for physical phonorecords and permanent digital downloads, negotiated between labels and publishers under the CRB's regulatory shadow, have remained unchanged since 2006.

[redacted]

[152] As I discussed in Section II.A, most of the growth in music industry revenues since 2016 appears related to interactive streaming.

[153] *Phonorecords III,* Services' Joint Proposed Findings of Fact and Conclusions of Law, 70 ("The rates and terms agreed upon to settle *Phonorecords I* were adopted by the Board in January 2009 as Subpart B of 37 C.F.R. § 385, and the basic structure, rates, and regulations encompassed in the settlement remain the rates and terms applicable to Subpart B services today.") This suggests that the relevant parties approved of those rates and chose to carry them forward even as the interactive streaming industry continued to grow.

[154] For example, in *Webcasting V*, Mr. Jonathan Orszag wrote: "Spotify and Apple have grown substantially in the last four years, and have gained substantial negotiating power as a result." *See* Expert Report of Jonathan Orszag, *Webcasting V* proceeding, Sept. 23, 2019, p. 50.

- Spotify's [redacted] as a percentage of its total music revenue have [redacted] since its U.S. launch in 2011 (see Section IV.C and Figure 9 below).

(109) As regards changes in regulatory standard, it is reasonable to ask whether the 801(b)(1) standard implies a higher or lower rate than the new willing buyer/willing seller standard. Again, the mechanical royalties for physical phonorecords and permanent digital downloads, negotiated between labels and publishers under the CRB's regulatory shadow, have remained unchanged since 2006 despite a similar change in regulatory standard.[155]

(110) In the *Phonorecords III* determination, the Judges acknowledged that the emergence of family and student plan offerings warranted an adjustment to the definition of "subscriber" for purposes of imposing the minima or "mechanical-only floor fees" in their rate structure. Family plans would count as 1.5 subscribers for floor-fee purposes, and student plans would count as 0.5 subscribers. The Judges found that "the assigned valuations match how the interactive streaming services themselves generally price those programs" and that "this practice of 'marketing reduced rate subscriptions to families and students' was sensibly 'aimed at monetizing a segment of the market with a low [willingness to pay] (or ability to pay) that might not otherwise subscribe at all.'"[156] The D.C. Circuit rejected the Copyright Owners' appeal of this finding.[157] As discussed above, applying this adjustment to the *Phonorecords II* terms makes sense given the distortionary effects of applying the original definition of "subscriber" to these offerings under the *Phonorecords II* rate structure. Moreover, to the extent that those plans were introduced well after the 2012 Settlement,[158] it would seem reasonable that the parties might have contemplated the Settlement more in terms of the standalone product.

(111) In past proceedings, the streaming services have proposed, and the CRJs have considered, the use of mechanical royalty rates paid by digital and physical formats as a benchmark for phonorecord all-in (and thence) mechanical royalties.[159] Thus I have included an updated calculation of the effective all-in musical work royalty rate for permanent digital downloads. Using RIAA data, I first calculate the effective per-unit royalty and revenue for digital

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[155] In addition, it [redacted]. *See* SPOT_P4_000001356 at -1358.

[156] *Johnson v. Copyright Royalty Bd.*, 969 F.3d 392 (quoting *Phonorecords III*, 84 Fed. Reg. at 1961–62).

[157] *Johnson v. Copyright Royalty Bd.*, 969 F.3d 392–94.

[158] Spotify introduced a Family offering in 2014. Stuart Dredge, "Spotify Launching Family Plan with Cheaper Subscriptions for Families," *Guardian*, Oct. 20, 2014, https://www.theguardian.com/technology/2014/oct/20/spotify-family-plans-subscriptions-premium.

[159] *See, e.g. Phonorecords III* Final Determination at p. 57.

downloads (one track), and then divide the effective per-unit royalty of $0.096 by the per-unit revenue (download price) of $0.97 to obtain the effective all-in musical works royalty of 9.9%.[160]

IV.A.2. The economics of the 2012 Interactive Streaming Settlement royalty rate structure

(112) Here, I first briefly summarize the rate structure of the 2012 Interactive Streaming Settlement, then discuss some economic aspects of a percentage of revenue rate structure and the potential effects of departures from that structure.

(113) In the 2012 Interactive Streaming Settlement, first, the all-in royalty pool is determined by whichever is greater: (1) the headline all-in percent of revenue, and (2) the lesser of (a) a percent of payments to record labels (the "TCC prong") and (b) 80 cents per subscriber per month (the "TCC prong cap"). Second, payable mechanical royalties are determined by whichever is greater: (1) the all-in royalty pool minus performance royalties, and (2) 50 cents per subscriber per month (the mechanical-only floor).

(114) In *Phonorecords III*, Spotify proposed the same rate structure (with some adjustments and the elimination of the mechanical-only floor),[161] whereas the copyright owners proposed a revised rate structure that used a greater-of methodology of: (1) a "usage charge" (calculated as a per-play fee) and (2) a "per-end user fee."[162]

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[160] This calculation is based on the following sources: [1] "RIAA Sales Volume (2020).xlsx", sheet "Sheet 1" provides U.S. sales volume data for 2020. [2] "RIAA Revenue, adjusted for inflation (2020).xlsx", sheet "Sheet 1" provides US. sales revenue data for 2020. [3] *Phonorecords III* Final Determination. I direct my attention to the "Download Album" and "Download Single" categories of this data, and use it to estimate the total number of *tracks* shipped in 2020 (assuming that each album contains 12 tracks) and per-track revenue. In this calculation, I assume an effective per-track royalty of $0.096, which utilizes the per-track mechanical royalty rate of 9.1 cents per track as described by the CRJs in *Phonorecords III*, adjusted for track length. To derive a final benchmark, I divide the effective per-track royalty by the per-track revenue calculated using the RIAA data to obtain an effective all-in musical works royalty rate of 9.9%.

[161] *Phonorecords III* Final Determination at p. 12 ("In its amended proposed rates and terms, Spotify proposed the following changes from the current regulations: (1) removal of the 'Mechanical Floor' for all licensed activity; and (2) a broadening of the present "not to exceed 15%" reduction of 'Service Revenues' in § 385.11 to reflect, *in toto*, an exclusion of the actual costs attributable to "obtaining" revenue, "including [but not expressly limited to] credit card commissions, app store commissions similar payment process charges, and actual carrier billing cost.")

[162] *Phonorecords III* Final Determination at p. 13. This proposal diverged from the 2012 interactive streaming Settlement that used a (1) "percent-of-revenue" rather than "per-play" structure and (2) a per-subscriber fee rather than a per-end user fee.

(115) Should the copyright owners again propose a per-play and/or per-end user fee structure, I provide economic reasons to instead carry forward the 2012 interactive streaming Settlement except that I would recommend eliminating the mechanical-only floor.

(116) First, a per-play or per-subscriber fee (including via a mechanical-only floor) may be more distortionary than a percentage of revenue structure because it discourages incremental output or raises price by more for a given royalty yield.

- Standard textbook economic analysis makes this point when a service will choose a single price or output on the demand curve facing it. That is, for a given royalty yield, a per-unit (per-play or per-subscriber) fee discourages a service from lowering its price to gain more subscribers more than does a percentage of revenue structure.[163]
- By extension, a percentage of revenue structure may better adjust to and encourage price discrimination (e.g., the introduction of products that appeal to listeners who are unwilling to pay the full rate—sometimes called "versioning"[164]). For example, Spotify's student or family plan may earn revenues from customers who would not buy a full-priced plan. In other words, it may be more profitable for a streaming service to offer programs that attract lower willingness to pay listeners and, as acknowledged by the CRJs, this may result in increased revenue for both the copyright owners and services.[165]

(117) Second, should the copyright owners pursue a per-end user fee structure,[166] I note that the CRJs rejected treating each user in one of these discounted offerings as a single subscriber in their final determination, leaving in place the existing per-subscriber fee, but incorporating an

[163] *See* Sofia Delipalla and Michael Keen, "The Comparison between Ad Valorem and Specific Taxation under Imperfect Competition", *Journal of Public Economics* 49, no. 3 (1992): 351, https://econpapers.repec.org/RePEc:eee:pubeco:v:49:y:1992:i:3:p:351-367; Philipp J. H Schröder, "The Comparison between Ad Valorem and Unit Taxes under Monopolistic Competition," *Journal of Economics* 83, no. 3 (2004): 282, https://www.jstor.org/stable/41795206?seq=1#metadata_info_tab_contents. The two forms of royalty structure have equivalent effects if competition among services is perfect, in the textbook sense, which is clearly not the case nor even feasible.

[164] Versioning is a business practice in which firms produce different versions of essentially the same product to appeal to different types of customers. *See* Carl Shapiro and Hal R. Varian, "Versioning: The Smart Way to Sell Information," *Harvard Business Review*, November 1998, https://hbr.org/1998/11/versioning-the-smart-way-to-sell-information; Zhu Wang and Julian Wright, "Ad Valorem Platform Fees, Indirect Taxes, and Efficient Price Discrimination," *RAND Journal of Economics* 48, no. 2 (2017): 467–84, http://www.jstor.org/stable/26305420.

[165] "The Judges find that the objective of maximizing the availability of musical works *downstream* to the public is furthered by an *upstream* rate structure that enhances the ability of the interactive streaming services to engage in *downstream* price discrimination ('down the demand curve,' increasing revenue for both Copyright Owners and the interactive streaming services)." *See Phonorecords III* Final Determination at p. 85.

[166] *Phonorecords III* Final Determination at p. 93 ("Copyright Owners' rate proposal is based not on subscribers, but on end users, which they define to include any person who streams at least one play during an accounting period, apparently without regard to that user's subscription status.")

adjustment based on the subscription type.[167] In addition, the Judges did not adopt any per-user fee component for users of ad-supported plans.[168]

(118) Third, a percentage of revenue structure also gives the licensor a relatively broad stake in the success of the service, and copyright holders have gained from the growing popularity of streaming especially, certainly to the extent that it has displaced piracy. In response to the CRJs' findings on revenue deferral (that "the [S]ervices do seek to engage to some extent in revenue deferral in order to promote their long-term growth strategy"[169]) and the use of the TCC prong and mechanical-only floor to protect copyright holders from such "revenue deferral," I would offer some comments:

- One would expect revenue deferral that is on balance profitable for a service (and/or beneficial for its shareholders) to also be on balance profitable (or beneficial) for those with a long-lived claim to a share of the service's revenues: it is not obvious why a copyright holder (here, a music publisher) would need to be protected against participating in a profitable investment in growth.
- That said, there could be opportunities for revenue displacement or obfuscation, rather than simple deferral, and a publisher's stake in future revenues might be lower (or higher) than its stake in current revenues. Copyright owners have argued that revenue deferral may result in paying the wrong songwriters—those with many streams today will not benefit from revenue deferred to tomorrow—although publishers may themselves be the hypothetical willing seller under the operative rate-setting standard, and in any case could potentially pursue "financial engineering" initiatives to address this point, as they already do to respond to timing and risk issues by giving advances to songwriters.[170]

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[167] Under the *Phonorecords III* rate structure, Family plans are to be counted in the subscriber count as 1.5 subscribers and student accounts (i.e., discounted offerings) are to be counted as 0.5 subscribers. This subscriber adjustment is used to calculate the mechanical floor, which amounts to 50 cents times the subscriber count. *Phonorecords III* Final Determination at p. 93.

[168] This difference in rate structure is reflected in the [redacted]. *See* [redacted]

[169] *Phonorecords III* Final Determination at p. 59.

[170] *Phonorecords III* Final Determination at p. 60. ("Music publishers must maximize revenues (subject to any cost constraints) over some time horizon, and their argument in this proceeding indicates that they seek to maximize royalty revenue over the short-run, so that current songwriters receive royalties based on current revenue that is not deferred because of the interactive streaming services' long-term business model. See Rysman WDT ¶ 50. The music publishers could instead pay royalties to songwriters based (at least in part) on an index of several years of revenue to be consistent with the long-term business models of the interactive streaming entities. See Leonard WRT ¶ 60 [redacted]

IV.B. [redacted]

(119) Sirius XM, the parent company of Pandora Media (hereinafter "Pandora"), has a non-interactive streaming service through Pandora's ad-supported radio service.[171] [redacted]

(120) [redacted]

- [redacted]

[171] Sirius XM, Annual Report (Form 10-K) (2020), 11, 90.

[172] Sirius XM, Annual Report (Form 10-K) (2020), 11. *See, e.g.*, PAN_PHONO4_00000005 at -0008.

[173] Sirius XM, Annual Report (Form 10-K) (2020), 11.

[174] Orrin G. Hatch–Bob Goodlatte Music Modernization Act, H.R. 1551, Publ. Law 115–264, Oct. 11, 2018, 3719 ("A digital phonorecord delivery does not result from a real-time, noninteractive subscription transmission of a sound recording where no reproduction of the sound recording or the musical work embodied therein is made from the inception of the transmission through to its receipt by the transmission recipient in order to make the sound recording audible."); Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, Feb.23, 2021, 14–15, *available at* https://sgp.fas.org/crs/misc/R43984.pdf. (In 2008, "organizations representing record labels, music publishers, songwriters, and digital music services" agreed that "noninteractive, audio-only streaming services do not require reproduction or distribution licenses from copyright owners.")

[175] The Hauser survey data indicates that if Spotify were to become unavailable, Spotify Standalone Premium subscribers would reallocate 15.0% of their listening time on Spotify to non-interactive streaming services.

[176] In *Phonorecords III*, the Judges agree with Dr. Eisenach that "the Pandora 'Opt-Out' agreements are useful benchmarks. These agreements have the level of comparability necessary for a benchmark to be useful." *Phonorecords III* Final Determination at p. 51.

Webcasting V Final Determination at 7–8, 94 ("The interactive market was proffered as a benchmark market in *Web IV* (as in the present proceeding), the Judges performed the same inquiry for that market, concluding that interactive licensees likewise 'must have' access to the repertoires of each Major in order to survive commercially […] The foregoing findings regarding the 'Must Have' status of the Majors in the *interactive* benchmark market are not challenged in this proceeding." "Mr. Orszag concludes that rates set in the *interactive subscription service* market are reasonable and appropriate benchmark rates, subject only to a downward adjustment to reflect the added value of interactivity in that proposed benchmark market.")

- [redacted]
- [redacted]
- [redacted]

(121) [redacted]

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[177] *See supra* n. 90.

[178] Sirius XM, Annual Report (Form 10-K) (2020), 11.

[179] *See, e.g.,* The copyright owners' expert's "attempt to identify comparable benchmarks and corresponding ratios of sound recording rates to musical works rates appears to me to be a reasonable first step in seeking to identify usable benchmarks." *Phonorecords III* Final Determination Dissent Opinion, p. 47.

One could reasonably argue that the ratio of musical works to sound recording royalties ought to be, and in an effectively competitive market would be, driven by a comparison of songwriters' versus recording artists' relative uniqueness and contributions. That comparison could in principle be different as regards the tastes of subscribers or listeners to different music services, but as noted above, benchmarking inevitably involves assuming that different markets are similar or comparable in some helpful way.

[redacted]

[180] *See Webcasting V* Final Determination at p. 147, fn. 203.

[181] [redacted]

(122) [redacted]

(123) [redacted] The CRJs have adjusted benchmarks in prior proceedings to gauge effectively competitive rates. In *Webcasting V*, "[t]he Judges adjust Mr. Orszag's proffered benchmark rate to reflect both the complementary oligopoly power of the Majors (12%) and, in partial mitigation, the extent to which Spotify paid the [redacted] percent-of-revenue royalty rate instead of the [redacted] rate (reflecting Spotify's bargaining power…the complementary oligopoly adjustment is…[redacted].)"[184]

[redacted]

[182] *See, e.g., Webcasting V* Final Determination at p. 8 ("The Majors possess 'complementary oligopoly power' in the actual (unregulated) interactive market and in the hypothetical (unregulated) noninteractive market that 'thwart[s] price competition and [is] inconsistent with an 'effectively competitive market'' …."); *Webcasting IV*, 81 Fed. Reg. at 26335. *See also,* [redacted], *Phonorecords IV* proceeding, Oct. 13, 2021, ¶ 29 [redacted]).

[183] *Johnson v. Copyright Royalty Bd.*, 969 F.3d 363, 382 (2020).

[184] *Webcasting V* Final Determination at p. 126

IV.C. [redacted]

IV.C.1. [redacted]

(124) [redacted]

(125) [redacted]

185 [redacted]

(126) [redacted]

(127) [redacted]

- [redacted]
- [redacted].

IV.C.2. [redacted]

(128) [redacted]

(129) [redacted]

(130) [redacted]

[redacted]

(131) [redacted]

(132) [redacted]

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192 [redacted]

193 [redacted]

194 [redacted]

195 [redacted]

196 For example, music industry blogs and reports describe the 50/50 split between performance and mechanical royalties. *See, e.g.,* Royalty Exchange, "Mechanical Royalties Guide 2021, Feb. 2, 2021, https://www.royaltyexchange.com/blog/mechanical-royalties; Manatt, "U.S. Music Streaming Royalties Explained," 2016, https://www.manatt.com/Manatt/media/Media/PDF/US-Streaming-Royalties-Explained.pdf.

[redacted]

Figure 9. [redacted]

[redacted]

Note: [redacted]

(133) [redacted]

197 [redacted]

V. Determination of interactive streaming all-in musical works royalties using a Nash bargaining model

(134) In this section, I use a game theoretic bargaining framework (Nash-in-Nash bargaining model, hereinafter "Nash bargaining model"[198]) to estimate the range of effective royalty rates that would result from negotiations between a willing buyer (or interactive streaming service) and a willing seller (or publisher) in an effectively competitive and efficient market. To do so, I correct for horizontal market power of the publishers, assuming that bargaining occurs between a relatively small publisher and a streaming service, neither of which is "must-have" for the other, and making a stronger related assumption about the magnitude of subscriber loss that would result if the service lost access to the publisher's catalog, as measured by the power ratio.

(135) With those assumptions, and others described below, my model estimates a range of effective rates under effective and efficient competition to be between [redacted] and [redacted]

(136) The Nash bargaining model analyzes the determination of musical works effective all-in license rates through a hypothetical negotiation between a music service on the one hand and a publisher on the other. It assumes that the service has or expects to have licensing deals with the remaining publishers, and the publisher has reached licensing deals with the remaining services, so that in a sense each negotiation is modeled as the incremental or "last" negotiation. It considers the payoff to the publisher from walking away from the negotiation or from failing to reach a deal, referred to as the opportunity cost of a deal, and also the effect on the service of failing to reach a deal, in which case in this hypothetical negotiation the service would have to do without the tracks controlled by the publisher. Relative to those payoffs from a failed negotiation, the model considers the joint benefit to the two parties in total from reaching a deal, a quantity that does not depend on the royalty because it focuses on the joint benefit (in which royalty payments count both as a cost and as a revenue). The model then calculates a royalty level that equates the benefit of the deal to the service net of royalty payments to the benefit of the deal to the publisher (consisting of the royalty payments less opportunity cost). That is, the calculated rate splits the difference such that each party gains equally from the deal relative to no deal.

(137) The Nash bargaining model appropriately considers the consequences to each negotiating party of reaching a deal at a certain royalty level versus failing to reach a deal and includes consideration of how listeners would respond to such a failure and the consequences for each party. By assuming that each party has or expects to strike deals with the other

[198] John F. Nash, "The Bargaining Problem," *Econometrica* 18, no. 2 (1950): 155–162, https://www.jstor.org/stable/1907266?seq=1#metadata_info_tab_contents.

counterparties, the model also appropriately recognizes the possibility of competitive substitution, because failing to strike a deal with one publisher is assumed to leave the service with access to other publishers' catalogs, and when a listener can effectively substitute listening among catalogs on Spotify, he or she is less apt to leave Spotify in response to the blocking of one catalog.

(138) In Section V.A, I explain how I estimate [redacted] Such opportunity costs arise when music consumption on the interactive streaming service reduces listening and royalties from alternative music distribution channels. Absent regulation and absent promotional effects or other indirect benefits, if the buyer did not at least cover the seller's walk-away opportunity costs, the seller could walk away from the deal with a higher payoff.

(139) In Section V.B, I describe the Nash bargaining approach to model rates [redacted] Assuming small publishers and values of the power ratio between [redacted]%, as discussed below, the model predicts an all-in royalty rate for musical work rights of [redacted] to [redacted] (inclusive of public performance royalties). I view these results as supportive and confirmatory of the reasonableness of the benchmarks considered.

(140) My Nash bargaining model does not account for any promotional [redacted][199] Based on my understanding of the statutory rate-setting standard, promotional benefits that "promote the sales of phonorecords" or "enhance the musical work copyright owner's other streams of revenue" should be taken into consideration.[200] Not adjusting for promotional effects and [redacted] would likely bias the model predicted all-in rates upward.

[199] In *Webcasting V*, the CRJs criticized Professor Willig's application of the opportunity cost concept for excluding promotional effects to publishers saying, "Professor Willig's estimated rates are […] too high because they do not reflect the 'opportunity benefit' of listeners who would substitute noninteractive listening for non-royalty bearing activities, including listening to AM/FM radio. And, given the legal infirmity of the 'fork in the road' approach […] his proposed rates are further improperly inflated." *See Webcasting V* Final Determination, Jul. 22, 2021, n. 279 at p. 203.

[200] 17 U.S.C. § 115(c)(1)(F) ("[T]he Copyright Royalty Judges shall base their decision on economic, competitive, and programming information presented by the parties, including— (i) whether use of the compulsory licensee's service may substitute for or may promote the sales of phonorecords or otherwise may interfere with or may enhance the musical work copyright owner's other streams of revenue from its musical works.")

V.A. Opportunity cost analysis

(141) The concept of the licensor's opportunity cost has been explored extensively in past CRB proceedings, both as a standalone approach that provides the lower bound on negotiated rates and as an input to various bargaining models.[201] The publisher's opportunity cost is the additional royalties that the publisher could have earned through alternative music distribution channels if its music were unavailable on Spotify, as some listeners would divert their subscriptions and/or their listening from Spotify to these alternative listening channels.[202] The publisher's opportunity cost is its "outside option" or "fallback value" in negotiations with Spotify (rather than accepting a rate lower than its opportunity cost, the publisher would make more profits by collecting royalties from alternative channels).

(142) I estimate a hypothetical small publisher's opportunity cost of licensing a service such as Spotify, using a weighted average of the royalty payments to the licensor of listeners' but-for behavior, i.e., what they would do if no deal were struck. [redacted] But it also includes subscribers that divert to other services or forms of listening. Based on the results of a recent survey, those in turn importantly include music videos, non-interactive streaming, and downloads/physical media.[203] Therefore, an opportunity cost calculation would incorporate rate inputs from each of those forms of listening.

(143) There are three components to my estimation of the publisher's opportunity costs, which I discuss in more detail in the subsections below.

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[201] *Phonorecords III* at p. 64; *Webcasting V* Final Determination at p. 73. Most notably, the CRJs relied on an opportunity cost analysis when setting rates in the *SDARS III* proceeding. "In determining the SDARS rates, the Judges relied most heavily on the opportunity cost approach proffered by SoundExchange […]" *See SDARS III* Determination at p. 65210.

[202] In my opportunity cost calculations, I make the simplifying assumption that the publisher's opportunity cost consists of royalties generated by subscribers who diverted from Spotify to alternative distribution channels. To the extent that subscribers do not cancel their subscriptions but divert some of their listening time to other forms of listening, my opportunity estimates would be biased downward. However, given the relative magnitude between the publisher's opportunity cost and the prospective joint gains from reaching a deal with Spotify, a reasonable sized bias would have only a small impact on my Nash bargaining model's all-in rate estimates.

[203] The Hauser survey data indicates that if Spotify were to become unavailable, Spotify Standalone Premium subscribers would reallocate 19.2% and 15.0% of their listening time on Spotify to music videos and non-interactive streaming, respectively. However, the survey questions are conditional on Spotify becoming unavailable and must thus be considered alongside subscribers that continue to subscribe, i.e., taking account of the "power ratio." See discussion in Section V.

- [redacted]
- [redacted]
- The amount of royalties a publisher would earn from other forms of listening

V.A.1. Lost subscribers relative to publisher share

(144) As indicated in Section V.A above, an important parameter in walk-away competition is the power ratio. In the case of a rights-holder negotiating with a subscription-based service, this ratio Z is defined as the percentage of the service's subscribers who would cancel the service if that rights-holder's tracks were unavailable ("churn"), divided by the percentage of streams on the service that correspond to the rights-holder's ownership of those tracks ("streamshare").

(145) In some respects the prevalent average of Z among a group of potentially competing suppliers can be viewed as an index of market power:

- When $Z = 0\%$, this corresponds to the case that listeners have available essentially perfect substitutes for the music in the supplier's catalog. This might be viewed as "perfect competition." To be clear, despite that phrase, I regard this as an orienting benchmark, not a most desirable or likely outcome. Nevertheless, it does correspond to no market power for the licensor.
- More substitutability among catalogs, as perceived by more listeners, corresponds to lower values of Z.
- $Z = 100\%$ in the case (among others) in which each supplier has its devoted listeners, who listen to nothing else, and there is no substitutability among music. That case corresponds to a perfectly and monopolistically divided market.
- $Z > 100\%$ in the case (among others) in which the market is dominated by several must-have suppliers or suppliers that approach or tend toward must-have status, i.e., disproportionately many subscribers would cancel their subscriptions if an average supplier's catalog were unavailable.[204]

[204] [redacted].

- For intermediate values of Z, as will become clear below, opportunity cost and negotiated prices will increase with Z.

(146) Z can be high for various reasons, potentially including simply because listeners are very particular about what music they want to listen to and will accept no substitutes on a particular service. However, that would be a case in which it is especially difficult for effective competition to exist. It does not mean that high values of Z must be consistent with effective competition.

(147) If the actual values of Z are in fact high, a Nash bargaining model taking that as given would not be a model of rate determination between a willing buyer and willing sellers under effective competition. One would want to adjust or compensate for such non-competitive values of Z, and indeed the existence of a compulsory license suggests that Congress was concerned that the actual market would not be effectively competitive.

(148) Nevertheless, I find it helpful to briefly review the available evidence of which I am aware on power ratios (values of Z) in various "actual markets":

- In *Webcasting V*, Professor Robert Willig took as given that major labels are must-have, which corresponds to each one's value of Z being the reciprocal of its market share (expressed as a fraction), and thus well above 100%, a fact that corresponds to their complementary oligopoly status. For non-Majors, he simply assumed that Z is equal to 100%.[205] That assumption appears to correspond to a borderline case between weak

[205] [redacted]

substitutability or competition (Z slightly below 100%) and mild complementary oligopoly (Z slightly above 100%).

- Also in *Webcasting V*, Professor Carl Shapiro considered [redacted]
- Finally, a [redacted].[207] This appears to mean that the power ratio would be small.

(149) I anticipate that further evidence on power ratios for particular rights-holders, in the "actual market," can be developed. In particular, [redacted]

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[206] Second Corrected Written Direct Testimony of Carl Shapiro, *Webcasting V* proceeding, Jul. 7, 2020, Appendix F at p. 5.

See also Written Rebuttal Testimony of Carl Shapiro, *Webcasting V* proceeding, Jan. 10, 2020 at p.62 ("Removing the 'must-have' assumption for major record companies has a significant impact on the Nash-in-Nash Bargaining royalty rates.[…] After making these corrections, Professor Willig's Nash-in-Nash Bargaining model gives very similar results to the slightly different Nash-in-Nash bargaining model used in my CWDT.")

[207] [redacted]

[208] [redacted]

[209] [redacted]

Figure 10. [redacted]]

[redacted]

(150) Pending such further evidence, and in order to be modeling an effectively competitive hypothetical market but wishing also to depart no further than necessary from the actual market, I assume that after [redacted] and consider Nash bargaining with values of Z ranging from [redacted]

[210] *See supra* n. 207.

V.A.2. Diversion ratios to other forms of listening

(151) A publisher's opportunity cost is also related to the alternatives to which listeners would turn after canceling their Spotify subscriptions and the probability, or "diversion ratios," associated with each alternative. I rely on the diversion ratios derived from surveys conducted by Dr. John Hauser for this proceeding, in which respondents that subscribe to Spotify's Premium service were first asked which alternatives they would consider replacing music listening on Spotify with if music on Spotify was no longer unavailable. Next, respondents who indicated that they would consider listening to one or more music options to replace music listening on Spotify were asked to allocate 100 points among the music options they said they would consider, to indicate the percentage of time they would actually spend listening to each considered music option instead of listening to music on Spotify Premium if music on Spotify was not available. Respondents could allocate 0 points to an option, indicating that they would not actually choose that option for any listening.[211]

(152) The respondent sample consists of 305 individuals who stated that they maintain a paid single, Premium subscription to Spotify (i.e., those with Duo, bundled, Family plans are not included).[212] Using this sample, I estimate diversion ratios from Spotify Standalone Premium to the following alternative forms of listening:

- Other on-demand streaming services: ad-supported services; new subscription purchases, or already paid subscription services
- Not-on-demand streaming services: ad-supported services; new subscription purchases, or already paid subscription services
- Music on video options: music on online video sites (e.g., YouTube); mobile short-form video platforms (e.g., TikTok, Instagram Reels); music channels through existing cable or satellite TV subscriptions (e.g., Music Choice)
- Satellite radio: new Sirius XM subscription purchases or already paid Sirius XM subscription
- Terrestrial radio: AM/FM broadcasting
- Physical sales: new CDs or vinyl records purchases; already owned CDs or vinyl records

[211] More details on the survey methodology and results can be found in the Dr. John Hauser's Written Direct Testimony. See Written Direct Testimony of Professor John R. Hauser, Phonorecords IV proceeding, Oct. 13, 2021.

[212] I removed three individuals from the original sample of 308 respondents before calculating diversion ratios. These individuals did not select any options when asked what they would do if Spotify's services were to become fully unavailable.

- Permanent digital downloads: new permanent digital downloads or already owned permanent digital downloads
- Peer-to-peer file sharing or free download sites
- Non-music options

(153) The first method I use to calculate diversion ratios measures the percent of time that respondents would allocate to alternative music listening options in the event that music on Spotify was not available. These diversions are calculated as the average percentage of time that respondents allocate to each alternative, when asked to allocate their listening time among the options presented above. I refer to this as the percent-of-time diversion ratios. In my opportunity cost calculations, I apply these diversion ratios to ad-supported services that generate additional revenue and publisher royalties when users spend more time listening to that option.

(154) The second method I use to calculate diversion ratios measures respondents' binary listening preferences, i.e., removing the percent-of-time allocation component and focusing on whether or not respondents would select each of the alternative music listening options, should Spotify be removed as a listening option. I refer to this as the binary diversion ratio and apply these ratios to new subscriptions, physical records, and digital downloads that generate additional revenue and publisher royalties from subscription fees or record purchases.

(155) The percent-of-time diversion results are presented in Figure 11 below. Respondents would allocate nearly [redacted] such as online video sites (e.g., YouTube) or short-form video platforms (e.g., TikTok).

Figure 11. Percent of time allocated to music options (i.e., percent-of-time diversion ratios)

Question option	Option text	Percent of time allocated
	Music on on-demand music streaming services to replace listening to music on Spotify Premium	**29.4%**
Q4r1	I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., [pipe:PAIDOPTIONS_HAVE]).	11.0%
Q4r2	I would listen to ad-supported Spotify, which I do not need to pay for.	0.0%
Q4r3	I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to [pipe:PAIDOPTIONS_DONTHAVE] at $9.99 per month or $119.88 per year).	11.3%
Q4r4	I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	7.0%
	Music on not-on-demand music streaming services to replace listening to music on Spotify Premium	**15.0%**
Q4r5	I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	3.6%
Q4r6	I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	7.2%
Q4r7	I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	4.2%
	Music on video options to replace listening to music on Spotify Premium	**19.2%**
Q4r8	I would listen to music on online video site(s) (e.g., YouTube, Vevo).	13.1%
Q4r9	I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	2.8%
Q4r10	I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	3.3%
	Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium	**9.0%**
Q4r11	I would listen to satellite radio through the paid subscription I already have (SiriusXM).	6.0%
Q4r12	I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	2.9%
	Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium	**8.7%**
Q4r13	I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	8.7%
	Owned, purchased, or downloaded music to replace listening to music on Spotify Premium	**11.3%**
Q4r14	I would listen to digital music files, CDs, or vinyl records that I already own.	8.0%
Q4r15	I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	3.3%
	Other	**7.5%**
Q4r16	I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	2.1%
Q4r17	I would listen to less music and would do something else instead (e.g., watch TV, read a book).	4.6%
Q4r18	I would listen to the following music option to replace listening to music on Spotify Premium: ${Q3.r18.open}	0.8%

Source: "Streaming Music Services - 9-23-21.xlsx", tab "A1".

(156) The binary diversion ratio results presented in Figure 12 show that [redacted] of respondents would allocate at least some portion of their listening time to on-demand streaming options, [redacted] would allocate at least some portion of their listening time to video-related music options, and [redacted] would allocate at least some portion of their listening time to not-on-demand streaming options. In my opportunity cost analysis, I conservatively assume that listeners pay the full subscription fee when they allocate non-zero listening time to subscription services. Similarly, I assume that listeners spend [redacted] (the average monthly spend for listeners that purchase CDs and permanent digital downloads in year 2013) on physical sales and digital downloads when they allocate non-zero listening time to purchased or downloaded music.[213]

213 [redacted]

Figure 12. Music options to which respondents would spend time listening (i.e., binary diversion ratios)

Question option	Option text	Percentage
	Music on on-demand music streaming services to replace listening to music on Spotify Premium	**76.4%**
Q4r1	I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., [pipe:PAIDOPTIONS_HAVE]).	46.6%
Q4r2	I would listen to ad-supported Spotify, which I do not need to pay for.	0.0%
Q4r3	I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to [pipe:PAIDOPTIONS_DONTHAVE] at $9.99 per month or $119.88 per year).	44.3%
Q4r4	I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	44.3%
	Music on not-on-demand music streaming services to replace listening to music on Spotify Premium	**58.4%**
Q4r5	I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	27.5%
Q4r6	I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	36.1%
Q4r7	I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	35.4%
	Music on video options to replace listening to music on Spotify Premium	**72.1%**
Q4r8	I would listen to music on online video site(s) (e.g., YouTube, Vevo).	66.9%
Q4r9	I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	28.2%
Q4r10	I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	31.1%
	Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium	**43.9%**
Q4r11	I would listen to satellite radio through the paid subscription I already have (SiriusXM).	34.4%
Q4r12	I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	23.6%
	Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium	**51.5%**
Q4r13	I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	51.5%
	Owned, purchased, or downloaded music to replace listening to music on Spotify Premium	**54.8%**
Q4r14	I would listen to digital music files, CDs, or vinyl records that I already own.	49.5%
Q4r15	I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	30.2%
	Other	**39.0%**
Q4r16	I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	18.7%
Q4r17	I would listen to less music and would do something else instead (e.g., watch TV, read a book).	21.3%
Q4r18	I would listen to the following music option to replace listening to music on Spotify Premium: ${Q3.r18.open}	4.3%

Source: "Streaming Music Services - 9-23-21.xlsx", tab "A1".

V.A.3. Publisher's royalty rates from other forms of listening

(157) In my opportunity cost analysis, I take as given the existing musical works royalty rates paid by alternative forms of listening, [redacted] horizontal market power and the "Cournot complements problem" prevalent in the music publishing industry due to the fractionalization of rights. This simplification is hard to avoid as correcting for these inefficiencies in all other music consumption channels can quickly make the model intractable. With this simplifying assumption, however, I note that I am likely to overestimate the publisher's opportunity cost relative to what would prevail under effective and efficient competition, and thereby upward bias the estimated royalty rates.

(158) [redacted] See Appendix F for more detailed calculations.

V.B. Nash bargaining model

(159) In this section, I use a Nash bargaining model to estimate royalties set through bilateral negotiation between a willing buyer and willing seller. In Nash bargaining models, each party to a negotiation would capture a fraction of the total gains from trade available to the two parties currently at the table. Absent evidence to the contrary, it is typical to assume that this fraction equals 50%, i.e., the parties equally split the total gains from trade, and I follow this assumption.[215]

(160) In Nash-in-Nash multi-party bargaining models, every pair of bargaining entities assumes that it arrives last to the negotiation table and that all other negotiating pairs have already reached, or are confidently expected to promptly reach, an agreement.[216] Therefore, each pair's Nash bargaining solution would be a function of the Nash bargaining solutions

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[214] [redacted]

[215] *See* Ariel Rubinstein, "Perfect Equilibrium in a Bargaining Model," *Econometrica* 50, no.1 (1982): 97–109, https://www.jstor.org/stable/1912531?seq=1#metadata_info_tab_contents; Allan Collard-Wexler, Gautam Gowrisankaran, and Robin S. Lee, "'Nash-in-Nash' Bargaining: A Microfoundation for Applied Work," *Journal of Political Economy* 127, no. 1 (2019): 163–195, https://www.journals.uchicago.edu/doi/10.1086/700729.

[216] John F. Nash, "The Bargaining Problem," *Econometrica* 18, no. 2 (1950): 155–162, https://www.jstor.org/stable/1907266?seq=1#metadata_info_tab_contents.

achieved between other entities. In this sense I look for a Nash equilibrium among Nash bargaining solutions.

(161) In my Nash bargaining model, I remove the publishers' heterogeneous market power by modeling negotiations between a willing buyer, an interactive streaming service such as Spotify, and a willing seller, a small publisher that is a limited consolidation of individual songwriters.[217] [redacted]

(162) I abstract from the various Spotify product offerings and focus on Spotify's standalone premium product, [redacted] In my Nash bargaining model, [redacted]

(163) In Figure 13, I report the Nash bargaining model estimates based on different assumptions of the power ratio Z that ranges from [redacted][220] [redacted]

[217] I model a Spotify negotiation, while recognizing that this proceeding is setting all-in rates not just for Spotify but for all streaming services. I do not have access to the data required to estimate the model for other streaming services.

[218] [redacted]

[219] I estimate the percentage of revenue generated by [redacted]

[220] In 0, I denote the percentage of subscribers that would cancel their subscription in the event of a blackout with publisher i as G_i. I denote the percentage of streams that the streaming service would lose as L_i. In the

[redacted]

(164) In addition to the assumptions and simplifications that I make above, the Nash bargaining model does not account for the possibility that being available on Spotify could be promotional, i.e., could further increase the publisher's royalty revenue through other distribution channels.[222] All else equal, such promotion effects would create downward pressure on the royalty rates estimated above.

(165) More broadly, because I needed to make a working assumption with limited information on the power ratio, Z, I do not interpret the model as offering stand-alone recommendations on all-in or mechanical rates. Rather, I view it as broadly confirmatory in the sense that it replicates the general range of rates suggested by the benchmarks discussed in Section IV if Z takes values in the range that I assumed. That range independently appears consistent with

calculations shown in Figure 13, I maintain the assumption that $L_i = G_i$. This is equivalent to assuming that the departing subscribers' average listening intensity, in terms of streams-per-person, is the same as that of the non-departing subscribers and that non-departing subscribers maintain their streams-per-person listening intensity at pre-blackout levels.

221 [redacted]

222 Spotify's leading playlists such as Today's Top Hits (18.5M followers), Global Top 50 (11.5M followers), or RapCaviar (8.6M followers) can have promotional effects for songs and artists. Further, curated playlists like New Music Friday (6.4M followers) are dedicated to the discovery and promotion of new songs and emerging artists. *See* Luis Aguiar and Joel Waldfogel, "Platforms, Power, and Promotion: Evidence from Spotify Playlists," June 22, 2020, 4.

where Z might lie in the actual market for small rights-holders with substitutable catalogs based on the testimony and limited other evidence discussed above, giving some support to the consistency of the benchmark estimates with Nash bargaining negotiation. Alternatively, it also appears sensible as an assumption intended to calibrate a hypothetical market with effective competition: It is toward, but not at or very close to, the more competitive or more substitutable end of the range of values between complete substitutability (in which case $Z = 0\%$) and the value ($Z = 100\%$) taken if (although not only if) the different publishers' catalogs were not at all substitutable as judged by the service's users.

Figure 13. [redacted]

Model assumption	Power ratio Z: percentage of subscribers lost relative to publisher's streamshare		
	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

[redacted].

(166) Given that I am unable to correct for the Cournot complements problem between sound recording and musical work rights and do not correct for the various factors leading to supra-competitive rates prevalent in alternative distribution channels, these predicted rates would likely be higher than the appropriate rate levels under effective and efficient competition. Further, these numbers are consistent with those that I reported for the candidate benchmarks described in Section IV, which I regard as confirmatory.

Joseph Farrell, D.Phil.

October 29, 2021
Date

Appendix A. Curriculum vitae for Professor Joseph Farrell

A.1. Summary

(167) Dr. Joseph Farrell is a Professor of the Graduate School in the Department of Economics at the University of California, Berkeley. From 2009 to 2012, Dr. Farrell served as Director of the Bureau of Economics at the Federal Trade Commission (FTC), where he was responsible for economic analysis relating to the Bureau's antitrust and consumer protection portfolios. He was a key member of the team that revised the FTC/Department of Justice *Horizontal Merger Guidelines*. His prior government experience includes serving as Deputy Assistant Attorney General for Economic Analysis for the Antitrust Division of the U.S. Department of Justice and as Chief Economist for the Federal Communications Commission.

(168) Dr. Farrell is an experienced expert witness who has been retained by U.S. and international government and private clients for internal advice and expert testimony. His widely cited academic research has focused on the economics of competition, mergers, innovation, and network effects. He is an internationally recognized leader for his contributions in industrial organization, regulation and antitrust enforcement, intellectual property, and game theory.

(169) Previously, Dr. Farrell was Chair of the Competition Policy Center at UC Berkeley. Dr. Farrell is a Fellow of the Econometric Society, past President of the Industrial Organization Society, former Editor of the *Journal of Industrial Economics*, and former Board Member for the National Academies' Computer Science and Telecommunications Board. In 2016, the Industrial Organization Society awarded him the Distinguished Service Award, which is given annually in recognition of professional leadership in the scholarship and practice of industrial organization. Dr. Farrell has been named to the *Who's Who Legal Competition Economists* list since 2015 and has been on the WWL Thought Leaders–Competition list since 2019.

A.2. Education

- DPhil, Economics, Oxford University, United Kingdom
- MSc, Mathematics, Oxford University, United Kingdom
- BA, Mathematics, First Class Honours, Oxford University, United Kingdom

A.3. Publications

- "The 2010 Horizontal Merger Guidelines After 10 Years" (with Carl Shapiro). *Review of Industrial Organization* 58 (2021): 1–11.
- "Natural Oligopoly Responses, Repeated Games, and Coordinated Effects in Merger Analysis: A Perspective and Research Agenda" (with Jonathan B. Baker). *Review of Industrial Organization* 58 (2021): 103–41.
- "Oligopoly Coordination, Economic Analysis, and the Prophylactic Role of Horizontal Merger Enforcement" (with Jonathan Baker). *University of Pennsylvania Law Review* 168 (2020) 1985–2018.
  - Jerry S. Cohen Antitrust Writing Award: Best Antitrust Article of 2020 on Tacit Collusion.
- "Comments on Merger Guidelines." In *Competition Law and Economics: Developments, Policies, and Enforcement Trends in the U.S. and Korea*, eds. Jay Pil Choi, S. Lee, and W. Lim. Northampton, MA: Edward Elgar Publishing, 2020.
- "Pharmaceutical Patents and Pay-for-Delay: Actavis" (with Mark Chicu). In *The Antitrust Revolution*, 7th ed., eds. John E. Kwoka, Jr., and Lawrence J. White. New York: Oxford University Press, 2018.
- "Some Simple Analytics of Vertically Linked Markets," *Review of Industrial Organization* 50, no. 4 (2017): 431–40.
- "Some Failures of the Popular Coase Theorem." In *The Elgar Companion to Ronald H. Coase*, ed. Claude Menard, chap. 24. Northampton, MA: Edward Elgar, 2016.
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- "Installed Base and Compatibility: Innovation, Product Preannouncements, and Predation" (with Garth Saloner). *American Economic Review* 76 (1986): 940–55.

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- "Standardization and Variety" (with Garth Saloner). *Economics Letters* 20 (1986): 71–74.
- "How Effective is Potential Competition?" *Economics Letters* 20 (1986): 67–70.
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- "Standardization, Compatibility and Innovation" (with Garth Saloner). *RAND Journal of Economics* 16, no. 1 (1985): 70–83.
  - Reprinted in *The Economics of Information*, eds. Steven A. Lippman and David K. Levine, chapter 18. Cheltenham, UK: Edward Elgar, 1995.

A.4. Professional activities and honors

- *Who's Who Legal* Thought Leader: Competition, 2019–present
- Distinguished Service Award, Industrial Organization Society, 2016
- Academic Advisor, OECD Competition Section, 2015
- Fellow, Econometric Society, 2002–present
- Finalist, International Who's Who of Competition Economists, 2013–present
- Senior Consultant, Charles River Associates, 2003–2009
- Board of Editors, Information Economics and Policy, 2004–2007
- Chair, Competition Policy Center, 1999–2006
- Co-Chair, American Bar Association conference on antitrust in high technology, June 2005
- Faculty, New York University graduate workshop on economics of technology, June 2005
- Computer Science/Telecommunications Board, National Academy of Sciences, 2001–2004
- Scientific Committee, Toulouse, 2004

- Vice-Chair, Economics Committee, Antitrust Section, American Bar Association, 2001
- Editor, *Journal of Industrial Economics*, 1995–2000 (previously Associate Editor)
- Program Committee, Econometric Society, June 1992; American Economic Association, January 2000
- President, Industrial Organization Society, 1996
- Reviewer, U.S. Office of Technology Assessment: "Computer Software and Intellectual Property," *Finding a Balance*, 1992
- Global Standards: Building Blocks for the Future, March 1992
- Organizing Committee, Telecommunications Policy Research Conference, April 1986
- Organized the GTE Laboratories Economics Symposium, August 1985
- Reviewer, National Academy of Sciences/National Research Council
- "Highly Cited Researcher" Economics/Business, ISI (http://isihighlycited.com)
- Referee for multiple economics journals, research agencies, publishers, etc.
- Witness, U.S. Senate Judiciary Committee, FCC, FTC, and DOJ hearings
- Consultant for Department of Justice, Federal Trade Commission, Canadian Bureau of Competition, Reserve Bank of Australia, and private parties
- University and departmental administrative service including past service as Chair of the Competition Policy Center, Chair of the Graduate Committee, membership of the Personnel Committee and Undergraduate Committee, promotion and tenure committees, and ad hoc committee

A.5. Academic advisory boards

- Centre for Competition Policy (UK) (2004–2008)
- Power and Telecom (1997–1999)
- Consortium on Telecommunications Policy (1997)
- Economics of Innovation and New Technology (1990–1995)

A.6. Seminar presentations and speeches

(170) American Bar Association, American Enterprise Institute, American National Standards Institute, Australian Competition and Consumer Commission, Barcelona, Brookings Institution, Cal Tech, California Public Utilities Commission, Calgary, Cambridge University, Columbia, Concurrences Global Antitrust Economics Conference, Consumer Financial Protection Bureau, [US President's] Council of Economic Advisors, University of Chicago, E.CA Expert Forum, European Commission DG Competition, University of East Anglia, Federal Communications Bar Association, Federal Communications Commission, Federal Reserve Board, Federal Trade Commission, Harvard, LSE, MIT, Melbourne, Michigan, NBER, Nokia, Northwestern, Norwegian School of Management, Oslo University, Oxford, Princeton, Progress and Freedom Foundation, Santa Fe Institute, Stanford, Tel Aviv, University of British Columbia, University of California (multiple campuses), National Economists' Club, New University of Lisbon, USC, Toronto, Toulouse, U.S. Department of Justice, U.S. Treasury, Canadian Bureau of Competition, National Association of Attorneys General, National Research Council, OECD, World Bank, UK Competition Commission, Office of Fair Trading (UK), and numerous conferences.

(171) Speeches as Deputy Assistant Attorney General: http://www.usdoj.gov/atr/public/speeches/speech_farrell.htm.

A.7. Professional experience

- Partner, Bates White, 2013–present
- University of California, Berkeley
  - Professor of the Graduate School, Department of Economics, since 2020
  - Professor of Economics, 1991–2020
  - Affiliated Professor, Haas School of Business, 1994–2013
  - Associate Professor, 1989–1991
  - Visiting Assistant Professor, 1986–1988
- Director, Bureau of Economics, U.S. Federal Trade Commission, June 2009–May 2012
- Deputy Assistant Attorney General and Chief Economist, Antitrust Division, U.S. Department of Justice, July 2000–June 2001
- Chief Economist, Federal Communications Commission, January 1996–June 1997
- Chair, Competition Policy Center, 1999–2006

- National Fellow, Hoover Institution, Stanford University, 1988–1989
- Technical Staff, GTE Laboratories
  - Principal Member, 1985–1986
  - Senior Member, 1984–1985
- Massachusetts Institute of Technology
  - Assistant Professor of Economics, 1980–1984
  - Instructor, 1979–1980
- Visiting Assistant Professor, University of California, San Diego, Spring 1983
- Visitor, Bell Laboratories, Summer 1978

A.8. Teaching experience

- Teaching experience at Massachusetts Institute of Technology, University of Michigan, University of California, Berkeley and University of California, San Diego
  - Graduate and undergraduate industrial organization
  - Regulation and antitrust
  - Competitive strategy
  - Microeconomics
  - Statistical decision theory
  - Game theory

A.9. Scholarships and grants

- Gordon Cain Senior Fellow, SIEPR, 2001–2002
- Sloan Foundation/NBER grant (with Severin Borenstein), "Why Do Firms Cut Costs?" 1998–2000
- Co-Principal Investigator (with Carl Shapiro), NSF, "Technology Transitions with Network Externalities," 1992–1994
- Hewlett Fund grant, Institute of International Studies, Berkeley, 1990–1991
- Co-Principal Investigator (with Carl Shapiro), NSF grant, "The Evolution of Network Industries," 1989–1991

- National Fellow, Hoover Institution, Stanford University, 1988–1989
- Principal Investigator, National Science Foundation (NSF), "Economics of Compatibility Standards and Lock-In," 1987–1989
- University Prize for best economics master's thesis, 1979
- Hulme Senior Scholarship (one of three in all subjects), 1978–1979
- Amphlett Senior Scholarship (one of six in all subjects), 1976–1978
- Science Research Council Studentship, 1975–1978
- Taberdar Senior Scholarship (awarded to one to two graduate students in all subjects), 1975–1976
- University Prize for final examinations in mathematics, 1975
- Open Scholarship in Mathematics (undergraduate) 1972–1975
- College Book Prize for academic performance, 1974

Appendix B. Materials relied upon

B.1. Litigation

B.1.a. Data and internal documents

- [redacted]
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B.1.b. Discovery documents

- [redacted]
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B.1.c. Testimony

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- [redacted]
- [redacted]

B.2. Publicly available materials

B.2.a. Data

- RIAA Revenues, adjusted for inflation (2020).xlsx
- RIAA Sales Volume (2020).xlsx
- RIAA. "Pie Chart 1985.xlsx." *Available at* https://www.riaa.com/u-s-sales-database/.
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- RIAA. "Pie Chart 2015.xlsx." *Available at* https://www.riaa.com/u-s-sales-database/.
- RIAA. "Pie Chart 2016.xlsx." *Available at* https://www.riaa.com/u-s-sales-database/.
- RIAA. "Pie Chart 2017.xlsx." *Available at* https://www.riaa.com/u-s-sales-database/.
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Appendix C. Other distribution channels

C.1. Non-interactive streaming services

(172) Non-interactive streaming services provide a pre-programmed stream of music based on listener preferences, but do not allow listeners to select the transmission of a specific sound recording. In this way, non-interactive services more closely mimic a radio broadcast than do interactive services, although some non-interactive services provide more personalization options to the listener.[223] Non-interactive streaming services include Pandora, iHeart Radio, Sirius XM, and Deezer. Non-interactive streaming services made up less than 10% of recorded music industry revenues in 2020.[224]

(173) *Non-interactive streaming services* are required to pay a public performance royalty for musical works, but not a mechanical royalty for musical works. These public performance royalties are privately negotiated, or negotiated under the relevant consent decrees, with PROs. Non-interactive streaming services must also pay a public performance royalty and reproduction/distribution royalty for sound recordings. Rates for the sound recording public performance and reproduction/distribution royalty are determined by the CRB under Sections 114 and 112 of the Copyright Act through the *Webcasting* proceedings and paid to SoundExchange.[225] This CRB-determined rate includes reproduction and distribution royalties for the sound recording analogous to many of the copies licensed under the Section 115 license.[226] Alternatively, non-interactive streaming services are free to negotiate their own deals related to the public performance and reproduction/distribution of sound recordings.[227]

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[223] SoundExchange, "Licensing 101," SoundExchange, accessed Oct. 2, 2021, https://www.soundexchange.com/service-provider/licensing-101/.

[224] Non-interactive shares include the SoundExchange distributions and other ad-supported streaming categories. These categories also include revenue attributed to Sirius XM, implying that the total share for non-interactive services *only* is less than 10%. Recording Industry Association of America (RIAA) U.S. Sales Database, "U.S. Recorded Music Revenues by Format," accessed June 22, 2021, https://www.riaa.com/u-s-sales-database/.

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[225] *See Webcasting IV* at 26316; SoundExchange, "Licensing 101," accessed Oct. 2, 2021, https://www.soundexchange.com/service-provider/licensing-101/.

[226] *See Webcasting IV* Determination at pp. 26397–26398.

[227] *See Webcasting IV* Determination at p. 26326.

C.2. Purchased music

(174) Permanent digital downloads (PDDs) allow listeners to purchase specific tracks or albums and store the audio files on a device or multiple devices locally and permanently. These sound recordings are available for listening without restriction as to the number of times or the amount of time that they may be accessed.[228] Notable platforms for such purchasing include Apple iTunes, Amazon Music, BandCamp, HDtracks, and 7digital. PDDs accounted for approximately 5% of recorded music industry revenue in 2020.[229]

(175) Similarly, physical media such as CDs, LPs, and cassettes allow listeners to listen to tracks and full albums without restrictions to the amount of time or number of times that each track can be accessed. Although some of these methods of listening, such as CDs, have declined in popularity in recent years, others, such as vinyl, continue to be popular among indie listeners.[230] In 2020, physical media accounted for approximately 9% of recorded music industry revenues.[231]

(176) *Digital downloads and physical copies* are required to pay a mechanical royalty for musical works, but not a public performance royalty. This royalty rate is also determined through the *Phonorecords* proceedings.[232] Digital downloads and physical copies also incur reproduction and distribution royalties for the use of the sound recording.[233]

C.3. Satellite and terrestrial radio

(177) Satellite and terrestrial radio services broadcast music and other programming through radio stations or via satellites. AM, FM, and satellite radio broadcasts do not allow listeners to select specified tracks or albums, but play a selection of programmed music based on the given channel's genre and affiliations. Although AM and FM radio are ad-supported and available for free to listeners, satellite radio offerings, such as those created by Sirius XM, require a subscription. Radio content remains a popular choice for music consumers today; in 2020, Sirius XM (satellite) and terrestrial radio

[228] 17 U.S.C. § 115(e)(24).

[229] Users can also purchase music in the form of ringtones—generally, clips from songs—for download. In 2020, ringtone purchases accounted for less than 1% of industry revenue. Recording Industry Association of America (RIAA) U.S. Sales Database, "U.S. Recorded Music Revenues by Format," accessed June 22, 2021, https://www.riaa.com/u-s-sales-database/

[230] Neil Shah, "The Biggest Music Comeback of 2014: Vinyl Records," *Wall Street Journal*, Dec. 11, 2014, https://www.wsj.com/articles/the-biggest-music-comeback-of-2014-vinyl-records-1418323133.

[231] Recording Industry Association of America (RIAA) U.S. Sales Database, "U.S. Recorded Music Revenues by Format," accessed June 22, 2021, https://www.riaa.com/u-s-sales-database/.

[232] *See Phonorecords III* Final Determination.

[233] Dana A. Scherer, "Money for Something: Music Licensing in the 21st Century," Congressional Research Service, Feb. 23, 2021, 22–23, *available at* https://sgp.fas.org/crs/misc/R43984.pdf.

accounted for approximately 22% of weekly music listening time for the internet population above 13 years of age.[234]

(178) *Satellite radio* services are required to pay public performance royalties for use of both the musical work and the sound recording, but not a mechanical royalty for the musical work. The musical work-related royalty is privately negotiated or negotiated under the relevant consent decrees, with PROs.[235] Royalty rates related to the sound recording performance and reproduction/distribution royalty are determined by the CRB under Sections 114 and 112 of the Copyright Act through the *SDARS* proceedings.[236] This CRB-determined rate includes reproduction and distribution royalties for the sound recording.[237]

(179) Terrestrial radio stations must pay a public performance royalty for use of the music work. These royalties are privately negotiated, or negotiated under the relevant consent decrees, with PROs.[238] However, there is no federal performance right related to the public performance of sound recordings for terrestrial radio.[239]

C.4. Video-sharing platforms

(180) Video-sharing platforms such as YouTube also provide users with a way to stream music and watch music videos online. Similarly, social media apps and websites such as TikTok and Triller can generate music listening opportunities for users. The popularity of the latter method of listening has increased in past years. In 2018, social media accounted for an approximate share of 7% of weekly music listening time. In 2020, this figure increased to 11%.[240]

(181) Online video services, such as YouTube and Vimeo are required to pay the PRO-negotiated performance royalty for use of the musical work, similar to other music listening services.[241] These

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234 [redacted]

235 *See, e.g.,* "Who Does ASCAP Collect From?" ASCAP, accessed May 28, 2021, https://www.ascap.com/help/royalties-and-payment/payment/whocollect.

236 *See, e.g., SDARS III* Determination.

237 *See SDARS III* Determination at p. 65210.

238 *See, e.g.,* "Who Does ASCAP Collect From?" ASCAP, accessed May 28, 2021, https://www.ascap.com/help/royalties-and-payment/payment/whocollect.

239 United States Copyright Office, "Copyright and the Music Marketplace: Existing Licensing Framework," p. 1, *available at* https://www.copyright.gov/policy/musiclicensingstudy/music-licensing-charts.pdf.

240 [redacted].

241 For example, "most popular live-streaming platforms, such as YouTube, Facebook, Instagram Live, Soundcloud, and Twitch are licensed by ASCAP." "Frequently Asked Questions," ASCAP, accessed May 28, 2021, https://www.ascap.com/help/ascap-licensing.

services also pay a privately negotiated reproduction and distribution royalty for the sound recording as part of the master-use license. Lastly, online video platforms must pay synch royalties for use of both the musical work and the sound recording. These are both privately negotiated.[242]

[242] *See Phonorecords III* Final Determination at p. 48.

Appendix D. Overview of interactive streaming services

Figure 14. Overview of interactive streaming services

Company	First on-demand product launch (U.S.)	Total U.S. subscribers (millions)	Total tracks (millions)	Products	Price
Spotify	2011[1]	[redacted]	70[3]	Spotify free	Free (ad-supported)
				Spotify Premium Individual	$9.99/month[4]
				Spotify Premium Duo	$12.99/month
				Spotify Premium Family	$15.99/month
				Spotify Premium Student	$4.99/month
Apple Music	2015[5]	[redacted]	s	Apple Music Individual	$9.99/month[8]
				Apple Music Family	$14.99/month
				Apple Music Student	$4.99/month
				Apple One (included in bundles)	$14.95/month–$29.95/month[9]
Amazon Music	2014[10]	[redacted]	2[12]	Amazon Music Prime	Included with Prime membership ($12.99/month) [14]
			75[13]	Amazon Music Unlimited	$7.99/month (Prime members) $9.99/month (non-Prime members) [15]
				Amazon Music Unlimited Echo	$3.99/month[16]
YouTube (Google)	2015[17]	[redacted]	[redacted]	YouTube Music	$9.99/month[20]
				YouTube Premium (included in bundle)	$11.99/month
SoundCloud	2008[21]	Unknown	Unknown	SoundCloud Free	Free (ad-supported) [23]
				SoundCloud Go	$4.99/month
			125[22]	SoundCloud Go+	$9.99/month
Pandora	2017[24]	[redacted]	4[redacted]	Pandora Plus	$4.99/month[27]
				Pandora Premium Individual	$9.99/month
				Pandora Premium Family	$14.99/month
				Pandora Premium Student	$4.99/month
Tidal	2015[28]	1–5 (global)[29]	80[30]	Tidal Premium	$9.99/month[31]
				Tidal HiFi	$19.99/month
iHeartRadio	2017[32]	Unknown	Unknown	iHeart Plus	$4.99/month[33]
				iHeart All Access Individual	$9.99/month
				iHeart All Access Family	$14.99/month

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[redacted]
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[8] Apple, "Apple Music," accessed Oct. 1, 2021, https://www.apple.com/apple-music/.
[9] Apple, "Apple One," accessed Oct. 1, 2021, https://www.apple.com/apple-one/.

[10] Amazon Music Prime launched before Amazon Music Unlimited. Tom Warren, "Amazon Launches Streaming Music Service for Prime Members," Verge, June 12, 2014, https://www.theverge.com/2014/6/12/5802898/amazon-prime-music-features-pricing.
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[16] Amazon, "Amazon Music Unlimited FAQ," accessed Oct. 1, 2021, https://www.amazon.com/b?ie=UTF8&node=15730321011.
[17] Google launched a YouTube music listening app in 2015 as part of YouTube Red. YouTube Music as it exists today launched in 2018. Drew Olanoff, "YouTube Launches Its Long-Awaited Music App," TechCrunch, Nov. 12, 2015, https://techcrunch.com/2015/11/12/youtube-music-app/. Vlad Savov, "Google Announces YouTube Music and YouTube Premium," *Verge*, May 17, 2018, https://www.theverge.com/2018/5/17/17364056/youtube-music-premium-google-launch.
[redacted]
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[23] Abigail Abesamis Demarest, "What is SoundCloud? Everything you Need to Know about the Music and Podcast Platform," *Business Insider*, Feb. 26, 2021, *available at* https://www.businessinsider.com/what-is-soundcloud.
[24] Pandora Premium launched in 2017. Lisa Eadicicco, "Pandora's New Features Make It a Much Better Spotify Rival," Time, Mar. 13, 2017, https://time.com/4699411/pandora-premium-launch-cost/. Pandora Plus launched in 2016.
[redacted]
[27] Pandora Plus is a limited interactive service offering. Pandora, "Plans," accessed Oct. 1, 2021, https://www.pandora.com/plans.
[28] Rishi Iyengar, "Jay Z Just Launched His Own Music-Streaming Service Called Tidal," Time, Mar. 30, 2015, https://time.com/3764675/tidal-for-all-jay-z-streaming-music-spotify/.
[29] In 2016, Tidal announced that it had reached 3 million subscribers worldwide. Tim Ingham, "Tidal Has Hit 3M Subscribers, Adding 2.5M Since Jay Z Buyout," Music Business Worldwide, Mar. 30, 2016, https://www.musicbusinessworldwide.com/tidal-has-hit-3m-subscribers-adding-2-5m-since-jay-z-buyout/. *See also* Frank Woodworth, "How Tidal Can Embrace Its Mission to Win the Music Streaming Wars," Forbes, Jan. 24, 2020, https://www.forbes.com/sites/frankwoodworth/2020/01/24/how-tidal-can-embrace-its-mission-to-win-the-music-streaming-wars/?sh=24fe81da5fce.
[30] Tidal, "About," accessed Oct. 1, 2021, https://tidal.com/about.
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[32] iHeartMedia, "iHeartMedia Officially Launches its Interactive On Demand Radio Services, 'iHeartRadio Plus' and 'iHeartRadio All Access powered by Napster'," Jan. 5, 2017, https://www.iheartmedia.com/press/iheartmedia-officially-launches-its-interactive-demand-radio-services-iheartradio-plus-and.
[33] iHeart Plus is a limited interactive service offering. iHeart, "Current Offers," accessed Oct. 1, 2021, https://www.iheart.com/offers/; iHeart, "Take your iHeartRadio listening experience to a new level," accessed Oct. 11, 2021, *available at* https://www.iheart.com/upgrade/

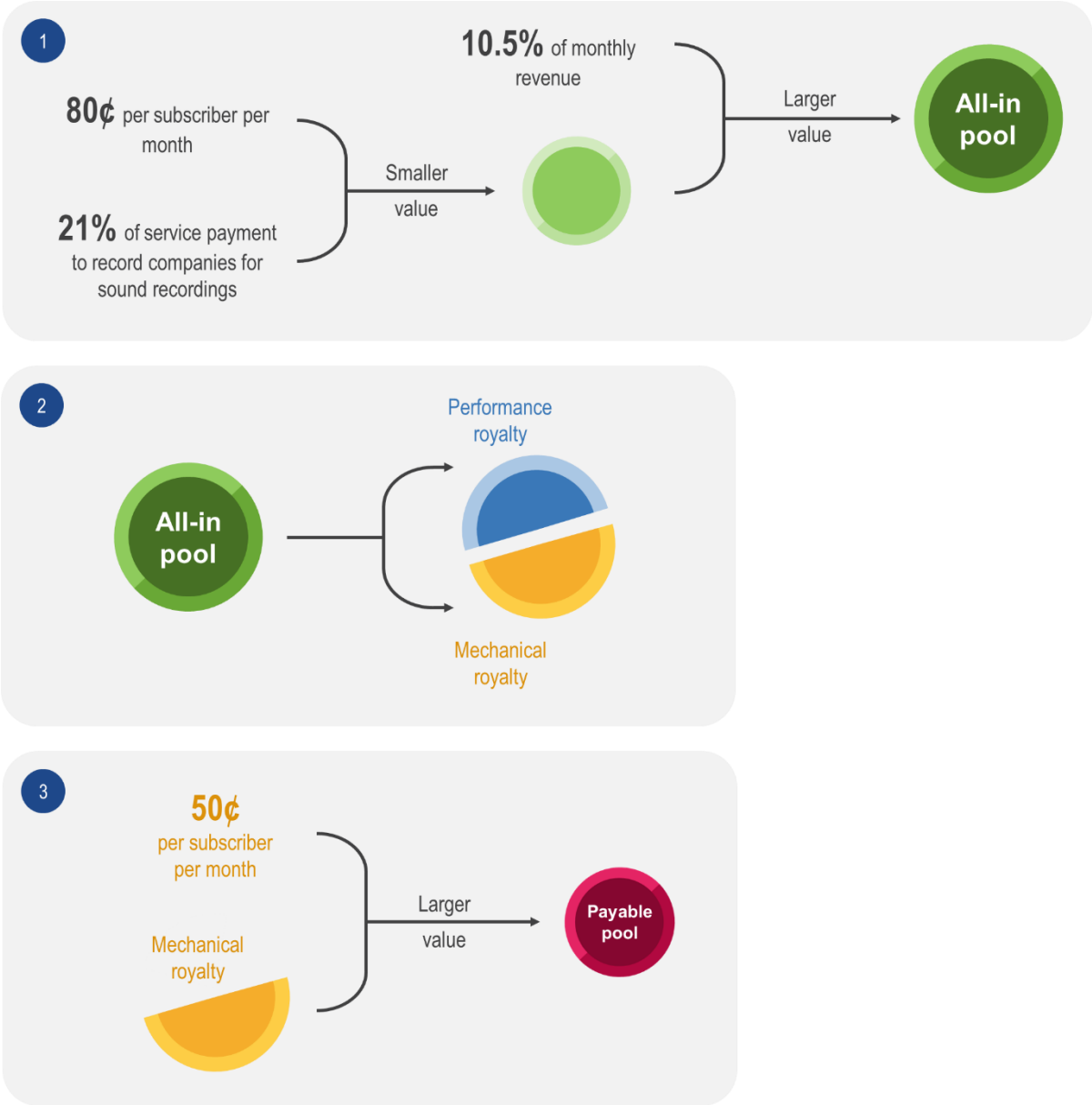
Appendix E. Determination of interactive streaming mechanical royalties

(182) Following the D.C. Circuit court's decision to vacate and remand the *Phonorecords III* determination, licensees have reverted back to collecting mechanical royalties using the previously-determined *Phonorecords II* rate structure. As discussed in Section IV.A of this report, the *Phonorecords II* rates and terms were determined through a party settlement in 2012. Under this structure, interactive streaming services pay mechanical royalties based on the nature of the service (Premium product, ad-supported product, bundled product, etc.). Rates are also subject to various subscriber minima, which can affect the overall payment depending on the product type, associated total content cost (TCC) paid to the labels, and subscriber count.

(183) Spotify's product offerings fall into four categories, which determine rates using varying frameworks: Standalone Portable Subscription (i.e., Spotify Premium), Free Non-Subscription (i.e., ad-supported Spotify), Bundled Subscription Offerings, and Standalone non-portable Subscriptions, Streaming Only (i.e., Spotify's desktop only subscription).

(184) The figure below illustrates the rate structure that is used to calculate mechanical royalties generated through Spotify's Premium product under the *Phonorecords II* rate structure. To calculate the appropriate royalties for Standalone Portable Subscription services, one must first compare the result of the 80¢ per subscriber minimum and 21% of the total content cost (TCC), i.e., payments to the labels. The smaller of these two figures is then compared to 10.5% of the monthly service revenue, and the higher value is designated to be the all-in rate pool. Next, the pre-determined payments to PROs for performance rights are subtracted from this rate pool. Finally, the remaining mechanical royalty is compared to a per-subscriber minimum of 50¢, and the higher figure is determined to be the final mechanical royalty payment.

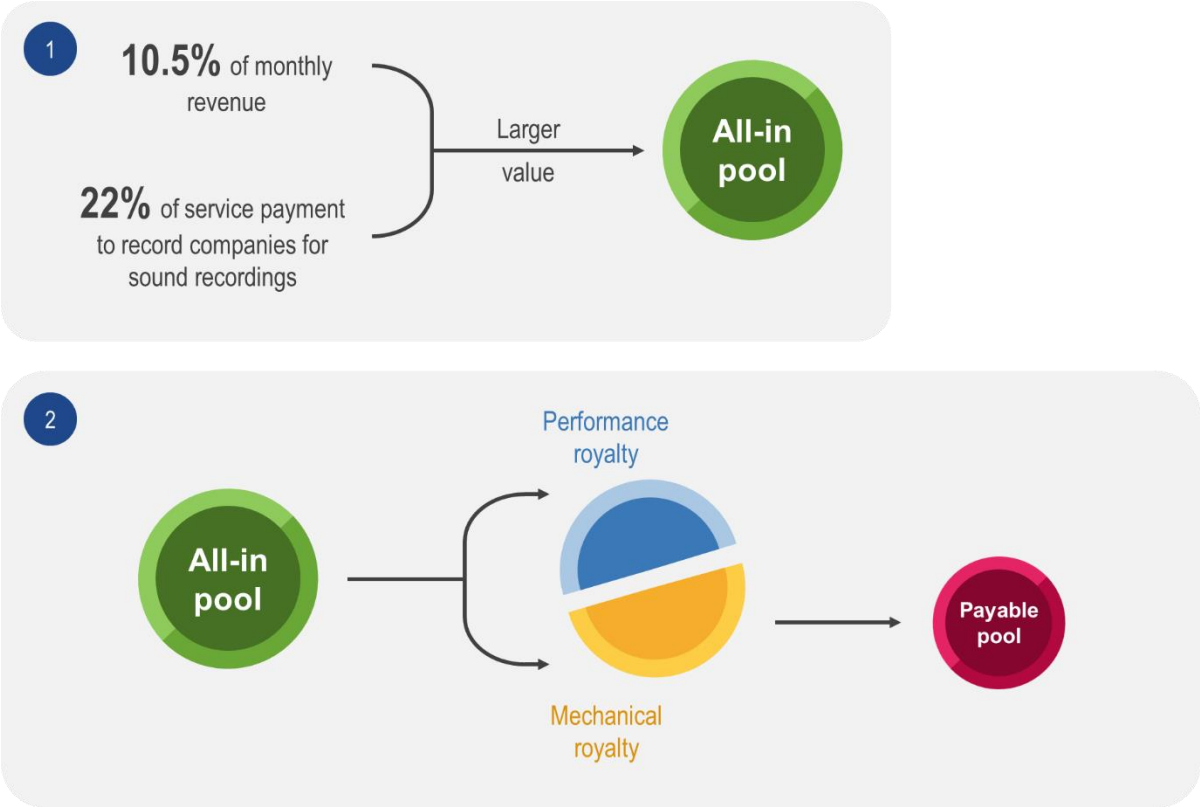
Figure 15. Mechanical royalty formula for Standalone Portable Subscription products (i.e., Spotify Premium)



Source: Adapted from Harry Fox Agency, "Archived Rates," *available at* https://www.harryfox.com/content/archived_rates.pdf.
Note: The percent of service payment to sound recording companies for pass-through licenses in step one is 17.36%.

(185) The formula structure for Free Non-Subscription services (such as Spotify's ad-supported product) does not include the same prongs as seen in the structure above. The figure below illustrates the more simplistic formula used to calculate mechanical royalties for these services:

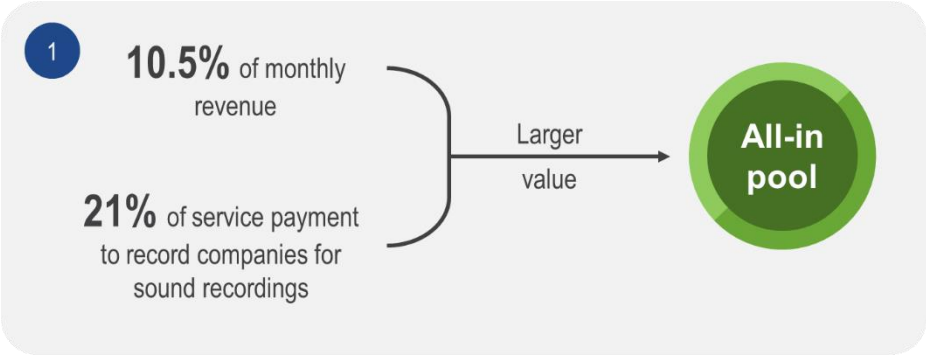
Figure 16. Mechanical royalty formula for Free Non-Subscription services (i.e., ad-supported Spotify)

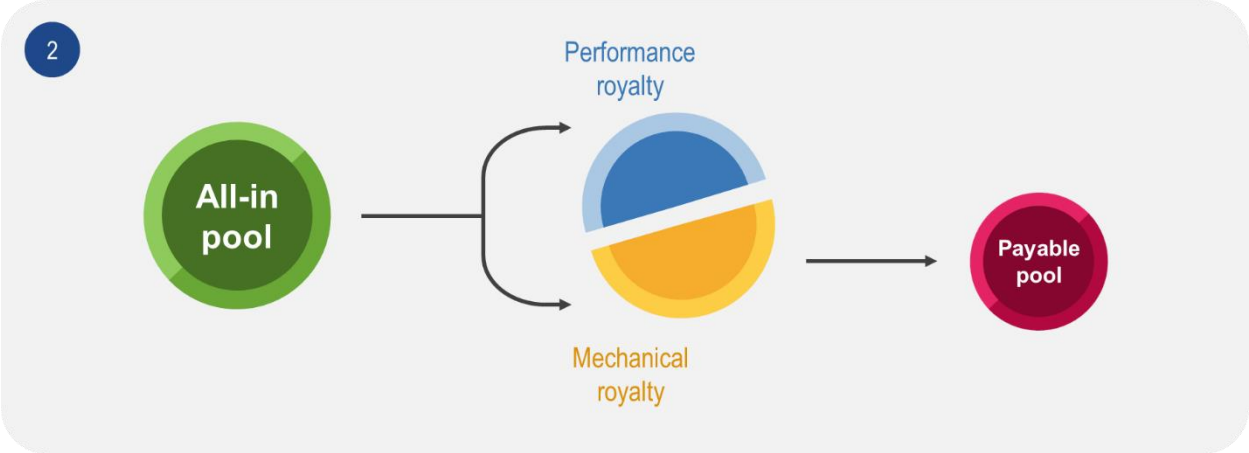


Source: Adapted from Harry Fox Agency, "Archived Rates," *available at* https://www.harryfox.com/content/archived_rates.pdf.
Note: The percent of service payment to sound recording companies for pass-through licenses in step one is 18%.

(186) Next, I can review the rate structure for Bundled Subscription services under the *Phonorecords II* rates structure. The formula for such products follows very closely to that for the Free Non-Subscription services, with the only difference coming from the percent of TCC used in step one of 21%.

Figure 17. Mechanical royalty formula for Bundled Subscription services





Source: Adapted from Harry Fox Agency, "Archived Rates," *available at* https://www.harryfox.com/content/archived_rates.pdf.

[redacted]

Appendix F. Opportunity cost calculations

(187) The publisher's opportunity cost associated with each option to which Spotify listeners could divert is described in this appendix. First, I provide a conceptual overview of opportunity cost calculations and then turn to calculation details.

(188) At a high level, each listening alternative is categorized as one of the following:[243] (1) Ad-supported on-demand streaming services, (2) Ad-supported not-on-demand streaming services, (3) Paid on-demand streaming services, (4) Paid not-on-demand streaming services, (5) Online videos, (6) Short-form videos, (7) Terrestrial radio, (8) Satellite radio, (9) Physical sales, (10) Music channels on cable or satellite TV, or (11) Piracy and non-music options. In the following bullet points, I provide a conceptual description of how per-subscriber opportunity cost ("OC") is calculated for each of these categories. In this context, OC describes the revenue that a publisher would earn if a single subscriber left Spotify and switched to the category indicated in the bullet point.[244]

- Ad-supported on-demand and ad-supported not-on-demand streaming services: OC = average number of monthly streams for Spotify's premium listeners × ad-supported on-demand or not-on-demand service's per-stream royalties paid to publishers × publisher i's streamshare
- Paid on-demand and not-on-demand streaming services: OC = monthly subscription fee × share of revenue paid to publishers from the paid music listening service services × publisher i's streamshare[245]
- Online videos: OC = average number of monthly streams for Spotify's premium listeners × online video per-stream royalties paid to publishers × publisher i's streamshare
- Short-form videos: OC = 0 (assuming each individual accounts for a negligible share of total revenue associated with a short-form video stream, based on payment terms in contract)[246]

[243] The labels used here correspond to listening options in the Hauser survey. See my backup materials for details.

[244] In my opportunity cost calculations, I make the simplifying assumption that the publisher's opportunity cost consists of royalties generated by subscribers who diverted from Spotify to alternative distribution channels. To the extent that subscribers do not cancel their subscriptions but divert some of their listening time to other forms of listening, my opportunity estimates would be biased downward. However, given the relative magnitude between the publisher's opportunity cost and its gains from reaching a deal with Spotify, a reasonable sized bias would not have a significant impact on my Nash bargaining model's all-in rate estimates.

[245] This is for new subscriptions. There is no opportunity cost (OC=0) for listeners who divert to previously paid for subscription services. Here, and elsewhere, I assume publisher i's stream share on alternative listening services is the same as that on Spotify. This may not be accurate, given that those who leave Spotify in the event of a blackout with publisher i are likely to be the most intensive listeners of publisher i's catalog. However, I do not have any information that would allow me to quantify this effect. To the extent that such information becomes available, I will update my analysis.

[246] [redacted]

- Terrestrial radio: OC = 0 (assuming each individual accounts for a negligible share of total ad revenue associated with a terrestrial radio play, since each terrestrial radio play is heard by many listeners at once)[247]
- Satellite radio subscriptions: OC = monthly subscription fee × share of revenue paid to publishers from the satellite radio subscriptions × publisher i's streamshare[248]
- Physical sales: OC = the amount of monthly spend for the average U.S. physical/PDD purchaser in 2013 × share of revenue paid to publishers × publisher i's physical sales/PDD share[249]
- Music channels on cable and satellite TV: OC=0 (assuming these involve existing subscriptions, and hence no additional royalties are generated)
- Piracy or non-music options: OC = 0

(189) For ad-supported on-demand streaming services, ad-supported not-on-demand streaming services, and online videos, I rely on the Copyright Owners' preliminary discovery data, limited to 2020 transactions of U.S. origin.[250] The data provides quarterly data for payments received by Concord from each of three PROs (ASCAP, BMI, and GMR), broken down by song title, the service on which the song was played, and multiple other dimensions. I assigned each service to a listening category and aggregated the data to the category/PRO level and then calculated a weighted average per-performance payment across PROs.[251] These category-specific per-performance payments to publishers are then used in calculating OC for these categories following the corresponding bullet points above.

(190) For paid interactive streaming services, I use a monthly subscription fee of $9.99 (as assumed in the Hauser survey) and the negotiated percentage-of-revenue all-in royalty rate between publisher i and a

[247] The OC = 0 assumption does not allow for radio advertising prices to increase with the size of the listening audience due to a lack of information that would allow me to estimate that relationship. To the extent that such information becomes available, I will update my analysis.

[248] This is for new subscriptions. There is no opportunity cost (OC=0) for listeners who divert to previously paid for subscription services.

[249] This is for new physical sales and downloads. There is no opportunity cost (OC=0) for listeners who divert to previously purchased CDs and downloads.

[250]

[251] The only service assigned to the ad-supported on-demand service category is SoundCloud. The services assigned to the ad-supported not-on-demand service category include Pandora, iHeartRadio Free, and AccuRadio. The services assigned to the online video category include YouTube and Vevo.

service such as Spotify as predicted in my Nash bargaining model (see Appendix G), which also determines the rate negotiated between publisher i and these alternative paid music listening services.

(191) For physical sales and permanent digital downloads, I use the product of monthly spend for the average U.S. physical sales/PDD purchaser [redacted] and the share of revenue paid to publishers [redacted].[252]

(192) For other paid subscription services, I use the product of each service's monthly subscription fee and the percentage-of-revenue royalty rate each service pays for musical work rights.

(193) A few additional parameters are needed to complete the OC calculations. [redacted].[253] For publisher i's streamshare/playshare and physical sales/PDD share, I use 1% in order to correct for the publisher's horizontal market power.

(194) Once category-specific OC values are calculated, I weight them by their appropriate diversion ratios. For ad-supported on-demand streaming services, ad-supported not-on-demand streaming services, and online videos, I use diversions based on how survey respondents said they would allocate their listening time conditional on leaving Spotify. For physical sales and other paid services, I used binary diversion ratios based on whether survey respondents said they would spend any time at all on new physical sales or new paid services. This difference reflects the fact that the first three categories generate payments to publishers that are correlated to the number of streams while the latter two categories generate payments to publishers based on one-time or monthly payments (e.g., the price of a CD or the price of a subscription) that do not vary with number of streams.

(195) Figure 18 below shows, for each category, the payment that publisher i would receive in the event of a blackout between Spotify and that publisher. The payment is expressed in terms of dollars per month per Spotify subscriber. This is the product of the publisher i's 1% share of payments from alternative listening options, the share of Spotify subscribers that are expected to leave Spotify in the event of a blackout (Z multiplied by 1%), and the payments to all publishers combined (per-subscriber) from that listening category. The "Total OC" values at the bottom of the table show the

[252] I derive the average monthly purchase amount for physical sales/PDD purchasers using physical sales and digital download data from earlier years to approximate a market in which interactive streaming services were unavailable. The earliest data available to me was from 2013, when interactive streaming services accounted for a much smaller percentage of listening and music industry revenues than present day. Adjusting the average monthly spend for listeners that purchase CDs and permanent digital downloads for inflation between years 2013 and 2021 has an immaterial effect on my all-in rate estimates. [redacted] I estimate the share of revenue paid to publishers for physical sales and digital downloads using the method I described in *supra* n. 160.

[253] This calculation is based on end user and unadjusted total streams data I received from Spotify [redacted].

weighted average opportunity cost for publisher i. Assuming a Z ratio [redacted], a small publisher's OC would be [redacted][254]

Figure 18. [redacted]]

[redacted]

[redacted]

[254] This result depends on the negotiated rate between the publisher and paid on-demand streaming services. I use the averages of the lower and upper bounds from my Nash bargaining model that correspond to the shown Z value (see Figure 13). Note that the Nash bargaining solution is relatively insensitive to errors in OC. A +/-10% change in OC results in less than a 0.03% (in absolute value) change in the predicted bargaining outcome. See my backup materials for details.

Appendix G. Nash-in-Nash bargaining model

(196) In the Nash-in-Nash bargaining model, I model a negotiation between Spotify and publisher i regarding a percentage-of-revenue royalty rates for Spotify's premium product ("Spotify" for short) assuming that (1) Spotify has reached an agreement with all other publishers and (2) all other listening alternatives have reached an agreement with publisher i. If Spotify fails to reach a deal with publisher i, publisher i's catalog will be removed from Spotify.

(197) To illustrate how the royalty rate is calculated using the Nash-in-Nash bargaining model, I first define the different inputs that go into the model.

- G_i is the share of Spotify subscribers lost if publisher i's music were to become unavailable on Spotify (recall that I focus on its premium product)
- L_i is the share of Spotify's premium streams lost if publisher i's music were to become unavailable for Spotify's premium product
- OC_i is publisher i's monthly opportunity cost per subscriber diverted from Spotify
- N is the number streams per month on Spotify premium, given access to music of all publishers
- S_i is publisher i's share of Spotify's premium streams
- C is Spotify premium's non-content related average incremental cost per stream
- U is the average percentage-of-revenue royalty rate for sound recordings
- B is the monthly average number of Spotify's premium subscribers given access to all publishers
- A is the average revenue per premium subscriber per month (ARPU)
- F is the average variable (non-royalty) cost per subscriber per month, excluding monthly per-stream costs
- X_i is the negotiated percentage-of-revenue royalty rate between publisher i and Spotify
- $V_i = \frac{\sum_{k \neq i} X_k S_k}{\sum_{k \neq i} S_k}$ is the weighted average percentage-of-revenue royalty rate that Spotify premium pays to all other publishers
- Z_i is the power ratio for publisher i – the ratio of G_i to S_i

(198) The idea behind the Nash bargaining solution is to find a royalty rate that is acceptable to both publisher i and Spotify. Arguably, there are various ways to approach this problem in order to come up with a fair and/or plausible outcome. The intuition behind the Nash bargaining solution is to find the royalty rate that results in publisher i and Spotify equally splitting the gains from trade.

(199) Publisher i's gains from trade is the percent-of-revenue earned in royalties from their contributions to Spotify's premium streams ($X_i S_i BA$), less its total opportunity cost ($BG_i OC_i$). Spotify's gains from trade is the difference between its *total* monthly profit if it reaches a deal with publisher i (π_i), and its *total* monthly profit if it does not reach a deal with publisher i (π_{-i}).

(200) Spotify's *total* monthly profit if it reaches a deal with publisher i (π_i) is its revenue (BA) minus total per-stream cost (NC), total per-subscriber costs (BF), sound recording royalties (UBA), all-in musical work royalties to publisher i ($X_i BAS_i$), mechanical royalties to all other publishers $V_i BA(1 - S_i)$, and other monthly fixed costs. Therefore, $\pi_i = B(A - F) - UBA - NC - X_i BAS_i - V_i BA(1 - S_i) - monthly\ fixed\ costs$.

(201) Spotify's *total* monthly profit if it does not reach a deal with publisher i (π_{-i}) is its revenue, accounting for subscribers lost ($B(1 - G_i)A$), minus its costs also accounting for the lost subscribers/streams. Specifically, the costs include the total per-stream costs ($N(1 - L_i)C$), total per-subscriber cost ($B(1 - G_i)F$), sound recording royalties ($UBA(1 - G_i)$), mechanical royalties to other publishers ($V_i BA(1 - G_i)$), and other monthly fixed costs. Therefore, $\pi_{-i} = B(1 - G_i)(A - F) - UBA(1 - G_i) - N(1 - L_i)C - V_i BA(1 - G_i) - monthly\ fixed\ costs$.

(202) Under the assumption of the Nash-in-Nash bargaining solution that gains from trade are split equally between the negotiating parties and taking V_i as given, I can solve for the equilibrium percentage-of-revenue royalty rate X_i that satisfies the equation: $\pi_i - \pi_{-i} = X_i S_i BA - BG_i OC_i$. Alternatively, this can be rewritten as $BG_i(A - F) - UBAG_i - NL_i C - X_i BAS_i + V_i BA(S_i - G_i) = X_i S_i BA - BG_i OC_i$.

(203) Assuming that publishers are symmetric and thus the equilibrium percentage-of-revenue royalty rate is the same for all the publishers, X_i must equal V_i. Solving for X_i in the above equation gives us $X_i = [BG_i(A - F) - UBAG_i - NL_i C + BG_i OC_i]/BA(S_i + G_i)$.[255] Note that if $C = 0$, then this equation simplifies to $X_i = [G_i(A - F) - UAG_i + G_i OC_i]/A(S_i + G_i)$

[255] Note that OC_i is also a function of musical works royalties earned by publisher i on other paid interactive services. In equilibrium, these royalties are equal to X_i, the royalties earned by publisher i on Spotify, which is taken into account in the calculation of X_i in my backup materials.

Appendix H. Cournot complements model

(204) A celebrated principle of microeconomics dating back over 180 years is the "Cournot complements problem."[256] When each of two or more joint suppliers of a product has a monopoly so that it has the right to prohibit the product's use—that is, when a user must get permission from both suppliers—and each sets a price for its consent without fully coordinating with the other supplier(s), then the overall price to the user will normally be above the price that would maximize joint gains to the team of suppliers. That harms both users and suppliers, relative to the "integrated monopoly" price that maximizes those joint gains.

(205) As an example, consider a situation in which two firms set price independently, as in the discussion above. Each firm has constant marginal cost of \$1 (denoted c in the derivations below) and sets price to maximize its own profit. Consumers must pay both firms and therefore pay a total price p, which is the sum of firm 1's price, p_1, and firm 2's price, p_2. Consumer demand is represented by a linear, downward sloping demand curve, $p = 10 - q$, where $p = p_1 + p_2$ and q is the total number of units purchased. In the derivations below, I use the more general form $p = a - bq$ for the demand equation and substitute $a = 10$ and $b = 1$ after solving.

(206) For any given p_2, there is an optimal p_1 that maximizes firm 1's profit, which I refer to as firm 1's "best response function." Firm 2's best response function is similarly defined - for any given p_1, there is an optimal p_2 that maximizes firm 2's profit.

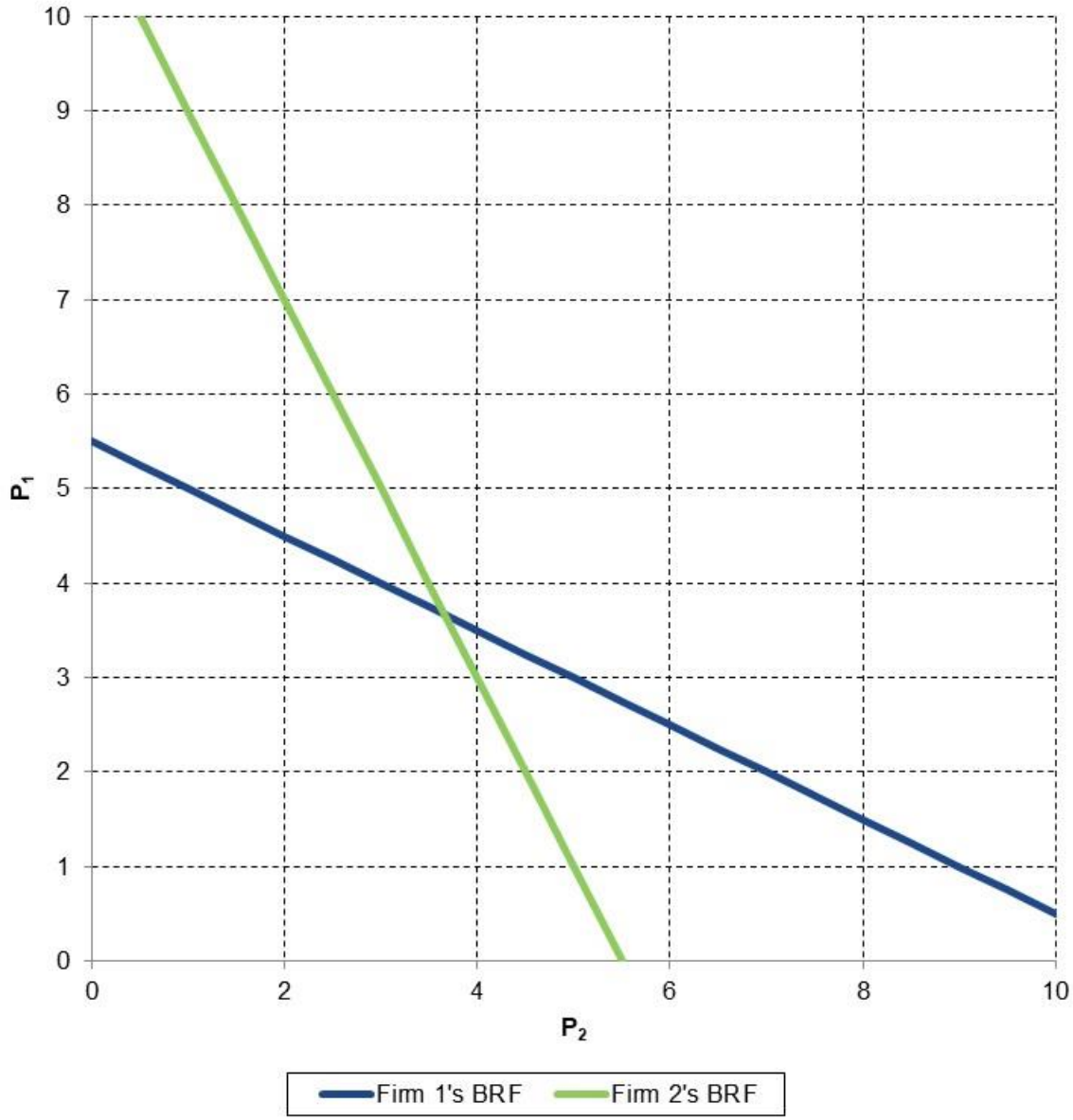
(207) To derive these best response functions, consider Firm 1's profit maximization problem, which is $\max_{p_1} \pi_1 = (p_1 - c)q$. Profit maximization leads to the first order condition: $q - (p_1 - c)/b = 0$. Combining this first order condition, the $p = p_1 + p_2$ identity, and the demand equation, and rearranging, results in firm 1's best response function: $p_1 = (a + c - p_2)/2$.

(208) Firms 1 and 2 are assumed to be symmetrical. As a result, firm 2's best response function is $p_2 = (a + c - p_1)/2$.

(209) These best response functions are illustrated in Figure 19.

[256] Augustin Cournot, *Mathematical Principles of the Theory of Wealth* (New York: The Macmillan Company, 1838), chapter 8 first discussed the Cournot complements problem. See generally also Carl Shapiro, "Theories of Oligopoly Behavior" (chapter 6 in *Handbook of Industrial Organization* edited by R. Schmalensee and R.D. Willig, 1989).

Figure 19. Best response functions in complementary duopoly scenario



(210) As p_2 increases, firm 1's best response (illustrated in green) decreases. That is, the higher firm 2 sets its price, the lower firm 1 will want to set its price in order to maximize its own profit. Similarly, firm 2's profit-maximizing price decreases as firm 1's price increases. As a result, the two best response functions cross.

(211) The equilibrium price is determined by the intersection of the two best response functions. At that point, firm 1 is setting price according to its best response function and firm 2 is doing the same. As a

result, when both firms set prices that correspond to the intersection of best response functions, neither firm can improve its profit by unilaterally deviating from its intersection price.

(212) The two best response functions represent a system of two equations and two unknowns, which can be solved for the equilibrium price pair and equilibrium total price. This results in the following expression for equilibrium price: $p = 2(a + c)/3$. Plugging this into the demand equation results in the following expression for equilibrium quantity: $q = (a - 2c)/(3b)$.

(213) Since the two firms are symmetrical, each firm sets the same price in equilibrium and therefore $p_1 = p_2 = (a + c)/3$. Using these results, each firm's profit is $\pi_1 = \pi_2 = (a - 2c)^2/(9b)$.

(214) Evaluating these expressions at the parameters stated above $(a = 10, b = 1, c = 1)$ results in the following equilibrium results: $p = \$7.33, q = 2.67$, and $\pi_1 = \pi_2 = \$7.11$. I refer to this as the "complementary duopoly equilibrium."

(215) To see how having multiple rights-holders leads to worse outcomes, compare the case above to one in which a single firm ("the monopolist") sets a single price for the complete bundle of rights the consumer must obtain in order to purchase the product.

(216) In this case, the monopolist's profit maximization problem is $\max_p \pi = (p - 2c)q$ and its first order condition is $q - (p - 2c)/b = 0$. This first order condition leads to the following expression for equilibrium price: $p = (a + 2c)/2$. And the following expression for equilibrium quantity: $q = (a - 2c)/(2b)$. Combining these results and using the monopolist's profit function leads to the following expression for equilibrium profit: $\pi = (a - 2c)^2/(4b)$.

(217) Evaluating these expressions at the same parameters listed above $(a = 10, b = 1, c = 1)$ results in the following equilibrium results: $p = \$6.00, q = 4$, and $\pi = \$16.00$. Assuming the two firms split the monopoly profits equally results in $\pi_1 = \pi_2 = \$8.00$. I refer to this as the "monopoly equilibrium."

(218) Comparing the monopoly equilibrium to the complementary duopoly equilibrium, two outcomes are worth noting. First, firms are better off when prices are set jointly than they are when setting prices independently. Under the complementary duopoly equilibrium, each firm earns profit of $7.11. Under the monopoly equilibrium, each firm would earn profit of $8.00. Second, consumers are also better off under integrated monopoly pricing.[257] They pay a price of $7.33 when firms price independently, but only $6.00 when firms price jointly.

(219) Now consider a situation in which one firm's (firm 1's) price is regulated while the other (firm 2) is free to set its own profit-maximizing price, taking the regulated firm's price as given. I assume that

[257] This is the opposite result of what happens when firms sell substitutes, rather than complements. In that case, which is more often the focus of, e.g., an antitrust analysis, consumers fare better under duopoly than they do under monopoly (absent efficiencies) and, generally, do even better as the number of competitors increases.

regulation determines a maximum price that firm 2 may charge (nothing prohibits it from charging less). In the calculations I also assume that the maximum price is set at a level such that firm 2 will not in equilibrium wish to charge less than the maximum (if it would, then I would replicate the complementary duopoly equilibrium).

(220) In this case, I let firm 2's price be regulated to some level, denoted $\bar{p}_2$. Firm 1's best response function does not change and can now be written as $p_1 = (a + c - \bar{p}_2)/2$. The consumer's price, p, can then be written as $p = \bar{p}_2 + (a + c - \bar{p}_2)/2$ or, after simplifying, $p = (a + c + \bar{p}_2)/2$. This leads to the following expression for equilibrium quantity: $q = (a - c - \bar{p}_2)/(2b)$. I refer to this as the "partial regulation equilibrium."

(221) Comparing the expression for equilibrium price under this scenario to the expression for equilibrium price under the complementary duopoly scenario, it can be shown that the total price under partial regulation is less than the complementary duopoly total price if firm 2's regulated price is less than it would set in the duopoly equilibrium.[258]

(222) Comparing the expression for equilibrium price under the partial regulation scenario to the expression for equilibrium price under the integrated monopoly scenario, it can be shown that the total price under partial regulation is still above the integrated monopolist's price if firm 2's price is regulated at a level above its marginal cost. If firm 2's price is regulated to marginal cost, the total prices in the partially regulated duopoly equilibrium and in the integrated monopoly coincide.[259]

(223) Clearly regulation at marginal cost is an extreme assumption in a market for rights to recorded music where marginal costs tend to be (near) zero; on the other hand, it suggests a stark formula for setting the regulated rate in order to get the total price right, if one could leave aside the question of dividing the total price between the creative contributors.

(224) Figure 20 compares equilibrium total price under the complementary duopoly, integrated monopoly, and four partial regulation scenarios. Each partial regulation scenario is labeled to indicate the margin earned by the regulated firm. For example, the bar labeled "Regulation – 0%" corresponds to a scenario in which the regulated firm's price is set equal to its marginal cost and therefore earns a 0% margin. At the other extreme, the bar labeled "Regulation – 88%" corresponds to a scenario in which the regulated firm's price is set to \$8.50 and therefore earns an 88% margin.[260]

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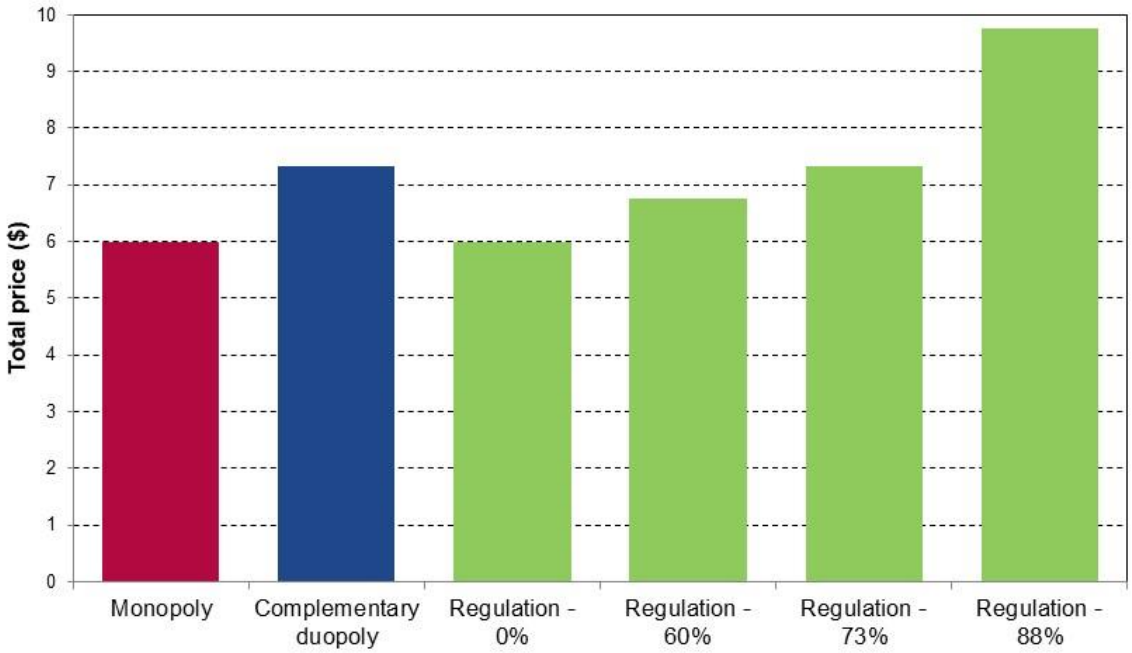
[258] That is, the inequality $(a + c + \bar{p}_2)/2 < 2(a + c)/3$ is only satisfied when $\bar{p}_2 < (a + c)/3$. The right hand side of the second inequality is equal to the price firm 2 sets in the unregulated duopoly scenario.

[259] That is, the equality $(a + c + \bar{p}_2)/2 = (a + 2c)/2$ is only satisfied when $\bar{p}_2 = c$.

[260] With price equal to \$8.50 and a marginal cost of \$1.00, the regulated firm earns \$7.50 per unit sold. Dividing this by its price, \$8.50, yields 88%. The height of the corresponding bar is \$9.75, since each bar represents total price, not just the regulated firm's price. In this case, when the regulated firm's price is set to \$8.50, the unregulated firm's best response is $p_1 = \$1.25$ and therefore total price is $p = \$9.75$.

(225) The monopolist's price is lower than the complementary duopoly price. Partial regulation can at best replicate the integrated monopoly outcome (recall that, in this context, that is a relatively good outcome), and that only when the regulated firm's price is set to its marginal cost (resulting in the regulated firm earning a margin of 0%). The consumer's price under partial regulation is an increasing function of the regulated firm's price.

Figure 20. Equilibrium consumer's price under various scenarios



Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)	Docket No. 21-CRB-0001-PR (2023-2027)

DECLARATION OF JOSEPH FARRELL, D.PHIL

I, Joseph Farrell, declare under penalty of perjury that the statements contained in my Written Direct Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief.

Executed this 29th of October 2021, in Lafayette, CA

Joseph Farrell, D.Phil

TAB B

PUBLIC VERSION

Before the
UNITED STATES COPYRIGHT ROYALTY BOARD
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: **Determination of Royalty Rates and Terms for Making and Distributing Phonorecords (*Phonorecords IV*)**	**Docket No. 21-CRB-0001-PR (2023-2027)**

WRITTEN DIRECT TESTIMONY OF PROFESSOR JOHN R. HAUSER

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I. Introduction

A. Qualifications

1. I am the Kirin Professor of Marketing at the Massachusetts Institute of Technology ("MIT") Sloan School of Management. My research and teaching at MIT Sloan focus on marketing management, new product and service development, forecasting consumer behavior, marketing research, research methodology, applications of machine learning, and listening to the customer. My research includes the evaluation of consumer decision-making, product and service development, customer satisfaction incentives, methods to identify the voice of the customer, methods to obtain customer feedback, customized communications, determination of relative feature preferences and implicit product valuations, and the use of machine learning to improve customer input. I have conducted research on changes in consumer demand for products and services in multiple industries, including satellite and online radio and music services as well as cable television services, software and web-based services, automotive markets, transportation services, eyewear, credit and debit cards, healthcare, consumer electronics, online retail, fashion, and luxury goods, among others. I have evaluated the factors that influence consumer purchasing decisions, consumer preferences, and consumer impressions in a variety of matters related to changes in product or service features, pricing, distribution, and advertising. I have published about the use of conjoint analysis and other methods to measure consumers' willingness to pay for and willingness to buy product and service features. I have studied consumer switching behavior for over thirty-five years.

2. I have testified on matters related to my research, which includes retail products, technology products, digital services, and media services. My testimony history includes, but is not limited to, matters on behalf of SiriusXM, National Association of Broadcasters,

Comcast, Dish Network, TiVo, We: Woman's Entertainment, Louis Vuitton, Apple Inc., Microsoft, Johnson & Johnson, Mozilla, Uber, LensCrafters, and Procter & Gamble. My testimony in these matters has addressed switching behavior, trademark infringement, patent infringement, price sensitivity, and false advertising, among other issues. I have provided strategic, market-research-based consulting to numerous consumer products, technology/software, and durable goods manufacturers, including American Airlines, Johnson & Johnson, IBM, Procter & Gamble, Fidelity Investments, Pacific Gas & Electric Company, Ford Motor Company, General Motors, and Chrysler.

3. I have served as Editor-in-Chief of *Marketing Science* and have held senior editorial positions with *Management Science*, the *Journal of Marketing Research*, and the *Journal of Product Innovation Management*. I have received numerous awards for excellence in marketing research and teaching. I am the recipient of the Paul D. Converse Award for "outstanding contributions to the development of the science of marketing," awarded by the American Marketing Association.[1] In 2001, I received the Charles Coolidge Parlin Award, a "preeminent national honor . . . [awarded for] outstanding leadership and sustained impact on advancing the evolving profession of marketing research over an extended period of time," from the American Marketing Association.[2] In 2011, I received the Gil Churchill Lifetime Achievement Award of the American Marketing Association for contributions to marketing research.[3] In 2013, I was awarded the Buck Weaver Award by the Institute for Operations

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[1] David R. Lampe, "Two from Sloan Win Marketing Awards," *MIT News*, April 3, 1996, *available at* https://news.mit.edu/1996/converse-0403.
[2] "Charles Coolidge Parlin Marketing Research Award," *American Marketing Association*, *available at* https://www.ama.org/AboutAMA/Pages/Parlin-Award.aspx.
[3] "Awards: Marketing Research SIG," *American Marketing Association, available at* https://www.ama.org/awards-marketing-research-sig/.

Research and the Management Sciences ("INFORMS") Society for Marketing Science ("ISMS"), for lifetime contributions to the theory and practice of marketing science.[4] I am a Fellow of INFORMS and an Inaugural Fellow of the ISMS.[5] I have also served as President of ISMS and as a Trustee of the Marketing Science Institute. In 2016, I was awarded an honorary doctorate (Doctor Honoris Causa) from the Erasmus School of Economics, Erasmus University.

4. I am the co-author of two textbooks, *Design and Marketing of New Products* and *Essentials of New Product Management*, as well as more than one hundred articles, papers, and books, including professional articles in which I administered and analyzed surveys about consumer decision-making. In these professional articles, I used marketing research to determine the importance of product (or service) features in consumer decision-making, determine consumer responses to changes in price and positioning of products or services, examine switching behavior, and to understand how the use of customer satisfaction measures promotes better management. I have developed market research techniques that enable marketing researchers, experts, and managers to predict the value of individual features in both existing and hypothetical products and to predict how consumers will respond in the marketplace. These methods have been employed numerous times by academic researchers, as well as practitioners from major international corporations. Many

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[4] "Buck Weaver Award," *INFORMS*, *available at* https://www.informs.org/Recognizing-Excellence/Community-Prizes/Marketing-Science-Society/Buck-Weaver-Award.
[5] "INFORMS Fellows: Class of 2006," *INFORMS, available at* https://www.informs.org/Recognizing-Excellence/Fellows/INFORMS-Fellows-Class-of-2006; "Leading Market Researchers Honored as Inaugural INFORMS Marketing Fellows," *INFORMS*, *available at* https://www.informs.org/About-INFORMS/News-Room/Press-Releases/Leading-Market-Researchers-Honored-as-Inaugural-INFORMS-Marketing-Fellows.

of the papers I have co-authored have been recognized with national and international awards.[6]

5. My curriculum vitae is attached as **Appendix A**, and my testimony at deposition or trial within the last five years is attached as **Appendix B**.

B. Assignment

6. I was retained by Latham & Watkins, counsel for Spotify USA Inc. ("Spotify"), to conduct an Internet survey as part of the Determination of Rates and Terms for Making and Distributing Phonorecords ("Phonorecords IV") proceedings. It is my understanding that the Phonorecords IV proceedings will "determine reasonable rates and terms for making and distributing phonorecords for the period beginning January 1, 2023, and ending December 31, 2027."[7] In particular, I was asked to design and conduct a survey of Spotify Premium users to determine what they would do instead of listening to music on Spotify if it was no longer available.[8]

7. The "Interactive Streaming Switching Survey" I conducted was based on scientific principles and was executed according to those principles. In undertaking this assignment, I utilized my extensive expertise in developing, testing, and analyzing surveys, as well as my

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[6] Toubia, Olivier, John R. Hauser, and Duncan I. Simester, "Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis," *Journal of Marketing Research* 41, 1, 2004, pp. 116–131; Yee, Michael, Ely Dahan, John R. Hauser, and James Orlin, "Greedoid-Based Noncompensatory Inference," *Marketing Science* 26, 4, 2007, pp. 532–549; Toubia, Olivier, Duncan I. Simester, John R. Hauser, and Ely Dahan, "Fast Polyhedral Adaptive Conjoint Estimation," *Marketing Science* 22, 3, 2003, pp. 273–303; Dahan, Ely and John R. Hauser, "The Virtual Customer," *Journal of Product Innovation Management* 19, 5, 2002, pp. 332–353; Toubia, Olivier, John Hauser, and Rosanna Garcia, "Probabilistic Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis: Theory and Application," *Marketing Science* 26, 5, 2007, pp. 596–610.

[7] "Determination of Rates and Terms for Making and Distributing Phonorecords (Phonorecords IV)," *Federal Register*, January 5, 2021, *available at* https://www.federalregister.gov/documents/2021/01/05/2020-29017/determination-of-rates-and-terms-for-making-and-distributing-phonorecords-phonorecords-iv.

[8] Spotify also offers a free, ad-supported service. I was not asked to conduct a survey of users of ad-supported Spotify and I offer no opinion on what users of free, ad-supported Spotify would do in place of listening to music on Spotify. My understanding is that other experts will be using other data to analyze Spotify's free, ad-supported service. By design, my survey's target population is explicitly focused on Spotify Premium users as described in more detail elsewhere in my written direct testimony.

experience in interpreting qualitative and quantitative research about consumer attitudes, intentions, and behavior. I include, as **Appendix C** to this report, a list of materials I have relied upon to date in connection with this particular assignment. To the extent that I review additional information for these proceedings, but after this report is filed, I will supplement this list.

8. I am being compensated at my standard billing rate of $1,100 per hour. I have been assisted in this matter by staff of Cornerstone Research, who worked at my direction. I receive compensation from Cornerstone Research based on its collected staff billings for its support of me in this matter. Neither my compensation in this matter nor my compensation from Cornerstone Research is in any way contingent or based on the content of my opinion or the outcome of this or any other matter.

9. Part of the survey work for this investigation was performed at my direction by GBK Collective ("GBK"), a marketing strategy and analytics consulting firm.[9] GBK's fees are not contingent or based on the content of my opinion or the outcome of this or any other matter.

II. Summary of Opinions

10. An Internet survey was conducted under my direction between September 8, 2021 and September 22, 2021 to measure what consumers who have a Spotify Premium account would do instead of listening to music on Spotify if either (a) music on Spotify Premium was no longer available or (b) music on both Spotify Premium and ad-supported Spotify was no longer available. The survey was designed and executed carefully following scientific guidelines for surveys conducted for academic, commercial, and litigation purposes. The survey was pretested carefully to assure that the questions were understood by respondents

[9] "GBK Collective," *LinkedIn*, *available at* https://www.linkedin.com/company/gbk-collective/.

and that the survey provides reliable data. The survey is based on a representative sample of respondents who listen to music on Spotify and have a personal Spotify Premium account. Respondents were randomly presented one of two hypotheticals:

a. **"Remove Spotify Premium Hypothetical:"** The first hypothetical asked respondents what they would do instead of listening to music on Spotify Premium if music on Spotify Premium was no longer available.

b. **"Remove All Spotify Hypothetical:"** The second hypothetical asked respondents what they would do instead of listening to music on Spotify Premium if music on both Spotify Premium and ad-supported Spotify was no longer available.

11. The data were analyzed according to scientific principles and reported accurately. I conducted several analyses to verify the quality of the survey responses, resulting in an analysis sample of 605 respondents shown the Remove Spotify Premium Hypothetical and 600 respondents shown the Remove All Spotify Hypothetical.[10]

12. If music on Spotify was no longer available, respondents reported that they would *consider* listening to a variety of alternative music options instead. On average, respondents indicated that they would consider 8.7 and 8.2 alternative music options for respondents shown the Remove Spotify Premium Hypothetical and the Remove All Spotify Hypothetical, respectively.

13. When asked to allocate points to indicate the percentage of time they would *actually* spend listening to each music option, respondents indicated that they would actually spend time listening to fewer options, on average, compared to the number of options they would

[10] The inbound sample was balanced to the U.S. Census and then screened to obtain a random sample of consumers who listen to Spotify and have a Spotify Premium account.

consider. Respondents indicated that they would actually allocate time to 6.7 and 6.3 alternative music options, on average, for respondents shown the Remove Spotify Premium Hypothetical and the Remove All Spotify Hypothetical, respectively. Of all alternative music options, respondents allocated the most time to listening to music on online video sites, such as YouTube and Vevo. This music option received 12.3 percent and 11.7 percent of all time allocated by respondents shown the Remove Spotify Premium Hypothetical and the Remove All Spotify Hypothetical, respectively. Other alternative music options to which respondents allocated the most time included listening to new paid subscriptions to on-demand music streaming services, and listening to on-demand streaming services through existing paid subscriptions. These results do not substantively change when alternative approaches are used to analyze the data, such as (a) reweighting respondents to reflect the actual distribution of Spotify subscription types, (b) reweighting respondents to reflect an equal number of click-ins per day, and (c) testing for differences in the results based on respondents' demographic characteristics.

III. Survey Design

14. In designing this survey, I followed standard scientific methods to maximize the reliability of the survey. My survey design adopted the scientific guidelines for surveys conducted for academic, commercial, and litigation purposes.[11] Here I describe the steps taken to develop the survey instrument,[12] including conducting qualitative interviews, developing the questions, implementing standard scientific principles of survey design, and evaluating (or pretesting) the survey.

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[11] *See, e.g.*, many of the recommendations in Diamond, Shari S., "Reference Guide on Survey Research," in *Reference Manual on Scientific Evidence*, Third Edition, Washington, D.C.: Federal Judicial Center and National Research Council of the National Academies, 2011, pp. 359–423, *available at* https://www.fjc.gov/content/reference-guide-survey-research-2 ("Diamond (2011)").

[12] I use the terms "survey instrument" and "survey questionnaire" interchangeably in this report.

A. Qualitative Interviews

15. Surveys should use language that respondents find relevant and easy to understand. If the questions of interest are ambiguous or otherwise unclear, the results of the survey may be distorted due to guessing or misunderstanding on the part of the respondent.

16. To develop an understanding of how individuals listen to Spotify and other on-demand music streaming services, and how they describe their listening, I instructed Cornerstone Research and GBK to conduct in-depth qualitative interviews. Qualitative interviews are one-on-one discussions between a trained interviewer and a (potential) customer or subscriber of a product or service. In these qualitative interviews, the interviewer encourages the respondent to talk about the respondent's experiences in choosing and using the product or service of interest. The interviewer listens carefully to the words and phrases used by the respondent and asks questions to understand the respondent's thought process.

17. At my direction, Cornerstone Research and GBK conducted fifteen qualitative interviews of listeners of Spotify (both Spotify Premium and ad-supported Spotify) between June 2, 2021 and July 23, 2021.[13] Cornerstone Research communicated to me orally the findings of these interviews, including the words and phrases respondents used to describe listening to Spotify and other on-demand music streaming services. These findings informed the wording of the questions and response options in the survey instrument.

18. I instructed Cornerstone Research and GBK to interview these fifteen Spotify listeners on four main topics. First, interviewees were asked to describe their Spotify listening including the devices they use to listen to Spotify, the reasons why they listen to

[13] Qualitative interview respondents were recruited from Dynata, and consisted of individuals who indicated in a survey screener that they listened to Spotify within the past week. All qualitative interviews were conducted over Zoom.

Spotify, and how they perceive listening to Spotify (and on-demand music streaming services in general) as different from other types of listening. Second, interviewees were asked what content they listen to when they listen to Spotify, including whether they listen to specific artists, genres, or content, whether they listen with other people, and how much they listen to Spotify. Third, interviewees were asked about the type of Spotify subscription they have (Premium or ad-supported), if they were aware of the amount they pay per month, and whether they receive any promotional offers, bundles, or discounts. Fourth, interviewees were asked what they would do if they could not listen to Spotify.

19. The qualitative interviews informed the survey questions, response options, and descriptions. Interviewees described various types of Spotify accounts such as Duo or Family plans. They described their experiences listening to Spotify Premium through a free trial. These descriptions informed the answer options provided in the survey, such as the answer options for question QS12, which asked respondents about the version of Spotify that they have.[14] Interviewees also described a number of different activities they would do if Spotify was no longer available, including listening to music through other on-demand streaming services, listening to music on short-form or long-form video sites (e.g., YouTube or TikTok), listening to records they already own, or watching television or movies. I used these responses to inform the list of alternatives for Q1 and Q3 of the survey instrument.[15]

20. When crafting the survey instrument, I used the words and phrases respondents used during these qualitative interviews. Qualitative interviews revealed that respondents were not

[14] The survey questionnaire with programming instructions is included as Appendix D. *See* Appendix D, QS12.
[15] *See* Appendix D, Q1, Q3.

familiar with terms such as "interactive streaming," but respondents understood the phrase "on-demand music streaming services" to describe music streaming services that allow listeners to choose specific songs. As a result, instead of using the term "interactive streaming" in the survey instrument, I used "on-demand music streaming."[16] The qualitative interviews informed the way the questions were worded, but, as is good scientific survey practice, all questions once written were pretested, as described later in this written direct testimony.

B. Survey Instrument Overview

21. In this section, I describe the survey questionnaire. The survey questionnaire with programming instructions is included as **Appendix D** to this report. Screenshots of the programmed survey questionnaire are included as **Appendix E** to this report.

1. Screening Questions

22. An important component of survey design is defining the relevant target population of interest for the survey.[17] The target population in this matter is United States residents over the age of 18 who listened to Spotify over the last seven days and have a Spotify Premium account.[18] Once the target population has been defined, "screening" questions identify whether sampled individuals meet the criteria for inclusion in the survey.[19]

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[16] *See*, *e.g.*, Appendix D, QINTRO.
[17] Diamond (2011) at pp. 376–377.
[18] Respondents may not accurately recall events too far back in time. However, first-stage pretests assured that respondents were able to recall the activities they had done over the last seven days, and the ways in which they listened to music. A shorter time period was not necessary because I did not ask respondents to estimate anything more specific (e.g., the amount of hours spent listening to music). Further, a period of seven days should capture both heavy and light listeners of Spotify.
[19] Diamond (2011) at pp. 386–387.

23. To reach the target population, I began with a sample of United States residents. I balanced the incoming sample in terms of geographic region, sex, and age group to match the U.S. Census. These demographic variables were also used to validate responses against the information that respondents previously reported to the sample provider.[20] Respondents were also required to take the survey on a compatible device (a smartphone, tablet, desktop, or laptop).[21] In addition, survey participants could not be employed by (or have a member of their household who was employed by) a music streaming service company, a market research company, or public relations agency, and could not have taken a survey related to music streaming services in the past two months.[22] These are standard screening questions and do not bias the results.

24. To evaluate whether respondents listened to Spotify and had a Spotify Premium account, I first asked respondents about the types of media-related activities in which they engaged in the last seven days. I chose a period of seven days because respondents may have difficulty recalling events that occurred further back in time. Cornerstone Research and GBK

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[20] *See* Appendix D, QS1–QS3.

[21] *See* Appendix D, QS5. A device sniffer was used to determine which type of device a respondent was using to the take the survey. 32 respondents shown the Remove Spotify Premium Hypothetical and 41 respondents shown the Remove All Spotify Hypothetical indicated in QS5 that they were using a device that was different from the device identified by the device sniffer. Based on the responses to Q2 and Q4, I found that including these respondents does not change the results of my survey. I therefore did not remove them from the sample. For Q2 (and Q4), I compared the distribution of all responses with the distribution of responses excluding respondents who indicated in QS5 that they were using a device that was different from the device identified by the device sniffer. I performed two different statistical tests. First, I performed a standard Pearson chi-squared test on the distribution of average time allocated to music options by respondents. I found no statistically significant difference at the 5 percent level (*p-value = 1 for the Remove Spotify Premium Hypothetical and p-value = 0.99 for the Remove All Spotify Hypothetical*). Second, I performed a first-order Rao-Scott chi-squared test on the percent of respondents who allocated non-zero time to music options. A first-order Rao-Scott chi-squared test is a modification of the standard Pearson chi-squared test that is appropriate when respondents can select multiple response options. *See* Decady, Y. J. and D.R. Thomas, "A Simple Test of Association for Contingency Tables with Multiple Column Reponses," *Biometrics* 56, 3, 2000, pp. 893–896 at pp. 894–895. I found no statistically significant difference at the 5 percent level (*p-value = 0.99 for both hypotheticals*). *See* work papers.

[22] *See* Appendix D, QS6–QS7.

probed respondents in both the qualitative interviews discussed earlier, and the pretests discussed later, and determined that respondents could accurately recall which types of media-related activities they engaged in the last seven days. This enabled me to identify respondents who listened to music in the last seven days, and could therefore accurately recall their listening behavior.[23]

25. I then provided respondents with definitions of different ways respondents may listen to content.[24] Because the different ways of listening are closely related, it is important to ensure that respondents understand the different terms used in the survey to describe those activities. The terms and definitions in the survey were developed based on the initial qualitative interviews, and were then refined based on feedback from the pretest interviews.

26. After respondents read the definitions for the different ways of listening to music, I asked respondents to select the ways in which they listened to music. The purpose of this question was to identify respondents who listened to on-demand music streaming services in the last seven days and could accurately recall their listening behavior.[25] Respondents who did not listen to on-demand music steaming services were not part of the target population for my survey.

27. I then asked respondents to indicate to which on-demand music streaming services they listened in the last seven days.[26] This question allowed me to determine which respondents had listened to Spotify in the last seven days and could accurately recall their

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[23] *See* Appendix D, QS8.
[24] *See* Appendix D, QINTRO.
[25] *See* Appendix D, QS9.
[26] *See* Appendix D, QS10.

listening behavior. Respondents who did not listen to Spotify were not part of the target sample.

28. Next, I asked respondents if they listened to Spotify on their own account, and whether they had their own Spotify Premium account.[27] The purpose of these questions was to identify respondents who used their own Spotify Premium account to listen to music. This includes respondents who are on Duo, Family, or Student Spotify plans, respondents who have paid bundle subscriptions to Spotify Premium and another service, and respondents who have Spotify Premium as a free benefit from another service. This does not include respondents who have Spotify Premium through a free trial.

29. Finally, I asked respondents what type of role they had in making the decision to purchase a paid subscription to Spotify Premium.[28] This question restricts survey respondents to those who either made the decision to purchase Spotify Premium on their own or played a major role in this decision.[29] These screening questions allowed me to include in my sample only qualified survey respondents who belong to the target population.

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[27] *See* Appendix D, QS11–QS12.

[28] *See* Appendix D, QS14.

[29] I did not ask respondents who have Spotify Premium as a free benefit from another service (e.g., some AT&T subscribers receive Spotify Premium for free) what role they played in the decision to purchase a paid subscription to Spotify Premium, as this question does not apply to them. Respondents who have Spotify Premium as a free benefit from another servicer are included in my final sample, and represent about 7 percent of the final sample. *See* Appendix Q. For Q2 (and Q4), I compared the distribution of all responses with the distribution of responses excluding those who have Spotify Premium as a free benefit from another service. I performed two different statistical tests. First, I performed a standard Pearson chi-squared test on the distribution of average time allocated to music options by respondents. I found no statistically significant difference at the 5 percent level (*p-value = 0.99 for both hypotheticals*). Second, I performed a first-order Rao-Scott chi-squared test on the percent of respondents who allocated non-zero time to music options. I found no statistically significant difference at the 5 percent level (*p-value = 0.99 for both hypotheticals*). *See* work papers.

30. After being identified as a member of the target population, qualified respondents proceeded to the main portion of the survey.[30] Answers to the questions in the main portion of the survey provided the basis for my analysis and opinions.

2. Main Survey

a) Music Options Considered to Replace Listening to Music on Spotify Premium

31. To measure what Spotify Premium users would do if music on Spotify was no longer available, I first asked respondents to indicate what they would *consider* doing, if anything, to replace listening to music on Spotify Premium, assuming they no longer had to pay the Spotify subscription fee.[31] Specifically, respondents were presented with a list of alternative music options and, for each alternative activity, each respondent was asked to specify whether he or she "Would consider" or "Would not consider" that alternative music option.[32] Respondents were also presented with the option to listen to less music and do something else instead. To ensure that respondents could flexibly indicate what they considered as substitutes for Spotify, respondents were also provided the option of typing additional music options into a text box. First-stage pretests assured that respondents were aware that they

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[30] For the screening questions, *see* Appendix D, QS0–QS16. For the main survey questions, *see* Appendix D, Q1–Q4.
[31] *See* Appendix D, Q1 and Q3.
[32] The Judges in the *Webcasting V* proceeding noted that the fact that the main hypothetical scenario did not focus on music content was "worthy of concern." *See* "Final Determination," *In re Determination of Rates and Terms for Digital Performance of Sound Recordings and Making of Ephemeral Copies to Facilitate Those Performances (Web V)*, Docket No. 19-CRB-0005-WR (2021–2025), July 20, 2021 ("Web V Determination"), p. 247. I address this critique by the Judges by focusing on music options in the list of alternatives in the current survey. I provided respondents just one option that covered all non-music options: "I would listen to less music and would do something else instead (e.g., watch TV, read a book)." *See* Appendix D, Q1 and Q3. The first-stage pretests indicated that respondents should be given the option of listening to less music. *See* Appendix G, Table G-1.

could enter additional options in this "Other" category and that they could also select "Don't know/Unsure/Not Applicable" for each individual alternative music option.[33]

32. The alternative music options in the list were generated from the qualitative interviews, which explored what listeners of Spotify considered as alternatives for listening to music on Spotify, and augmented with additional background research into the different ways in which respondents may listen to music.[34] These music options and the descriptions of the music options were refined based on feedback received during survey pretests. First-stage and second-stage pretests, described below, assured that respondents viewed the list of alternative music options as sufficiently comprehensive. First-stage and second-stage pretests also confirmed that respondents were able to identify and select the music options from this list that accurately reflected what respondents would consider if music on Spotify was no longer available.

33. For listening activities that require subscriptions, I provided examples of the potential price for each subscription so that respondents would be aware of the cost of choosing that option as a potential substitute. I provided both monthly and annualized example prices so respondents could more easily consider the cost of each option if music on Spotify was not available as posed hypothetically in the survey. Prices provided in these response options were based on the most frequent (non-zero) monthly subscription prices for on-demand music

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[33] *See* Appendix G, Table G-2. I included "Not Applicable" in the "Don't know/Unsure/Not Applicable" option so that if there was a music option that respondents did not have, they could select not applicable (e.g., if a respondent did not own any digital music files, CDs, or vinyl records, the music option "I would listen to digital music files, CDs, or vinyl records that I already own" would not be applicable). The decision to add a "Not Applicable" option was supported by the first-stage pretests.

[34] *See, e.g.*, Exhibit 21, Edison Research, "Share of Ear: Americans' Share of Time Spent Listening to Audio Sources," Q2 2021, p. 29.

streaming services and not-on-demand music streaming services.[35] Prices provided for satellite radio were based on monthly subscription prices charged by SiriusXM.[36] The price provided for iTunes songs is the most common price that iTunes charges for an individual song, and is the mid-point of prices that iTunes charges for an individual song,[37] and prices for CDs and vinyl are based on an approximate average of prices as of 2021.[38] Survey language reinforced that the prices were examples rather than an exhaustive list of potential prices. First-stage pretests confirmed that respondents understood that the prices were example prices, and that individual prices might vary by brand or subscription type.

34. Some respondents were automatically provided with fewer on-demand music streaming service options to consider than others, because earlier answers indicated that some options were not applicable to certain respondents. For example, in QS15 respondents were asked on which on-demand music streaming services other than Spotify, if any, they have their own account with a paid subscription.[39] If a respondent did not select that they had any other accounts with a paid subscription to on-demand music streaming services in this screening question, they were not provided with the option to consider listening to "on-demand music streaming service(s) through the paid subscription(s) I already have." Because I knew that this option was not applicable to these respondents, I did not provide this as an option to consider. For other music options with existing subscriptions (e.g., "not-on-demand music streaming services(s) through the paid subscriptions I already have"), respondents were

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[35] *See* Appendix F for details.
[36] *See* "Plans," *SiriusXM*, *available at* https://www.siriusxm.com/plans.
[37] "The 8 Best Places to Buy Music Online," *MakeUseOf,* July 16, 2021, *available at* https://www.makeuseof.com/best-places-to-buy-music-online/. The price of an individual song on iTunes is either $0.69, $0.99, or $1.29. *See* "iTunes Introduces 3-Tier Price Structure," *NPR,* April 8, 2009, *available at* https://www.npr.org/templates/story/story.php?storyId=102863576.
[38] *See* "Yes, You Should Still Be Buying CDs, Here's Why," *Gear Patrol*, January 26, 2021, *available at* https://www.gearpatrol.com/tech/audio/a731474/reasons-to-buy-cds/ ("[N]ew CDs are usually in the $12 to $15 price range. If you're looking for vinyl, on the other hand, a new record will likely cost twice as much as that.").
[39] *See* Appendix D, QS15.

able to select "Don't know/Unsure/Not Applicable" if this option did not apply to them. First-stage pretests indicated that respondents understood that they could do so.

35. Additionally, respondents shown the Remove Spotify Premium Hypothetical were provided the option to consider listening to ad-supported Spotify to replace listening to music on Spotify Premium if Spotify Premium was no longer available. However, respondents shown the Remove All Spotify Hypothetical were not provided ad-supported Spotify as an option because the conditions of that hypothetical required that ad-supported Spotify be removed.

36. The consideration question serves four important functions in my survey. First, the consideration question is a filter question. Respondents cannot choose a medium if they would not at least consider that medium. By using such a filter question, I avoid asking respondents to guess about which medium they would choose. Second, when respondents are asked to allocate time among considered options, the number of such options is more manageable and appropriate to the respondent, ensuring that the respondents' 100-point allocations are accurate. Third, there is strong scientific evidence that consumers use a two-stage consider-then-choose decision process when they make a consumption decision.[40] By

[40] *See* Hauser, John R., "Consideration-Set Heuristics," *Journal of Business Research* 67, 8, 2014, pp. 1688–1699, at p. 1688 ("Evidence suggests that consumers, who are faced with many products from which to choose, simplify their decisions with a consider-then-choose decision process in which they first identify a set of products, the consideration set, for further evaluation and then choose from the consideration set."). *See also*, Hauser, John R. and Birger Wernerfelt, "An Evaluation Cost Model of Consideration Sets," *The Journal of Consumer Research* 16, 4, 1990, pp. 393–408 at p. 393 ("The basic idea is that when choosing to make a purchase, consumers use at least a two-stage process. That is, consumers faced with a large number of brands use a simple heuristic to screen the brands to a relevant set called the consideration set… Purchase or consumption decisions are then made from brands in this set."); Shocker, Allan D., Moshe Ben-Akiva, Bruno Boccara, and Prakash Nedungadi, "Consideration Set Influences on Consumer Decision-Making and Choice: Issues, Models, and Suggestions," *Marketing Letters* 2, 3, 1991, pp. 181–197 at p. 183, Figure 1 ("[T]he consideration set may evolve until the consumer decides to make a final choice. It may be created anew on each decision occasion or possibly even be largely irrelevant if no active processing occurs prior to choice (*e.g.*, under routinized response behavior). Because of its dynamic nature, it is sometimes useful to define another, closely related set in more static terms. In this interpretation, the *choice* set, is defined as the final consideration set, *i.e.*, the set of alternatives considered immediately prior to choice.").

asking a consideration question prior to the time allocation (or choice) question, my survey is more realistic and provides a better representation of the decision processes that consumers use. It is important to recognize that consideration is not choice. Consumers might consider and reject a medium for a particular listening experience. Furthermore, they might consider multiple media before deciding on the media to which to listen. Fourth, using a consideration question prior to the time allocation (or choice) question mitigates "cheap talk." Cheap talk is the tendency of some survey respondents to select options without fully accounting for their costs (discussed further in Section III.D.2). Asking respondents to consider certain options before allocating time to those options (or making a choice) provides respondents an opportunity to reflect on their selections and the costs associated with their selections.

b) Allocating Time to Music Options to Replace Listening to Music on Spotify Premium

37. To determine the music options to which each respondent would *actually* listen (and the time they would spend listening to that music option) instead of listening to music on Spotify Premium, I asked a focused question of respondents who selected that they "Would consider" listening to more than one music option.[41]

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[41] 1 and 4 respondents did not select "Would consider" for any of the options in Q1 and Q3 respectively, and did not write an answer into the text box succeeding "I would listen to the following music option to replace listening to music on Spotify Premium." These respondents were sent to the end of the survey. 18 and 11 respondents selected "Would consider" for only one option in Q1 and Q3 respectively. These respondents were assumed to have allocated 100 points to this option and were sent to the end of the survey. *See* Appendices S-2 and T-2. Recall that respondents could indicate that they would consider "I would listen to less music and would do something else instead (e.g., watch TV, read a book)." If a respondent did not select this option to consider, then it is appropriate to ask the respondent to allocate 100 points to the remaining options. This logical structure of the questioning sequence assures that the assignment of 100 points is unambiguous in the case of only one option chosen. 2 and 3 respondents selected "I would listen to less music and would do something else instead (e.g., watch TV, read a book)" as their only option for Q1 and Q3, respectively. *See* work papers.

38. For respondents who would consider two or more activities, I instructed respondents to allocate points across multiple music options to indicate the percentage of time respondents would actually spend listening to each music option to replace listening to music on Spotify Premium if either music on Spotify Premium was no longer available (Remove Spotify Premium Hypothetical), or music on both Spotify Premium and ad-supported Spotify was no longer available (Remove All Spotify Hypothetical). Qualitative interviews indicated that respondents would realistically replace time listening to music on Spotify Premium with multiple options if music on Spotify was no longer available.[42] I allowed respondents to assign 0 points to (or leave blank) any music option to which they would not *actually* listen. By allocating non-zero points to a music option, respondents effectively indicated their choice of music option. In that sense, this design follows a variant of the "consider-then-choose" structure.[43]

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[42] In the *Webcasting V* proceeding, I conducted a survey in which respondents were allowed to focus on the most recent listening instance and indicate one option to which they could switch. I relied on a probabilistic-across-respondent design to obtain a statistically valid population-level estimate. The Judges nevertheless preferred that respondents be given multiple options, indicating that "it is widely accepted that consumers often choose more than one music (or non-music) option." *See* Web V Determination, p. 247. To address the Judges concern, in the current survey I allow respondents to allocate time to more than one music option (which is equivalent to allowing respondents to choose more than one music option).

[43] In the *Webcasting V* proceeding, I conducted a survey using a "consider-then-choose" structure, in which I asked respondents to consider various options and then choose one of the options they considered. The Judges in that proceeding found the "consider-then-choose" structure to be appropriate. *See* Web V Determination, p. 247 ("The Judges find that the 'consider-then-choose' structure is an acceptable design choice in this instance. A case could be made that certain consumer choices on specific products or services are ill-suited to such a format. However, SoundExchange has not established convincingly that the design is inappropriate in this case."). Initially, I designed the current survey with a similar "consider-then-choose" structure prior to asking respondents to allocate time across the options they chose. However, first-stage pretests indicated that respondents found the intermediate step of choosing from the considered music options redundant with the subsequent time allocation question. Respondents could indicate which options they would actually choose by allocating points to various options, and indicate which options they would not choose by allocating zero points to those options (or leaving them blank), without the intermediate choice question. Therefore, based on the first-stage pretests, I removed the intermediate choice question. The framework I use in the current survey is a variation of the "consider-then-choose" framework as modified explicitly based on the way pretest respondents describe their music-listening experiences.

39. As described below, second-stage pretests confirmed that respondents were able to allocate points to accurately reflect the time they would actually spend listening to various music options.[44]

40. After answering this question, respondents were sent to the end of the survey and presented with a "thank you" message.

C. Principles of Survey Design

41. My survey design adopted standard scientific methods to maximize the reliability of the survey instrument. I included attention checks to verify that respondents carefully read the survey questions. I used a "double-blind" methodology and included questions and response options unrelated to the study's objective to avoid unintended biases or "demand artifacts."[45] I used filters and randomization or rotation of response options when appropriate, as described below.

1. Attention Checks

42. In scientific survey practice, it is appropriate to include questions in a survey instrument that test whether respondents are sufficiently engaged in the survey to provide

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[44] *See* Section III.D.2. The time allocation question is a type of "constant sum" question that is commonly used in surveys. *See* Griffin, Abbie and John R. Hauser, "The Voice of the Customer," *Marketing Science* 12, 1, 1993, pp. 1–27. Using data from an industry partner, the authors compare predictions based on constant-sum scales to actual preference for various new-product concepts. The constant-sum data are highly correlated with observed preference for the concepts ($\rho = 0.96$). Constant-sum measures are instrumental in methods to forecast the sales of new products. *See* Silk, Alvin J. and Glen L. Urban, "Pre-Test-Market Evaluation of New Packaged Goods: A Model and Measurement Methodology," *Journal of Marketing Research* 15, 2, 1978, pp. 171–191. There is strong scientific evidence that these methods predict well actual sales in the market place. *See* Urban, Glen L. and Gerald M. Katz, "Pre-Test-Market Models: Validation and Managerial Implications," *Journal of Marketing Research* 20, 3, 1983, pp. 221–234. All three cited papers received best paper awards.

[45] Demand artifacts are aspects of a study that influence research results based on the chosen survey procedure and not phenomenon under study. Demand artifacts are analogous to leading questions asked to a witness during testimony. For a discussion of demand artifacts, *see, e.g.*, Sawyer, Alan G., "Demand Artifacts in Laboratory Experiments in Consumer Research," *Journal of Consumer Research* 1, 4, 1975, pp. 20–30; Shrimp, Terence A., Eva M. Hyatt, and David J. Snyder, "A Critical Appraisal of Demand Artifacts in Consumer Research," *Journal of Consumer Research* 18, 3, 1991, pp. 273–283.

reliable and accurate answers. Such questions are known as attention checks or, more formally, as "instructional manipulation checks (IMCs)." IMCs enhance data quality and survey reliability.[46] I included four attention checks in the screening questions to eliminate respondents who were not paying attention to the survey.

43. The first attention check was included in QS8 in the screening questions, and asked respondents to select which activities they engaged in over the last seven days.[47] One of the response options is "I watched on-demand holographic telecast(s)." Because this type of media is unavailable, respondents who read and answered the question carefully should not select this response option.

44. The second and third attention checks also provided response options that are not available. The second attention check was included in QS10, which asked respondents to select which on-demand streaming services they listened to in the last seven days. One of the options listed in this question was "BetaWaves," which is not a real on-demand music streaming service.[48] The third attention check presented the fabricated option "BetaWaves Premium" for QS15, which asked respondents to select on-demand streaming services, other than Spotify, for which they had their own account with a paid subscription.[49] These

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[46] There is extensive scientific literature on the use and recommended use of IMCs. *See,* for example, one classic peer-reviewed article that has over 2,700 Google Scholar citations as of September 9, 2021: Oppenheimer, Daniel M., Tom Meyvis, and Nicolas Davidenko, "Instructional Manipulation Checks: Detecting Satisficing to Increase Statistical Power," *Journal of Experimental Social Psychology* 45, 2009, pp. 867–872. IMCs are effective at eliminating inattentive respondents. Surveys without IMCs include inattentive respondents who add noise and make the survey less reliable and valid. IMCs are commonly used in survey research and have been shown to increase validity, increase statistical power, and filter out careless respondents. Researchers have shown that IMCs enhance data quality and do not induce social desirability or demand artifacts. The survey expert balances the complexity of IMCs so that IMCs achieve these goals. Depending upon the sample and the wording, IMCs reported in the peer-reviewed scientific literature filter out as few as 7–8% of the respondents and as much as over 80% of the respondents. *See* Morren, Meike and Leonard J. Paas, "Short and Long Instructional Manipulation Checks: What Do They Measure?" *International Journal of Public Opinion Research* 32, 4, 2020, pp. 790–800 at Table 1; Kung, Franki Y.H., Navio Kwok, and Douglas J. Brown, "Are Attention Check Questions a Threat to Scale Validity?" *Applied Psychology* 67, 2, 2018, pp. 264–283.
[47] *See* Appendix D, QS8.
[48] *See* Appendix D, QS10.
[49] *See* Appendix D, QS15.

attention checks presented in QS8, QS10, and QS15 assure that respondents are paying attention and providing thoughtful responses to the survey questions. These attention checks also serve to terminate respondents who are prone to checking every option or checking many options.

45. The fourth attention check was included in QS16, which asked respondents to select "Lenovo," "Asus," or "MSI," with random assignment, from a list of computer, tablet, and smartphone brand options, regardless of what brand computer, tablet, or smartphone they were using.[50] Additionally, I included a prompt in the main part of the survey to ensure that respondents are thinking carefully about the questions asked.[51]

2. Double-Blind Design

46. Scientific survey practice avoids indicating the sponsor and/or purpose of the survey to ensure respondents' objectivity. According to the *Reference Manual on Scientific Evidence*, "the survey instrument should provide no explicit [clues (e.g., a sponsor's letterhead appearing on the survey)] or implicit clues [(e.g., reversing the usual order of the *yes* and *no* response boxes on the interviewer's form next to a crucial question, thereby potentially increasing the likelihood that *no* will be checked)] about the sponsorship of the survey or the expected responses." The goal of the survey design is to make the respondent "blind" to the sponsor and purpose of the survey.[52]

47. It is important to conceal the purpose of the survey from respondents in order to avoid demand artifacts. In some cases, respondents might guess the sponsor of the survey, e.g., a survey to estimate demand for iPhones, but in such cases the survey researcher should test to ensure that such knowledge does not change the way respondents answer the questions.

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[50] *See* Appendix D, QS16.
[51] *See* Appendix D, INTRODUCTION.
[52] *See, e.g.*, Diamond (2011) at pp. 410–411.

Demand artifacts are aspects of a study that influence research results based on the chosen survey procedure, and not the phenomenon under study. Demand artifacts are analogous to leading questions asked to a witness during testimony. I used the standard and accepted scientific survey-research procedures to identify, and if necessary, eliminate or at least minimize demand artifacts. Because of these steps, the answers provided by respondents in the survey are not biased due to any demand artifacts.[53]

48. The design and administration of my survey can be characterized as double-blind because the survey was administered via the Internet. Respondents were not exposed to human interviewers, thereby eliminating the possibility of an interviewer communicating the sponsor or purpose of the survey and influencing the outcome (intentionally or not). An Internet-based survey avoids demand artifacts that might be induced by means of intonation or facial expressions during the delivery of particular questions or answers. An Internet-based survey removes, or at least greatly diminishes, any "interviewer bias" which may arise from the desire of the respondents to please, displease, or impress the interviewer.

49. To ensure that respondents were unaware of the sponsor and purpose of the survey, I was careful not to convey information in the screening questions that could influence responses to the main survey or provide respondents with information that otherwise would not occur to them. One way in which this can be accomplished is to include unrelated response options in closed-ended qualification questions.[54] These response options distract respondents from the option of interest to the researcher.[55] Such questions and response

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[53] *See, e.g.*, Sawyer, Alan G., "Demand Artifacts in Laboratory Experiments in Consumer Research," *Journal of Consumer Research* 1, 4, 1975, pp. 20–30; Shrimp, Terence A., Eva M. Hyatt, and David J. Snyder, "A Critical Appraisal of Demand Artifacts in Consumer Research," *Journal of Consumer Research* 18, 3, 1991, pp. 273–283.

[54] *See*, *e.g.*, Diamond (2011) at pp. 386–387.

[55] "Closed-ended" questions provide the respondent with a set of potential response options from which to choose. These are distinct from "open-ended" questions, which allow the respondent to formulate his/her own answers. For a discussion of closed-ended and open-ended questions, *see* Diamond (2011) at pp. 391–394.

options help conceal from the respondents the intention of the survey and minimize the potential for demand artifacts. For example, if a survey is conducted to determine whether respondents might be interested in a specific genre of novels, the survey can ask the respondent to choose the genres in which he or she is interested from a set of genre options including the genre of interest. The other genres within the option set mask the target of the survey, and therefore serve to distract the respondent from the purpose of the study.

50. I took several steps in the survey to minimize demand artifacts. For example, I included media activities in QS8 that are done by watching and reading, as well as by listening. These activities mask that the purpose of the survey is to evaluate how respondents might substitute away from listening to music on Spotify.[56] Similarly, in QINTRO and QS9 I described and provided a variety of ways in which respondents might listen to music other than on-demand music streaming services, such as not-on-demand music streaming services, satellite radio, live AM/FM radio broadcasts, video sites, digital music files, CDs, and vinyl records.[57] A similar set of options was included in the main part of the survey instrument, both to mirror the options provided in QS8 and QS9, and to avoid suggesting to respondents that there was a specific desired response to the survey in either Q1 and Q3, or Q2 and Q4. Additionally, in QS10, I provided a list of many popular on-demand music streaming services other than Spotify, to avoid indicating that the target population was Spotify users.[58]

51. At my direction, experienced interviewers from GBK tested explicitly for demand artifacts during the pretest debriefs. No demand artifacts were detected in the final phrasing and layout of the questions. Respondents did not find the questions to be leading and respondents were not able to guess that any particular result was desired by the survey

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[56] *See* Appendix D, QS8.
[57] *See* Appendix D, QINTRO and QS9.
[58] *See* Appendix D, QS10.

designer. Respondents were not able to guess the purpose of the survey. During second-stage pretesting, some respondents thought that the sponsor of the survey might be Spotify, but indicated that they did not answer the questions in the survey any differently because of this, and an almost equivalent number guessed that the survey had been sponsored by rights holders.[59]

3. Filters

52. To avoid influencing respondents' responses and to minimize guessing by respondents, I used carefully designed "filters" and "quasi-filters." Filters are questions and/or response options that eliminate respondents who are not relevant or who do not have opinions. Quasi-filters avoid speculation and guessing that may arise when a respondent is forced to offer an opinion or to answer a question for which he or she has no opinion. For example, typical quasi-filters offer response options such as "don't know" or "no opinion." According to the *Reference Manual on Scientific Evidence*, "[b]y signaling to the respondent that it is appropriate not to have an opinion, the question reduces the demand for an answer and, as a result, the inclination to hazard a guess just to comply."[60]

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[59] Second-stage pretest respondents were given a potential list of options and could select more than one potential sponsor. These respondents guessed Pandora (70 percent), Spotify (60 percent), SiriusXM (60 percent), YouTube (30 percent), Warner Music Group (20 percent), Sony Music Entertainment (20 percent), Universal Music Group (10 percent), and other (10 percent). Guessing Spotify does not indicate a demand artifact per se because the survey asks what respondents would do if music on Spotify was no longer available. As evidence that Spotify was not guessed at an unreasonable rate, I note that more respondents guessed Pandora than Spotify, and the sum of rights holders (Warner Music Group, Sony Music Entertainment, Universal Music Group) is almost that of Spotify. As is appropriate to a qualitative pretest, the sample is not designed for statistical comparisons. As further evidence of the lack of a demand artifact, the percent of respondents who guess Spotify would have been much less if I provided unaided responses (i.e. no list of options given to respondents) than aided responses from a list. *See* Appendix J.

[60] Diamond (2011) at pp. 389–391.

53. I used numerous filters and quasi-filters in my survey questions and response options. For example, the questions in the main part of my survey included quasi-filters (that is, the option of "Don't know/Unsure/Not Applicable").[61] The survey's screening questions also served as filters. For example, in QS8, QS9, QS10, QS11, QS12, and QS14 respondents who answer "Don't know/Unsure" are terminated.[62]

54. In the main survey, Q1 and Q3 ask each respondent to indicate which of several different music options he or she "Would consider" or "Would not consider" listening to if music on Spotify was no longer available.[63] Q1 presents respondents with the Remove Spotify Premium Hypothetical, while Q3 presents respondents with the Remove All Spotify Hypothetical. Each respondent is only asked either Q1 and Q2, or Q3 and Q4.

55. These questions include two quasi-filters to accommodate respondents who either have no opinion, or who would prefer to do something not listed. For each of the music options, respondents are given the opportunity to indicate "Don't know/Unsure/Not applicable" if they are unsure of whether they would or would not consider doing something in place of listening to music on Spotify, or if the music option does not apply to them.[64] If respondents would consider doing something other than listening to a music option to replace listening to music on Spotify, they were able to select the option "I would listen to less music and would do something else instead (e.g., watch TV, read a book)." If respondents would consider a music option that was not provided, respondents could provide their own answer

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[61] *See* Appendix D, Q1–Q4.

[62] *See* Appendix D, QS8–QS12, QS14. 69, 44, 7, 19, 14, and 3 respondents were terminated because they chose "Don't know/Unsure" for QS8, QS9, QS10, QS11, QS12, and QS14 respectively. *See* work papers. These respondents were terminated to ensure that the respondents in the final sample were members of the target population and were knowledgeable about the service they were using.

[63] *See* Appendix D, Q1 and Q3.

[64] For example, if a respondent does not have a paid subscription to a not-on-demand music streaming service, the respondent could select "Don't know/Unsure/Not Applicable" as the option that does not apply. *See* Appendix D, Q1 and Q3.

option. First-stage pretests assured that respondents understood these options and understood that these options could be selected.

56. Q1 and Q3 serve as filters for Q2 and Q4, respectively. In Q2 and Q4, respondents were asked to allocate time to music options as a substitute for music on Spotify only among the music options they indicated they "Would consider" in Q1 or Q3 (including any option they indicated in the free-response "Other" box). This filter allows respondents to evaluate the full range of substitutes they would consider in place of listening to music on Spotify. The filter avoids asking respondents what they would do for any option they would not consider, thus avoiding asking respondents about options for which they have no opinion. The filter also minimizes potential respondent fatigue because the filter limits the number of alternatives to only relevant options when respondents are asked to allocate time across music options to replace listening to music on Spotify.

57. By using filters appropriately, I carefully avoided asking questions that might not be relevant to certain respondents, and I avoided asking respondents to express a belief when the respondents had none or were not sure.

4. Rotation or Randomization of Response Options

58. In closed-ended questions with several response options, respondents might be more likely to choose a certain option simply because it is first or last on the list. Such phenomena are known as "order effects."[65] To avoid order effects, I rotated or randomized response options so that different respondents see the options in different orders and any possible order effects cancel out across respondents. There are standard exceptions to these rules. For example, certain options—such as "Other," "None of the above," and "Don't

[65] For a discussion of order effects, *see* Diamond (2011) at pp. 395–396.

know/Unsure"—always come last in order for the question to preserve logical flow. Another exception to response rotation or randomization occurs when response options come in a certain logical order, such as those for age or education levels. In such circumstances, response options are usually not rotated or randomized.

59. I rotated and/or randomized response options in the introductory questions and closed-ended filter questions wherever appropriate. For example, in QS8 I kept together response options of watching, listening, and reading, but randomized the ordering of the three types of options, and randomized the ordering of the watching, listening, and reading options within type.[66] This randomization concealed the options of interest from respondents. In question QS11, I asked the respondents "Did you listen to music on Spotify using your own Spotify account?"[67] Although I am interested only in respondents who listened to music on Spotify using their own Spotify account, I rotated the order in which "Yes, I listened to music on Spotify using my own Spotify account" and "No, I listened to music on Spotify using someone else's Spotify account" were presented. These questions filter respondents and minimize or eliminate order effects.

60. I performed similar randomizations in Q1 and Q3 of the main questionnaire, for music options to which respondents would or would not consider listening to replace listening to music on Spotify.[68] Importantly, while I randomized the response options in Q1 and Q3, I kept the response options for Q2 or Q4 in the same order in which respondents saw response options for Q1 or Q3, respectively.[69] This approach minimizes order effects while ensuring that respondents are not confused by different orders of the response options in related

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[66] *See* Appendix D, QS8.
[67] *See* Appendix D, QS11.
[68] *See* Appendix D, Q1 and Q3.
[69] Respondents are randomized to Q1 or Q3. Respondents who answered Q1 are asked Q2. Respondents who answered Q3 are asked Q4.

questions. I also kept similar response options together, both within and across categories. For example, I ensured that all on-demand music streaming service categories came immediately before or immediately after all not-on-demand music streaming service categories.[70]

D. Survey Pretest

61. Prior to administering the final survey, it is important to pretest the proposed series of questions with a small sample of "the same type of respondents who would be eligible to participate in the full-scale survey."[71] Such pretests assess the potential for demand artifacts and ensure that all survey questions are understood as intended.[72]

62. To ensure that the questions were understood by respondents and were relevant to respondents' decision making, I instructed Cornerstone Research and GBK to conduct pretests of the survey instrument in two stages. The first-stage pretest ensured that my survey questionnaire used words and phrases with which respondents are familiar so that respondents understood the questions and the response options.[73] The first-stage pretest interviews were open-ended verbal debriefs of pretest respondents after the respondents answered the survey questions.[74] To the extent that the words and phrases are not clear to respondents, pretests determine and evaluate alternative words and phrases that respondents may understand.

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[70] I randomized whether all on-demand music screaming services came immediately *before* or immediately *after* all not-on-demand music streaming services.
[71] Diamond (2011) at pp. 388–389.
[72] Diamond (2011) at pp. 387–389.
[73] Payne, Stanley L. B., "What's the Good Word?" in *The Art of Asking Questions*, Princeton, NJ: Princeton University Press, 1980, pp. 138–157.
[74] Urban, Glen L. and John R. Hauser, *Design and Marketing of New Products*, Englewood Cliffs, NJ: Prentice-Hall, Inc., 1980, pp. 194–195 ("A sample size of 10 is common. After a question is answered, you can ask respondents what they thought each question asked. You can try different forms of the questions. You can watch for careless response or no response… You can do whatever is necessary to ensure that what you think is being asked is actually what is being answered.").

63. I used the results of the first-stage pretest to revise the words and phrases in my survey questionnaire. I continued to revise and pretest my survey questionnaire until respondents did not find any questions difficult or ambiguous, were able to answer the survey questions easily, and felt that their answers represented their opinions. At my direction, experienced interviewers from GBK debriefed first-stage pretest respondents, and staff from Cornerstone Research listened to all of the first-stage pretests. I listened to some of the first-stage pretests to ensure that they were being conducted as I required. The results of the first-stage pretest were reported to me orally.

64. After I finalized my survey questionnaire using input from the first-stage pretests, I began the second-stage pretest. The second-stage pretest asked seven closed-ended questions after the second-stage respondents answered the survey questions. These seven questions were designed to test and confirm that the important issues brought up by first-stage pretest respondents were resolved in the final survey questionnaire. The results of the second-stage pretest were collected and are reported later in this section of my written direct testimony.[75]

1. First-Stage Pretest

65. Between August 3, 2021 and September 2, 2021, at my direction, experienced interviewers from GBK conducted the first-stage pretest of the survey with 39 adults in the United States who listened to Spotify over the last seven days. The number of pretest interviews varies by study based on how well respondents understand the initial survey instrument. The rule of thumb is to continue to pretest the survey until the survey researcher is confident that all issues have been identified and that the survey is well understood by respondents (and that respondents provide accurate and relevant answers).[76] Based on my

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[75] *See* Section III.D.2.

[76] Urban, Glen L. and John R. Hauser, *Design and Marketing of New Products*, Englewood Cliffs, NJ: Prentice-Hall, Inc., 1980, pp. 194–195.

experience, conducting 39 interviews is sufficient for the purpose of ensuring that the questions were understood well by respondents and that the respondents' answers accurately reflected respondents' beliefs and/or behavior. First-stage pretest responses were used solely for pretesting and are not included in the final survey results.

66. Pretesting assured that appropriate vocabulary was used in the survey instrument. To make sure respondents understood the words and phrases in the survey instrument, GBK asked pretest respondents for their understanding of any potentially unfamiliar words or phrases. GBK also asked respondents if they would prefer different wording or phrasing. For example, in QINTRO, pretesting confirmed that respondents were generally comfortable with the definitions of various ways of listening to music as listed in the survey. Pretesting indicated how I could improve that understanding by improving the formatting of how the definitions appeared in the programmed survey.[77] For example, I added line spacing between the definitions and I added a timer on the "Continue" button so that respondents understood the amount of time remaining given they were asked to remain on a page for a certain amount of time.[78] After making these edits, first-stage pretests continued and I found that respondents no longer raised issues about QINTRO.

67. Pretesting assured that I used the appropriate set of response options.[79] During first-stage pretests, GBK asked respondents if the set of response options provided in each question of the survey instrument was complete and, if it was not complete, which additional response options would respondents recommend for inclusion. For example, some respondents indicated that it was confusing for them to consider the alternative "I would listen to satellite radio through the paid subscription I already have (SiriusXM)" because they

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[77] *See* Appendix G, Table G-1.
[78] *See* Appendix G, Table G-1.
[79] Providing too limited a set of response options can result in biased responses. *See* Diamond (2011) at p. 393.

did not have a paid subscription to SiriusXM. As such, I expanded the response option "Don't know/Unsure" to "Don't know/Unsure/Not Applicable" so that respondents could choose "Not Applicable" for music options they did not have. After making these changes to the response options, I found that respondents no longer sought additional categories of response options or requested further refinements to response options. First-stage pretests (and second-stage pretests, described later) also confirmed that respondents were able to identify and select music options from this comprehensive list that accurately reflected what they would consider to replace listening to music on Spotify Premium.[80]

68. Pretesting assured that respondents understood the survey instrument questions and accompanying instructions. During first-stage pretests, GBK asked respondents to describe, in their own words, their understanding of the survey questions and accompanying instructions. When any survey question or instruction was not clear, GBK asked respondents how the survey question or instruction could be reworded so that the wording or phrasing would be more natural to respondents. For example, as they considered the alternatives in Q1, some respondents mentioned that it was difficult to remember the instruction that they should indicate what they would consider doing to replace listening to music on Spotify Premium. In response to comments by respondents during first-stage pretests, I added language to the content category headers to remind respondents appropriately.[81] After modifying the words and phrases in Q1 (as well as conforming changes in Q3), I found that respondents no longer expressed difficulty in answering this question. These changes also

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[80] In the *Webcasting V* proceeding, the Judges noted that the number of options provided to respondents "can reasonably be expected to produce biased and unreliable results." *See* Web V Determination, p. 247. My current survey includes fewer options than those in the survey in *Webcasting V* (18 versus 24 options). Further, both first-stage and second-stage pretests assured that respondents found the list to be comprehensive and were able to accurately select music options from the list that was provided.

[81] *See* Appendix D, Q1.

applied to Q2 and Q4. The resulting questions were clear to respondents, and respondents believed that their answers reflected their opinions and behavior.

69. Pretesting assured that respondents understood that the prices provided in response options were examples. During first-stage pretests, GBK asked respondents to describe how they understood the monthly and annualized prices provided for new subscription services. Respondents confirmed that they understood the monthly and annualized prices to be example prices. Respondents also confirmed that they understood the monthly and annualized prices to be for an individual plan and without promotional discounts and not, for example, the prices for a student plan. I reinforced the "example" nature of the prices with the following additional language in Q1 and Q3 (and Q2 and Q4) regarding example prices: "The prices below are examples and do not include promotional discounts, taxes, or fees."[82]

70. As discussed above, experienced interviewers from GBK tested explicitly for demand artifacts.[83] The first-stage pretests show (and the second-stage pretests, described later, confirm) that no demand artifacts were detected in the final phrasing and layout of the questions. For a summary of changes made to the survey instrument based on the first-stage pretests, see **Appendix G** to this report.

2. Second-Stage Pretest

71. Between September 2, 2021 and September 7, 2021, at my direction, experienced interviewers from GBK conducted the second-stage pretest of the survey with 20 adults in the United States who listened to Spotify over the last seven days and had a Spotify Premium account. 10 of these respondents were shown the Remove Spotify Premium Hypothetical, and the other 10 respondents were shown the Remove All Spotify Hypothetical. After the

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[82] *See* Appendix D, Q1 and Q3.
[83] *See* ¶ 47.

second-stage respondents answered the survey questions, they were asked questions from the second-stage pretest questionnaire. The second-stage pretest questionnaire with programming instructions is included as **Appendix H** to this report. Screenshots of the programmed second-stage pretest questionnaire are included as **Appendix I** to this report.

72. The question sequences Q1–Q2 and Q3–Q4 ask respondents what they would do if music on Spotify Premium or both Spotify Premium and ad-supported Spotify were no longer available. It is natural that respondents might guess that Spotify was the sponsor of the survey. I asked who they thought could be the sponsor of the survey. Respondents were given seven options, plus "Other," and a quasi-filter of "Don't know/Unsure." Although some respondents guessed Spotify as a potential sponsor, respondents guessed many other options as well. Spotify was not even the most-guessed option and some respondents guessed the copyright holders. Respondents were next asked whether they answered the questions differently because of whom they thought was the sponsor of the survey. Importantly, all respondents indicated that they did not answer the questions differently based on whom they thought was the sponsor of the survey.

73. There are, appropriately, several options in Q1 (or Q3) where respondents are asked to indicate the music listening options they would consider if music on Spotify was no longer available. The first-stage pretests indicated that the number of options was not too numerous and that respondents could readily and accurately indicate the options they would consider. The second-stage pretest confirmed that all respondents were able to identify and select the options that accurately reflected what the respondent would consider if music on Spotify was no longer available.

74. It was also important that the list of options to be considered be comprehensive. First-stage pretests indicated that list was comprehensive and, if a respondent did not find an

appropriate response option in the list, the respondent could write that music option in the text box at the end of the list of options. Almost every second-stage pretest respondent (19 out of 20) indicated that they found the list to be comprehensive, and one respondent indicated that he or she did not know or was unsure. Similarly, 19 out of 20 respondents indicated that they understood that they could write additional music options in the text box, with one respondent indicating that he or she did not know or was unsure. No respondent indicated that the list was not comprehensive and no respondent indicated that he or she did not understand that he or she could write a music option in the text box. Together these results indicate that the list is sufficiently comprehensive to identity the options that respondents would consider if music on Spotify was no longer available.

75. In Q1 or Q3, respondents indicated the music options (or less music option) they would consider if music on Spotify was no longer available. In Q2 or Q4, respondents then allocated 100 points among the options they would consider, representing the amount of time they would *actually* spend listening to each option. Q1 or Q3 are filter questions for Q2 or Q4, thus ensuring that the point-allocation task was reasonable, not too burdensome, and accurate. These four questions were worded carefully based on the first-stage pretests. The second-stage pretests confirmed that almost all respondents (19 out of 20) believed that their point allocations accurately reflected the time respondents would actually spend listening to various music options. One respondent selected "Don't know/Unsure." No respondents indicated that their point allocations did not accurately reflect the time they would spend listening to various music options. Based on these results, and the scientific literature, as cited in footnote 84, Q2 and Q4 are accurate measures of respondents' time allocations. Overall, the second-stage pretests confirm that the list of music options is sufficiently

comprehensive such that respondents can indicate accurately all options, yet the list is not too burdensome. Thus, responses accurately reflected time allocations.

76. Some music options are free and others cost money. The costs vary among music options. I did not want to over-emphasize these costs, nor did I want to under-emphasize these costs. Based on first-stage pretests, I chose to provide costs and wording for those costs that reminded respondents of, but did not over-emphasize, the costs. I also provided a mild form of a "cheap talk" script to ensure that respondents pay attention, but not too much attention, to costs.[84] The cheap talk script was refined based on first-stage pretests. Respondents found the script to be reasonable but not intrusive, and they found the script did not overly emphasize costs.

77. The cheap talk script used in the survey is:[85]

> In the next question, you will be asked to allocate time across music options that you would **actually** listen to. Some of those options may have a cost associated with them.

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[84] By "cheap talk," I refer to the concern that respondents might state that they would allocate time to a music option without fully taking into account the monetary cost of that option. Cheap talk, if it were to exist for the respondents, would bias respondents toward more expensive options and thus favor the copyright holders rather than Spotify. Although any cheap talk bias favors the copyright holders, the best strategy to obtain reliable results is to minimize cheap talk. I do so conservatively such that, if there is any remaining bias, it favors the copyright holders. If it were feasible, the best strategy to minimize cheap talk is incentive alignment. *See* Ding, Min, et al., "Unstructured Direct Elicitation of Decision Rules," *Journal of Marketing Research* 48, 2011, pp. 116–127; Miller, Klaus M. et al., "How Should Consumers' Willingness to Pay Be Measured? An Empirical Comparison of State-of-the-Art Approaches," *Journal of Marketing Research* 48, 2011, pp. 172–184. I have used incentive alignment in litigation involving smartphones (*Apple Inc v. Samsung Electronics Co. Ltd. et al*., Case 12-cv-00630, U.S. District Court Northern District of CA, San Jose Division). With incentive alignment, respondents are given real money with which to choose alternatives. However, incentive alignment has proven to be problematic when applied to music services because of the ongoing costs from subscriptions and because free plans are available. *See* "Rebuttal Testimony of John R. Hauser, Sc.D.," *In the Matter of Determination of Royalty Rates for Digital Performance in Sound Recordings and Ephemeral Recordings (Web IV)*, Docket No. 14-CRB-0001-WR (2016–2020), February 23, 2015, ¶¶ 80, 85, 88. Because incentive alignment is not feasible for music services, I approximate incentive alignment with two strategies. The first strategy is to ask a consideration question followed by the time allocation (or choice) question as described in paragraph 36. The second strategy is a mild reminder to respondents to consider costs using a cheap talk script. I pretested this script carefully. Respondents found it helpful but not overwhelming. *See* Appendix G, Table G-2. Responses to the second-stage pretests showed that while most respondents took into account costs while allocating points across music options, some did not. *See* Appendix J. This is understandable because cheap talk scripts can help minimize cheap talk, but may not fully eliminate cheap talk. Importantly, any bias not mitigated by the mild cheap talk script would favor the copyright holders.

[85] *See* Appendix D, Q2INTRO and Q4 INTRO.

> In surveys people sometimes **say** they would pay for music options that they may not **actually** be willing to pay for.
>
> Please answer the next question as if you would **actually** pay the cost associated with the options that you would listen to.

78. The second-stage pretests confirmed that most of the respondents (15 out of 20) took into account the costs of the music options in deciding which music options to which they would actually listen. 4 of 20 respondents did not take costs into account and one respondent indicated "Don't know/Unsure." Thus, costs were considered by most respondents (and not overly so). To the extent that some respondents did not consider costs, their answers would reflect more paid music options than they would actually choose in real life. That is, the survey may slightly over-estimate switching to paid options, making my survey results conservative. For a summary of responses to the second-stage pretest questions, see **Appendix J** to this report.

IV. Survey Administration

A. Use of the Internet for the Survey

79. The survey was administered via the Internet. Respondents were able to take the survey from a smartphone, tablet, desktop, or laptop.[86] Internet surveys are widely used by major corporations to make substantial business decisions. I have extensive experience with Internet surveys in the contexts of litigation, corporate applications, and academic research.[87] In my experience, if best practices are followed, Internet-based samples are representative of

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[86] *See* Appendix D, QS5.

[87] For many years, I headed the Virtual Customer Initiative ("VCI"), a key initiative within MIT's Center for Innovation in Product Development. The VCI studies the use of Internet-based surveys and methods that are developed explicitly for such surveys. An article on the virtual customer that I co-authored (Dahan, Ely, and John R. Hauser, "The Virtual Customer," *Journal of Product Innovation Management* 19, 5, 2002, pp. 332–353) is highly cited. I have won many awards for research that relied upon Internet-based surveys. Another article compares respondents' answers in an Internet survey to their actual choices of a product worth approximately $100. In addition, projections from the study were compared to market-place results. This article is highly cited and has won international awards (*see* Toubia, Olivier, Duncan I. Simester, John R. Hauser, and Ely Dahan, "Fast Polyhedral Adaptive Conjoint Estimation," *Marketing Science* 22, 3, 2003, pp. 273–303).

target populations and can be used to project to target populations both reliably and validly. Online survey instruments have many benefits: they eliminate interviewer bias (that is, they create a "blind" environment); they produce acceptable completion rates; and, due to the anonymous nature of the Internet, they allow for truthful responses, particularly when the subject matter is sensitive. Online survey instruments allow researchers instant access to results and enable the use of advanced design capabilities, such as complex randomization, screening logic, and error checking. Internet surveys are an increasingly common form of market research. Over 90 percent of the U.S. population has access to the Internet.[88] Internet surveys are particularly relevant in this case because, in order to listen to on-demand music streaming services, respondents by definition have access to the Internet. We therefore expect nearly 100 percent of Spotify Premium users to have access to the Internet. The largest corporations use Internet surveys to support multi-million dollar marketing decisions.[89] Courts accept the results of Internet surveys in a wide range of cases.[90] I have personal prior experience in formulating Internet surveys for litigation which have been accepted by the courts.

80. As an expert, I need to achieve multiple goals such as assuring that there is a sufficient sample in each of the hypothetical cells for sufficient statistical power. I need to do this by maintaining randomization among the hypothetical cells and achieving a representative sample of the target market, in this case, residents of the United States 18 years

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[88] "Internet Usage in the United States – Statistics & Facts," *Statista*, *available at* https://www.statista.com/topics/2237/internet-usage-in-the-united-states/.

[89] Dynata's clients include Nestle, Starbucks, BCG, Verizon, Pepsico, among many others. *See* "The World's Largest First-Party Data Platform for Insights, Activation & Measurement," *Dynata, available at* https://www.dynata.com/. I understand from GBK that Schlesinger Group's clients include Google, Facebook, LinkedIn, Amazon, WhatsApp, Pfizer, Eli Lilly, Proctor & Gamble, McDonald's and Warner Bros.

[90] Gelb, Gabriel M. and Betsy D. Gelb, "Internet Surveys for Trademark Litigation: Ready or Not, Here They Come," *The Trademark Reporter* 97, 5, 2007, pp. 1073–1088; Thornburg, Robert H., "Trademark Surveys: Development of Computer-Based Survey Methods," *The John Marshall Review of Intellectual Property Law* 4, 91, 2004, pp. 91–124.

or older who listen to music, have a Spotify Premium account, and are sufficiently involved in the decision-making process. To achieve these goals (with sufficient sample size), I drew respondents from two premier consumer panels, randomizing respondents within each panel to the two hypotheticals.

81. The Internet survey was conducted by contracting with two of the premier consumer panels that provide pre-recruited potential survey respondents who have indicated their willingness to participate in market research surveys. These panels are used by major corporations to make important decisions. In this case, I selected Dynata and Schlesinger Group.[91] Members of these consumer panels were recruited to my survey using a dashboard or router system. The combined inbound sample was balanced to U.S. census demographics. In this system, respondents either receive an email with a direct link to the survey or are able to access the survey through the panel's dashboard.[92]

82. Dynata is a leading provider of market research services that maintains a diverse panel of over 62 million registered members globally.[93] I have worked with Dynata on other projects.[94] I have found them to be consistently reliable and a high-quality supplier of qualified survey respondents. As part of the panel recruitment process, all panel members

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[91] *See* Appendix K for answers to the ESOMAR questions by Dynata and Schlesinger Group.
[92] The dashboard or router system employs measures to prevent the same participant from entering the survey multiple times, even if the participant is a member of multiple panels.
[93] "About Us," *Dynata*, 2021, *available at* https://www.dynata.com/about-us/; "Generate New Data," *Dynata*, 2021, *available at* https://www.dynata.com/generate-new-data/.
[94] For example, in previous proceedings, I used Research Now which is now Dynata. *See* "Announcing New Name and Brand: Research Now SSI is Now Dynata," *PR Newswire,* January 15, 2019, *available at* https://www.prnewswire.com/news-releases/announcing-new-name-and-brand-research-now-ssi-is-now-dynata-300778014.html; "Testimony of John Hauser, SC.D.," *In the Matter of Determination of Rates and Terms for Preexisting Subscription and Satellite Digital Audio Radio Services*, Docket No. 2011-1 CRB PSS/Satellite II, November 28, 2011, ¶ 39; "Rebuttal Expert Report of John Hauser," *In the Matter of Determination of Royalty Rates and Terms for Transmission of Sound Recordings by Satellite Radio and 'Preexisting' Subscription Services (SDARS III)*, Docket No. 16-CRB-0001 SP/PSSR (2018-2022), February 17, 2017, ¶ 95.

complete a questionnaire that includes basic demographic information (age, gender, education, etc.). In addition, Dynata collects data from screener surveys for particular sub-groups (e.g., automotive, mobile phone habits, financial services). Panel members have the option to add similar information to their member profiles.[95]

83. The Schlesinger Group is also a leading provider of respondents for consumer surveys, and has more than 50 years of experience in quantitative and qualitative data collection. The panel recruitment process involves a validation process to ensure that respondents have a genuine interest to participate in research studies. Among other data, the Schlesinger Group also collects demographic information from its participants.[96]

84. The validation process for an Internet survey is different from that for telephone, mall, or mail surveys, because only the Internet panel provider is allowed to contact the respondents. Security steps assure that only panel members receive invitations, that the survey is not answered by a "bot" or a "survey farm," and that the survey taker cannot take the survey more than once. As an additional precaution, I instructed Cornerstone Research to check survey responses for potential duplicates and/or other suspicious patterns such as "straight-lining." Any suspicious duplication or straight-lined responses were dropped.[97] Dynata and Schlesinger Group are reputable panel providers which themselves employ security procedures.[98] To provide further validation, each respondent's age, gender, and region of residence (mapped from state of residence) were compared to values for that

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[95] *See* Appendix K-1.
[96] *See* Appendix K-2.
[97] *See* Section V.A. Dynata uses a "third-party digital fingerprint technology." Additionally, Dynata uses the survey router system to set limits on the number of surveys each panelist can take in a given period of time. *See* Appendix K-1.
[98] *See* Appendix K.

respondent in the panel provider's database. Any respondents whose stated age, gender, or region of residence did not match the values in the database were terminated from the survey.[99]

B. Survey Rollout

85. The pretest interviews ensured that the questions were understood by respondents. To ensure that the survey was programmed properly, Cornerstone Research, at my direction, extensively tested the links, skip logic, and screening questions.

86. Survey respondents were recruited to the survey via a survey dashboard/router for Dynata. To confirm respondent identity and prevent duplicate responses, Dynata uses a "third-party digital fingerprint technology."[100] Additionally, Dynata uses the survey router system to set limits on the number of surveys each panelist can take in a given period of time. These measures preserve integrity of the survey data.[101] For Schlesinger Group, respondents are recruited through a dashboard system and may also receive e-mail invitations to take the survey. Schlesinger Group also employs a "RELEVANTID digital fingerprinting technology" to ensure that there are no duplicate responses in the sample.[102]

87. To ensure the representativeness of the survey population, the inbound sample was "click-balanced" (i.e., targeting a representative sample from the market research panel based on the distribution of individuals by validated demographics) using U.S. Census Bureau data. The demographic variables used for balancing were gender, age, and region.[103] I also ensured

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[99] *See* Appendix D, QS1–QS3.
[100] *See* Appendix K-1.
[101] *See* Appendix K-2.
[102] *See* Appendix K-2.
[103] Gender, age, and region quotas for the survey were set using U.S. Census Bureau postcensal population estimates from July 1, 2019 and applied to inbound "clicks" (i.e., responses to the survey invitation) (*see*

that demographic variables across the respondents shown each of the two hypotheticals were not statistically different.[104] By design, the percentages of respondents who came from the Dynata and Schlesinger Group panels were not statistically different within either of the two hypotheticals.[105]

88. To ensure representativeness within the day and by day of week, GBK released invitations to the survey in several batches over the course of 15 days and at different times of day. To yield a sample of at least 500 completed surveys for each hypothetical, I instructed Cornerstone Research and GBK to target approximately 20,000 click-ins, based on the qualification rate for pretest recruiting.[106,107] I instructed GBK and Cornerstone Research

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"Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2010 to July 1, 2019," *U.S. Census Bureau*, *available at* https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html; "Estimates of the Total Resident Population and Resident Population Age 18 Years and Older for the United States, States, and Puerto Rico: July 1, 2019," *U.S. Census Bureau*, *available at* https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html). *See* Appendix L for a comparison of the click-balancing targets and the demographic characteristics of click-in respondents.

[104] I performed a standard Pearson chi-squared test on the distributions of each demographic variable between respondents shown the Remove Spotify Premium Hypothetical and those shown the Remove All Spotify Hypothetical. I found no statistically significant difference at the 5 percent level in each of these three demographic variables across the two hypotheticals *(p-value = 0.46 for age, 0.71 for gender, 0.88 for region)*. *See* Appendix M.

[105] I performed a two-sample z-test of proportions and found that there was no statistically significant difference at the 5 percent level (*p-value = 0.54*). *See* work papers.

[106] The screening criteria for the pretest recruitment were less strict than the screening criteria for the full survey. For example, the goal in pretests is to have respondents that vary on demographics. They do not need to be formally click-balanced to the U.S. Census. To ensure that I would collect at least 500 completes per hypothetical in two weeks, I asked Cornerstone Research and GBK to target more clicks than would have been implied by the pretest recruiting data alone.

[107] Appendix N shows the distribution of survey click-ins by day of week and time of day. Individuals clicked into the survey on each day of the week and at different times of the day. Because click-ins were not equally distributed across the seven days of the week, as a robustness check I weighted the survey responses to the time allocation questions Q2 and Q4 to match the scenario in which click-ins were evenly distributed across days of the week. I found that this did not meaningfully change the results of the survey. In particular, for Q2 (and Q4), I compared the distribution of unweighted responses with the distribution of weighted responses assuming click-ins were evenly distributed. I performed two different statistical tests. First, I performed a standard Pearson chi-squared test on the distribution of average time allocated to music options by respondents. I found no statistically significant difference at the 5 percent level (*p-value = 0.99 for both hypotheticals*). Second, I performed a first-order Rao-Scott chi-squared test on the percent of respondents who allocated non-zero time to music options. I found no statistically significant difference at the 5 percent level (*p-value = 0.99 for both hypotheticals*). *See* work papers.

to monitor the qualification rate for the first few batches of invitations released, and to make adjustments if necessary to ensure that the sample would be collected over the course of at least a full week. No quotas or other constraints were imposed on the post-screening sample. The survey remained in the field for 15 days, ensuring that respondents had ample opportunity to click in to the survey on all days of the week.

89. A total of 22,071 participants clicked on the survey link and began the survey screener. After clicking on the survey link, respondents were directed to a browser window with a generic message thanking participants for their willingness to participate in the study and providing instructions for completing the survey.[108] After clicking the next button, respondents were prompted with a CAPTCHA challenge to ensure that responses were not computer-generated.[109] After completing the CAPTCHA challenge, respondents moved to the screening portion of the survey. Recall that the screening portion of the survey determines whether or not a respondent is within the target sample, passes attention check questions, is validated on stated age, gender, and region of residence, and is using a proper device for the survey.[110] After screening 1,299 respondents moved to the main survey. The

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[108] *See* Appendix E.

[109] A CAPTCHA challenge refers to a program that protects websites against bots (i.e., computer-generated responses) by generating and grading tests that humans can pass, but current computer programs cannot. The acronym CAPTCHA stands for Completely Automated Public Turing Test To Tell Computers and Humans Apart. *See*, *e.g.*, "CAPTCHA: Telling Humans and Computers Apart Automatically," *CAPTCHA*, *available at* http://www.captcha.net/. *See* Appendix D, QS0.

[110] A total of 19,116 respondents did not qualify because (1) they did not listen to music via Spotify on their own paid account within the last seven days or were not involved in the decision to subscribe to the paid subscription (12,828 respondents); (2) they did not meet other screening criteria (*e.g.*, failed the CAPTCHA, selected "My area is not listed here" in QS1, selected "Prefer not to answer" in QS2 or QS3, selected "Under 18" in QS3, selected "Other mobile or electronic device" in QS5, took a survey on a similar topic in the prior two months, is employed by or is a member of a household with someone employed by a music streaming service company or a market research company) (3,700 respondents); (3) their responses to introductory questions regarding age, gender, region, or education level could not be validated against panel data (1,602 respondents); or (4) they did not pass attention check questions (986 respondents). An additional 1,661 respondents did not qualify because they began the screening portion of survey but opted not to complete it. *See* work papers.

qualification rate was 5.9 percent; the qualification rate is the percent of respondents who are qualified relative to the number of participants who clicked on the survey link and began the survey screener.[111] By balancing the click-in respondents to the U.S. population and then accepting only respondents who were in the target population, I assured that the target sample was representative of the target population. The completion rate was quite high: 1,294 (99.6 percent) of qualified respondents completed the survey between September 8, 2021 and September 22, 2021.[112] This sample size is adequate to enable me to provide statistically significant estimates.[113]

90. Respondents who qualified and completed the survey were compensated in the form of "points" by Dynata and Schlesinger Group.[114] In my experience, such token honoraria are common in survey research and do not influence the accuracy of the responses.

V. Analysis of Survey Results

A. Overview of Qualified Survey Responses

91. I balanced the incoming sample of survey respondents against U.S. Census Bureau statistics on age, region, and gender for the U.S. population. **Appendix L** presents the percentages of incoming respondents from each age group, region, and gender and the corresponding percentages of each of these in the U.S. population. The percentages are

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[111] As of July 2021, [redacted] *See* Exhibit 22, SPOT_P4_000001242, [redacted] The U.S. population as of July 31, 2021 was 332.6 million, [redacted] *See* "U.S. and World Population Clock," *U.S. Census Bureau*, *available at* https://www.census.gov/popclock/. [redacted] due to the various screening criteria in the survey, which included the restriction that respondents must either have made the decision to purchase Spotify Premium on their own or played a major role in this decision. *See* Appendix D, QS14.

[112] *See* Appendix O. A small number of respondents were eliminated from the final survey sample based upon what I judged to be unreasonable responses. *See* Section V.A for details.

[113] Detailed screening statistics are shown in Appendix O.

[114] The monetary amount of "points" awarded to each respondent by the panels is proprietary information.

similar, illustrating that the incoming sample is representative of the U.S. population on these demographic characteristics.

92. **Appendix O** presents the number of respondents who were terminated during the screening portion of the survey instrument, the number of respondents who completed the survey, and the number of qualified survey respondents. As part of my analysis, I performed checks to ensure that the data collected from respondents were of high quality by evaluating respondents with results and responses that suggested that it was possible that they may not have been sufficiently engaged in the survey to provide reliable and accurate answers. I reviewed all open-ended responses to screening questions QS9, QS10, QS13, and QS15, and questions Q1 and Q3. I dropped 4 respondents from my analysis for providing incoherent open-ended responses in Q1 or Q3.[115] Other than these respondents, I found no other incoherent free-response options.[116] Out of the 650 respondents who completed the survey and were shown the Remove Spotify Premium Hypothetical, I dropped 42 respondents from the analysis because of straight-lining,[117] and 3 respondents for incoherent responses to open-ended questions, resulting in a sample of 605 qualified respondents. Out of the 644 respondents who completed the survey and were shown the Remove All Spotify Hypothetical, I dropped 43 respondents from the analysis because of straight-lining, and 1 respondent for an incoherent response to an open-ended question, resulting in a sample of

[115] I reviewed the answers respondents provided within the "Other" category of Q1 and Q3, and excluded respondents with the following nonsensical answers: "???," "Incididunt asperiore," "1," and "Hey sorry."
[116] I consider free-response text to be coherent if the response relates to the question, or indicates that there is nothing else to add.
[117] I define "straight-lining" respondents as respondents who selected the same answer for every option in Q1 or Q3.

600 qualified respondents.[118] The disqualification rate is not statistically different between the two hypotheticals.[119] My sample sizes of 605 and 600 respondents shown each hypothetical provide sufficient statistical power to draw reliable conclusions regarding the questions of interest (Q2 or Q4).[120]

1. Analysis of Time Taken to Complete the Survey

93. Based on my experience conducting surveys, extremely long completion times generally suggest that respondents may have been interrupted. This does not necessarily bias the results, but it is appropriate to examine the results carefully in such a situation. On the other hand, extremely short completion times suggest that either respondents were sure of their answers and answered rapidly or that respondents may not have paid attention to the questions or may not have been sufficiently engaged in the survey. This, too, does not necessarily bias the results, but it is appropriate to examine the results carefully. Hence, I examined more closely the responses provided by respondents with extremely long and extremely short completion times.

94. I examined the times that each respondent took to complete the survey. The median time to complete the survey was 8.65 minutes for those shown the Remove Spotify Premium Hypothetical and 8.15 minutes for those shown the Remove All Spotify Hypothetical. I compared the expected substitution patterns of listeners (Q2 and Q4) including the group comprised of the fastest 5 percent of respondents (31 respondents shown the Remove Spotify Premium Hypothetical with less than 4.31 minutes completion time, and 29 respondents

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[118] *See* work papers.

[119] I performed a two sample z-test of proportions and found that there was no statistically significant difference at the 5 percent level (*p-value = 0.95*). *See* work papers.

[120] With 605 qualified respondents who were shown the Remove Spotify Premium Hypothetical, the maximum survey margin of error is 4.0 percent. With 600 qualified respondents who were shown the Remove All Spotify Hypothetical, the maximum survey margin of error is also 4.0 percent. *See* Thompson, Steven K., *Sampling*, Hoboken, NJ: John Wiley & Sons, Inc., 2012, pp. 58–59. *See* work papers.

shown the Remove All Spotify Hypothetical with less than 4.10 minutes of completion time) and the slowest 5 percent of respondents (31 respondents shown the Remove Spotify Premium Hypothetical with more than 25.89 minutes completion time, and 30 respondents shown the Remove All Spotify Hypothetical with more than 24.94 minutes of completion time) with the expected substitution patterns of listeners for the remaining 90 percent.[121] Based on the responses to Q2 and Q4, I found that including the fastest 5 percent and slowest 5 percent of respondents in the sample did not change the basic results. As a result, I did not remove these respondents from the sample.[122]

2. Exclusion of Incoherent, Seemingly Inconsistent, or Unlikely Responses

95. Prior to the analysis of any data and based on a review of the screening criteria, I evaluated whether any respondents provided responses that were internally inconsistent and/or unlikely.

96. I asked a few questions that allowed respondents to provide open-ended responses in a text box. In particular, 3, 8, 1, and 8 respondents provided an answer in the text box in response to screening questions QS9, QS10, QS13, and QS15 respectively. Additionally, 60 and 52 respondents provided an answer in the text box in response to questions Q1 and Q3, respectively. I reviewed the open-ended responses provided by these respondents.[123] For Q1

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[121] *See* work papers.

[122] For Q2 (and Q4), I compared the distribution of all responses with the distribution of responses excluding those with the fastest 5 percent and slowest 5 percent of respondents in the sample. I performed two different statistical tests. First, I performed a standard Pearson chi-squared test on the distribution of average time allocated to music options by respondents. I found no statistically significant difference at the 5 percent level (*p-value = 0.99 for both hypotheticals*). Second, I performed a first-order Rao-Scott chi-squared test on the percent of respondents who allocated non-zero time to music options. I found no statistically significant difference at the 5 percent level (*p-value = 0.99 for both hypotheticals*). *See* work papers.

[123] *See* work papers.

and Q3, of the 60 and 52 respondents who provided an answer in the text box, 17 and 16 indicated that either there was nothing else they would consider (e.g., by writing "nothing," "None," "Already listed above"), that they weren't sure (e.g., by writing "Don't know"), or that they would generally consider other music options (e.g., by writing "Would consider").[124] Only 31 and 23 respondents allocated time to their open-ended response in Q1 and Q3, respectively.[125]

97. I do not find logical inconsistencies between responses within my survey. I note that 87 respondents shown the Remove Spotify Premium Hypothetical and 98 respondents shown the Remove All Spotify Hypothetical selected that they listened to music through a paid subscription to satellite radio (SiriusXM) in QS9 and also selected that they would consider a new paid subscription of the same type in Q1 or Q3.[126]

98. However, these responses do not generate logical inconsistencies. It is not inconsistent for a respondent to indicate in screening question QS9 that they listened to content through a paid subscription and then, in question Q1 or Q3, to indicate that they would consider purchasing a new paid subscription to a service of the same type for at least two reasons. First, a respondent may think of upgrading or downgrading to a different tier of service with the same company to be the same as a "new" paid subscription, even if they reported listening to an existing paid subscription in the past seven days. Second, a respondent who answers that they listened to a paid subscription service within the last seven days may have listened to a friend's or family member's subscription to SiriusXM, but would

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[124] For Q1 and Q3, 43 and 36 respondents provided open-ended responses that were similar to alternative music options in the list. *See* work papers. These open-ended responses as a whole, however, do not include sufficient detail to match these responses to alternatives in the list. Therefore, I summarize these responses separately in the "Other" category for Appendices S-1 and T-1.
[125] *See* work papers.
[126] *See* work papers.

consider buying their own subscription if music on Spotify was no longer available. These types of responses were articulated as consistent by respondents in the first-stage pretests.

99. In addition, a total of 315 respondents indicated in Q1 (Remove Spotify Premium Hypothetical) and 324 respondents indicated in Q3 (Remove All Spotify Hypothetical) that they would consider listening to their existing paid subscription and a new paid subscription within the on-demand, not-on-demand, or satellite radio categories.[127] This also does not represent a logical inconsistency. Based on the qualitative interviews and pretest interviews, I learned that it is not uncommon for individuals to have subscriptions to multiple services, even within the same service category. Respondents indicated that they may have multiple subscriptions because different services within the same service category may offer different features for listeners and different libraries of content. And, as discussed above, respondents may consider upgrading or downgrading their existing subscription with the same service category.

3. Consistency of Survey Findings

100. As a partial test of whether the incoming sample was representative of audio consumption, I compared the responses to screening question QS9 in my survey against an Edison Research "Share of Ear" industry report on audio consumption in the United States.[128] The two surveys differ in many ways that make exact comparisons difficult, but they are sufficiently similar so that qualitative comparisons are informative. **Appendix P** compares the percentage of survey respondents from my survey *who selected each source of music*

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[127] 199, 174, and, 143 respondents shown the Remove Spotify Hypothetical selected that they would consider listening to their existing paid subscription and a new paid subscription within the on-demand, not-on-demand, and satellite radio categories, respectively. 188, 191, and, 140 respondents shown the Remove All Spotify Hypothetical selected that they would consider listening to their existing paid subscription and a new paid subscription within the on-demand, not-on-demand, and satellite radio categories, respectively. *See* work papers.

[128] Exhibit 21, Edison Research, "Share of Ear: Americans' Share of Time Spent Listening to Audio Sources," Q2 2021.

content in QS9 against the *share of time spent listening to music* for Americans at least 13 years of age, broken down by audio source.

101. The share of music options selected in my screening question QS9 is qualitatively similar to and in the same rank order as the shares of time spent listening to music options reported in the "Share of Ear" industry report. For example, "Share of Ear" reports that, of all time spent listening to music by Americans at least 13 years of age, 21 percent is spent listening to music streaming services.[129] Based on the results of screening question QS9 in my survey, I find that approximately 26 percent of the music options selected by respondents are for music streaming services (on-demand and not-on-demand) within a seven-day period. Similarly, "Share of Ear" reports that, of all time spent listening to music by Americans at least 13 years of age, 15 percent is spent listening to music on YouTube. Based on the results of my screening question QS9, I find that approximately 17 percent of music options selected by respondents are for video sites, such as YouTube or Vevo, within a seven-day period.

102. The qualitative similarities and rank order of media between the results of QS9 in my survey and the quantities reported in the "Share of Ear" industry report, despite differences in the type of share that is being measured and despite slight differences in the age range of the respondents, suggest that the results of my survey are representative of audio consumption in the United States, within the expected variation.

103. There are a number of reasons why results in the "Share of Ear" report and in QS9 of my survey may differ. First, survey respondents were asked to specify all of the ways in

[129] Exhibit 21, Edison Research, "Share of Ear: Americans' Share of Time Spent Listening to Audio Sources," Q2 2021, p. 29. This report appears to refer to music streaming services as "Streaming Audio."

which they listened to music during the "last seven days."[130] 10,664 respondents selected a total of 28,987 music options that they listened to in the past seven days. For example, if a respondent selects three music options in QS9, all three music options count toward the total of 28,987 music options selected.[131] In contrast, the "Share of Ear" industry report summarized the "share of time spent listening to music" by audio source.[132] Therefore, "Share of Ear" results may differ from the survey results because "Share of Ear" measures the share of *time* spent for each music option, whereas the survey measures the share of *responses* for each music option.

104. For example, if each survey respondent spends more time listening to music streaming services than he or she does listening to YouTube, then the "Share of Ear" share for music streaming services will be higher than in the survey, relative to YouTube. Depending on how much time individuals spend listening to each media option, the "Share of Ear" share for that option may be larger or smaller than the share of media options selected by respondents in QS9 in my survey. Thus, I do not expect the share of music options selected in QS9 and "Share of Ear" to be identical, but I do expect that they will not differ dramatically.

105. Second, respondents to my survey were at least 18 years old, whereas the "Share of Ear" report summarizes listening time by individuals who are at least 13 years old.[133] To the extent that the consumption of music differs between Americans aged 13 through 17 and Americans 18 years old or older, the share of respondents and share of media options selected

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[130] *See* Appendix D, QS9.
[131] *See* Appendix P.
[132] Exhibit 21, Edison Research, "Share of Ear: Americans' Share of Time Spent Listening to Audio Sources," Q2 2021, p. 29.
[133] Exhibit 21, Edison Research, "Share of Ear: Americans' Share of Time Spent Listening to Audio Sources," Q2 2021, p. 29.

from QS9 may differ from the quantities reported in the "Share of Ear" industry report. However, if Americans aged 13 through 17 do not differ dramatically from other young Americans 18 years old or older in their consumption of music, I would not expect the various shares to be substantially different due to this difference in target population.

B. Survey Results

1. Subscriptions to Spotify and Other On-Demand Music Streaming Services

106. As part of my screening questions, I asked respondents about the type of subscriptions that give them access to Spotify and about their subscriptions to other on-demand music streaming services.

107. Respondents obtained subscriptions to Spotify Premium through different means. In QS12, respondents were asked which version of Spotify they have.[134] If respondents indicated that they had ad-supported Spotify or a free-trial subscription to Spotify Premium, I terminated them from the survey.[135] **Appendix Q** shows the distribution of responses to QS12 for options involving a paid subscription to Spotify Premium. The vast majority of respondents (around 75 percent across respondents shown either hypothetical) had a paid subscription to Spotify Premium that was *not* bundled with another service. Some respondents (around 18 percent across respondents shown either hypothetical) indicated that they had a subscription to Spotify Premium through a paid bundle subscription with another

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[134] *See* Appendix D, QS12.

[135] QS10 asks respondents whether they listened to Spotify in the last seven days. QS11 asks respondents to confirm that they listened to Spotify using their own account. These prior questions focus QS12 to listening behavior in the last seven days through the respondent's own account. QS12 asks the respondent to indicate the type of that account. *See* Appendix D, QS10–QS12.

service, such as Hulu or Showtime.[136] Finally, there was a small percentage of respondents (around 7 percent across respondents shown either hypothetical) who received Spotify Premium as a free benefit from another service. For example, certain AT&T subscriptions offer Spotify Premium as an "entertainment benefit."[137]

108. In QS15, I asked respondents whether they subscribed to any other paid on-demand music streaming services in addition to Spotify.[138] **Appendix R** shows the distribution of responses to this question (QS15). The most common on-demand music streaming service to which respondents had a paid subscription was Amazon Music Prime, with 31 percent of respondents in the Remove Spotify Premium Hypothetical and 35 percent of respondents in the Remove All Spotify Hypothetical.[139] The second and third most common responses were Apple Music and YouTube Music Premium, with 20–25 percent of respondents. Most commonly, respondents did not subscribe to any other paid on-demand music streaming services besides Spotify. In particular, 41 percent of respondents in the Remove Spotify Premium Hypothetical and 37 percent of respondents in the Remove All Spotify Hypothetical indicated that they did not have a paid subscription to any on-demand music streaming service in addition to Spotify.

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[136] "Hulu and SHOWTIME with Premium," *Spotify*, August 12, 2021, *available at* https://support.spotify.com/us/article/hulu-showtime-premium/.
[137] "Set Up Your Spotify Premium Service," *AT&T*, June 28, 2021, *available at* https://www.att.com/support/article/wireless/KM1362774/.
[138] *See* Appendix D, QS15.
[139] Amazon Music Prime is included with an Amazon Prime Membership. *See* "Amazon Music Prime," *Amazon*, *available at* https://www.amazon.com/music/prime.

2. Alternative Music Options to Listening to Music on Spotify

109. Next, I asked each respondent what he or she would *consider* doing instead of listening to music on Spotify Premium if music on either Spotify Premium (Remove Spotify Premium Hypothetical) or both Spotify Premium and ad-supported Spotify (Remove All Spotify Hypothetical) was no longer available.[140] **Appendix S-1** summarizes the responses to this consideration question for respondents in the Remove Spotify Premium Hypothetical (Q1), and **Appendix T-1** summarizes the responses to this consideration question for respondents in the Remove All Spotify Hypothetical (Q3). Respondents shown the Remove Spotify Premium Hypothetical (Q1) selected "Would consider" for an average of 8.7 alternative music options and "Would not consider" for an average of 5.9 alternative music options. Respondents shown the Remove All Spotify Hypothetical (Q3) selected "Would consider" for an average of 8.2 alternative music options and "Would not consider" for an average of 5.7 alternative music options.

110. For each of the alternative music options to replace listening to music on Spotify Premium, **Appendices S-1 and T-1** report the number and percentage of survey respondents who selected "Would consider," "Would not consider," and "Don't know/Unsure/Not Applicable." For example, for alternative #3 ("I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't current subscribe to"), 361 respondents who were shown the Remove Spotify Premium hypothetical (60 percent) answered that they would consider doing this and 166 respondents (27 percent) answered that they would not consider doing this if music on Spotify Premium was no longer available. 78 respondents (13 percent) indicated "Don't know/Unsure/Not Applicable" about whether

[140] *See* Appendix D, Q1 and Q3.

they would consider this alternative music option if music on Spotify Premium was no longer available.

111. Respondents who indicated that they would consider listening to one or more music options to replace listening to music on Spotify Premium were next shown Q2 or Q4, depending on the hypothetical scenario to which they were assigned.[141] These questions asked each respondent to allocate 100 points among the music options they said they would consider, to indicate the percentage of time they would actually spend listening to each considered music option instead of listening to music on Spotify Premium if music on Spotify Premium was not available (Q2, Remove Spotify Premium hypothetical), or if music on both Spotify Premium and ad-supported Spotify was not available (Q4, Remove All Spotify Hypothetical). Respondents were required to allocate all 100 points across the music options they considered, but could allocate 0 points or leave blank any music options to which they would not actually spend time listening. Respondents were considered to have allocated 100 points to a single music option if that music option was the only music option to which they would consider listening, as indicated in Q1 or Q3. Based on the first-stage pretests, one of the available options was "I would listen to less music and would do something else instead (e.g., watch TV, read a book)."[142]

112. **Appendices S-2 and T-2** summarize the responses to Q2 and Q4, and show the number and percentage of respondents who allocated points to music options within each category as well as the number and percentage of respondents who allocated points to each alternative music option. These results include the 604 respondents who answered Q2 and

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[141] *See* Appendix D, Q2 and Q4.

[142] For ease of exposition in this report, "I would listen to less music and would do something else instead (e.g., watch TV, read a book)" is labeled as a music option. The availability of this option makes the 100-point assignment consistent and logical when a respondent considers only one option.

the 596 respondents who answered Q4. 1 respondent shown the Remove Spotify Premium Hypothetical and 4 respondents shown the Remove All Spotify Hypothetical did not answer Q2 or Q4 because they selected "Would not consider" or "Don't know/Unsure/Not Applicable" for all music options in Q1 or Q3, respectively, and did not enter any additional music options in the "Other" category.

113. In **Appendices S-2 and T-2**, I bolded each category and assigned a letter to the category. Alternative music options within category A ("Music on on-demand music streaming services to replace listening to music on Spotify Premium") were most frequently allocated points in both hypotheticals. 539 respondents shown the Remove Spotify Premium Hypothetical (89 percent) and 471 respondents shown the Remove All Spotify Hypothetical (79 percent) allocated points to at least one alternative music option within this category. Alternatives within category C ("Music on video options to replace listening to music on Spotify Premium") were allocated points by 463 respondents shown the Remove Spotify Premium Hypothetical (77 percent) and 442 respondents shown the Remove All Spotify Hypothetical (74 percent). **Appendices S-2 and T-2** also show the number and percentage (with accompanying 95 percent confidence interval) of respondents who allocated points to alternative music options within each of the other categories. Respondents shown the Remove Spotify Premium Hypothetical (Q2) allocated time to an average of 6.7 alternative music options, and respondents shown the Remove All Spotify Hypothetical (Q4) allocated time to an average of 6.3 alternative music options.

114. **Appendices S-3 and T-3** also present data for Q2 and Q4, but instead report the percentage of time allocated to each music option, according to the total number of points assigned to each option across respondents.[143]

115. Within each content category of alternatives, **Appendices S-3 and T-3** report the percentage (with accompanying 95 percent confidence interval) of total time allocated to each music option across respondents. Each percentage is calculated based on the full qualified sample of respondents, and is not limited to respondents who selected alternative music options within the category. **Tables 1 and 2** below summarize the alternative music options to which more than four percent of time was allocated across survey respondents who answered Q2 or Q4.

[143] Each respondent had 100 points to allocate. Some music options received 1 or more points and some music options received 0 points. For example, for the 604 respondents shown the Remove Spotify Premium hypothetical that answered Q2, each respondent allocated 100 points, totaling 60,400 points allocated. The percentages of time allocated to each music option can also be calculated by computing the average number of points allocated per respondent (dividing the points to a music option by 604) and then computing the percentage of time allocated to each music option (dividing the resulting points by 100).

Table 1: Music Options to Which More Than Four Percent of Time Was Allocated; Remove Spotify Premium Hypothetical (N = 604)

Response Options	Percent of Time Allocated	95% Confidence Interval
I would listen to music on online video site(s) (e.g., YouTube, Vevo).	12.3%	[11%, 13.7%]
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Apple Music at $9.99 per month or $119.88 per year).	11.7%	[10%, 13.3%]
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have.	10.3%	[9%, 11.7%]
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	8.7%	[7.6%, 9.8%]
I would listen to ad-supported Spotify, which I do not need to pay for.	8%	[7%, 9%]
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	6.9%	[5.9%, 7.8%]
I would listen to digital music files, CDs, or vinyl records that I already own.	5.7%	[4.8%, 6.5%]
I would listen to satellite radio through the paid subscription I already have (SiriusXM).	5.2%	[4.2%, 6.2%]
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	4.7%	[3.7%, 5.6%]
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	4%	[3.4%, 4.6%]

Source: Interactive Streaming Switching Survey, Appendix S-3.

Table 2: Music Options to Which More Than Four Percent of Time Was Allocated; Remove All Spotify Hypothetical (N = 596)

Response Options	Percent of Time Allocated	95% Confidence Interval
I would listen to music on online video site(s) (e.g., YouTube, Vevo).	11.7%	[10.3%, 13%]
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have.	10.9%	[9.5%, 12.3%]
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Apple Music at $9.99 per month or $119.88 per year).	10.3%	[8.7%, 11.9%]
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	8.9%	[7.8%, 10.1%]
I would listen to digital music files, CDs, or vinyl records that I already own.	8.2%	[7.1%, 9.4%]
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	7.5%	[6.5%, 8.6%]
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	6.7%	[5.5%, 7.8%]
I would listen to satellite radio through the paid subscription I already have (SiriusXM).	6.2%	[5.2%, 7.3%]
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	4.7%	[4%, 5.5%]

Source: Interactive Streaming Switching Survey, Appendix T-3.

116. "I would listen to music on online video site(s) (e.g., YouTube, Vevo)" was the alternative music option to which the most time was allocated across respondents. It was allocated 12.3 percent of time across respondents shown the Remove Spotify Premium Hypothetical and 11.7 percent of time across respondents shown the Remove All Spotify Hypothetical. Other alternative music options to which respondents allocated a high share of their time included "I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to", which was allocated 11.7 percent of time across respondents shown the Remove Spotify Premium

Hypothetical and 10.3 percent of time across respondents shown the Remove All Spotify Hypothetical, and "I would listen to on-demand music streaming service(s) thorough the paid subscription(s) I already have," which was allocated 10.3 percent of time across respondents shown the Remove Spotify Premium Hypothetical and 10.9 percent of time across respondents shown the Remove All Spotify Hypothetical. Additionally, the alternative music option "I would listen to digital music files, CDs, or vinyl records that I already own" was allocated 5.7 percent of time across respondents shown the Remove Spotify Premium Hypothetical and 8.2 percent of time across respondents shown the Remove All Spotify Hypothetical.

117. I performed statistical analyses to assess whether respondents' demographic characteristics are related to the distribution of alternative music options to which respondents allocated time in Q2 and Q4. I find that the distributions of respondents' time allocations in Q2 and Q4 do not statistically differ by age, gender, region, or education level.[144]

118. Additionally, in **Appendix U** I compare the distribution of respondents' Spotify Premium subscription type, as indicated in QS12 and QS13, to the actual distribution of Spotify Premium subscribers using data from Spotify.[145] The distribution of respondents may

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[144] For Q2 (and Q4), I compared the distribution of all responses with the distribution of responses excluding respondents in each demographic group in QS1–QS4. For example, I compared the distribution of all responses with the distribution of responses excluding respondents aged 18–24. I performed two different statistical tests for each group. First, I performed a standard Pearson chi-squared test on the distribution of average time allocated to music options by respondents. I found no statistically significant difference at the 5 percent level for any group (*p-value = 0.99–1 for all groups in both hypotheticals*). Second, I performed a first-order Rao-Scott chi-squared test on the percent of respondents who allocated non-zero time to music options. I found no statistically significant difference at the 5 percent level (*p-value = 0.69–0.99 for age, 0.09–0.46 for gender, 0.99 for region, 0.99–1 for education for both hypotheticals*). *See* work papers.

[145] *See* Exhibit 22, SPOT_P4_000001242, "[redacted]"

differ from that of actual Spotify Premium subscribers for several reasons. For example, I understand that Spotify subscription data include people who have a free trial to Spotify Premium, whereas the survey sample does not. Further, the survey sample includes only primary decision makers or those who played a major role in the decision to purchase a paid subscription to Spotify Premium, whereas the data from Spotify includes all subscribers, including subscribers who played no role or a minor role in the decision to purchase a paid subscription to Spotify Premium.[146] Nevertheless, I performed a test to see if there is any difference in responses to Q2 and Q4 after weighting the sample to represent that actual distribution of Spotify subscriber types and found no significant change in results.[147] These additional tests confirm that my survey results are robust.

VI. Summary

119. A scientifically designed Internet survey was conducted under my direction to measure what consumers would do in place of listening to music on Spotify Premium if either (a) music on Spotify Premium was no longer available or (b) music on both Spotify Premium and ad-supported Spotify was no longer available. Respondents reported that they would consider a variety of alternative music options to replace listening to music on Spotify Premium. When asked to allocate time across music options, respondents allocated the most time to music on online video sites, such as YouTube and Vevo. Other commonly-selected alternatives included new paid subscriptions to on-demand music streaming services, on-demand streaming services through existing paid subscriptions, and live AM/FM radio

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[146] *See* Appendix D, QS14.

[147] For Q2 (and Q4), I compared the distribution of unweighted responses with the distribution of responses weighted based on the actual distribution of Spotify Premium subscribers. I performed two different statistical tests. First, I performed a standard Pearson chi-squared test on the distribution of average time allocated to music options by respondents. I found no statistically significant difference at the 5 percent level (*p-value = 0.99 for both hypotheticals*). Second, I performed a first-order Rao-Scott chi-squared test on the percent of respondents who allocated non-zero time to music options. I found no statistically significant difference at the 5 percent level (*p-value = 0.99 for both hypotheticals*). *See* work papers.

broadcasts through a radio or over the internet. These results are robust to different approaches to analyzing the data.

120. The survey was conducted and the data were analyzed according to scientific principles to assure that the survey and data are reliable and representative, that the results are analyzed and reported reliably, and that the results of the survey can be relied upon to draw inferences about the behavior of adults in the U.S. who have a Spotify Premium account and make decisions about listening to music.

APPENDIX A

Updated December 2020

ACADEMIC VITA (long version)

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Education

Sc.D. M.I.T., 1975, Operations Research Dissertation: "A Normative Methodology for Predicting Consumer Response to Design Decisions: Issues, Models, Theory and Use."

Advisor: John D. C. Little. Committee members: Glen L. Urban and Moshe Ben-Akiva.

S.M. M.I.T., 1973, Civil Engineering (Transportation Systems Division)

S.M. M.I.T., 1973, Electrical Engineering

S.B. M.I.T., 1973, Electrical Engineering
Joint Thesis (S.M.'s and S.B.): "An Efficient Method to Predict the Impacts of Operating Decisions for Conventional Bus Systems." Advisor: Nigel Wilson.

Honorary Degree

Doctor Honoris Causa, Erasmus School of Economics, Erasmus University, Dies Natalis 2016.

Lifetime Achievement Awards

Buck Weaver Award 2013, INFORMS Society of Marketing Science (ISMS).This award recognizes lifetime contributions to the theory and practice of marketing science.

Parlin Award 2001, The American Marketing Association describes this award as "the oldest and most distinguished award in the marketing research field."

Converse Award 1996, the American Marketing Association, for "outstanding contributions to the development of the science of marketing."

Churchill Award 2011, the American Marketing Association, Market Research Special Interest Group, for "Lifetime achievement in the academic study of marketing research."

Fellow of the Institute for Operations Research and Management Science (INFORMS)

Inaugural Fellow of the INFORMS Society of Marketing Science (ISMS)

Highly Cited Researcher (ISI Web of Science), Since 2006.

Awards for Published Papers

INFORMS Society of Marketing Science (formerly The Institute of Management Science)	John D.C. Little Best-paper Award 2020, Finalist ISMS Long Term Impact Award, 2019, Finalist ISMS Long Term Impact Award, 2018, Finalist ISMS Long Term Impact Award, 2017, Finalist ISMS Long Term Impact Award, 2012, Finalist ISMS Long Term Impact Award, 2011, Finalist John D.C. Little Best-paper Award, 2015, Finalist John D.C. Little Best-paper Award, 2009, Finalist John D.C. Little Best-paper Award, 2003, First Place John D.C. Little Best-paper Award, 1998, Finalist John D.C. Little Best-paper Award, 1994, Finalist John D.C. Little Best-paper Award, 1993, First Place John D.C. Little Best-paper Award, 1990, Honorable Mention Best paper in Marketing Sciences Literature, 1984, Honorable mention. Best Paper in Marketing Sciences Literature, 1983, First Place. Best Paper in Marketing Sciences Literature, 1982, First Place. Two published articles were cited in 2007 as one of "the top 20 marketing science articles in the past 25 years.
American Marketing Association:	Explor Award (Leadership is on-line market research), 2004, First-Place Finalist, Paul Green Award for contributions to marketing research, 2004 MSI Award for Most Significant Contribution to Practice of Marketing in 1996. Finalist, O'dell Award for best paper in the *Journal of Marketing Research*, published in 1986, awarded in 1991. One of the top 50 most prolific marketing scholars (top journals) in the last 25 years (1982-2006). Total articles, rate of publication, and author-adjusted rate.
Product Development Management Assoc.	Best Paper Award, Finalist, 2003. Best Paper Award, Finalist, 2002. One of ten most-cited papers in the *Journal of Product Innovation Management*. One of the top articles in educational citations in the last twenty years.
European Marketing Academy	Best Paper in *IJRM*, Finalist, 2014
Sawtooth Software Conference	Best Presentation and Paper, 2006; Runner-up, 2008, Honorable Mention, 2016.
European Society of Marketing Research	Best Paper at Rome conference, September 1984.
Emerald Management Reviews	2010 Citation of Excellence (top 50 of 15,000 published papers in 2009)
Doctoral Consortia Faculty	American Marketing Association, 1979, 1984, 1985, 1986, 1988, 1989, 1991, 1993, 1995, 1997, 1998, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2012, 2013, 2014. INFORMS Society of Marketing Science, 2002 (founding member), 2003, 2004, 2012, 2014, 2015, 2017, 2018. European Marketing Academy, 1985

Awards, Teaching

MIT Sloan School of Management:	Nominated for Excellence in Teaching Award 2000, 2007, 2008, 2020 Named "Outstanding Faculty" by *Business Week Guide to the Best Business Schools* (1995). Excellence in Teaching Award 1994 (Awarded by the Master's Student class).

Awards for Thesis Supervision

American Marketing Association (Ph.D.):	Winner John Howard Dissertation Award (2010, Matt Selove, Committee) Co-winner John Howard Dissertation Award (2005, Olivier Toubia) 1st Place (1981, Ken Wisniewski) Honorable Mention (1979, Patricia Simmie).
INFORMS (Ph.D.)	ISMS Doctoral Dissertation Proposal Award (2016, Artem Timoshenko) Winner of the Frank Bass Award (2004, Olivier Toubia, awarded 2005) Winner of the Frank Bass Award (1989, Abbie Griffin, awarded 1995)
MIT Sloan School of Management (Ph.D.):	1st Place (1987, Peter Fader)
MIT Sloan School of Management (Master's):	1st Place (1991, Jon Silver and John Thompson) 1st Place (1983, Steve Gaskin) Honorable Mention (1982, Larry Kahn).
Marketing Science Institute	MSI Alden G. Clayton Doctoral Dissertation Proposal Competition 2017, Artem Timoshenko

Awards, Other

Who's Who in America	Since 1997
Who's Who in Management Science	Since 2000
Who's Who in Economics	Since 2003
Who's Who in Finance and Business	Since 2009
Harvard Business School:	Marvin Bower Fellow, 1987 - 1988.
National Science Foundation Fellowship:	1971 - 1974.
M.I.T.	National Scholar, 1967 - 1971.
Honor Societies:	Tau Beta Pi, Eta Kappa Nu, Sigma Xi

Directorships, Trustee, Advisory Board

2016 – Present	Founder, Board of Directors, Hyper Morphing Technologies, B.V.
1988 – Present	Founder, Senior Product Development Consultant at Applied Marketing Science, Inc.
March 2003 – July 2009	Trustee, Marketing Science Institute

Academic Appointments

January 1989 - Present	Kirin Professor of Marketing MIT Sloan School of Management Massachusetts Institute of Technology Cambridge, Massachusetts 02142
July 2017 – present	Head, Marketing Group
January 2020-June 2020	Acting Area Head, Management Science Area and member of Governance Committee
July 2010 – June 2011	Head, Marketing Group
July 2005 – June 2009	Area Head, Management Science Area

July 1988 – June 2003	Head, Marketing Group
September 1993 - May 2000	co-Director, International Center for Research on the Management of Technology
September 1997 - May 2000	Research Director, Center for Innovation in Product Development
June 2001 – June 2006	Virtual Customer Initiative Leader, Center for Innovation in Product Development
July 1984 - January 1989	Professor of Management Science MIT Sloan School of Management Massachusetts Institute of Technology Cambridge, Massachusetts 02142
July 1987 - June 1988	Marvin Bower Fellow Harvard Business School Harvard University Cambridge, Massachusetts 02163
March 1985 - May 1985	Visiting Lecturer European Institute of Business Administration Fontainebleau, FRANCE
September 1980 - June 1984	Associate Professor of Management Science MIT Sloan School of Management Massachusetts Institute of Technology Cambridge, Massachusetts 02142
September 1975 - August 1980	Assistant Professor of Marketing and of Transportation (granted tenure and promoted in 1980) Graduate School of Management and Transportation Center Northwestern University Evanston, Illinois 60201

Teaching Interests

Marketing Management, New Product and Service Development, Competitive Marketing Strategy, Marketing Models, Measurement and Marketing Research, Research Methodology, Marketing Analytics.

Research Interests

Consumer decision measurement: conjoint analysis, non-compensatory methods, adaptive methods, machine-learning methods, strategic importance of accuracy. Product forecasting: information acceleration, really-new products, incentive-aligned games. Consumer behavior: cognitive simplicity in decision making and in dynamic models, theory-based models, vivid stimuli. Morphing: website, banner, product assortment. Voice of the customer methods, defensive and competitive strategy, new product development, experimental and quasi-experimental methods.

Books

Hauser, John R. and Glen L. Urban (2016), *From Little's Law to Marketing Science: Essays in Honor of John D. C. Little*, MIT Press: Cambridge MA.

This is an edited volume that serves as a Festschrift to honor the lifetime achievements of John D. C. Little.

Urban, Glen L. and John R. Hauser (1993), *Design and Marketing of New Products, 2E*, Prentice-Hall.

A comprehensive text that integrates advanced, state-of-the-art techniques to provide graduate-level students and marketing professionals with an understanding of the techniques and an operating ability to design, test, and implement new products and services.

This text has been honored by being selected for both the Prentice-Hall International Series in Management and the

Series in Marketing. It has been adopted at a number of major universities. In a 1988 survey it was identified the 1980 version as the most widely used new product textbook at the graduate level.

The revision includes new material on designing for quality, reduced cycle times, prelaunch forecasting, quality improvement, defensive and competitive strategy, value mapping, the integration of marketing and engineering, new issues of organization, customer satisfaction, and new international examples. It is available in Korean and is being translated into Japanese and Chinese. Many current texts draw heavily from our material.

Third most cited work in the *Journal of Product Innovation*, 1984-2004. (Cited May 2010.)

Urban, Glen L., John R. Hauser, and Niki Dholakia (1986), *Essentials of New Product Management*, Prentice Hall.

This is an undergraduate textbook which presents the essential concepts but written for a non-technical audience. It has been translated to Japanese and has sold well in Japan.

Hauser, John R. (1986), *Applying Marketing Management: Four Simulations*, Scientific Press.

This mini-text and software package contains four tutorial exercises for marketing management concepts. With this package students learn positioning, competitive strategy, new product development, and life cycle forecasting while using the personal computer to simulate marketing management problems. A detailed instructor's manual and transparency masters are also available. It is available in Japanese.

Hauser, John R. (1989), *ENTERPRISE: An Integrating Management Exercise*, Scientific Press.

This mini-text and software package contains a comprehensive competitive simulation. Students compete in six markets by making marketing and production decisions. A detailed instructor's manual and administrative software is also available. It is available in Japanese.

Journal Editor

Marketing Science, Editor-in-Chief for volumes 8, 9, 10, 11, 12, and 13 (1989-1994). Four issues per year including periodic editorials and journal management. Processed about 120 new papers per year. Special Editor for issues on the Theory and Practice of Marketing (2014) and Big Data (2016).

Journal Publications (Almost all available for download at web.mit.edu/hauser/www.)

Citations Reports: December 28, 2018 Google Scholar; 27,697 citations and an H-index of 56. ISI Web of Science (automated, December 28, 2018): 6,214 citations with an H-index of 36. Not included in automatic ISI report: Design and Marketing of New Products (474 2E, 286 1E, 35 UG), Defensive Marketing Strategies (236), Testing Competitive Market Structures (94). Application of Defender (45), Dynamic Markov Application (28). Revised total of 7,412; revised ISI H-index of 38. Addition citations updated January 2018 (books) & December 2018 (articles).

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Lin, Song, Juanjuan Zhang, and John R. Hauser (2015), "Learning from Experience, Simply," *Marketing Science*, 34, 1, (January-February), 1-19.

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Dzyabura, Daria and John R. Hauser (2011), "Active Machine Learning for Consideration Heuristics," *Marketing Science*, 30, 5, (September-October), 801-819.

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Finalist, John D. C. Little Award for Best Article in the Marketing Sciences Literature, 2009.

Finalist, INFORMS Society for Marketing Science Long Term Impact Award, 2017, 2018, 2019

2010 Emerald Management Reviews Citation of Excellence for one of best articles published in the top 400 business and management journals in 2009. (Top 50 of 15,000 articles.)

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First Place, Frank M. Bass Award for Best Article Based on a Dissertation, 2005.

Finalist, INFORMS Society for Marketing Science Long Term Impact Award, 2011

Finalist, INFORMS Society for Marketing Science Long Term Impact Award, 2012

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Cited by the PDMA in 2007 as one of the top articles in the last twenty years in educational citations.

Simester, Duncan I, John R. Hauser, Birger Wernerfelt, and Roland Rust (2000), "Implementing Quality Improvement Programs Designed to Enhance Customer Satisfaction: Quasi-experiments in the United States and Spain," *Journal of Marketing Research*, 37, 1, (February), 102-112.

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Predicting Product Return Rates, " (Cambridge, MA: MIT Sloan School of Management). Under review, *Marketing Science*.

Burnap, Alex and John R. Hauser (2020), "Design and Evaluation of Product Aesthetics: A Human-Machine Hybrid Approach," (Cambridge, MA: MIT Sloan School of Management). Under review, *Marketing Science*.

Burnap, Alex and John R. Hauser (2020), "Predicting "Design Gaps" in the Market: Deep Consumer Choice Models under Probabilistic Design Constraints," (Cambridge, MA: MIT Sloan School of Management).

Eggers, Felix, John R. Hauser, Matthew Selove (2017), "Scale Matters: How Craft in Conjoint Analysis Affects Price and Positioning Strategies," (Cambridge, MA: MIT Sloan School of Management).

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Braun, Michael, Clarence Lee, Glen L. Urban, and John R. Hauser (2009), "Does Matching Website Characteristics to Cognitive Styles Increase Online Sales?," (Cambridge, MA: MIT Sloan School of Management).

Zettelmeyer, Florian and John R. Hauser (1995), "Metrics to Evaluate R&D Groups: Phase I, Qualitative Interviews," Working Paper, International Center for Research on the Management of Technology, MIT, Cambridge, MA, 02142.

Hauser, John R. (1991), "Comparison of Importance Measurement Methodologies and their Relationship to Consumer Satisfaction," (Cambridge, MA: MIT Sloan School of Management).

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Research in Progress

Field application and test of website morphing.

The effect of vivid stimuli in conjoint analysis. Machine learning to identify non-linearities.

Fractional updating for Multiarm bandit approaches to the design of randomized medical clinical trials

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Hauser, John R. (1996), "R&D Metrics: An Annotated Bibliography," ICRMOT Working Paper, M.I.T., Cambridge, MA 02142. (June) Also available as a Marketing Science Institute Working Paper (November).

Hauser, John R. and Greg Cirmak (1987), "Consumer Driven Engineering for the CHEK Automobiles," Information Resources, Inc. Report to General Motors, Inc. Details the results of a major study on consumer perceptions and preferences of luxury automobiles. April.

Hauser, John R. (1983), "Critique of Market Studies for Cellular Radio Telephone:. Affidavits before the FCC evaluating market studies, June and September.

Hauser, John R. (1983), "Forecasts of Demand and Cellular Radio Telephone,: Affidavits before the FCC for five major and nine minor markets. June and April.

Hauser, John R., and J. Bertan (1982), "Auto Show Interviews," Internal Report to Buick Division of General Motors, June.

Hauser, John R., and Kenneth J. Wisniewski (1981), "Monitoring the Implementation of Innovative Transportation Services, Phase I: Final Report," Technical Report to the Urban Mass Transit Administration, Research Grant IL-11-0012, May.

Hauser, John R. and Kenneth J. Wisniewski (1979), "Consumer Analysis for General Travel Destinations," Technical Report, Transportation Center, Northwestern University, March.

Hauser, John R. and Steven M. Shugan (1978), "Designing and Building a Market Research Information System," Technical Report, Transportation Center, Northwestern University, February.

Hauser, John R. (1978), "Forecasting and Influencing the Adoption of Technological Innovations," Technical Report, Transportation Center, Northwestern University, October.

Hauser, John R., Alice M. Tybout and Frank S. Koppelman (1978), "Consumer-Oriented Transportation Services Planning: The Development and Implementation of a Questionnaire to Determine Consumer Wants and Needs," Technical Report, Transportation Center, Northwestern University, October.

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Koppelman, Frank S., John R. Hauser and Alice M. Tybout (1977), "Preliminary Analysis of Perceptions, Preferences, Beliefs and Usage of Transportation Services for Travel to Downtown Evanston," Technical, Report, Transportation Center, Northwestern University, May.

Hauser, John R. (1977), "Results of the Focus Group Interviews for Shared Ride Auto Transit," Cambridge Systematics Consultant's Report, May.

Hauser, John R. (1976), "Report on the Applicability of Attitudinal research for Improving the Effectiveness of Transportation Demand Models," Position Paper commissioned by Cambridge Systematics, Inc., April.

Wilson, Nigel, R. W. Weissberg and John R. Hauser (1976), "Advanced Dial-a-Ride Algorithms--Final Report," M.I.T. Department of Civil Engineering Technical Report, April.

Hauser, John R., et al. (1974), "The Chemung County Transit Survey." Volunteers in Technical Assistance (a division of VISTA) publication for Chemung County, NY, June. (Includes analysis of transportation options based on the results of the survey designed and implemented by the technical team.)

Hauser, John R. (1974), "A Cost Model for RTS (Rochester, NY) Conventional Bus Routes," M.I.T., Department of Civil Engineering Report, January.

Hauser, John R. (1973), "An Efficient Model for Planning Bus Routes in Communities with Populations Between 20,000 and 250,000," M.I.T., Operations Research Center Working Paper OR-029-993, November.

Research Grants

July 2007 – June 2008	Understanding Non-compensatory Decision Making for Consideration Decisions (under Consortium with MIT Center for eBusiness and General Motors, Inc.)
June 2000 – May 2006	Center for Innovation in Product Development, MIT, Initiative Leader, Virtual Customer.
January 2001 – May 2002	eBusiness Center at MIT. Design and Delivery of Online Promotions. (with John Little, Duncan Simester, and Glen Urban).
January 1997 – May 2000	Center for Innovation in Product Development, Engineering Research Center Grant from the National Science Foundation. Research Director. In addition, research grants for non-monetary incentives, procurement metrics, and virtual customer methods.

June 1999 – May 2000	"Metrics Thermostat," International Center for Research on the Management of Technology (Principal Investigator).
June 1999- May 2001	"New Product Metrics at Ford and the US Navy," Center for Innovation in Product Development
June 1999- May 2001	"Lean Sustainment Metrics at the USAF," Lean Sustainment Initiative at MIT
June 1994 - May 1999	"Metrics to Value R&D," International Center for Research on the Management of Technology (Principal Investigator). General topic. Detailed proposals were for various aspects of the problem.
June 1991 - May 1994	"Customer Needs, Customer Satisfaction, Sales, and Profit: Providing the Right Incentives to Engineering and R&D," International Center for Research on the Management of Technology (co-Principal Investigator with Birger Wernerfelt)
January 1990 - June 1992	"Information Acceleration and Preproduction Forecasting of New Autos, Phases I and II." General Motors Electric Vehicle Project. (Associate)
December 1988 - June 1990	"Improved Methodologies to Measure Consumer Needs," Procter & Gamble Company. (Principal Investigator)
September 1981 - December 1985	"Prelaunch Forecasting System for New Consumer Durables and Its Applications to Auto Purchases," General Motors, Buick Division (co-Principal Investigator with Glen L. Urban).
January 1981 - May 1981	"Marketing Approaches in Travel Demand," United Parcel Service Grant (Faculty Advisor).
January 1979 - August 1980	"Monitoring the Implementation of Innovative Public Transportation Services" from University Research Program of the Urban Mass Transportation Administration (Principal Investigator).
July 1975 - September 1977	"Consumer-Oriented Transportation Service Planning." from the Program of University Research, U.S. Department of Transportation (Faculty Associate).
September 1977 - January 1978	"Consumer-oriented Transportation Service: Modification and Evaluation" from Program of University Research, USDOT (Faculty Associate).
May 1976 - September 1978	"Enhancement of Communications with a Small Scientific Community Using Slow-Scan Televideo Terminals and Voice-Grade Telephone Lines" from the National Science Foundation (Faculty Associate).
January 1976 - December 1976	"A Method for Assessing Pricing and Structural Changes on Transport Mode Use," U.S. Department of Transportation (Faculty Associate).
September 1976 - June 1977	"Prediction of Urban Recreational Demand" from the National Science Foundation (Faculty Consultant).

Invited Lectures (Outside the MIT Sloan School)

Northeastern University Seminar Series, Boston, MA, November 11, 2019, "Product Recommendations when Consumers Learn their Preferences." (joint research with Daria Dzyabura).

Carnegie Mellon University, April 8, 2016, "The Effect of Precision on Strategic Positioning."

University of North Carolina, Kenan-Flagler Business School, Marketing Department. March 7, 2014. "Learning from Experience, Simply."

Marketing Science Institute, November 2012, “Panel Discussion: Perspectives on Big Data from Marketing Scholars,” Cambridge, MA.

Wharton School, University of Pennsylvania, April 2009, “Website Morphing”

Max Planck Institute for Human Development, Center for Adaptive Behavior and Cognition, Summer Institute on Bounded Rationality in Psychology and Economics, August 2006, “Greedoid-Based Non-Compensatory Consider-then-Choice Inference.”

Northwestern University, Evanston, IL, April 2006, “Greedoid-based Non-compensatory Inference.”

University of Michigan, Seminar Series, October 2004, “Table Stakes: Non-compensatory Consideration-then-Choice Inference.”

Management Roundtable Special Conference on “Taking the Voice of the Customer to the Next Level,” Boston, MA October 2004, “The Virtual Customer.”

Marketing Science Institute Research Generation Conference, Atlanta, GA, May 2004, “New Products/Innovation,” (with Gerry Tellis).

Marketing Science Institute Conference on Emerging Approaches for Successful Innovation, Chicago, IL, May 2003, "'Listening-In' to Find Unmet Customer Needs and Solutions."

University of California at Los Angeles, "Polyhedral CBC (and other fun stuff), February 2003

New York University, "Polyhedral Methods," March 2003.

Industrial Liaison Program – Research Directors' Conference, April 2002, "The Virtual Customer."

University of Maryland, "Polyhedral Methods for Conjoint Analysis," March 2002.

Marketing Science Institute Trustees Meeting on Marketing Outside the Silo, Boston, MA, April 2002, "Challenges and Visions for Marketing's Role in Product Development Processes."

Managing Corporate Innovation -- ILP Symposium celebrating ten years of Management of Technology Research at MIT. “Dealing with the Virtual Customer: Fast Web-based Customer Input.” April 2001

Epoch Foundation, Cambridge, MA, October 2000, “The Virtual Customer.”

Yale University Research Seminar in Marketing, New Haven, CN, March 2000, "Metrics Thermostat."

Analysis Group Economics Seminar, Boston, MA, December 1999, "The Use of Marketing Research in Litigation." Also New York, NY, March 2000 and Washington, D. C., March 2002.

Boston Chapter of the Society for Concurrent Engineering, Waltham, MA, October 1999, "Metrics Thermostat."

University of Michigan DuPont Distinguished Speakers’ Series, Ann Arbor, MI, March 1998, “New Product Metrics.”

Kirin Brewery Co. Limited, Tokyo, JAPAN, December 1998, “You Are What You Measure!” and “Scientific Studies of the Voice of the Customer.”

NEC Corporation, Tokyo, JAPA, December 1998, “Scientific Studies of the Voice of the Customer.”

University of California at Los Angeles, Los Angeles, CA, February 1997, “Research, Development, and Engineering Metrics”

Stanford University, Stanford, CA, December 1996, “Metrics to Value R,D&E”

University of California at Los Angeles, Los Angeles, CA, February 1997, “Research, Development, and Engineering Metrics”

Duke University, Durham, NC, "Internal Customers and Internal Suppliers," Nov. 1995.

University of Minnesota, Minneapolis, MN, "Voice of the Customer," "Internal Customers and Captive Suppliers," May 1995.

Winter Retreat, University of Florida, Gainesville, FL, "Internal Customers and Captive Suppliers," December 1993.

Product Development Association - Boston, "Design and Marketing of New Products II: Advances in Product Development Management over the Last 13 Years," May 1993.

3M, Minneapolis, MN, "Incentives to Encourage a Long-term Perspective and a Customer Focus," Workshop on "Towards a World-class Research, Development, and Engineering Organization," November 1992.

Baxter Health Care, Orange County, CA, "The Voice of the Customer," August 1992.

TIMS College on the Practice of Management Science (*New Directions in Management Science*), Cambridge, MA: "The Voice of the Customer," October 1991.

IBM, Inc., Boca Raton, FL: "Voice of the Customer for Performance Graphics," May 1991.

Kirin Brewery Company, Ltd. Tokyo, JAPAN: "New Product Development" and "Customer Satisfaction and Customer Needs," April 1991.

American Iron and Steel Institute, Detroit, MI: "Satisfying the Customer -- Technical Issues," February 1991.

Warner Lambert, Inc., Mountain Laurel, PA: "Communication Among R&D and Marketing," October 1990.

Digital Equipment Corporation, Maynard, MA: "Voice of the Customer," May 1990.

Life Insurance Marketing and Research Association, Inc.: 31st Research Planning Conference, Boston, MA, "The House of Quality." June 1989.

University of Illinois: "Customer Driven Engineering." April, 1988.

Marketing Science Institute and IBM Thornwood Educational Facility: Quality through Customer Driven Engineering." April, 1988.

Harvard Business School: "Customer Driven Engineering: Integrating Marketing and Engineering." February, 1988.

Vanderbilt University: "Competitive Price and Advertising Strategies" and "Customer Driven Engineering." October, 1988.

Columbia University: "Price, Positioning, and Advertising Games: To Equilibrate of Not, Does it Pay to be Smart?" May, 1987.

New York Marketing Modelers' Club: "Would You Really Rather Have a Buick?: Prelaunch Forecasting of New Automobiles," May 1987.

M.I.T. Applied Economics: "Competitive Product Selection and Advertising Models." April, 1987.

Northwestern University: "Agendas and Consumer Choice," August, 1986.

AMA Faculty Consortium on Marketing Strategy at the University Tennessee, Knoxville. "Defender: Analyses for Competitive Strategy," July, 1986.

Ohio State University: "Defensive and Competitive Strategy." May, 1986.

Boston University: "Research in Competitive Strategy." November, 1985.

Midwest Electronics Association, Minneapolis, MN: "New Products for High-Tech Firms." October, 1985.

University of Pennsylvania: "Agendas and Consumer Choice," August, 1985.

Herstein Institute, Vienna Austria: "Competitive Strategy," May, 1985.

Cadbury-Schweppes, Birmingham, England: "New Product Development and Defensive Strategy." May, 1985.

Rhone-Poulenc and Aluminum Pechiney, Paris, France: "New Product Development." April, 1985.

University of Michigan: "Defensive and Competitive Strategy." February, 1985.

Marketing Science Institute Special Mini-Conference: "Defensive Marketing Strategies for Consumer Firms." September 1983.

University of Chicago, Graduate School of Business, Chicago, IL. "Agendas and Consumer Choice," May 1984.

European Institute for Business Administration (INSEAD), Fontainebleau, FRANCE. "Agendas and Consumer Choice," June 1984.

University of Connecticut. "Defensive Marketing: Theory, Measurement, and Models," April, 1983.

University of Osaka, JAPAN "Defensive Marketing: Theory, Measurement, and Models," August, 1983.

Kao Soap, Ltd., Tokyo, JAPAN: "Defensive Marketing," August, 1983.

Johnson & Johnson, K. K., Tokyo, JAPAN: "Defensive Marketing," August, 1983.

Analog Devices, Inc., Norwood, MA. "New Product Development," May, 1982.

University of Rochester Research Seminar, "Prelaunch Forecasting of New Consumer Durables," April 1982.

Frito-Lay R & D Laboratory, Dallas, TX, "Marketing and R & D for New Products," October 1981.

University of California at Los Angeles Research Seminar, "Defensive Marketing Strategies," July, 1981.

Purdue University Research Seminar, "Product Realization," October 1979.

Stanford University Research Seminar, "Product Realization," October 1979.

Elrick and Lavidge, Inc., Chicago, Illinois, "Product Realization," October 1979.

Booz, Allen and Hamilton, Inc., Chicago, Illinois, "New Service Planning for Hospitals," April 1979.

Cornell University Research Seminar, "Intensity Measures of Consumer Preference," February 1979.

University of Rochester Research Seminar, "Product Realization: Synthesis of Marketing and Economic Theory," December 1978.

Region VI Center of Health Planning, New Orleans, LA, "Finding the Linkage Through Marketing,: August 1978.

Nebraska Hospital Association, Kearney, NE, "Hospital Marketing Surveys," May 1978.

Executive Development Group, Waterloo Management Education Centre, Toronto, Ontario, Canada, "Designing New Industrial Products," February 1978.

Academic Update, Xavier University Graduate Program in Hospital and Health Administration, Cincinnati, OH, "Designing Hospital Services: A Marketing Approach," October 1977.

The Hospital Marketing Workshop, Ireland Educational Corporation, Chicago, Illinois, "Analyzing the Hospital Markets," January 1977 and May 1977.

Association for College Unions - International, 1976 Fall Conference in Green Bay, WI, Keynote Speech - "Designing Successful Services: A Marketing Approach," October 1976.

University of Chicago, Graduate School of Business, Research Seminar, "Testing Probabilistic Models," April 1976.

Council for the Advancement and Support of Education, Conference on Marketing Alumni Program, New York, NY, Keynote Speech, February 1976.

Presentations at Professional Meetings (No published proceedings, some co-presented or presented by co-author[s])*

2020 Conference on Artificial Intelligence, Machine Learning, and Business Analytics (Virtual), Temple University, December 11-12, 2020. "Identifying Profitable and Feasible Design Gaps for New Products" with Alex Burnap*.

INFORMS Marketing Science Conference (Virtual), Duke University, June 2020.

- "Leveraging the Power of Images in Managing Product Return Rates" with Daria Dzyabura, Siham El Kihal*, and Marat Ibragimov.
- "Design Gaps: Using Deep Learning to Balance Consumer Demand and Engineering Costs" with Alex Burnap*

New England Marketing Conference (NEMC),Cambridge, MA, October 11. 2019. "Issues In Ensuring That Marketing is a Viable Discipline Over the Next Decade."

11th Triennial Invitational Choice Symposium, Cambridge, MD, May 29-June 1, 2019.

- "Leveraging the Power of Images in Predicting Product Return Rates. Joint research with Daria Dzyabura, Siham El Kihal, and Marat Ibragimov.
- "Design and Evaluation of Product Aesthetics: A Human-Machine Hybrid Approach." Joint research with Alex Burnap* and Artem Timoshenko.

Smarter Choices for Better Health, Erasmus Initiative Conference, Rotterdam, NL, November 22, 2019, "Morphing Randomized Controlled Trials." Joint research with Gui Liberali.*

ISMS Marketing Science Conference, Rome, Italy, June 20-22, 2019, "Generating and Testing Product Design Aesthetics: A Human-Machine Hybrid Approach." Joint research with Alex Burnap* and Artem Timoshenko.

Theory + Practice in Marketing Conference, Columbia Business School, New York, NY, May 16-18, 2019, "Leveraging the Power of Images in Predicting Product Return Rates. Joint research with Daria Dzyabura, Siham El Kihal*, and Marat Ibragimov..

INFORMS Doctoral Consortium, Temple University, Philadelphia, PA. June 13, 2018. "Big Data and Machine Learning."

INFORMS Marketing Science Conference, Temple University, Philadelphia, PA. June 14-16, 2018.

- John R. Hauser*, "Marketing Science's Field Guide to Machine Learning and Algorithms." Plenary Panel.
- John R. Hauser*, "Digital Marketing Applications of AI and Deep Learning ," Panel Discussion
- Alex Burnap*, Artem Timoshenko, and John R. Hauser , "Deep Learning to Predict Consumer Aesthetic Preferences and Augment Product Designers"
- Artem Timoshenko* and John R. Hauser, "Combining Machine Learning and Human Judgment to Identify Customer Needs—New Tests and Applications"
- Gui Liberali* and John R Hauser, "Morphing Randomized Controlled Trials"

INFORMS Doctoral Consortium, University of Southern California, Los Angeles, CA. June 7, 2017. "Machine learning applications for customer-oriented recommendation systems and the voice of the customer."

INFORMS Marketing Science Conference, University of Southern California, Los Angeles, CA. June 8-10, 2017.

- Daria Dzyabura and John R. Hauser*, "Recommending Products When Consumers Learn Their Preferences."
- Felix Eggers* and John R. Hauser, "Precision Matters: How Craft in Conjoint Analysis Affects Price and

Positioning Strategies."

- Artem Timoshenko* and John R. Hauser, "Identifying Customer Needs from User Generated Content."

Dies Natalis Academic Symposium, Erasmus University, Rotterdam, The Netherlands, November 8, 2016, "Recommending Products When Consumers Learn their Preferences." Based on research with Daria Dzyabura.

Erasmus Centre for Marketing and Innovation, Econometric Workshop, Erasmus University, Rotterdam, The Netherlands, "Strategic Implications of Precision in Conjoint Analysis. Based on research with Felix Eggers.

2016 Paul D. Converse Symposium, University of Illinois, Champaign, IL, April 21-23, 2016, "Academic Achievements of Steven M. Shugan, Converse Winner."

INFORMS Marketing Science Conference, Shanghai, China. June 16-18, 2016, Xinyu Cao*, T. Tony Ke, John R. Hauser, Juanjuan Zhang, "Competing for Limited Attention on Social Media."

INFORMS Marketing Science Conference, Baltimore MD, June 2015. Songting Dong, John Hauser*, Min Ding, Lixin Huang, and Holger Dietrich, "The Sleuth Game: Predicting Consumer Response to as-yet-unspecified Product Features for Really New Products."

AMA/Sheth Foundation Doctoral Consortium, Northwestern University, Evanston, IL, June 2014, "Bridging Empircs and Practice."

INFORMS Marketing Science Consortium, Emory University, Atlanta GA, June 2014, "Learning from Experience Simply."

AMA Summer Educators' Conference, San Francisco, CA, August 1-3, 2014. Guilherme Liberali,* Hauser, John R., and Glen L. Urban "Recent Advances in Morphing Theory: Challenges and Opportunities for Research."

INFORMS Marketing Science Conference, Atlanta, GA, June 2014. Aliaa Atwi* and John R. Hauser, "Exploration vs. Exploitation in Rapid Coupon Personalization."

AMA Sheth Foundation Doctoral Consortium 2013, University of Michigan, Ann Arbor, MI, June 6-9. "Managing Your Career (as a Marketing Academic)."

AMA Summer Educators' Conference, Boston MA August 9-11, 2013. Panel on "Academic Integrity in the Publication Process" with Robert Meyer, Richard Lusch, John Hauser.*

10th Marketing Dynamics Conference, The University of North Carolina at Chapel Hill, May 30 – June 1, 2013. Song Lin*, Juanjuan Zhang, and John Hauser, "Learning from Experience, Simply."

Joint Statistical Meetings 2013, Montreal, Ontario, August 2013. Song Lin*, Juanjuan Zhang, and John Hauser, "Learning from Experience, Simply."

2012 AMA Sheth Foundation Doctoral Consortium, Foster School of Business, University of Washington, June 2012, Panel: 10 Steps to Successful Publishing.

INFORMS Marketing Science Conference, Boston, MA, June 2012.

- Song Lin*, Juanjuan Zhang, and John R. Hauser, "Learning from Experience, Simply."
- Glen L. Urban, Guilherme Liberali, Erin MacDonald, Robert Bordley, and John R. Hauser*, "Morphing Banner Advertising"
- Matt Selove* and John R. Hauser, "The Strategic Importance of Accuracy in Conjoint Design."
- Panel: Research Opportunities at the Marketing/Operations Interface

The 2012 Theory & Practice in Marketing (TPM) Conference on Marketing Strategy, Harvard University, Boston, MA. May 2-3, 2012. Glen L. Urban, Guilherme Liberali, Erin MacDonald, Robert Bordley, and John R. Hauser*, "Morphing Banner Advertising."

New England Marketing Conference, Cambridge, MA, October 28, 2011. Gui Liberali, Glen L. Urban and John R. Hauser*, " Providing Unbiased Competitive Information to Encourage Trust, Consideration, and Sales: Two Field Experiments."

Yale School of Management, Center for Customer Insight, The Customer Insights Conference, New Haven, CT, May 12-14, 2011. John R. Hauser and Matthew Selove*, "The Strategic Importance of Accuracy in the Relative Quality of Conjoint Analysis."

INFORMS Marketing Science Conference, Cologne, Germany, June 2010 (*indicates primary presenter if not me)

- Liberali, Guilherme*, John R. Hauser, and Glen L. Urban, "Optimal Time-to-Morph and Cognitive Costs of Morphing."
- Liberali, Guilherme, Glen L. Urban, and John R. Hauser, "Do Competitive Test Drives and Product Brochures Improve Sales?"
- Urban, Glen L.*, Jong Moon Kim, Erin MacDonald, John R. Hauser and Daria Dzyabura, "Developing Consideration Rules for Durable Goods Markets."

2010 Advanced Research Techniques Forum, San Francisco, CA, June 6-9, 2010, "Unstructured Direct Elicitation of Non-compensatory and Compensatory Decision Rules," with Min Ding, Songting Dong*, Daria Dzyabura (listed as Silinskaia), Zhilin Yang, Chenting Su, and Steven Gaskin.

2009 AMA Sheth Foundation Doctoral Consortium, J. Mack Robinson College of Business, Georgia State University, June 2009. E-Commerce and Digital Marketing Topics.

INFORMS Marketing Science Conference, Ann Arbor, MI, June 2009 (* indicates primary presenter if not me)

- "An Empirical Test of Incentive-Compatible Direct Elicitation of Heuristic Decision Rules for Consideration and Choice," with Min Ding, Songting Dong, Daria Dzyabura, Zhilin Yang, Chenting Su, and Steven Gaskin
- "Adaptive Profile Evaluation to Identify Heuristic Decision Rules in "Large" and Challenging Experimental Designs," with Daria Dzyabura (formerly Silinskaia)* and Glen L. Urban..
- "Morphing Websites in the Presence of Switching Costs," with Guilherme Liberali* and Glen L. Urban.
- "Continuous-Time Markov-Process with Misclassification: Modeling and Application to Auto Marketing," with Glen L. Urban* and Guilherme Liberali.
- "An Incentive-Aligned Sleuthing Game For Survey Research," with Min Ding*
- "Would You Consider a Buick Even if It Were #1 in JD Power?" with Erin MacDonald* and Glen Urban
- "Cognitive Simplicity and Consideration Sets," with Rene Befurt*, Daria Dzyabura, Olivier Toubia, and Theodoros Evgeniou
- "John D. C. Little, a Pioneer in Marketing Science (Festschrift paper)," with Glen L. Urban

INFORMS Marketing Science Conference, Vancouver, B.C., June 2008 (* indicates primary presenter if not me)

- "Cognitive Styles and Website Design," with Michael Braun, Glen L. Urban, and Clarence Lee.
- Modeling Cognitive Complexity to Predict Consideration Sets," with Daria Dzyabura (formerly Silinskaia)*, Theodoros Evgeniou, Olivier Toubia, and Rene Befurt.
- "Morphing Websites to Match Individual Cognitive Styles," with Michael Braun*, Glen L. Urban, and Guilherme Liberali

Sawtooth Software Conference, Delray, FL, March 2009, "A Critical Review of Non-compensatory and Compensatory Models of Consideration-Set Decisions," with Min Ding and Steven Gaskin

AMA Doctoral Consortium, Robert J. Trulaske, Sr. College of Business, University of Missouri, June 2007, "Looking Ahead: Directions for Scholarly Research in Marketing" and "Building Teaching Effectiveness: Stimulating Student Interest."

Sawtooth Software Conference, Santa Rosa, CA, October 2007, "Two-Stage Models: Identifying Non-Compensatory Heuristics for the Consideration Set then Adaptive Polyhedral Methods Within the Consideration Set," with Steven Gaskin, Theodoros Evgeniou, Daniel Bailiff.

AMA Advance Research Technologies Forum, Sante Fe, New Mexico, June 2007, "Two-Stage Models: Identifying Non-Compensatory Heuristics for the Consideration Set then Adaptive Polyhedral Methods Within the Consideration Set," with Steven Gaskin, Theodoros Evgeniou, and Daniel Bailiff.

AMA Doctoral Consortium, W. P. Carey School of Business, Arizona State University, May 2007, “Consideration The New Battlefield in Product Development.”

Agent-based Models of Market Dynamics and Consumer Behaviour, University of Surrey, Guildford, UK, January 2006, “Co-opetition for the Diffusion of Resistant Innovations: A Case Study in the Global Wine Industry using an Agent-based Model.” with Rosanna Garcia. Also presented at the American Marketing Association’s Advanced Research Techniques (ART) Forum in June 2006 at Monterrey CA.

AMA Doctoral Consortium, University of Maryland, College Park, MD, July 2006, “Creating Value: Products and Brands.”

Marketing Science Conference, University of Pittsburgh, Pittsburgh, PA, June 2006, “A Truth-telling Sleuthing Game for Survey Research,” with Min Ding.

Marketing Science Conference, University of Pittsburgh, Pittsburgh, PA, June 2006, On Managerially Efficient Experimental Designs,: with Olivier Toubia.

Sawtooth Software Conference on Conjoint Analysis, Delray Beach, FL, March 2006, “Must Have” Aspects vs. Tradeoff Aspects in Models of Customer Decisions,” with Michael Yee, James Orlin, Ely Dahan.

AMA Doctoral Consortium, University of Connecticut, Storrs CT, June 2005, “The Virtual Customer.”

Marketing Science Conference, Emory, Atlanta, GA, June 2005, “Direct, Nonparametric Product Optimization Using Interactive Genetic Algorithms,” with Kamal Malek and Kevin Karty.

Marketing Science Conference, Emory, Atlanta, GA, June 2005, “Non-Deterministic Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis: Application to the Diffusion of the New Wine Cork,” with Olivier Toubia and Rosanna Garcia.

Marketing Science Conference, Emory, Atlanta, GA, June 2005, “Greedoid-Based Non-compensatory Two-Stage Consideration-then-Choice Inference,” with Michael Yee, Jim Orlin, and Ely Dahan.

Marketing Science Doctoral Consortium, Rotterdam, The Netherlands, June 2004, “Research that Has Impact.”

Marketing Science Conference, Rotterdam, The Netherlands, June 2004, “Improving Choice-Based Polyhedral Methods by Taking Response Error into Account,” with Olivier Toubia.

Marketing Science Conference, Rotterdam, The Netherlands, June 2004, “The Dream Versus Reality of CRM,” with Glen L. Urban, Eric Bradlow, and, Mahesh Kumar.

Marketing Science Conference, Rotterdam, The Netherlands, June 2004, “Non-compensatory Consideration-then-Choice Adaptive Conjoint Analysis,” with Michael Yee and James Orlin.

AMA Doctoral Consortium, Texas A&M University, College Station, TX, June 2004, "Virtual Customer Initiative."

AMA Advanced Research Techniques Forum, June 2004, “Conjoint Adaptive Ranking Database System (CARDS),” with Ely Dahan, James Orlin, and Michael Yee.

AMA Doctoral Consortium, University of Minnesota, Minneapolis, MN, June 2003, "The Review Process."

Marketing Science Doctoral Consortium, University of Maryland, June 2003, “Roots of Marketing Science Thought,” with John Little.

Marketing Science Conference, University of Maryland, June 12-15, 2003, "Individual-level Adaptation of Choice-Based Conjoint Questions: More Efficient Questions and More Accurate Estimation," (with Olivier Toubia and Duncan Simester).

Marketing Science Conference, University of Alberta, Canada, June 28, 2002, "Configurators, Utility Balance, and Managerial Use," (with Duncan Simester and Olivier Toubia).

Marketing Science Doctoral Consortium, University of Alberta, Canada, "Helping Managers Structure and Make Decisions," June 27, 2002. (Founding Consortium).

Marketing Science Conference, University of Alberta, Canada, June 28, 2002, "Adaptive Choice-Based Conjoint Analysis with Polyhedral Methods," (with Duncan Simester and Olivier Toubia*).

Advances in Marketing Research and Modeling: The Academic and Industry Impact of Paul E. Green, Wharton, Philadelphia, PA, May 2002, "New Methods of Data Collection and Estimation Using Polyhedral Estimation Techniques."

Production and Operations Management Society (POMS) Conference 2002 - High Tech POM, San Francisco, CA, April 2002, "The Virtual Customer," (with Ely Dahan*).

Product Development Association (PDMA) International Research Conference, Santa Clara, CA, October 2001, "The Virtual Customer," (with Ely Dahan*).

New England Marketing Conference, Cambridge, MA, September 2002, "Fast Polyhedral Adaptive Conjoint Estimation," (with Ely Dahan, Duncan Simester, and Olivier Toubia).

Marketing Science Conference, Wiesbaden, Germany, July 2001, "Empirical Test of Web-based Conjoint Analysis Including ACA, Efficient Fixed Designs, Polyhedral Methods, and Hybrid Methods," (with Ely Dahan, Duncan Simester, and Olivier Toubia*)

Marketing Science Conference, Wiesbaden, Germany, July 2001, "Evaluation of Fast Polyhedral Adaptive Conjoint Estimation," (with Duncan Simester and Olivier Toubia).

The 12th Annual Advanced Research Techniques Forum, Amelia Island, Florida, June 2001, "The Virtual Customer: Communication, Conceptualization, and Computation," (with Ely Dahan*).

AMA Doctoral Consortium, University of Miami, June 2001, "Role of Technology in Marketing."

Marketing Science Conference, UCLA, June 2000, "Applications of the Metrics Thermostat."

Marketing Science Conference, UCLA, June 2000, "The Virtual Customer." (with Ely Dahan and Duncan Simester).

Marketing Science Institute Marketing Metrics Workshop, Washington, D.C. October 1999, "Metrics for New Product Development: Making Agency Theory Practical," Plenary Speaker.

Marketing Science Conference, Syracuse, NY, May 1999, “Balancing Customer Input, Speed to Market, and Reduced Cost in New Product Development: What is the Most Profitable Strategy”

ICRMOT Conference on Technology Alliances and New Product Development: A Cross-cultural Perspective, Mishima, JAPAN, December 1998, “You Are What You Measure!”

AMA Doctoral Consortium, Athens, Georgia, August 1998, “Quantitative Advances in Marketing Models.”

AMA Winter Educators’ Conference, Austin, TX, February 1998 (Plenary Speaker), “New Challenges in the Marketing-Product Development Interface.”

AMA Doctoral Consortium, Cincinnati OH, August 1997, "Working with Industry."

Marketing Science Conference, Berkeley CA, March 1997, “Cultivating Technological Managers for Customer Expertise.”

Marketing Science Institute Conference on Interfunctional Interfaces: The Management of Corporate Fault Zones, Palo Alto, CA, December 1996, “Multi-Stage Modeling of R&D/Marketing Interfaces in New Product Development.”

Marketing Science Conference, Berkeley CA, March 1997, “Cultivating Technological Managers for Customer Expertise.”

Envisioning the Future on Internet Marketing: Research and Strategy Implications, M.I.T., September 1996, "Agents and Intermediaries: Roles, Trust, and Value."

"Can R&D be Evaluated on Market-Driven Criteria?," (with Florian Zettelmeyer). Marketing Science Conference, University of Florida, Gainesville, March 1996

"Information Acceleration," (with Glen Urban, William Qualls, Bruce Weinberg, Jon Bohlmann, and Roberta Chicos). Wharton Conference on Innovation in Product Development, Philadelphia, PA, May 1995.

"Metrics by Which Managers Evaluate R&D Groups," (with Florian Zettelmeyer). Association of Consumer Research, Boston, MA, October 1994.

"Satisfying the Internal Customer," (with Birger Wernerfelt and Duncan Simester) Marketing Science Conference, University of Arizona, Tucson, AZ, March 1994.

"Customer-Satisfaction Based Incentive Systems," AMA Educator's Conference, Boston, MA, August 1993.

"Marketing in the 1990s: Emerging Issues," AMA Doctoral Consortium, University of Illinois, August 1993.

"Quality Function Deployment and the Voice of the Customer," Pharmaceutical Management Science Association, Phoenix AZ, May 1993.

"In a World of Active Time-constrained Customers, How Can a Firm be the Great Communicator," (with Birger Wernerfelt), Marketing Science Conference, Washington University, St. Louis, MO, March 1993.

"Customer Needs, Customer Satisfaction, Sales, and Profit," (with Birger Wernerfelt, Ronit Bodner, and Duncan Simester), ORSA/TIMS Joint National Conference, San Francisco, CA, November 1992.

"Customer Satisfaction and Employee Rewards," (with Birger Wernerfelt, Ronit Bodner, and Duncan Semester), Marketing Science Conference, London, England, June 1992.

"Information Acceleration and Preproduction Forecasting of Electric Autos," (with Glen L. Urban and Bruce Weinberg), Marketing Science Conference, London, England, June 1992.

"The Voice of the Customer and Customer Satisfaction," ORSA/TIMS Joint National Meeting, Anaheim, CA, October 1991.

"Modeling Marketing Phenomena," AMA Doctoral Consortium, University of Southern Calif. August 1991.

"Relationship of Satisfaction to Customer Needs and to Market Share," 1st Congress on Customer Satisfaction and Market-Driven Quality, American Marketing Association, Orlando FL, May 1991.

"Time Flies When You're Having Fun: How Consumers Allocate Their Time When Evaluating Products" (with Bruce Weinberg, Glen Urban, and Miguel Villas-Boas), Marketing Science Conference, Wilmington, DL, March 1991.

"Information Acceleration and Preproduction Forecasting of New Autos," (with Glen Urban, and Bruce Weinberg), Marketing Science Conference, Wilmington, DL, March 1991.

"Beyond Quality Function Deployment," ORSA/TIMS Joint National Meeting, Philadelphia, PA October 1990. (Conference-wide Tutorial)

"Competitive Marketing Strategies," Operations Research 1990 (Osterreichische Gesellschaft fur Operations Research), Vienna, Austria, August 1990. (Invited Speaker)

"New Product Development: A Quantitative Analysis of Interfunctional Communication" (with Abbie Griffin), Marketing Science Conference, Urbana, IL, March 1990.

"Integrated Product Development: New Methodological Developments" (with Abbie Griffin), Marketing Science Conference, Durham, N.C., March 1989.

"Customer Driven Engineering" (with Gregory Cirmak and Robert Klein), ORSA/TIMS Joint National Meeting, Washington, D.C., April 1988.

"Competitive Advertising and Pricing in Duopolies" (with Birger Wernerfelt), Marketing Science Conference, Seattle, Washington, March 1988.

"Customer Driven Engineering" (with Abbie Griffin), Marketing Science Conference, Seattle, Washington, March 1988.

"Customer Needs," Visions of Design Practices for the Future, Newton, MA, October 1987.

"Effective Strategies in Oligopoly" (with Peter Fader), ORSA/TIMS Joint National Meeting, Miami Beach, Florida, November 1986.

"Competitive Strategy Contest: Result and Analysis" (with Peter Fader), Marketing Science Conference, Dallas, TX, March 1986.

"The PC As a Tool to Teach Complex Marketing Science Concepts," Marketing Science Conference, Dallas, TX, March 1986.

"The Coming Revolution in Marketing Theory," Plenary Speaker, European Marketing Conference, Bielefeld, West Germany. April 1985.

"Defensive Strategy" Confer. on Economics of the Firm, Universite de Paris X, Nanterre, France, April 1985.

"Competitive Marketing Strategies" Marketing Science Conference, Nashville, Tennessee, March 1985.

"Developing New Product Management: Past Progress, Current Efforts, Current Needs" (Panel) Marketing Science Conference, Nashville, Tennessee, March 1985.

"Testing Competitive Marketing Structures: Theory and Applications" (with Glen Urban) ORSA/TIMS Joint National Meeting, Dallas, TX November 1984.

"Competitive Strategy," ORSA/TIMS Joint National Meeting, Dallas, Texas, November 1984.

"Forecasting Automobile Sales: An Application of a Value Priority Algorithm," (with Glen Urban), John Roberts and John Dabels), TIMS XXVI International Meeting, Copenhagen, Denmark, June 1984.

"Consumer Durables: The Actual Consumer Budgets Compared to the Value Priority Model," (with Glen Urban), Marketing Science Conference, Chicago, Illinois, March 1984.

"Defensive Strategy Models: Application and Predictive Text," (with Steven Gaskin, and Karl Irons) ORSA/TIMS Joint National Meeting, Orlando, Florida, November 1983.

"New Product Research: Focus on Defensive strategies," Roundtable Program, ORSA/TIMS Joint National Meeting, Orlando, FL, November 1983.

"Intensity of Preference," (with Steven Shugan) ORSA/TIMS Joint National meeting, San Diego, CA, October 1982.

"Measurement Error Theories for von Neumann-Morgenstern Utility Functions," (with Jehoshua Eliashberg) ORSA/TIMS Joint National Meeting, San Diego, CA, October 1982.

"Consumer Preference Models: Axioms and Statistics," ORSA/TIMS Joint National Meeting, Houston, Texas, October 1981.

"Economic Models of Consumer Behavior," (panel discussion), ORSA/TIMS Joint National Meeting, Houston, Texas, October 1981.

"Defensive Marketing Strategies, Part II," (with Steven Shugan), ORSA/TIMS Joint National Meeting, Houston, Texas, October 1981.

"Agendas and Choice Probabilities," (with Amos Tversky), Association of Consumer Research, St. Louis, Missouri, October 1981, and Special Conference on Choice Theory, Durham, North Carolina , June 1981.

"Strategic Response to Competitive New Products," (with Steven Shugan), ORSA/TIMS Joint National Meeting, Toronto, Ontario, Canada, May 1981.

"Applications of a Dynamic Semi-Markov Model of Consumer Choice," (with Ken Wisniewski), ORSA/TIMS Joint National Meeting, Colorado Springs, Colorado, November 1980.

"Models of Consumer Behavior," (panel discussion), ORSA/TIMS joint National Meetings, Colorado Springs, Colorado, November 1980.

"Dynamic Semi-Markov Models of Consumer Behavior," (with Ken Wisniewski) TIMS International Conference on Marketing, Paris, June 1980.

"Profit Maximizing Perceptual Positioning," (with Patricia Simmie) TIMS International Conference on Marketing, Paris, June 1980.

"An Error Theory for von Neumann-Morgenstern Utility Assessment," (with Jehoshua Eliashberg), ORSA/TIMS Joint National Meeting, Washington, D.C., May 1980.

"Defender: Defensive Strategies Against New Products" (with Steven Shugan), ORSA/TIMS Second Special Interest Conference on Marketing Measurement and Analysis, Austin, Texas, March 1980.

"Adaptive Control of New Product Launches," (with Ken Wisniewski), ORSA/TIMS Joint National Meeting, Milwaukee, Wisconsin, October 1979.

"The Value of Up-front Research in New Products," (with Glen Urban), TIMS International Meeting, Honolulu, Hawaii, June 1979.

"Methods for Computing Probabilities of Choice," (with Steven Shugan), TIMS International Meeting, Honolulu, Hawaii, June 1979.

"Forecasting and Improving the Adoption of New High Technology Products," (with Pat Lyon), ORSA/TIMS Joint National Meeting, New Orleans, Louisiana, May 1979.

"A Methodology for Product Realization: Multi-method Procedures," (with Patricia Simmie), ORSA/TIMS Joint National Meeting, Los Angeles, California, November 1978.

"Searching for Marketing Segments" (with Ken Wisniewski), ORSA/TIMS Joint National Meeting, New York, New York, May 1978.

"P.A.R.I.S.: An Interactive Market Research System," (with Steven Shugan), ORSA/TIMS Joint National Meeting, New York, New York, May 1978.

"Extended Conjoint Analysis," (with Steven Shugan), ORSA/TIMS Joint National Meeting, Atlanta, Georgia, November 1977.

"Consumer Preference Functions: Theory, Measurement, Estimation , and Application," (with Steven Shugan), ORSA/TIMS Joint National Meeting, Atlanta, Georgia, November 1977.

"Measuring Consumer Preferences for Health Care Plans," (with Glen Urban), ORSA/TIMS Joint National Meeting, San Francisco, California, May 1977.

"Improved Transportation Design with Consumer Response Models: An AMTRAK Example" (with Frank Koppelman), ORSA/TIMS Joint National Meeting, Miami, Florida, November 1976.

"A Comparison of Statistical and Direct Multiattribute Utility Assessment Procedures," (with Glen Urban), ORSA/TIMS Joint National Meeting, Las Vegas, Nevada, November 1985.

"Measuring Consumer Preferences: An Axiomization for Describing Choice," ORSA/TIMS Joint National Meeting, Las Vegas, Nevada, November 1975.

"Modeling Consumer Response to Innovations," (1) Milwaukee Chapter of ORSA/TIMS, November 1985; (2) Chicago Chapter of ORSA/TIMS, December 1975.

"Modeling Decisions of Choice Among Finite Alternatives: Applications to Marketing and to Transportation Demand Theory," ORSA/TIMS Joint National Meeting, San Juan, Puerto, Rico, October 1974.

"An Efficient Model for Planning Bus Routes in Medium Sized Communities," ORSA/TIMS Joint National Meeting, San Diego, CA, November 1973.

Professional Affiliations

The Institute for Operations Research and Management Science (INFORMS)

INFORMS Society of Marketing Science (ISMS)

American Marketing Association

Product Development and Management Association, Certified New Product Development Professional

Professional Services

President, INFORMS Society of Marketing Science (January 2014 –December 2015). President-elect (a board position, January 2012 – December 2013). Past-President (a board position, January 2016 – December 2017).

Secretary, INFORMS Society of Marketing (January 2002 – December 2005). Founding Officer.

Advisory Council, INFORMS College of Marketing (1994 - 2002)

Council of The Institute of Management Sciences (TIMS, 1987 - 1989)

Associate Editor for Marketing, *Management Science*, (1980 - 1981)

Department Editor for Marketing, *Management Science*, (1982 - 1988)

Editor-in-Chief, *Marketing Science*, (1989 - 1994)

Editor, Special Issue on Big Data, *Marketing Science*, 2016. Senior Editor, Practice Papers, *Marketing Science*, 2016-2018. Associate Editor, Special Issue on the Theory and Practice of Marketing, *Marketing Science*, 2014.

Editorial Advisory Board, *Sloan Management Review* (2000-2002).

Associate Editor, *Journal of Marketing Research* (April 2006 – June 2009). First time in journal history that Associate Editors had been appointed.

Senior Advisory Board, *Journal of Marketing Research* (July 2009 – 2016). First time such an advisory board was formed.

Advisory Board, *Marketing Science* (2010 – 2018).

Advisory Board, *Journal of Product Innovation Management* (2011 – 2018)

Emeritus Editorial Board, *Marketing Science* (includes active reviewing of papers).

Editorial Boards, *Marketing Science*, (1980 – 1988, Editor 1989-1995, 2003- 2008, including acting Area Editor), *Journal of Product Innovation Management* (1997 - 2010), *Journal of Marketing* (2005- 2008, outstanding reviewer 2006), *European Management Journal* (advisory, 1998 - 2002), *International Journal for Research in Marketing* (2007 – 2014).

Reviewer: *Advances in Consumer Research, Applications in Management Science, European Journal of Research in Marketing, Journal of the Academy of Marketing Science, Journal of Consumer Research, Journal of Marketing, Journal of Marketing Research, Journal of Mathematical Psychology, Journal of Product Innovation Management, Management Science, Marketing Science, Proceedings of the National Academy of Sciences, Operations Research, Review of Marketing, Sloan Management Review, Transportation Research Record, Transportation Science, Journal of Business Research,* AMA Dissertation Prize, AMA Educators' Conference, American Institute of Decision Sciences Dissertation Prize, Nicholson Dissertation Prize, Marketing Science Institute Dissertation Award, Product Development Management Association Dissertation Prize, Prentice-Hall Books, National Science Foundation.

Conference Chairman: Conference Chair, Profitable Customer-Driven Organizations: Developing the Blueprint, Management Roundtable, May 1994.

Segment Chairman: Yale School of Management, Center for Customer Insight, The Customer Insights Conference, New Haven, CT. May 12-14, 2011. New Product Innovations.

Non-traditional Models of Consumer Preference and Choice, Adaptive Preference and Estimation, Optimizing Product Design and Customer Targeting, Obtaining Information From or About Consumers (Atlanta, GA, 2005, co-chair four sessions)

TIMS International Meeting, Copenhagen, Denmark, June 1984 (two sessions).

TIMS College of Marketing, Houston, Texas, October 1981 (twelve sessions).

TIMS College of Marketing, Milwaukee, Wisconsin, October 1979 (five sessions).

American Marketing Association Educator's Conference, Chicago, Illinois, August 1978, (three sessions).

INFORMS Marketing Science Conference, Atlanta GA, June 2005 (four sessions)

Session Chairman: *INFORMS (Previously named ORSA or TIMS)*

Virtual Customer Initiative (Rotterdam, The Netherlands, 2004)

New Approaches to Mapping (University of Maryland, 2003)

The Virtual Customer (University of Alberta, Canada 2002)

The Virtual Customer (Wiesbaden, Germany 2001)

Building Competitive Advantage Through Product Quality and R&D (Gainesville, FL 1996)

Customer Satisfaction and Its Role in Global Competition (San Francisco, CA 1992)

Competitive R&D (Washington, D.C., April 1988)

Competitive Marketing Strategy, (St. Louis, Michigan, November 1987)

Competition in Multiattributed Spaces (Atlanta, Georgia, November 1985).

Marketing: Consumer Measurement (Copenhagen, Denmark, June 1984)

Marketing: Dynamic Structures (Copenhagen, Denmark, June 1984)

Product Policy (Orlando, Florida, November 1983)

Product Policy (San Diego, California, October 1982)

New Product Introduction and Defense in Competitive Environments, (Detroit, Michigan, April 1982)

New Product and Product Policy Models, (Houston, Texas, October 1981)

New Product Models (Toronto, Ontario, Canada, May 1981)

Models of Consumer Behavior (Colorado Springs, Colorado, November 1980)

New Product Realization and Selection (Los Angeles, California, November 1978).

Session Chairman: *Association of Consumer Research*

Mathematical Theories of Consumer Behavior (St. Louis, Missouri, October 1981)

Committee Memberships

Editor Selection Committee, *Marketing Science*, INFORMS College of Marketing, 2001 (chair), 2004 (chair), 2007.

Editor Selection Committee, *Journal of Marketing Research,* American Marketing Association, 1999.

Conference Steering Committee, Duke Invitational Symposium on Choice Modeling and Behavior, June 1993.

Editor Selection Committee, *Management Science,* TIMS.

Founding Committee for *Marketing Science*, TIMS College of Marketing, (1979 - 1982).

Management Science Roundtable, TIMS, (1982 - 1988)

Marketing Strategy Steering Committee, Marketing Science Institute, (1983 - 1984).

Organizing Committee for Conference on Economics of the Firm, April 1985, Universite de Paris X Nanterre.

Organizing Committee for 1985 Conference in Bielefeld, West Germany, European Marketing Academy.

Publications Committee (1980 - 1982), Operations Society of America.

Scientific Committee for 1986 Conference in Helsinki, Finland.

Student Affairs Committee (1978 - 1979), Operations Society of America.

*Litigation Consulting (on behalf of, *deposition testimony, †court, commission, or arbitration testimony)*

ABC, Inc., American Broadcasting Company, Inc., and Disney Enterprises, Inc., Plaintiffs, v. Dish Network L.L.C. and Dish Network Corp., (Preliminary Injunction)

Joseph Adinolfe, et al., v. United Technologies Corp., d/b/a Pratt & Whitney (class action, damages)* †

Alcatel-Lucent USA Inc. v. Amazon.com, Inc. et al. (Patent Infringement)* †

Allergan, Inc. Engagement. (Off-label Prescriptions)

American Express Travel Related Services, Inc. v. Visa USA, Inc., et. al. (Evaluation of marketing research) *

In Re American Express Anti-Steering Rules Antitrust Litigation (II) (Evaluation of marketing research)*

American Multi-Cinema, Inc. v. American Movie Classics Company, Inc., et. al. (Confusion)

Amway v. Procter & Gamble (Damages)*

Garth A. Anderson, et al. v. American Family Insurance Company (Class Action) *

Anoush Cab, Inc., et al. v. Uber Technologies, Inc., Rasier, LLC (damages) †

Apple, Inc. v. Samsung Electronics Company, Ltd, et al. (Patent infringement, two cases) ** †††

Atlantic Recording Corporation, et. al. v. XM Satellite Radio, Inc. (Copyright infringement).

Ariza, Et Al. v. Luxottica Retail North America (class action)*

Axcan Scandipharm, Inc. V. Global Pharmaceuticals And Impax Laboratories, Inc. (False Advertising)

Avaya Inc. v. SNMP Research International, C.A. (Damages) *

Berlex v. Biogen, Inc. (Damages)*

Blue Mountain Arts, Susan Polis Schutz, and Stephen Schutz v. Hallmark Card, Inc. (Trade Dress)

James And Lisa Camenson, et al.; v. Milgard Manufacturing Inc., et. al. (Class action)

CBS Corporation, CBS Broadcasting Inc., CBS Studios Inc., and Survivor Productions, LLC. v. and DISH Network Corporation, DISH Network L.L.C. (damages).

Clearchannel Communications, Inc. (v. SoundExchange) in the Webcasting IV. (Rate setting) *†

Comm-Tract Corp. v. Northern Telecom, Inc. (Advice only)

Comcast Cable Communications. LLC v. Sprint Communications Company (Patent Infringement)*

Computer Aid, Inc. v. Hewlett Packard (damages)*

Dayna Craft, et al. v. Philip Morris Companies, Inc. and Philip Morris Inc. (Class Action).*

Creative Laboratories, Inc. v. Apple Computer, Inc. (Intellectual Property)

CTC Communications Corporation v. Bell Atlantic Corporation (Damages)

Eagle Harbor Holdings LLC, and Mediustech LLC, v. Ford Motor Company (Patent infringement).

Anne Elkind And Sharon Rosen, et al. v. Revlon Consumer Products Corporation, Inc. (Class Action)

EPD v. Curtis (Product Confusion)†

FCA Canada Inc. and FCA US LLC, re Canadian Class Actions re Diesel Fuel Emissions, specifically, Shane Witham, et al. v. FCA Canada Inc., FCA US LLC, and FIAT Chrysler Automobiles N.V. (Class Action) †

Fox Broadcasting Company, Inc., Twentieth Century Fox Film Corp., and Fox Television Holdings. Inc., Plaintiffs, v. Dish Network L.L.C. and Dish Network Corp., (Preliminary Injunction, Damages)*

Stephen S. Gallagher, et. al. v. State Farm Mutual Automobile Insurance Company, et al. (Class Action)

Geico v. Google and Overture Services (Yahoo), Inc. (Trademark Infringement)

In Re: General Motors, LLC Ignition Switch Litigation (non-testifying expert)

Gillette v. S. C. Johnson (Patent Infringement)

Gyrodata, Inc. v. Atlantic Inertial Systems Inc ("AIS"), et al. (consulting expert)

Heublein vs. Seagrams and Gallo (Liability)

Hewlett-Packard, Inc. v. Factory Mutual Insurance Company (Insurance Coverage)*

IMS Health Incorporated v. Symphony Health Solutions Corporation, Source Healthcare Analytics, LLC, and ImpactRx, Inc., C.A. No. 1:13-cv-2071-GMS (D. Del.). (Patent infringement, technical expert.)

Intel v. Advanced Micro Devices (Damages)*

J. B. D. L. Corp. d/b/a, Beckett Apothecary v. Wyeth-Ayerst Laboratories, Inc. and American Home Products Corporation, (Class Action)

Jerry Jacobs, et. al. v. Osmose Inc., et. al. (Class Action)*

Jay Kordich, et. al. v. Salton Maxim Housewares, Inc., et. al. (Trademark)†

In RE J.P. Morgan Chase Cash Balance Litigation (Class Action)*

Michael Kors, Inc. v. Costco Wholesale Corporation (False Advertising, Damages)*

L.A. Taxi Cooperative, Inc. et al. v. Uber Technologies, Inc.; Rasier, LLC; and Rasier-CA, LLC. (False Advertising)*.

Lending Tree, Inc. v. The Gator Corporation (Intellectual Property)

Lotus v. Borland (Damages)*

Louis Vuitton Malletier, S. A. v. Hyundai Motor America (Trademark Infringement)*

Malden Transportation, Inc. et al. vs. Uber Technologies, Inc., Rasier, LLC*† (damages). See also Anoush.

Marvin Lumber and Cedar Company v. PPG Industries, Inc., et. al. (Survey Design)

MasterCard International, Inc. v. First National Bank of Omaha (Product Confusion)*

Mayo Foundation v. Mayo Health Facilities (Product Confusion)†

Mead Johnson Nutritionals v. unnamed party (False Advertising)

Merck & Co. (Lanham Act Advice)

In Re Microsoft Corporation Antitrust Litigation (Multi-district Litigation)*

Millennium Laboratories, Inc. v. Ameritox, Ltd. (False Advertising)

Scott Miller, et al. v. Fuhu, Inc. and Fuhu Holdings, Inc. (Class Certification)*

MillerCoors, LLC v. Anheuser-Busch Companies, LLC. (False Advertising) *

National Association of Broadcasters v. SoundExchange in Webcasting V (Rate Setting) *†

Pacific Bell Telephone Company in New Regulatory Framework Review of Customer Satisfaction before the California Public Utility Commission†

Luciano F. Paone v. Microsoft Corporation (Patent Infringement)*

Pfizer Consumer Healthcare (Lanham Act Advice)

Playtex v. Procter & Gamble (Claims Substantiation)*†

Procter & Gamble v. Amway (Liability and Damages)*†

Procter & Gamble v. Haugan, et. al. (Liability and Damages)†

Putnum Fund Trustees, (Investment Fraud, advice on market research)

Ram Broadcasting, Inc. (Cellular Telephone Filings)

RealPlayer, Inc. v. Microsoft Corporation (Anti-trust)

Roberts et. al. v. Enterprise Rent-a-Car Company of Boston, Inc. (Class Action)

The Republic of Columbia v. Diageo North America, et al. (Anti-trust).

St. Clair Intellectual Property Consultants, Inc. v. Research in Motion, Ltd. and General Imaging Co. (Patent infringement)

Curt Schlesinger and Peter Lore, on behalf themselves and the Certified Class, Plaintiffs, v. Ticketmaster (Class action, false advertising, confusion)*

Barbara Schwab, et. al. v. Philip Morris, USA (Class Action)*

SoundExchange, Inc. v. Sirius Satellite Radio, Inc. and XM Satellite Radio, Inc.: In the Matter of Adjustment of Rates and Terms for Preexisting Subscription Services and Satellite Digital Radio Services. SDARS I, II, and III. (Rate setting) 2007*†. 2012*†. 2017*†.

SoundExchange, Inc. v. iHeart Media (2015) and the National Association of Broadcasters (2020), In the Matter of Determination of Rates and Terms for Digital Performance in Sound Recordings and Ephemeral

Recordings. Web IV, V. (Rate Setting). 2015*†, 2020*†

Sprint Communications Company L.P. et al. v. Comcast Cable Communications, LLC. et al. (Damages)*

State of Colorado, et. al. v. Warner Chilcott Holdings Company III, Ltd., et. al. (Anti-trust)* †

State of Florida and Plaintiff States Antitrust Litigation for Disposable Contact Lenses (Survey Analysis)†

State of Washington v. Comcast, et al. (False Advertising)* †

Stipic, et. al. v. Behr Process Corporation and Masco International (Class Action)*

Straumann Company v. Lifecore Biomedical, Inc. (Product Confusion)*

Sun Microsystems, Inc. v. Microsoft Corporation (Anti-trust).

Symphony Health Solutions Corporation v. IMS Medical Radar (Technical Expert)*.

Takada Pharmaceuticals USA, Inc. v. Par Pharmaceutical Companies, Inc. Par Pharmaceutical, Inc., Amneal Pharmaceuticals, LLC, Watson Laboratories, Inc. West-Ward Pharmaceutical Corp., Hikma Americas PLC. (Patent Infringement).

Tivo, Inc. v. Echostar Communications Corporation, et. al* (Patent Infringement)

Tropicana Products, Inc. v. Vero Beach Groves, Inc. (Lanham Act)† (Declaration accepted as court testimony.)

United States of America Department of Justice v. AT&T Inc., DirecTV Group Holdings, LLC, And Time Warner Inc.* †

Wal-Mart Stores, Inc (and other retailers) v. Mastercard International, Inc. (Liability and Damages, Anti-trust)*

We Media, Inc. v. We: Women's Entertainment, LLC. (Product Confusion)*.

Yahoo Holdings, Inc., et al. v. Mozilla Corporation (customer satisfaction) *

Olua Zakaria, et al. v. Gerber Products Co. d/b/a Nestle Nutrition, Nestle Infant and Nestle Nutrition North America (class action, damages)*.

Marketing, Marketing Research, and Product Development Consulting Not Otherwise Listed

American Home Foods, Inc.; American Airlines; American Hospital Supply Corporation; Analog Devices, Inc; Andersen Consulting, Inc. (Accenture), Applied Marketing Science, Inc.; A.T.&T.; Avon; Barton-Aschmann Associates; Baxter Cardiovascular Group, Booz Allen Hamilton, Inc., Cambridge Systematics, Inc.; Chrysler, LLC; Colgate-Palmolive; Costello Associates, Inc.; Economics' Laboratories, Inc.; Elrick and Lavidge, Inc.; Evanston Hospital; Evanston, Illinois and Schaumburg, Illinois (Transportation Planning); Fiat Chrysler Automobiles, Fidelity Investments; Ford Motor Company; French's Inc., G.D. Searle, Inc.; General Foods, Inc.; General Motors, Inc., Buick Division, Chevrolet Division, Marketing and Product Planning; Gillette; IBM, Inc.; Information Resources, Inc.; Intel, Inc., Johnson & Johnson; Kodak; Macromedia, Inc., Management Decision Systems, Inc.; M/A/R/C, Inc.; Merck, Inc., Navistar International, Inc.; Pacific Gas and Electric Company, Pepsi-Cola, Inc.; Polaroid; Procter & Gamble Company; Product Genesis, Inc.; RAM Broadcasting, Inc.; Regional Transportation Authority; Richardson-Vicks, Inc.; Southern Company Services, Inc.; Time-Life Books; Volunteers in Technical Assistance, and Wyeth-Ayerst Laboratories, Inc. Co-founder, senior product development consultant, Applied Marketing Science, Inc., Advisory Board (former), Affinnova, Inc.

M.I.T. or MIT Sloan Committee Work

Associated Faculty Committee to Review the Organizational Learning Center (MIT Sloan), 1995.

Building Committee for the E51 Expansion, MIT Sloan, 1992, Ad Hoc.

Center for Innovation in Product Development

Leader, Virtual Customer Initiative, 2000 - 2006

Research Director, 1997 – 2000

Center for Transportation Studies, 1981 - 1982.

Master of Science in Transportation Committee.

Committee on the Masters in Analytics, 2014-2016.

Committee on the Undergraduate Program, 2003 – 2005.

Committee to Investigate Sloan-Logo Research Notes (MIT Sloan, chair), 2001-2002.

Dean's Consultation Committee (MIT Sloan), 2008-2009.

Dean Search Committee (MIT Sloan), 1993.

Executive Educational Programs Committee (MIT Sloan), 1983 – 1985, 1998-1999, 2007.

Faculty Admissions Committee, 2004-2009.

Faculty Council (MIT Sloan), 1999.

International Center on Research for the Management of Technology (MIT Sloan).

Co-Director, (1993 - 2000).

Joint Steering Committee (1990 - 1993).

Management Science Area, MIT Sloan School of Management.

Area Head, (2005- 2009).

Chairman of Subcommittee on Peer Group Comparisons, (1981 - 1982).

Committee on Management Science Curriculum Redesign, (1982 - 1983).

Marketing Group Head (1986, 1988 – 2003, 2010-2011).

Marketing PhD Admissions, Head (2015, 2016)

Management of Technology Program Committee (MIT Sloan), (2001- 2003).

Master's Program Committee, MIT Sloan, (1980 – 1987, 2007 – 2015).

Ad hoc committee to develop a Marketing, Operations and Strategy Track (2011-2012).

Ad hoc committee to understand gender issues in class participation (2015-2016)

Chairman: Subcommittee On Placement, (1981 - 1982).

Core Curriculum Implementation Committee (1992-1994).

Core Curriculum Reassessment Committee (1991-1992).

Subcommittee on Admissions, Special Consideration, (2007 – 2009).

Subcommittee on Course Ratings (2011).

Subcommittee on Entrepreneurship and Innovation Evaluation (Chair, 2008).

Subcommittee on Fellowship Awards (2014-2015)

Subcommittee on the Management Science Core, (1982 - 1983).

Subcommittee on Tracks (2008-2009).

Subcommittee on Strategy Curriculum (2009).

MIT Sloan Committee on Educational Technology, 2004 – 2006.

Operations Research Center

Admissions Committee, (1981 - 1982).

Associated Faculty (1980 – 2000).

Operations Research Committee (2001- 2003).

President's Committee (1984).

Organization Committee for the New MIT Sloan Building, E62, (2007- 2009).

Personnel and Policy Committee, MIT Sloan (Executive Committee, 2005 – 2009, 2013-2014).

Chair of ad hoc committees for reappointment, promotion, and tenure (1983 - 2014).

Member of ad hoc committees for reappointment, promotion, and tenure (1981 - 2014).

Sloan Appreciation Awards Committee (2013-2014)

Symposium Director, Marketing Center, MIT Sloan School, M.I.T., (1981 - 1982).

Zannetos Dissertation Award Committee, MIT Sloan, (1981-82, 1996-97, chair 1997-1998).

M.I.T. Subjects Taught (often multiple sections)

15.810, Marketing Management (Core)	Spring 1990, 1991, 1992, 1993, 1994, 1995, 1997, 1998, 1999, 2001, 2004, 2005. 2006, 2018. Fall 1999, 2006, 2007, 2008, 2011, 2012, 2013, 2014, 2015. (Teaching awards listed on page 2 of vita.). Retitled Marketing Innovation in 2018.
15.812, Marketing Management (UG)	Fall 1981, 1982, 1984, 1985, 1986. Spring 1981, 1984, 2006, 2018. Retitled Marketing Innovation in 2018.
15.813, Marketing Management in Public Sector	Fall 1980.

15.814, Marketing Innovation	Spring 2019, 2020
15.8141, Marketing Innovation (UG)	Spring 2019, 2020
15.814, Marketing Mgmt (Mgmt of Technology)	Fall 1988, 1993, 1999, 2001.
15.820, Advanced Marketing Management	Spring 1990
15.821, Listening to the Customer	Spring 2021
15.828, New Product Development	Spring 1981, 1982, 1989; Fall 1982, 1984; 1985.
15.838, Ph.D. Seminar (Various Topics)	Spring 1986, 1997, 2002, 2006, 2011, 2013, 2014, 2015, 2016, 2021.
15.839, Marketing and Statistics Workshop	Spring 1982; Fall 1982, 1984.
15.TH4, Thesis Project on Competitive Strategy	Spring 1985, 1986.
CS.113, Core Ethics: Ethics in Marketing	Fall 2014, 2015, 2016, 2017, 2019.
CS.108, Core Ethics: Ethics in Drug and Vaccine Tests	Fall 2020

Summer Session, ILP, and External Executive

A.T.&T Course on New Product Development, 1986.

European Institute for Business Administration (INSEAD) European Marketing Programme, 1985.

Greater Boston Area Executive Program, 1982, 1983.

M.I.T. Civil Engineering, Demand Theory, 1980, 1981, and 1982.

M.I.T. ILP, Marketing Strategy and Models in the Information age, 1983.

M.I.T., Management of R&D, 1989, 1990, 1991, 1992, 1993, 1994. 1995, 1996, 1997, 1998, 1999.

M.I.T. Marketing Science Symposium, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988.

M.I.T./M.I.P. Executive Program, 1992.

M.I.T. New Product Development, 1997.

Pedagogical Developments.

In 2017-209, I headed an effort to redesign the basic marketing course with further consideration of redesigning the entire marketing curriculum.

In 2012, I redesigned the core curriculum in marketing to reflect new developments in marketing analytics, big data, and new media.

In 1990 and 1991, Prof. John D. C. Little and I redesigned the core curriculum in Marketing Management and taught the course to the entire Master's class.

In the 1991-1992 I was part of a committee of six faculty members that redesigned the core curriculum at the Sloan School. I supervised the voice-of-the-customer analyses of students and recruiters and encouraged the committee to design a program that these customers would find exciting. The new core was implemented in the 1993-1994 academic year. Student satisfaction increased significantly.

Teaching Notes

Note on Defensive Marketing Strategy (2005, for 15.810, Marketing Management)

Note on Product Development (2055, for 15.810, Marketing Management)

Note on the Voice of the Customer (2018 for 15.814, Marketing Innovation)

Note on Consumer Behavior (2015, for 15.810, Marketing Management)

Note on Life Cycle Diffusion Models (2005, for 15.810, Marketing Management)

Note on Engineering Product Design (2006, for 15.810, Marketing Management)

Note on Conjoint Analysis (2018, for 15.814, Marketing Innovation)

M.I.T. Thesis Supervision

(a) *MIT Sloan School of Management, Master's Theses*

Hafiz Adamjee (joint with John Scaife), "The Face of the Customer: The Use of Multimedia in Quality Function Deployment," - (1993). This product was subsequently commercialized and was a finalist for the *New Media* Invision 1994 Multimedia award at COMDEX/Spring '94.

Ramay Akras, "Competitive Strategy in the Marketing of Small DDP Computers: an Analysis of Emerging Price and Product Position Patterns," - (1986).

Frederic Amerson, "Strategic Marketing Simulation: Improvements to the Enterprise Integrating Exercise," - (1989).

Sébastien Andrivet (Sloan Fellows Program), "Customer research, customer-driven design, and business strategy in Massively Multiplayer Online Games," – (2007)

Andrew Anagnos (joint with Karen Van Kirk), "A Framework for Analyzing Quality in the News Media," - (1991)

Allen Aerni, "Measurement of Customer Satisfaction," - (1994).

Joel Berez, "An Investigation of Decision Hierarchies" - (1981).

Harel Beit-on, "Competitive Strategy for Small Business Jet Aircraft," - (1985).

Willy Biberstein (SDM Program), "Framework for Customer Interaction Throughout the Automotive Product Development Process," (February 2002).

Andre Borschberg (joint with Webb Elkins), "Defensive Marketing Strategy: Its Application to a financial Decision Support System" - Reader (1983).

Philippe Bosquet, "European Airline Deregulation: Defining Air France's Strategy for the 1990's," - Reader (1989)

Jill A. Christians, (joint with Cheryl M. Duckworth), "Expectations and Customer Satisfaction: A Market Research Study for Plimoth Plantation," Reader (1994).

Poh-Kian Chua (MOT Program), "R,D&E Metrics: Shaping the Outcomes of Your R,D&E Investment," – (1998).

Leslie K. Cooper, "The Structure of Recruiter Needs at the Sloan School of Management: A Quantitative Assessment," - (1992).

Teruyuki Daino (Sloan Fellows Program), "How a Leading Company Can Overcome a Competitive Challenge: A Case Study of Anheuser-Busch Company." – (1998).

Laura E. Donohue, "Software Product Development: An Application of the Integration of R&D and Marketing via Quality Function Deployment" - (1990)

Cheryl M. Duckworth (joint with Jill A. Christians), "Expectations and Customer Satisfaction: A Market Research Study for Plimoth Plantation," Reader (1994).

Webb Elkins (joint with Andre Borschberg), "Defensive Marketing Strategy: Its Application to a Financial Decision Support System" - Reader (1983).

Rasheed El-Moslimany (LFM Program), "Getting Value from the Value Chain: Comfort Choice," Co-Advisor. (June 2002)

Merve Ergez (Master of Science in Management Studies), Strategic Scent Selection: A Marketing Research Study for Olivita Brand," (June 2014).

Julio Faura (MOT Program), "Contribution to Web-based Conjoint Analysis for Market Research," (2000).

Richard Feldman, "Decision Support Systems for Forecasting Communications in the Home," - Reader (1985).

Anders T. Fornander, "The Continuing Operating System Battle in the Personal Computer Industry," - Reader (1994).

Carl Frank (MOT Program), "Metrics Thermostat for Strategic Priorities in Military System Acquisition Projects," (2000).

Mihaela Fulga, "Competitive Pricing and Positioning Strategies in the Dating Service Market," - (1986).

Steven P. Gaskin, "Defender: Test and Application of a Defensive Marketing Model" - (1986). 1st Place, Brooks Award.

Peter N. Goettler, "A Pre-market Forecasting Model of New Consumer Durables: Development and Application," - Reader (1986).

Patti N. Goldberger, "Competitive Strategy in the Market for Running Shoes," - (1985).

Akhil Gupta, "The Personal Computer Industry: Economic and Market Influences on Product Positioning Strategies," - (1986).

Michael Halloran (joint with Marc Silver), "Defensive Marketing Strategy: Empirical Applications" - (1983).

Carla Heaton, "Competitive Strategy in the Facsimile Market," - (1985).

Judith Hee, "Determining Manufacturer's Coupon Strategies" - Reader (1981).

Jonathan E. Higginson, "Understanding Dependencies in Research and Development at the Charles Stark Draper Laboratory." - (1997).

Scott D. Hill, "Correlation of Core Competencies with Market-Driven or Self-Guided Research," - (1995).

Dan Isaacs, "Competitive Pricing and Positioning Strategies in the Imported Beer Marketing," - (1986).

Francois Jacques, "Marketing Strategies in Innovative Industries: The Case of Package/Document Delivery Services," - Co-Advisor (1985).

Lawrence Kahn, "Competitive Positioning: A Study of Recruiter's and Employer's Perceptions of the Sloan School of Management" - (1982). Honorable mention Brooke's Thesis Prize.

D. Darcy Kay, "Competitive Strategy for Anti-arthritic Drugs" - (1985).

Young Joo Kim (MOT Program), "R&D Management Applications of The Dynamic Metrics Framework" – (1998)

Priya Kher (Systems Design and Management Program), “Using Application Generated Data to Provide Personalized User Experience in Software Applications” – (2018)

Sidney A. Kriger, "The Effect of Quality Function Deployment on Communications of the New Product Development Teams," - (1989)

Yasuke Kume, "New Marketing Strategy of Telecommunications in Japan" - Reader (1981).

Elvind Lange, "Measuring Market Response to Marketing Mix Variables Using Dynamic Modeling and Its Implications for Brand Strategy" - Reader (1981).

Stephen P. Langhans, "Defensive Marketing Strategy: A Consumer Semi-Durable Case Example" - (1983).

In-Kyu Lee, "Evaluating System for the Upstream Center of R&D for being Market-Oriented in a Consumer Electronics Company," - (1995).

Michael Leslie (joint with Joel Wachtler), "A Methodology for Making International Marketing Mix Decisions," - Reader (1985).

Kit Mee Lim, "Competitive Strategy among Companies Offering Credit Cards," - Reader (1985).

James A. Lutz, "Competitive Marketing Strategy in the CAD Marketplace," - (1985).

Larry D. Lyons, "Forecasting the Impact of Competitive Entries on Sales of a New Consumer Durable" - Reader (1984).

Arpita Majundar (SDM Program), "Strategic Metrics for Product Development at Ford Motor Company," - (2000).

Catherine E. Manion, "A Survey of Customer Satisfaction Incentive Systems for Salespersons," - (1993).

Maureen E. Matamoros, "Information Overload," – Reader (1986).

Meghan McArdle (LFM Program), "Internet-based Rapid Customer Feedback for Design Feature Tradeoff Analysis," – co-Advisor (2000)

Fernando Motta, "Competitive Strategy Among Panamanian Banks," - (1985).

Neil Novich, "Price and Promotion Analysis Using Scanner Data" - Reader (1981).

Kenji Nozaki, "Marketing and Technology Strategy for the Japanese Architectural Design Company," - (1989).

Seiji Nozawa, “Voice of the Customer Analysis in the Japanese Beer Market.” - (1997).

Minho Park (MOT Program), “R&D Matrix at LG Electronics.” - (1997)

Stephen Pearse, "Production and Sales Forecasting: A Case Study and Analysis" - Reader (1982).

Ning P. Peng, "An Exploration of the Impact and Success of Customer Satisfaction Programs," - (1994).

Homer Pien (MOT Program), “Competitive Advantage through Successful Management of R&D.” - (1997)

Susan B. Poulin, "Defensive Strategy in the Automatic Test Equipment Industry" (1984).

Jill W. Roberts, "MBA Recruiters' Needs: Voice of the Customer Analysis," - (1992).

Lisa Gayle Ross, "A Voice of the Customer Analysis of M.B.A. Schools: The Student Segment," - (1992). Lisa was a runner-up for the George Hay Brown Marketing Scholar of the Year in 1992.

Tamaki Sano, “Strategy for Kirin as a Global Brand” – (2009) Sloan Fellow.

John Scaife (joint with Hafiz Adamjee), "The Face of the Customer: The Use of Multimedia in Quality Function Deployment," - (1993). See award listed under Adamjee.

Paul E. Schoidtz, "Advertising, Price, and Positioning Equilibria," - (1986).

Hongmei Shang, "A Simulation Analysis of Optimal Task Assignment for Growing Managers from R&D Labs," – (February 2000).

Rosemarie Shield, "Competitive Pricing and Positioning Strategies in the Chromatographic Instruments Market," - , (1986).

Jon Silver (joint with John C. Thompson, Jr.), "Beta-binomial Analysis of Customer Needs -- Channels for Personal Computers," - (1991). 1st Prize, Brooks Award.

Marc Silver (joint with Michael Halloran), "Defensive Marketing Strategy: Empirical Applications" - (1983).

Lisa Silverman, "An Application of New Product Growth Modeling to Automobile Introductions" - (1982).

Sheryl Sligh, "An Assessment of the Analog Modem Market," - (1991).

Jamie Smith, "Industrial Buying Process of Pension Funds for Real Estate," - (1982).

Yoshihito Takahashi (MOT), "Analysis of Strategy in an Ethical Drug Industry," – Reader (2000).

Genevieve Tchang, "A Methodology for Planning and Evaluating External Relations at Business Schools" - Reader (1982).

John C. Thompson, Jr. (joint with Jon Silver), "Beta-binomial Analysis of Customer Needs -- Channels for Personal Computers," - (1991). 1st Place, Brooks Award.

V. Mullin Traynor, "The Dissemination and Adoption of New Technology: Control Data's Computer-Based Training System, Plato, and the Electric Utilities" - (1982).

Karen Van Kirk (joint with Andrew Anagnos), "A Framework for Analyzing Quality in the News Media," - (1991)

Joel Wachtler (joint with Michael Leslie), "A Methodology for Making International Marketing Mix Decisions," - Reader (1985).

Tamao Watanabe, "Customer Analysis of the U.S. Cardiovascular Drug Market: Focusing on Physician's Drug Choice" - (1991)

Stephen L. Weise, "Expert Decision Support Systems for Marketing Management," – Reader (1986).

Nancy Werner, "Competitive Price and Positioning in the Integrated Office Automation Systems Market" - (1986).

Julie Wherry, “Pre-Test Marketing: Its Current State in the Consumer Goods Industry and Its Effect on Determining a Networked Good.” - (2006).

Ali Yalcin, "The Potentials and Limitations of Customer Satisfaction Indices in Captive Customer-Supplier Environments," - (1995)

Sandra Yie, "The Core Curriculum at Sloan: Establishing a Hierarchy of Needs," - (1992).

Judy Young, "Responsive Marketing Strategy at AT&T" - (1982).

(b) *Aeronautics S.M. Theses*

Keith Russell (LSI), "Reengineering Metrics Systems for Aircraft Sustainment Teams: A Metrics Thermostat for Use in Strategic Priority Management," (February 2001).

(c) *Electrical Engineering, S.B. and M.Eng. Theses*

Chan, Christine W. Y. (M. Eng), "Measuring Non-Monetary Incentives Using Conjoint Analysis," Co-Advisor (1999).

Emily Hui (M.Eng.), "Application of Polyhedral Conjoint Analysis to the Design of Sloan's Executive Education Programs." June 2003.

Brian T. Miller (S. B.), "A Verification of Price Equilibria Based on Non-Zero Conjectural Variation," (1986).

(d) *Mechanical Engineering, Master's Theses*

Burt D. LaFountain, "An Empirical Exploration of Metrics for Product Development Teams" – (1999)

Tina Savage, "The Virtual Customer: A Distributed Methodology for Linking Product Design and Customer Preferences." Co-Advisor (1998).

(e) *Operations Research Center, Master's Theses*

Jeffrey Moffit (ORC), " Applying the Metrics Thermostat to Naval Acquisitions for Improving the Total Ownership Cost – Effectiveness of New Systems," (2001)

Olivier Toubia (ORC), "Interior-point Methods Applied to Internet Conjoint Analysis," (February 2001), Co-Advisor.

(f) *Urban Studies, Master's Theses*

Marijoan Bull, "Affirmative Fair Housing Marketing" - Committee Member (1982).

Barry Cosgrove, "Marketing Analysis for the Brockton Area Transportation Authority" – Committee Member (1981).

(g) *MIT Sloan School of Management, Ph.D. Theses*

Makoto Abe, "A Marketing Mix Model Developed from Single Source Data: A Semiparametric Approach." Committee member (August 1991). Abe is on the faculty at the University of Tokyo.

Cao, Xinyu, "Consumer Inattention, Uncertainty, and Marketing Strategy." Committee member (June 2018). Cao is joining the faculty at New York University.

Daria Dzyabura, "Essays on Machine Learning in Marketing (tentative title)," Chairman (June 2012). Dzyabura is on the faculty at the New Economic School in Russia.

Peter Fader, "Effective Strategies in Oligopolies," Chairman (February 1987). Sloan School of Management, Zannetos Prize, 1st Place. Fader is on the faculty at the University of Pennsylvania.

Fred Feinberg, "Pulsing Policies for Aggregate Advertising Models" Committee Member (August 1988). Feinberg is on the faculty of the University of Michigan.

Dave Godes, " Friend or Foe?: The Relationship Between Learning and Incentives and two additional essays in marketing," (June 2000), Committee Member. Primary advisor on listed essay. Zannetos Prize, 1st Place. Godes is on the faculty of the University of Maryland.

Abbie Griffin, "Functionally Integrated New Product Development: Improving the Product Development Process Through Linking Marketing and Technology Development," Chairman. (June 1989). Griffin is on the faculty at the University of Utah and was editor of *Journal of Product Innovation Management* from 1997-2003 Frank Bass Dissertation Award (INFORMS).

Gurumurthy Kalyanaram, "Empirical Modeling of the Dynamics of the Order of Entry Effect on Market Share, Trial Penetration and Repeat Purchases for Frequently Purchased Consumer Goods," Committee Member (March 1989).

G. K. was on the faculty at the University of Texas, Dallas.

Eriko Kitazawa, "Customer Satisfaction at Japanese Utility Franchises," Committee Member (1996).

Li, Xitong, “Using Web Data and Services: Technology, Theory, and Evidence,” Co-chairman (2014). Li is on the faculty at HEC Paris.

Eleanor (Nell) Putnam-Farr, “The Effects of Framing on Enrollment and Participation – Field Experiments Using Different Recruitment Language.” June 2015. Putnam-Farr joined Yale University as a post doctoral fellow. She is joining the faculty at Rice University.

John H. Roberts, "A Multiattributed Utility Diffusion Model: Theory and Application to the Prelaunch Forecasting of Autos". Committee Member (February 1984). Roberts is on the faculty at the London Business School and the Australian Graduate School of Management..

Matt Selove, “The Strategic Importance of Accuracy in Conjoint Design,” Committee Member (June 2010). Selove joined the faculty at the University of Southern California. He is now on the faculty at the University of Florida. John Howard Dissertation Award (AMA), 2010.

Duncan I. Simester, "Analytical Essays on Marketing," Committee Member, (June 1993). Sloan School of Management, Zannetos Prize, Honorable Mention. Simester is on the faculty of M.I.T.

Artem Timoshenko, "Essays on Machine Learning in Marketing (tentative ,June 2019),." Timoshenko is on the faculty of Northwestern University.

Olivier Toubia, “New Approaches to Idea Generation and Consumer Input in the Product Development Process,” (June 2004). Toubia is on the faculty of Columbia University. Frank M. Bass Dissertation Award (INFORMS), 2005, John Howard Dissertation Award (AMA), 2005. ISMS Long-term Impact Award 2016.

Miguel Villas-Boas, "On Promotions and Advertising Policies: A Strategic Approach." Committee member (February 1991). Villas-Boas is on the faculty at the University of California, Berkeley.

Bruce Weinberg, "An Information-Acceleration-Based Methodology for Developing Preproduction Forecasts for Durable Goods: Design, Development, and Initial Validation." Committee Member. (August 1992). Weinberg was on the faculty at Boston University.

Florian Zettelmeyer, “Three Essays on Strategic and Organizational Uses of Information in Marketing.” Committee Member. Zettelmeyer is on the faculty of Northwestern University.

(h) *Civil Engineering, Ph.D. Thesis*

Karla Karash (Ph.D.), "An Application of the Lens Model in Measuring Retail Attractiveness and the Effects of Transportation Programs" - Committee Member (August 1983). Karash was at the MBTA.

(j) *Mechanical Engineering, Ph.D. Thesis*

Javier Gonzalez-Zugasti (Mechanical Engineering, Ph.D.), "Models for Product Family Design and Selection," (June 2000), Committee Member.

(k) Operations Research Center, Ph.D. Thesis

Yee, Michael (Operations Research, Ph.D.), “Inferring Non-Compensatory Choice Heuristics,” (June 2006), Co-Advisor. Yee is at MIT’s Lincoln Laboratories.

Northwestern University Ph.D. Thesis Supervision (1975 - 1980 Academic Years)

Steven M. Shugan, "A Descriptive Stochastic Preference Theory and Dynamic Optimization: Applications Toward Predicting Consumer Choice' Chairman (September 1977). Shugan is on the faculty at the University of Florida and was editor of *Marketing Science* for six years.

Patricia Simmie, "Product Realization: Theory, Models, and Application" - Chairman (June 1979), American Marketing Association Dissertation Prize, Honorable Mention. Simmie was at York University.

Ken J. Wisniewski, "A Semi-Markov Theory of Consumer Response: New Theoretical Properties, Simulation Testing, and Empirical Application" Chairman (June 1981). American Marketing Association Dissertation Prize, First Place. Wisniewski was on the University of Chicago.

APPENDIX B

Expert Testimony
Testimony by John R. Hauser from 2016 to 2021

Charles Tillage, et al. v. *Comcast Corporation and Comcast Cable Communications LLC and DOES 1-20*, Case No. 3:17-cv-06477-VC-DMR, United States District Court Northern District of California, San Francisco Division. Deposition Testimony, May 27, 2021.

Dane Ashley Bruce Tress v. *FCA US LLC and FCA Canada Inc*., QBG 469 of 2018. Cross-Examination testimony, April 12, 2021.

Arendi S.A.R.L v. *Apple Inc.*, Case No. 12-1596-LPS, United States District Court, District of Delaware. Deposition testimony, January 15, 2021.

In the Matter of Determination of Rates and Terms for Digital Performance of Sound Recordings and Making of Ephemeral Copies to Facilitate those Performances (Web V) before United States Copyright Royalty Board, Library of Congress, Washington, DC, Docket No. 19-CRB-0005-WR (2021-2025). Deposition testimony, February 21, 2020. Trial testimony, August 26–27, 2020.

Allegra, et al. v. *Luxottica Retail North America d/b/a LensCrafters*, Case No. 1:17-cv-05216-PKC-RLM, United States District Court Eastern District of New York, Brooklyn Division. Deposition testimony, January 10, 2020.

Shane Witham and Robert Maginnis v. *FCA Canada Inc., FCA US LLC, Robert Bosch GMBH and Robert Bosch LLC*, CV-17-567691-00CP, Ontario Superior Court of Justice. Cross-Examination testimony, December 6, 2019.

MillerCoors, LLC. v. *Anheuser-Busch Companies, LLC.*, Case No. 19-cv-218, United States District Court for the District of Wisconsin. Deposition testimony, October 28, 2019.

Yahoo Holdings, Inc., et al. v. *Mozilla Corporation*, Case No. 17-CV-319921, Superior Court of the State of California, County of Santa Clara. Deposition testimony, September 13, 2019.

Malden Transportation, Inc., et al v. *Uber Technologies, Inc., Rasier, LLC*, Case No. 1:16-cv-12538-NMG, United States District Court, District of Massachusetts. Deposition testimony, January 30, 2019. Trial testimony, July 31–August 1, 2019.

State of Washington v. *Comcast Cable Communications Management, LLC; Comcast Cable Communications, LLC; and Comcast of Colorado/Florida/Michigan/New Mexico/Pennsylvania/Washington, LLC*, Case No. 16-2-18224-1 SEA, State of Washington King County Superior Court. Deposition testimony, August 9, 2018.

United States of America v. AT&T Inc., DirecTV Group Holdings, LLC, and Time Warner Inc., Case No. 1:17-cv-02511, United States District Court for the District of Columbia. Deposition testimony, March 9, 2018. Trial testimony, March 29, 2018.

Joseph Adinolfe, et al., v. *United Technologies Corp., d/b/a Pratt & Whitney,* Case No. 10-80840-CIVKAM, In the United States District Court, Southern District of Florida, West Palm Beach Division. Deposition testimony, July 12, 2016. Class certification hearing testimony, January 9, 2018.

Garth Anderson, et al., v. *American Family Insurance Company*, Case No. 5:15-CV-475 (MTT), United States District Court for the Middle District of Georgia, Macon Division. Deposition testimony, November 14, 2017.

In the Matter of Determination of Royalty Rates and Terms for Transmission of Sound Recordings by Satellite Radio and "Preexisting" Subscription Services (SDARS III) before United States Copyright Royalty Judges, Library of Congress, Washington, DC, Docket No. 16-CRB-0001-SR/PSSR (2018-2022). Deposition testimony, March 17, 2017. Trial testimony, May 9, 2017.

Oula Zakaria v. *Gerber Products Co., a Corporation, d/b/a Nestle Nutrition, Nestle Infant Nutrition, and Nestle Nutrition North America*, No. 2:15-cv- 0200-JAK, United States District Court, Central District of California. Deposition testimony, November 17, 2016.

Sprint Communications Company L.P. et al. v. *Comcast Cable Communications, LLC. et al.*, Case No. 2:12-cv-00859-JD, United States District Court for the Eastern District of Pennsylvania. Deposition testimony, April 5, 2016.

APPENDIX C

Materials Relied Upon

Books

- Diamond, Shari S., "Reference Guide on Survey Research," in *Reference Manual on Scientific Evidence*, Third Edition, Washington, D.C.: Federal Judicial Center and National Research Council of the National Academies, 2011, pp. 359–423, *available at* https://www.fjc.gov/content/reference-guide-survey-research-2.
- Payne, Stanley L. B., "What's the Good Word?" in *The Art of Asking Questions*, Princeton, NJ: Princeton University Press, 1980, pp. 138–157.
- Thompson, Steven K., *Sampling*, Hoboken, NJ: John Wiley & Sons, Inc., 2012.
- Urban, Glen L. and John R. Hauser, *Design and Marketing of New Products*, Englewood Cliffs, NJ: Prentice-Hall, Inc., 1980.

Academic Articles

- Dahan, Ely and John R. Hauser, "The Virtual Customer," *Journal of Product Innovation Management* 19, 5, 2002, pp. 332–353.
- Decady, Y. J. and D.R. Thomas, "A Simple Test of Association for Contingency Tables with Multiple Column Reponses," *Biometrics* 56, 3, 2000, pp. 893–896.
- Ding, Min, et al., "Unstructured Direct Elicitation of Decision Rules," *Journal of Marketing Research* 48, 2011, pp. 116–127.
- Gelb, Gabriel M. and Betsy D. Gelb, "Internet Surveys for Trademark Litigation: Ready or Not, Here They Come," *The Trademark Reporter* 97, 5, 2007, pp. 1073–1088.
- Griffin, Abbie and John R. Hauser, "The Voice of the Customer," *Marketing Science* 12, 1, 1993, pp. 1–27.
- Hauser, John R., "Consideration-Set Heuristics," *Journal of Business Research* 67, 8, 2014, pp. 1688–1699.
- Hauser, John R. and Birger Wernerfelt, "An Evaluation Cost Model of Consideration Sets," *The Journal of Consumer Research* 16, 4, 1990, pp. 393–408.
- Kung, Franki Y.H., Navio Kwok, and Douglas J. Brown, "Are Attention Check Questions a Threat to Scale Validity?" *Applied Psychology* 67, 2, 2018, pp. 264–283.
- Miller, Klaus M. et al., "How Should Consumers' Willingness to Pay Be Measured? An Empirical Comparison of State-of-the-Art Approaches," *Journal of Marketing Research* 48, 2011, pp. 172–184.

- Morren, Meike and Leonard J. Paas, "Short and Long Instructional Manipulation Checks: What Do They Measure?" *International Journal of Public Opinion Research* 32, 4, 2020, pp. 790–800.
- Oppenheimer, Daniel M., Tom Meyvis, and Nicolas Davidenko, "Instructional Manipulation Checks: Detecting Satisficing to Increase Statistical Power," *Journal of Experimental Social Psychology* 45, 2009, pp. 867–872.
- Sawyer, Alan G., "Demand Artifacts in Laboratory Experiments in Consumer Research," *Journal of Consumer Research* 1, 4, 1975, pp. 20–30.
- Shocker, Allan D., Moshe Ben-Akiva, Bruno Boccara, and Prakash Nedungadi, "Consideration Set Influences on Consumer Decision-Making and Choice: Issues, Models, and Suggestions," *Marketing Letters* 2, 3, 1991, pp. 181–197.
- Shrimp, Terence A., Eva M. Hyatt, and David J. Snyder, "A Critical Appraisal of Demand Artifacts in Consumer Research," *Journal of Consumer Research* 18, 3, 1991, pp. 273–283.
- Silk, Alvin J. and Glen L. Urban, "Pre-Test-Market Evaluation of New Packaged Goods: A Model and Measurement Methodology," *Journal of Marketing Research* 15, 2, 1978, pp. 171–191.
- Thornburg, Robert H., "Trademark Surveys: Development of Computer-Based Survey Methods," *The John Marshall Review of Intellectual Property Law* 4, 91, 2004, pp. 91–124.
- Toubia, Olivier, John R. Hauser, and Duncan I. Simester, "Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis," *Journal of Marketing Research* 41, 1, 2004, pp. 116–131.
- Toubia, Olivier, Duncan I. Simester, John R. Hauser, and Ely Dahan, "Fast Polyhedral Adaptive Conjoint Estimation," *Marketing Science* 22, 3, 2003, pp. 273–303.
- Toubia, Olivier, John Hauser, and Rosanna Garcia, "Probabilistic Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis: Theory and Application," *Marketing Science* 26, 5, 2007, pp. 596–610.
- Urban, Glen L. and Gerald M. Katz, "Pre-Test-Market Models: Validation and Managerial Implications," *Journal of Marketing Research* 20, 3, 1983, pp. 221–234.
- Yee, Michael, Ely Dahan, John R. Hauser, and James Orlin, "Greedoid-Based Noncompensatory Inference," *Marketing Science* 26, 4, 2007, pp. 532–549.

Internet Sources

- "About Us," *Dynata,* 2021, *available at* https://www.dynata.com/about-us/.

- "Amazon Music Prime," *Amazon*, *available at* https://www.amazon.com/music/prime.
- "Announcing New Name and Brand: Research Now SSI is Now Dynata," *PR Newswire*, January 15, 2019, *available at* https://www.prnewswire.com/news-releases/announcing-new-name-and-brand-research-now-ssi-is-now-dynata-300778014.html.
- "Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2010 to July 1, 2019," *U.S. Census Bureau*, *available at* https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html.
- "Awards: Marketing Research SIG," *American Marketing Association, available at* https://www.ama.org/awards-marketing-research-sig/.
- "Buck Weaver Award," *INFORMS*, *available at* https://www.informs.org/Recognizing-Excellence/Community-Prizes/Marketing-Science-Society/Buck-Weaver-Award.
- "CAPTCHA: Telling Humans and Computers Apart Automatically," *CAPTCHA*, *available at* http://www.captcha.net/.
- "Charles Coolidge Parlin Marketing Research Award," *American Marketing Association*, *available at* https://www.ama.org/AboutAMA/Pages/Parlin-Award.aspx.
- David R. Lampe, "Two from Sloan Win Marketing Awards," *MIT News*, April 3, 1996, *available at* https://news.mit.edu/1996/converse-0403
- "Determination of Rates and Terms for Making and Distributing Phonorecords (Phonorecords IV)," *Federal Register*, January 5, 2021, *available at* https://www.federalregister.gov/documents/2021/01/05/2020-29017/determination-of-rates-and-terms-for-making-and-distributing-phonorecords-phonorecords-iv.
- "Estimates of the Total Resident Population and Resident Population Age 18 Years and Older for the United States, States, and Puerto Rico: July 1, 2019," *U.S. Census Bureau*, *available at* https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html.
- "GBK Collective," *LinkedIn*, *available at* https://www.linkedin.com/company/gbk-collective/.
- "Generate New Data," *Dynata,* 2021, *available at* https://www.dynata.com/generate-new-data/.
- "Hulu and SHOWTIME with Premium," *Spotify*, August 12, 2021, *available at* https://support.spotify.com/us/article/hulu-showtime-premium/.

- "INFORMS Fellows: Class of 2006," *INFORMS, available at* https://www.informs.org/Recognizing-Excellence/Fellows/INFORMS-Fellows-Class-of-2006.
- "Internet Usage in the United States – Statistics & Facts," *Statista*, *available at* https://www.statista.com/topics/2237/internet-usage-in-the-united-states/.
- "iTunes Introduces 3-Tier Price Structure," *NPR*, April 8, 2009, *available at* https://www.npr.org/templates/story/story.php?storyId=102863576.
- "Leading Market Researchers Honored as Inaugural INFORMS Marketing Fellows," *INFORMS*, *available at* https://www.informs.org/About-INFORMS/News-Room/Press-Releases/Leading-Market-Researchers-Honored-as-Inaugural-INFORMS-Marketing-Fellows.
- "Plans," *SiriusXM*, *available at* https://www.siriusxm.com/plans.
- "Set Up Your Spotify Premium Service," *AT&T*, June 28, 2021, *available at* https://www.att.com/support/article/wireless/KM1362774/.
- "The 8 Best Places to Buy Music Online," *MakeUseOf,* July 16, 2021, *available at* https://www.makeuseof.com/best-places-to-buy-music-online/.
- "The World's Largest First-Party Data Platform for Insights, Activation & Measurement," *Dynata*, *available at* https://www.dynata.com/.
- "U.S. and World Population Clock," *U.S. Census Bureau*, *available at* https://www.census.gov/popclock/.
- "Yes, You Should Still Be Buying CDs, Here's Why," *Gear Patrol*, January 26, 2021, *available at* https://www.gearpatrol.com/tech/audio/a731474/reasons-to-buy-cds/.

Industry Reports

- Edison Research, "Share of Ear: Americans' Share of Time Spent Listening to Audio Sources," Q2 2021.

Legal Documents

- "Final Determination," *In re Determination of Rates and Terms for Digital Performance of Sound Recordings and Making of Ephemeral Copies to Facilitate Those Performances (Web V)*, Docket No. 19-CRB-0005-WR (2021–2025), July 20, 2021.
- "Rebuttal Expert Report of John Hauser," *In the Matter of Determination of Royalty Rates and Terms for Transmission of Sound Recordings by Satellite Radio and*

'Preexisting' Subscription Services (SDARS III), Docket No. 16-CRB-0001 SP/PSSR (2018-2022), February 17, 2017.

- "Rebuttal Testimony of John R. Hauser, Sc.D.," *In the Matter of Determination of Royalty Rates for Digital Performance in Sound Recordings and Ephemeral Recordings (Web IV)*, Docket No. 14-CRB-0001-WR (2016–2020), February 23, 2015.
- "Testimony of John Hauser, SC.D.," *In the Matter of Determination of Rates and Terms for Preexisting Subscription and Satellite Digital Audio Radio Services*, Docket No. 2011-1 CRB PSS/Satellite II, November 28, 2011.

Data

- Interactive Streaming Switching Survey Data.
- Interactive Streaming Switching Survey Data Glossary.
- Interactive Streaming Switching Survey Termination Report.
- Second-Stage Pretest Survey Data.
- SPOT_P4_000001242, "[redacted]"

APPENDIX D

Interactive Streaming Switching Survey Questionnaire

[PROGRAMMER NOTES IN BOLD CAPS AND BRACKETS]
Notes to respondent in italics

Overview

Sample:

- Approximately 1,000 respondents recruited from an online panel
- Click balanced on age, gender, and region to U.S. Census Bureau 2019 postcensal population estimates

[DISPLAY A MESSAGE TO RESPONDENTS ON OTHER ELECTRONIC DEVICE (e.g. NOT A SMARTPHONE, TABLET, DESKTOP, OR LAPTOP) AND ASK THEM TO RE-ENTER USING AN APPROPRIATE DEVICE (USING THE SAME LINK): "This survey is not formatted for viewing on your current device. Please return to the survey, using the same link, from a desktop, laptop, tablet computer, or smartphone."**]**

Introduction and Screening

[NO SURVEY TITLE TO BE DISPLAYED TO RESPONDENTS. WHEN RESPONDENT CLICKS ON INVITATION LINK, DISPLAY MESSAGE BELOW:]

Thank you for your willingness to participate in this study. The responses you give to these questions are very important to us. If you don't know an answer to a question or if you are unsure, please indicate this in your response. <u>It is very important that you do not guess.</u>

Your answers will be kept in confidence. The results of this study will not be used to try to sell you anything. Please take the survey in one session without interruption. These questions should take 10–15 minutes to complete.

When you are ready to get started, please click on the "CONTINUE" button below.

["CONTINUE" BUTTON TAKES RESPONDENT TO QUESTION QS0]

[NEXT PAGE]

QS0. Please enter the code exactly as it appears in the image below, including upper and lower case letters. Do NOT include any spaces. Click "CONTINUE" to proceed.
[INSERT CODE. IF THE CODE DOES NOT MATCH ON THE FIRST TRY, PIPE IN A DIFFERENT RANDOMLY SELECTED CODE AND ALLOW RESPONDENT TO TRY AGAIN. TERMINATE IF THE CODE DOES NOT MATCH THE SECOND TIME RESPONDENT TRIES.]

[NEXT PAGE]

SCREENING QUESTIONS (QS-SERIES OF QUESTIONS)

QS1. In which state do you live? *(Select one only)*

[INSERT DROP DOWN LIST OF 50 STATES + DC + "My Area Is Not Listed Here". TERMINATE IF "MY AREA IS NOT LISTED HERE" SELECTED. ASSIGN REGION VARIABLE]

[NEXT PAGE]

QS2. Are you…? *(Select one only)*
- ⦿ Male
- ⦿ Female
- ⦿ Prefer not to answer

[TERMINATE IF "PREFER NOT TO ANSWER" IS SELECTED]

[NEXT PAGE]

QS3. Which of the following includes your age? *(Select one only)*
- ⦿ Under 18
- ⦿ 18 - 34
- ⦿ 35 - 49
- ⦿ 50 - 64
- ⦿ 65 or older
- ⦿ Prefer not to answer

[TERMINATE IF "UNDER 18" OR "PREFER NOT TO ANSWER" IS SELECTED]

[NEXT PAGE]

QS4. What is the highest degree or level of education you have completed? *(Select one only)*
- ⦿ Elementary school
- ⦿ Middle school
- ⦿ Completed some high school
- ⦿ High school graduate
- ⦿ Other post high school vocational training
- ⦿ Completed some college
- ⦿ Associate's degree
- ⦿ Bachelor's degree
- ⦿ Completed some postgraduate
- ⦿ Master's degree
- ⦿ Doctorate/PhD
- ⦿ None of the above

[REGION/AGE/GENDER DESIGNATION MUST MATCH PANEL DATA, OTHERWISE TERMINATE]

[NEXT PAGE]

QS5. What type of electronic device are you using to complete this survey? *(Select one only)* **[RANDOMIZE FIRST FOUR RESPONSES; ANCHOR "OTHER MOBILE OR ELECTRONIC DEVICE"]**

- ⦿ Desktop computer
- ⦿ Laptop computer
- ⦿ Tablet computer (e.g., Apple iPad, Kindle Fire, Samsung Galaxy Tab)
- ⦿ Smartphone (e.g., Apple iPhone, Samsung Galaxy, HTC 10)
- ⦿ Other mobile or electronic device **[ANCHOR; TERMINATE]**

[NEXT PAGE]

QS6. Do you or does anyone in your household work in any of the following areas? *(Select all that apply)* **[RANDOMIZE LIST, ANCHOR "NONE OF THE ABOVE" AND "DON'T KNOW/UNSURE" LAST]**

- ❒ For a music streaming service company, a music publisher, or a record label
- ❒ For a video game company
- ❒ For a food or beverage company
- ❒ For a pharmaceutical or medical device company
- ❒ For an Internet service provider
- ❒ For a market research company or public relations agency
- ❒ None of the above **[EXCLUSIVE; ANCHOR]**
- ❒ Don't know/Unsure **[EXCLUSIVE; ANCHOR]**

[TERMINATE IF "MARKET RESEARCH" OR "MUSIC STREAMING SERVICE" SELECTED]

[NEXT PAGE]

QS7. Have you taken a survey relating to any of the following products or services in the past 2 months? *(Select all that apply)* **[RANDOMIZE LIST, ANCHOR "NONE OF THE ABOVE" AND "DON'T KNOW/UNSURE" LAST]**

- ❒ Music streaming services
- ❒ Video games
- ❒ Food and beverage
- ❒ Prescription drugs or medical devices
- ❒ Search engines
- ❒ None of the above **[EXCLUSIVE; ANCHOR]**
- ❒ Don't know/Unsure **[EXCLUSIVE; ANCHOR]**

[TERMINATE IF "MUSIC STREAMING SERVICES" SELECTED]

[NEXT PAGE]

QS8. There is a variety of media content available for people to watch, listen to, or read. The next questions ask about your media habits.

Thinking of the last seven days, which of the following types of activities did you engage in? *(Select all that apply)* **[ANCHOR "NONE OF THE ABOVE" AND "DON'T KNOW" LAST]**

[ANSWER OPTIONS SHOULD BE KEPT IN ORDER IN THREE BLOCKS: OPTIONS STARTING "I WATCHED," "I LISTENED" AND "I READ." ROTATE ORDERING OF THE BLOCKS]

- ❒ I watched TV program(s) (e.g., shows, sports, or news).
- ❒ I watched movie(s) (e.g., at home or in a theater).
- ❒ I watched on-demand holographic telecast(s).
- ❒ I listened to music (e.g., pop, country, rock).
- ❒ I listened to other audio content (e.g., sports, news, podcasts, or audiobooks).
- ❒ I read magazine(s) or newspaper(s) (e.g., in print or online).
- ❒ I read book(s) (e.g., physical or digital).
- ❒ None of the above. **[EXCLUSIVE; ANCHOR]**
- ❒ Don't know/Unsure. **[EXCLUSIVE; ANCHOR]**

[CONTINUE ONLY IF "MUSIC" IS SELECTED]
[TERMINATE IF "ON-DEMAND HOLOGRAPHIC TELECASTS" IS SELECTED]

[NEXT PAGE]

QINTRO. You mentioned that you listened to **music** in the last seven days. There are various ways in which you can listen to music, some of which are defined below. Please read these definitions carefully, and keep them in mind when responding to questions in this survey.

[RANDOMIZE DESCRIPTIONS, KEEPING "ON-DEMAND MUSIC STREAMING SERVICES" AND "NOT-ON-DEMAND MUSIC STREAMING SERVICES" TOGETHER AND ROTATING]

- **Satellite radio (SiriusXM)**: Satellite radio is broadcast nationwide via satellite, thus allowing listeners to listen to the same stations anywhere in the country through a receiver that is portable, in the home, or built into a car. It can also be accessed through an Internet-capable device by going to the SiriusXM website or using the SiriusXM app. Satellite radio is available by subscription and offers commercial-free music as well as sports, news, talk, and other programming. Satellite radio may offer different stations that are not available on live AM/FM radio.

- **On-demand music streaming services:** On-demand music streaming services allow listeners to choose the specific song, artist, or playlist they wish to hear. These services may be available for free with ads, or through a paid subscription without ads. Examples include Apple Music, ad-

supported Spotify, Spotify Premium, YouTube Music, Amazon Music Prime, Amazon Music Unlimited, and others.

- **Not-on-demand music streaming services:** Not-on-demand music streaming services do not allow listeners to choose the specific song or artist they wish to hear, but instead provide a pre-programmed list of songs. The specific planned selection and order of songs remain unknown to the listener (i.e., no prepublished playlist). These services may be available for free with ads, or through a paid subscription without ads. Examples include ad-supported Pandora, Pandora Plus, Amazon Music Free, and others.

[DISPLAY "CONTINUE" BUTTON AFTER 30 SECONDS]

[NEXT PAGE]

QS9. You mentioned that you listened to **music** in the last seven days. In which of the following ways, if any, did you listen to **music**? *(Select all that apply)* **[RANDOMIZE LIST, KEEPING "ON-DEMAND MUSIC STREAMING SERVICES" AND "NOT-ON-DEMAND MUSIC STREAMING SERVICES" TOGETHER AND ROTATING, ANCHOR "OTHER" AND "DON'T KNOW/UNSURE" LAST]**

You may click **here** to review the definitions you read earlier in the survey. **[ADD LINK TO A POPUP WINDOW SHOWING DEFINITIONS (ONLY THE BULLET POINTS) FROM QINTRO IN THE SAME ORDER]**

- ❒ I listened to music on on-demand music streaming service(s) through paid subscription(s) or via free ad-supported versions (e.g., Apple Music, Spotify Premium, ad-supported Spotify, Tidal).
- ❒ I listened to music on not on-demand music streaming service(s) through paid subscription(s) or via free ad-supported versions (e.g., Pandora Plus, ad-supported Pandora, Amazon Music Free).
- ❒ I listened to music on online video site(s) (e.g., YouTube, Vevo).
- ❒ I listened to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).
- ❒ I listened to music channels through a cable or satellite television subscription (e.g., Music Choice).
- ❒ I listened to music on satellite radio through a paid subscription (SiriusXM) on the radio or over the internet.
- ❒ I listened to digital music files, CDs, or vinyl records.
- ❒ I listened to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).
- ❒ I listened to music on live AM/FM radio broadcasts through a radio or over the internet.
- ❒ Other. *(Please specify, if not already selected in the list above)*: **[TEXTBOX, DO NOT ALLOW BLANK; ANCHOR]**
- ❒ Don't know/Unsure. **[EXCLUSIVE; ANCHOR]**

[CONTINUE ONLY FOR RESPONDENTS WHO SELECT "ON-DEMAND MUSIC STREAMING SERVICE(S)"; TERMINATE OTHERWISE]

[NEXT PAGE]

QS10. You mentioned that you listened to **music** on **on-demand** music streaming service(s) in the last seven days. On which of the following **on-demand** music streaming service(s) did you listen to **music** in the last seven days? *(Select all that apply)* **[RANDOMIZE LIST; ANCHOR "DON'T KNOW/UNSURE" LAST]**

- ❒ Amazon Music
- ❒ Apple Music
- ❒ BetaWaves
- ❒ Deezer
- ❒ iHeart Radio
- ❒ LiveXLive
- ❒ Napster
- ❒ Pandora
- ❒ SoundCloud
- ❒ Spotify
- ❒ Tidal
- ❒ YouTube Music
- ❒ Other *(Please specify, if not already selected in the list above)*: **[TEXTBOX, DO NOT ALLOW BLANK; ANCHOR]**
- ❒ Don't know/Unsure **[EXCLUSIVE; ANCHOR]**

[TERMINATE IF "BetaWaves" IS SELECTED]
[CONTINUE ONLY FOR RESPONDENTS WHO SELECT SPOTIFY; TERMINATE OTHERWISE]

[NEXT PAGE]

QS11. You mentioned that you listened to **music** on **Spotify** in the last seven days. Did you listen to **music** on **Spotify** using your own **Spotify** account? *(Select one only)* **[ROTATE; ANCHOR "DON'T KNOW/UNSURE" LAST]**

- ❒ Yes, I listened to **music** on **Spotify** using my own **Spotify** account (this includes listening to music as a member of a Duo or Family subscription plan)
- ❒ No, I listened to **music** on **Spotify** using someone else's **Spotify** account
- ❒ Don't know/Unsure **[ANCHOR]**

[CONTINUE ONLY FOR RESPONDENTS WHO SELECT YES]

[NEXT PAGE]

QS12. You mentioned that you listened to **music** on **Spotify** in the last seven days using your own **Spotify** account. Which version of **Spotify** do you have? *(Select one only)* **[RANDOMIZE LIST, KEEPING "PAID SUBSCRIPTION" AND "FREE**

TRIAL" TOGETHER AND ROTATING; ANCHOR "DON'T KNOW/UNSURE" LAST]

- ❒ I have the free version of Spotify (ad-supported)
- ❒ I have a paid subscription to Spotify Premium (including Duo, Family, Student subscription plans) that is not bundled with a subscription to another service
- ❒ I have Spotify Premium through a free trial subscription
- ❒ I have a paid bundle subscription to Spotify Premium and another service (e.g., Hulu or Showtime)
- ❒ I have Spotify Premium as a free benefit from another service (e.g., some AT&T subscribers receive Spotify Premium for free)
- ❒ Don't know/Unsure **[ANCHOR]**

[IF RESPONDENT CHOOSES "PAID SUBSCRIPTION" OR "PAID BUNDLE SUBSCRIPTION", CONTINUE TO QS13]
[IF RESPONDENT CHOOSES "FREE BENEFIT", CONTINUE TO QS15]
[IF RESPONDENT CHOOSES "FREE VERSION", "FREE TRIAL", OR "DON'T KNOW/UNSURE", TERMINATE]

[NEXT PAGE]

QS13. You mentioned that you have a paid subscription to **Spotify Premium**. Which type of subscription plan do you have? *(Select one only)* **[RANDOMIZE; ANCHOR "DON'T KNOW/UNSURE" LAST]**

- ❒ Individual (1 Premium account)
- ❒ Duo (2 Premium accounts for a couple under one roof)
- ❒ Family (up to 6 Premium accounts for family members living under one roof)
- ❒ Student (1 Premium account, available only to students at an accredited higher education institution)
- ❒ Other *(Please specify, if not already selected in the list above)*: **[TEXTBOX, DO NOT ALLOW BLANK; ANCHOR]**
- ❒ Don't know/Unsure **[ANCHOR]**

[NEXT PAGE]

QS14. You mentioned that you have a **paid** subscription to **Spotify Premium**. Which of the following best describes your role in making the decision to purchase a **paid** subscription to **Spotify Premium**? *(Select one only)* **[ROTATE LIST; ANCHOR "DON'T KNOW/UNSURE" LAST]**

- ❒ I made the decision on my own
- ❒ I played a major role in the decision
- ❒ I played a minor role in the decision
- ❒ I was not involved in the decision
- ❒ Don't know/Unsure **[ANCHOR]**

[TERMINATE IF "I played a minor role in the decision," "I was not involved in the decision" or "Don't know/Unsure" is selected]

[NEXT PAGE]

QS15. On which on-demand music streaming service(s) **other than Spotify** do you have **your own account with a paid subscription** (including as part of a group or family plan)? *(Select all that apply)* **[SHOW IN THE SAME ORDER AS QS10 AS INDICATED BELOW]**

- ❒ Amazon Music Prime (included with Amazon Prime membership) **[SAME PLACEMENT AS "AMAZON MUSIC"; RANDOMIZE WITH "AMAZON MUSIC UNLIMITED"]**
- ❒ Amazon Music Unlimited **[SAME PLACEMENT AS "AMAZON MUSIC"; RANDOMIZE WITH "AMAZON MUSIC PRIME"]**
- ❒ Apple Music **[SAME PLACEMENT AS "APPLE MUSIC"]**
- ❒ BetaWaves Premium **[SAME PLACEMENT AS "BETAWAVES"]**
- ❒ Deezer Premium **[SAME PLACEMENT AS "DEEZER"]**
- ❒ iHeart Radio All Access **[SAME PLACEMENT AS "IHEART RADIO"]**
- ❒ LiveXLive Premium **[SAME PLACEMENT AS "LIVEXLIVE"]**
- ❒ Napster Premier **[SAME PLACEMENT AS "NAPSTER"]**
- ❒ Pandora Premium **[SAME PLACEMENT AS "PANDORA"]**
- ❒ SoundCloud Go+ **[SAME PLACEMENT AS "SOUNDCLOUD"]**
- ❒ Tidal **[SAME PLACEMENT AS "TIDAL"]**
- ❒ YouTube Music Premium **[SAME PLACEMENT AS "YOUTUBE MUSIC"]**
- ❒ Other *(Please specify, if not already selected in the list above)*: **[TEXTBOX, DO NOT ALLOW BLANK; ANCHOR]**
- ❒ Don't know/Unsure **[EXCLUSIVE; ANCHOR]**
- ❒ None of the above **[EXCLUSIVE; ANCHOR]**

[TERMINATE IF "BetaWaves Premium" IS SELECTED]

[IF RESPONDENT SELECTS ANYTHING OTHER THAN "DON'T KNOW/UNSURE" OR "NONE", THEN:

- **[HAS PAID OPTIONS] = 1**

OTHERWISE:

- **[HAS PAID OPTIONS] = 0]**

[NEXT PAGE]

[RANDOMIZE THE VALUE OF [CHECK] BETWEEN THE FOLLOWING OPTIONS:

- **LENOVO**
- **ASUS**
- **MSI**

]

QS16. People vary in the amount they pay attention to these kinds of surveys. Some take surveys seriously and read each question, while others take surveys very quickly and barely read the questions at all. If you are the type of person who takes surveys seriously and reads all of the questions, please select **[CHECK]**

from the list. *(Select one only)* **[RANDOMIZE LIST, ANCHOR "OTHER" AND "DON'T KNOW" LAST]**

- ⦿ Apple
- ⦿ HP
- ⦿ Dell
- ⦿ Acer
- ⦿ Samsung
- ⦿ LG
- ⦿ **[CHECK]**
- ⦿ Other. Please specify: **[ANCHOR; TEXTBOX, DO NOT ALLOW BLANK IF CHECKED]**
- ⦿ Don't know/Unsure **[ANCHOR]**

[CONTINUE IF [CHECK] SELECTED, OTHERWISE TERMINATE]

[GO TO MAIN QUESTIONNAIRE.]

MAIN QUESTIONAIRE (Q-SERIES OF QUESTIONS)

[IF [HAS PAID OPTIONS] = 1, THEN:

- **[PAID OPTIONS_HAVE] = [INSERT SELECTED OPTIONS FROM QS15 WITH COMMAS SEPARATING THE VALUES]]**

[IF RESPONDENT IN QS15 DOES NOT SELECT EVERYTHING OTHER THAN "OTHER," "DON'T KNOW/UNSURE", "NONE", OR "AMAZON MUSIC PRIME,", THEN:

- **[PAID OPTIONS_ DON'T HAVE] = [INSERT RANDOM NON-SELECTED OPTION FROM QS15; DO NOT CHOOSE "AMAZON MUSIC PRIME"]**

ELSE, THEN:

- **[PAID OPTIONS_ DON'T HAVE] = "an on-demand music streaming service"]**

INTRODUCTION

In the next few pages, we will ask you some questions about how you would choose among music options.

If you are unable to say whether you would or would not choose a particular music option or if the music option is not applicable to you, please indicate this by selecting “Don’t know/Unsure/Not Applicable.” It is important that you do not guess.

[DISPLAY “CONTINUE” BUTTON AFTER 10 SECONDS]

[NEXT PAGE]
[RANDOMLY ASSIGN RESPONDENTS TO CELL A OR CELL B]

CELL A – REMOVE SPOTIFY PREMIUM

Q1. Suppose that **music** on **Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now (including music on ad-supported Spotify).

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click **here** to review the definitions you read earlier in the survey. **[ADD LINK TO A POPUP WINDOW SHOWING DEFINITIONS (ONLY THE BULLET POINTS) FROM QINTRO IN THE SAME ORDER]**

[RANDOMIZE BLOCKS A–F, KEEPING A AND B TOGETHER AND ROTATING;

RANDOMIZE CHOICES WITHIN BLOCKS;

ROTATE AND KEEP TOGETHER THE FOLLOWING RESPONSE OPTIONS WITHIN BLOCKS:

- **1, 2, AND 3 IN BLOCK A;**
- **2 AND 3 IN BLOCK A;**
- **5 AND 6 IN BLOCK B;**
- **14 AND 15 IN BLOCK F**

ROTATE "WOULD CONSIDER" AND "WOULD NOT CONSIDER" COLUMNS; CARRY "WOULD CONSIDER" AND "WOULD NOT CONSIDER" HEADER ABOVE EACH BLOCK]

[IF [HAS PAID OPTIONS] = 0, THEN REMOVE A.1 BELOW]

	Would consider	Would not consider	Don't know/Unsure/ Not Applicable **[ANCHOR]**
A) Music on on-demand music streaming services to replace listening to music on Spotify Premium			
1. I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., [PAID OPTIONS HAVE]).	⦿	⦿	⦿

2. I would listen to ad-supported Spotify, which I do not need to pay for.	⦿	⦿	⦿
3. I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to [PAID OPTIONS DON'T HAVE] at $9.99 per month or $119.88 per year).	⦿	⦿	⦿
4. I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	⦿	⦿	⦿
B) Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
5. I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	⦿	⦿	⦿
6. I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	⦿	⦿	⦿
7. I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	⦿	⦿	⦿
C) Music on video options to replace listening to music on Spotify Premium			
8. I would listen to music on online video site(s) (e.g., YouTube, Vevo).	⦿	⦿	⦿
9. I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	⦿	⦿	⦿
10. I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	⦿	⦿	⦿
D) Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
11. I would listen to satellite radio through the paid subscription I already have (SiriusXM).	⦿	⦿	⦿
12. I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99	⦿	⦿	⦿

per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).			
E) Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
13. I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	⦿	⦿	⦿
F) Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
14. I would listen to digital music files, CDs, or vinyl records that I already own.	⦿	⦿	⦿
15. I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	⦿	⦿	⦿
16. I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	⦿	⦿	⦿
G) Other [ANCHOR]			
17. I would listen to less music and would do something else instead (e.g., watch TV, read a book).	⦿	⦿	⦿
18. I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above): **[TEXTBOX]**			

[GO TO END IF RESPONDENT INDICATES "WOULD NOT CONSIDER" AND/OR "DON'T KNOW/UNSURE/NOT APPLICABLE" FOR ALL OPTIONS]

[GO TO END IF RESPONDENT ONLY SELECTS "WOULD CONSIDER" FOR ONE OPTION AND DOES NOT INDICATE ANY ALTERNATIVE IN THE TEXTBOX.]

[NEXT PAGE]

Q2INTRO. In the next question, you will be asked to allocate time across music options that you would **actually** listen to. Some of those options may have a cost associated with them.

In surveys people sometimes **say** they would pay for music options that they may not **actually** be willing to pay for.

Please answer the next question as if you would **actually** pay the cost associated with the options that you would listen to.

[DISPLAY "CONTINUE" BUTTON AFTER 10 SECONDS]

[NEXT PAGE]

Q2. In the previous question, you mentioned that if music on **Spotify Premium** is no longer available, you would **consider** using the following music options to **replace** listening to music on **Spotify Premium.**

Please allocate 100 points across the following music options to indicate the **percentage of time** you would **actually** spend listening to each music option if music on **Spotify Premium** is no longer available.

The total across all music options should add up to 100.

- Allocate between 0 and 100 points to the music options below.
- Allocate 0 points to (or leave blank) any music options that you would **not** actually use.
- Allocate 100 points to a music option if that is the **only** option you would use.

(Please enter whole numbers only)

[INSERT CHOICES SELECTED IN Q1 AS SEPARATE ROWS; **DO NOT DISPLAY SECTION HEADING IF NO CHOICES ARE SELECTED IN THAT CATEGORY;** **PRESENT RESPONSE OPTIONS IN THE SAME ORDER AS PRESENTED IN Q1;** **DISPLAY TEXT FROM FREE-RESPONSE TEXTBOX AS AN OPTION IF POPULATED IN Q1.]**	**[ALLOW RESPONDENT TO ENTER A NUMBER BETWEEN 0 – 100]**
Total:	**[TOTAL MUST SUM TO 100]**

[GO TO END]

CELL B – REMOVE AD-SUPPORTED SPOTIFY AND SPOTIFY PREMIUM

Q3. Suppose that **music** on **ad-supported Spotify and Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now.

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click **here** to review the definitions you read earlier in the survey. **[ADD LINK TO A POPUP WINDOW SHOWING DEFINITIONS (ONLY THE BULLET POINTS) FROM QINTRO IN THE SAME ORDER]**

[RANDOMIZE BLOCKS A–F, KEEPING A AND B TOGETHER AND ROTATING;

RANDOMIZE CHOICES WITHIN BLOCKS;

ROTATE AND KEEP TOGETHER THE FOLLOWING RESPONSE OPTIONS WITHIN BLOCKS:

- **1, 2, AND 3 IN BLOCK A;**
- **2 AND 3 IN BLOCK A;**
- **5 AND 6 IN BLOCK B;**
- **14 AND 15 IN BLOCK F**

ROTATE "WOULD CONSIDER" AND "WOULD NOT CONSIDER" COLUMNS; CARRY "WOULD CONSIDER" AND "WOULD NOT CONSIDER" HEADER ABOVE EACH BLOCK]

[IF [HAS PAID OPTIONS] = 0, THEN REMOVE A.1 BELOW]

[ADD TABLE EQUIVALENT TO Q1, BUT REMOVE A.2]

[GO TO END IF RESPONDENT INDICATES "WOULD NOT CONSIDER" AND/OR "DON'T KNOW/UNSURE/NOT APPLICABLE" FOR ALL OPTIONS]

[GO TO END IF RESPONDENT ONLY SELECTS "WOULD CONSIDER" FOR ONE OPTION AND DOES NOT INDICATE ANY ALTERNATIVE IN THE TEXTBOX.]

[NEXT PAGE]

Q4INTRO. In the next question, you will be asked to allocate time across music options that you would **actually** listen to. Some of those options may have a cost associated with them.

In surveys people sometimes **say** they would pay for music options that they may not **actually** be willing to pay for.

Please answer the next question as if you would **actually** pay the cost associated with the options that you would listen to.
[DISPLAY "CONTINUE" BUTTON AFTER 10 SECONDS]

[NEXT PAGE]

Q4. In the previous question, you mentioned that if music on **ad-supported Spotify and Spotify Premium** is no longer available, you would **consider** using the following music options to **replace** listening to music on **Spotify Premium.**

Please allocate 100 points across the following music options to indicate the **percentage of time** you would **actually** spend listening to each music option if music on **ad-supported Spotify and Spotify Premium** is no longer available.

The total across all music options should add up to 100.

- Allocate between 0 and 100 points to the music options below.
- Allocate 0 points to (or leave blank) any music options that you would **not** actually use.
- Allocate 100 points to a music option if that is the **only** option you would use.

(*Please enter whole numbers only)*

[INSERT CHOICES SELECTED IN Q3 AS SEPARATE ROWS; **DO NOT DISPLAY SECTION HEADING IF NO CHOICES ARE SELECTED IN THAT CATEGORY;** **PRESENT RESPONSE OPTIONS IN THE SAME ORDER AS PRESENTED IN Q3;** **DISPLAY TEXT FROM FREE-RESPONSE TEXTBOX AS AN OPTION IF POPULATED IN Q3.]**	**[ALLOW RESPONDENT TO ENTER A NUMBER BETWEEN 0 – 100]**
Total:	**[TOTAL MUST SUM TO 100]**

[GO TO END]

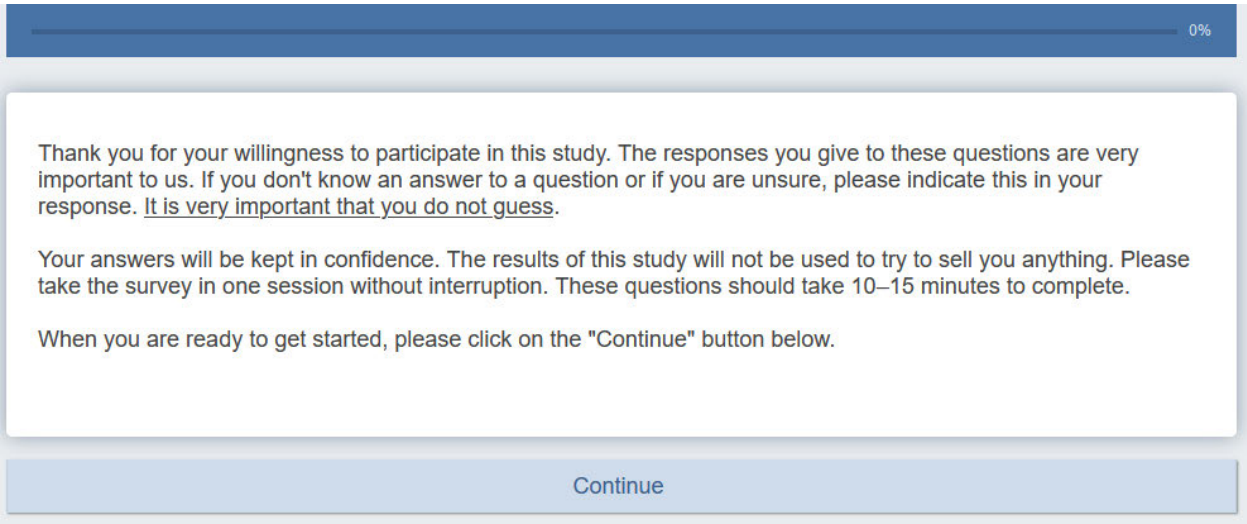
END

Thank you for taking the time to complete this survey today.

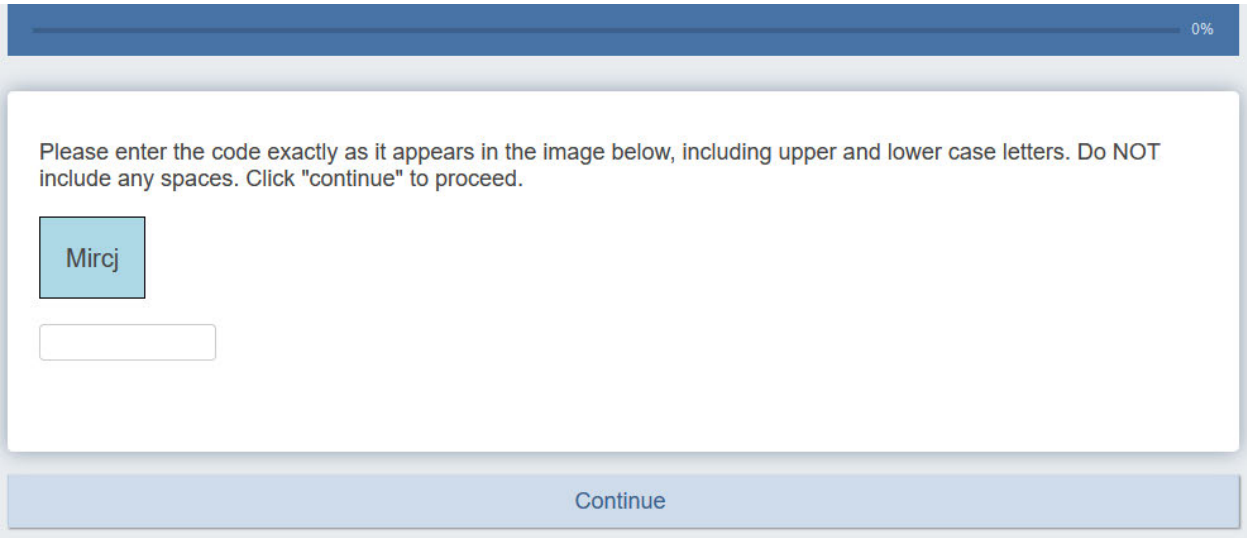
[END OF SURVEY; RESPONDENT FORWARDED TO PANEL THANK-YOU PAGE]

APPENDIX E

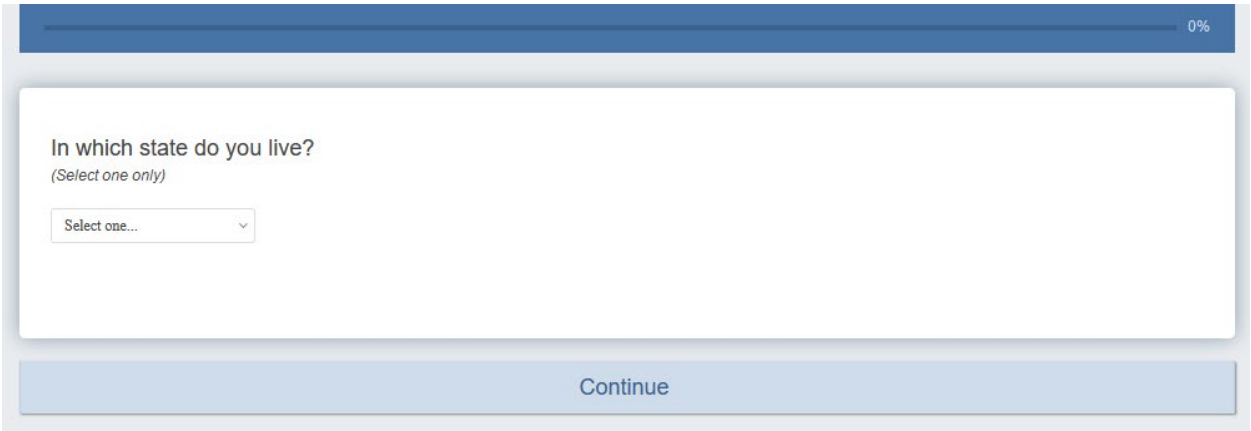
Spotify Music Streaming Services
Survey Screenshots
September 2021



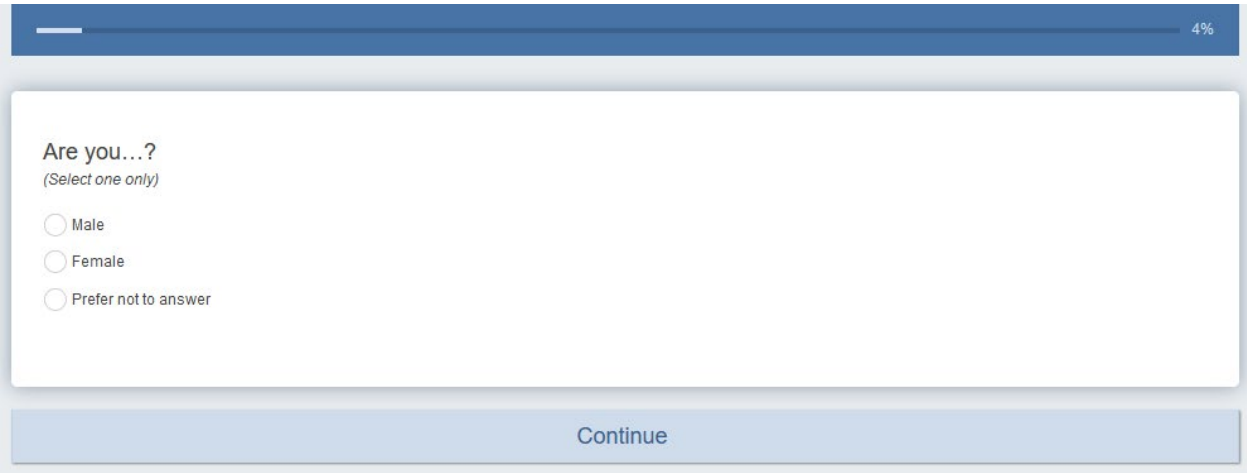
QS0


0%
Please enter the code exactly as it appears in the image below, including upper and lower case letters. Do NOT include any spaces. Click "continue" to proceed.
Mircj
Continue

QS1


0%
In which state do you live?
(Select one only)
Select one...
Continue

QS2


4%
Are you…?
(Select one only)
Male
Female
Prefer not to answer
Continue

QS3

8%
Which of the following includes your age?
(Select one only)
Under 18
18 - 34
35 - 49
50 - 64
65 or older
Prefer not to answer
Continue

QS4

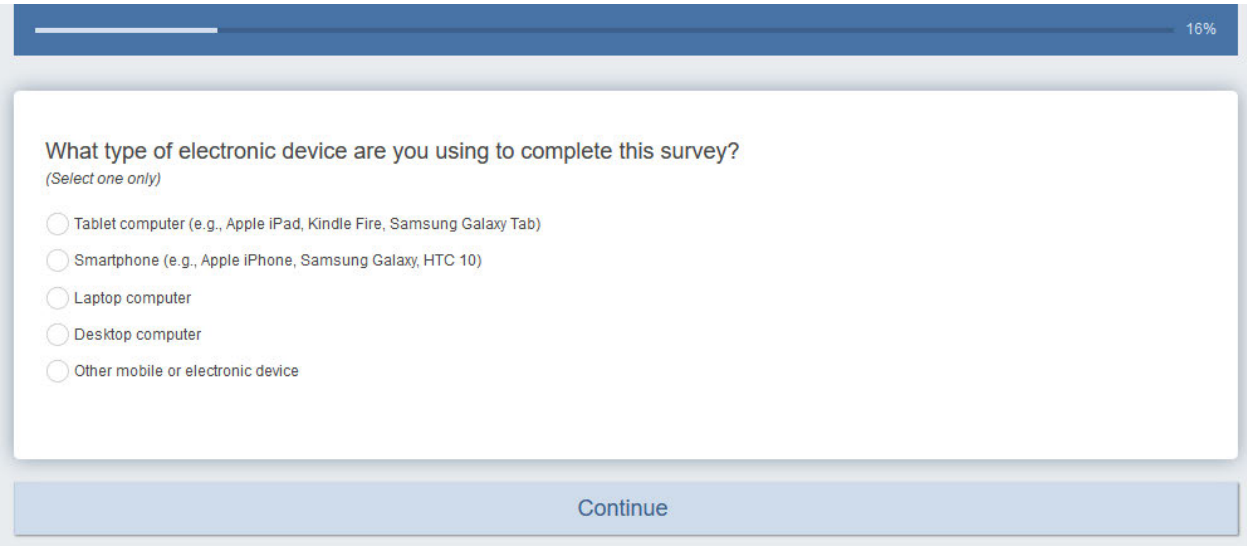
12%

What is the highest degree or level of education you have completed?
(Select one only)

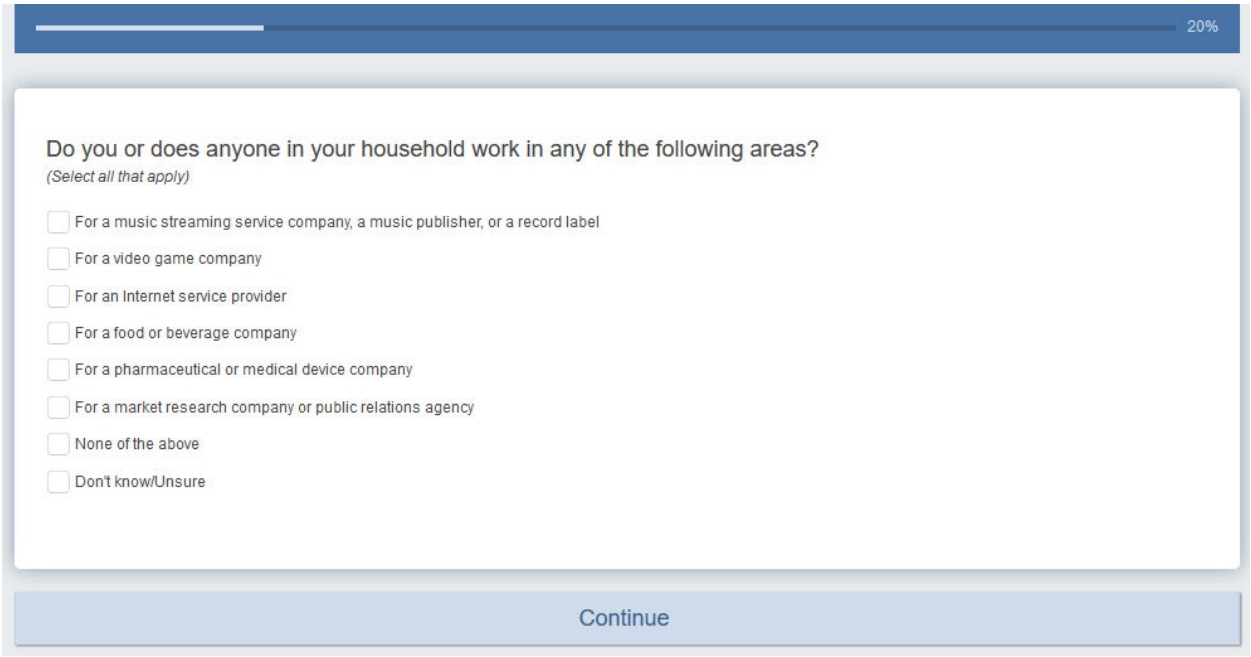
- Elementary school
- Middle school
- Completed some high school
- High school graduate
- Other post high school vocational training
- Completed some college
- Associate's degree
- Bachelor's degree
- Completed some postgraduate
- Master's degree
- Doctorate/PhD
- None of the above

Continue

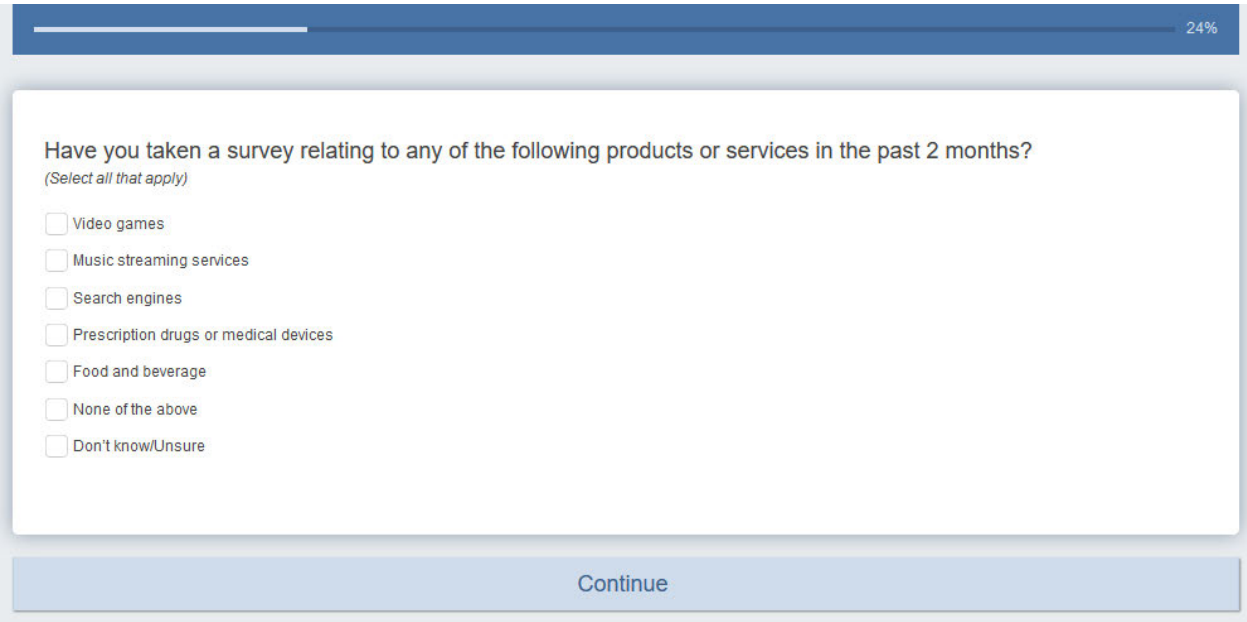
QS5


16%
What type of electronic device are you using to complete this survey?
(Select one only)
Tablet computer (e.g., Apple iPad, Kindle Fire, Samsung Galaxy Tab)
Smartphone (e.g., Apple iPhone, Samsung Galaxy, HTC 10)
Laptop computer
Desktop computer
Other mobile or electronic device
Continue

QS6


20%
Do you or does anyone in your household work in any of the following areas?
(Select all that apply)
For a music streaming service company, a music publisher, or a record label
For a video game company
For an Internet service provider
For a food or beverage company
For a pharmaceutical or medical device company
For a market research company or public relations agency
None of the above
Don't know/Unsure
Continue

QS7


24%
Have you taken a survey relating to any of the following products or services in the past 2 months?
(Select all that apply)
Video games
Music streaming services
Search engines
Prescription drugs or medical devices
Food and beverage
None of the above
Don't know/Unsure
Continue

QS8

29%

There is a variety of media content available for people to watch, listen to, or read. The next questions ask about your media habits.

Thinking of the last seven days, which of the following types of activities did you engage in?
(Select all that apply)

- [ ] I watched movie(s) (e.g., at home or in a theater).
- [ ] I watched TV program(s) (e.g., shows, sports, or news).
- [ ] I watched on-demand holographic telecast(s).
- [ ] I read magazine(s) or newspaper(s) (e.g., in print or online).
- [ ] I read book(s) (e.g., physical or digital).
- [ ] I listened to music (e.g., pop, country, rock).
- [ ] I listened to other audio content (e.g., sports, news, podcasts, or audiobooks).
- [ ] None of the above.
- [ ] Don't know/Unsure.

Continue

QINTRO

33%

You mentioned that you listened to **music** in the last seven days. There are various ways in which you can listen to music, some of which are defined below. Please read these definitions carefully, and keep them in mind when responding to questions in this survey.

- **Satellite radio (SiriusXM)**: Satellite radio is broadcast nationwide via satellite, thus allowing listeners to listen to the same stations anywhere in the country through a receiver that is portable, in the home, or built into a car. It can also be accessed through an Internet-capable device by going to the SiriusXM website or using the SiriusXM app. Satellite radio is available by subscription and offers commercial-free music as well as sports, news, talk, and other programming. Satellite radio may offer different stations that are not available on live AM/FM radio.
- **Not-on-demand music streaming services**: Not-on-demand music streaming services do not allow listeners to choose the specific song or artist they wish to hear, but instead provide a pre-programmed list of songs. The specific planned selection and order of songs remain unknown to the listener (i.e., no prepublished playlist). These services may be available for free with ads, or through a paid subscription without ads. Examples include ad-supported Pandora, Pandora Plus, Amazon Music Free, and others.
- **On-demand music streaming services**: On-demand music streaming services allow listeners to choose the specific song, artist, or playlist they wish to hear. These services may be available for free with ads, or through a paid subscription without ads. Examples include Apple Music, ad-supported Spotify, Spotify Premium, YouTube Music, Amazon Music Prime, Amazon Music Unlimited, and others.

16

QS9

41%

You mentioned that you listened to **music** in the last seven days. In which of the following ways, if any, did you listen to **music**?

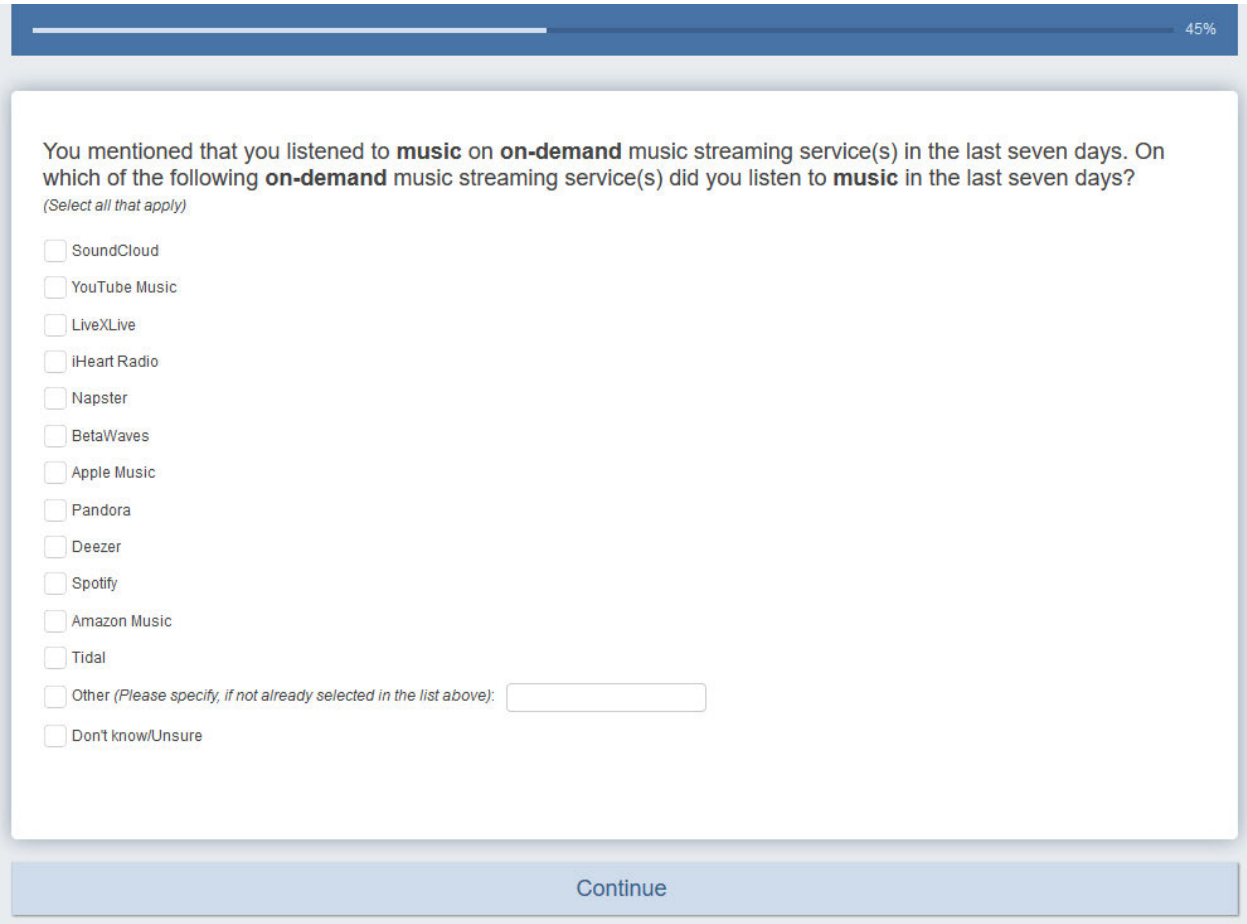
(Select all that apply)

You may click **here** to review the definitions you read earlier in the survey.

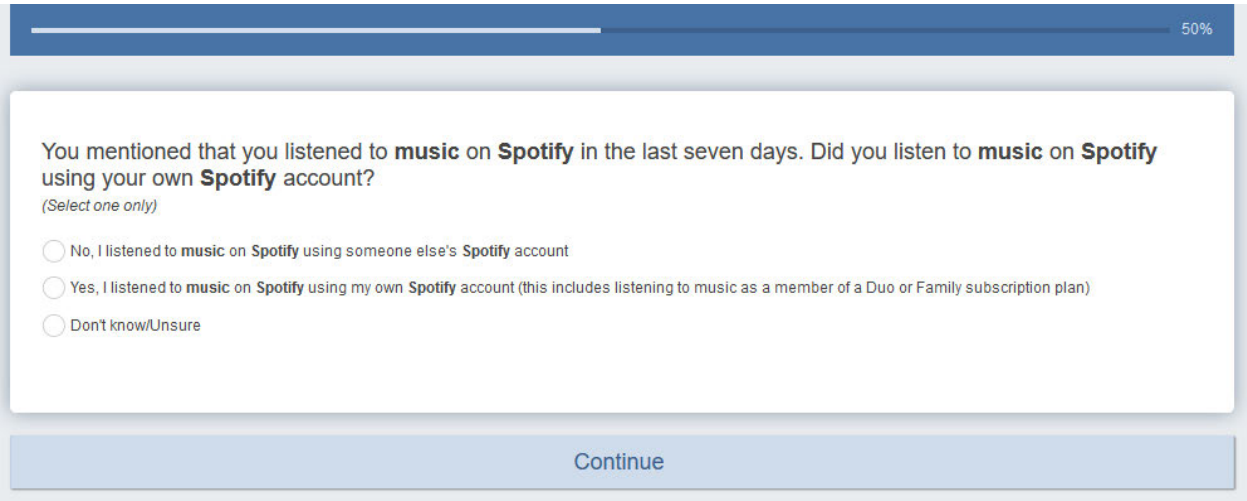
- [ ] I listened to music channels through a cable or satellite television subscription (e.g., Music Choice).
- [ ] I listened to music on on-demand music streaming service(s) through paid subscription(s) or via free ad-supported versions (e.g., Apple Music, Spotify Premium, ad-supported Spotify, Tidal).
- [ ] I listened to music on not on-demand music streaming service(s) through paid subscription(s) or via free ad-supported versions (e.g., Pandora Plus, ad-supported Pandora, Amazon Music Free).
- [ ] I listened to music on satellite radio through a paid subscription (SiriusXM) on the radio or over the internet.
- [ ] I listened to music on live AM/FM radio broadcasts through a radio or over the internet.
- [ ] I listened to digital music files, CDs, or vinyl records.
- [ ] I listened to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).
- [ ] I listened to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).
- [ ] I listened to music on online video site(s) (e.g., YouTube, Vevo).
- [ ] Other *(Please specify, if not already selected in the list above)*:
- [ ] Don't know/Unsure.

Continue

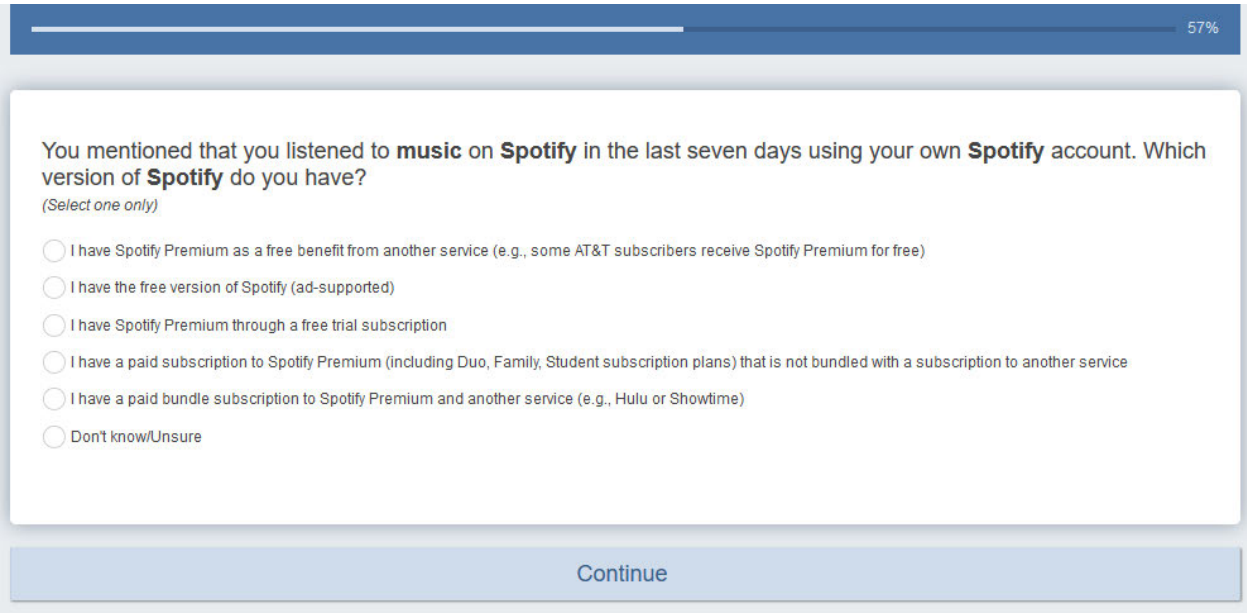
QS10


45%
You mentioned that you listened to **music** on **on-demand** music streaming service(s) in the last seven days. On which of the following **on-demand** music streaming service(s) did you listen to **music** in the last seven days?
(Select all that apply)
SoundCloud
YouTube Music
LiveXLive
iHeart Radio
Napster
BetaWaves
Apple Music
Pandora
Deezer
Spotify
Amazon Music
Tidal
Other *(Please specify, if not already selected in the list above)*:
Don't know/Unsure
Continue

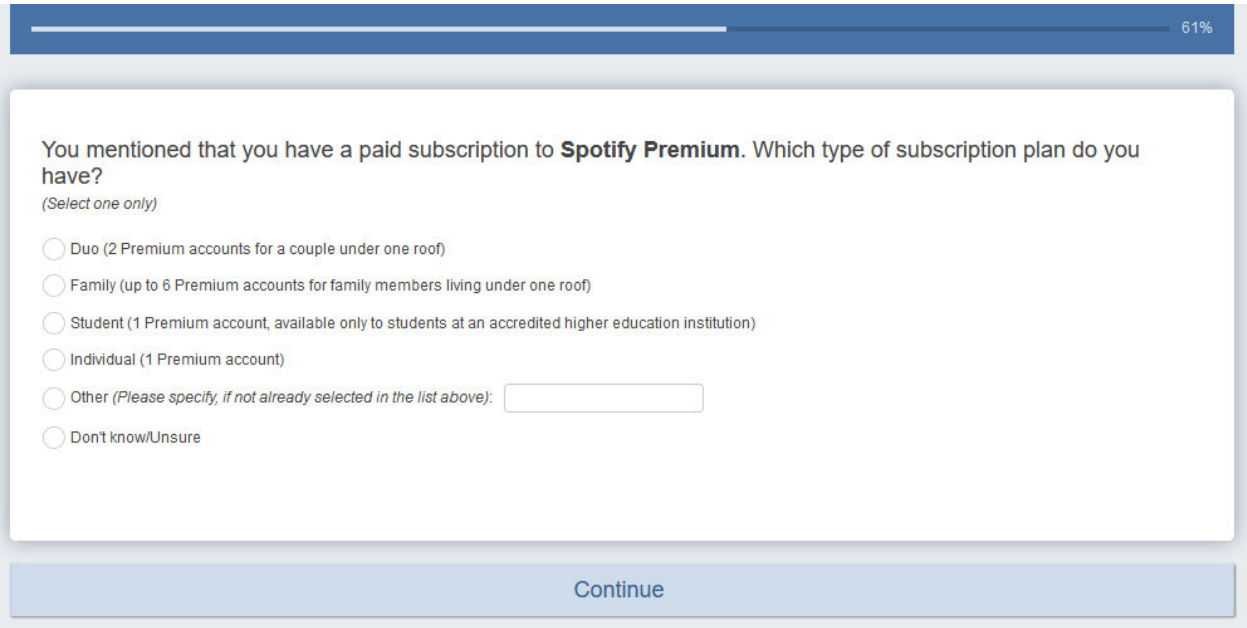
QS11


50%
You mentioned that you listened to **music** on **Spotify** in the last seven days. Did you listen to **music** on **Spotify** using your own **Spotify** account?
(Select one only)
No, I listened to **music** on **Spotify** using someone else's **Spotify** account
Yes, I listened to **music** on **Spotify** using my own **Spotify** account (this includes listening to music as a member of a Duo or Family subscription plan)
Don't know/Unsure
Continue

QS12


57%
You mentioned that you listened to **music** on **Spotify** in the last seven days using your own **Spotify** account. Which version of **Spotify** do you have?
(Select one only)
I have Spotify Premium as a free benefit from another service (e.g., some AT&T subscribers receive Spotify Premium for free)
I have the free version of Spotify (ad-supported)
I have Spotify Premium through a free trial subscription
I have a paid subscription to Spotify Premium (including Duo, Family, Student subscription plans) that is not bundled with a subscription to another service
I have a paid bundle subscription to Spotify Premium and another service (e.g., Hulu or Showtime)
Don't know/Unsure
Continue

QS13


61%
You mentioned that you have a paid subscription to **Spotify Premium**. Which type of subscription plan do you have?
(Select one only)
Duo (2 Premium accounts for a couple under one roof)
Family (up to 6 Premium accounts for family members living under one roof)
Student (1 Premium account, available only to students at an accredited higher education institution)
Individual (1 Premium account)
Other (Please specify, if not already selected in the list above):
Don't know/Unsure
Continue

QS14

63%

You mentioned that you have a **paid** subscription to **Spotify Premium**. Which of the following best describes your role in making the decision to purchase a **paid** subscription to **Spotify Premium**?

(Select one only)

- I made the decision on my own
- I played a major role in the decision
- I played a minor role in the decision
- I was not involved in the decision
- Don't know/Unsure

Continue

QS15

67%

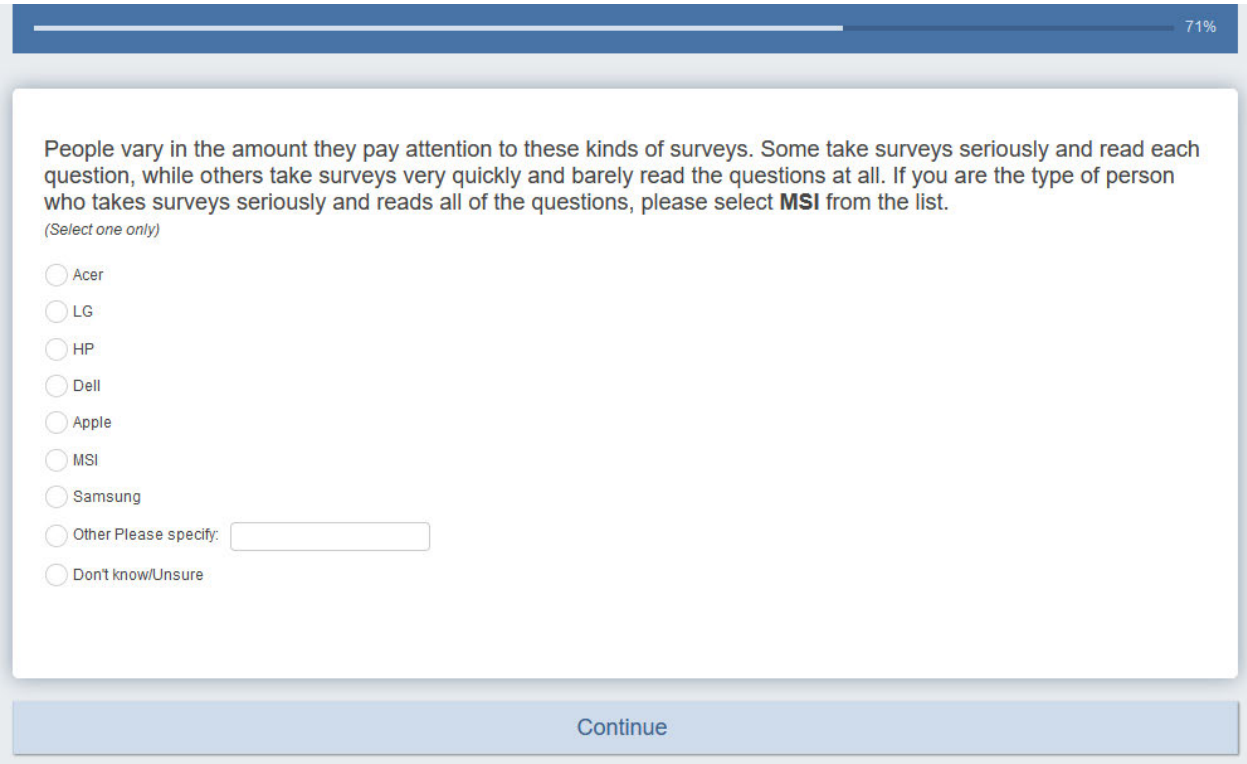
On which on-demand music streaming service(s) **other than Spotify** do you have **your own account with a paid subscription** (including as part of a group or family plan)?

(Select all that apply)

- [ ] SoundCloud Go+
- [ ] YouTube Music Premium
- [ ] LiveXLive Premium
- [ ] iHeart Radio All Access
- [ ] Napster Premier
- [ ] BetaWaves Premium
- [ ] Apple Music
- [ ] Pandora Premium
- [ ] Deezer Premium
- [ ] Amazon Music Unlimited
- [ ] Amazon Music Prime (included with Amazon Prime membership)
- [ ] Tidal
- [ ] Other *(Please specify, if not already selected in the list above)*:
- [ ] Don't know/Unsure
- [ ] None of the above

Continue

QS16


71%
People vary in the amount they pay attention to these kinds of surveys. Some take surveys seriously and read each question, while others take surveys very quickly and barely read the questions at all. If you are the type of person who takes surveys seriously and reads all of the questions, please select **MSI** from the list.
(Select one only)
Acer
LG
HP
Dell
Apple
MSI
Samsung
Other Please specify:
Don't know/Unsure
Continue

75%

In the next few pages, we will ask you some questions about how you would choose among music options.

If you are unable to say whether you would or would not choose a particular music option or if the music option is not applicable to you, please indicate this by selecting "Don't know/Unsure/Not Applicable." It is important that you do not guess.

7

Q1

79%

Suppose that **music** on **Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now (including music on ad-supported Spotify).

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click **here** to review the definitions you read earlier in the survey.

	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to iHeart Radio All Access at $9.99 per month or $119.88 per year).	○	○	○
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).	○	○	○
I would listen to ad-supported Spotify, which I do not need to pay for.	○	○	○
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	○	○	○
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	○	○	○
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	○	○	○
I would listen to digital music files, CDs, or vinyl records that I already own.	○	○	○
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	○	○	○
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	○	○	○
I would listen to music on online video site(s) (e.g., YouTube, Vevo).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	○	○	○
I would listen to satellite radio through the paid subscription I already have (SiriusXM).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book).	○	○	○
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above):			

Continue

83%

In the next question, you will be asked to allocate time across music options that you would **actually** listen to. Some of those options may have a cost associated with them.

In surveys people sometimes **say** they would pay for music options that they may not **actually** be willing to pay for.

Please answer the next question as if you would **actually** pay the cost associated with the options that you would listen to.

7

Q2

88%

In the previous question, you mentioned that if music on **Spotify Premium** is no longer available, you would **consider** using the following music options to **replace** listening to music on **Spotify Premium**.

Please allocate 100 points across the following music options to indicate the **percentage of time** you would **actually** spend listening to each music option if music on **Spotify Premium** is no longer available.

The total across all music options should add up to 100.

- Allocate between 0 and 100 points to the music options below.
- Allocate 0 points to (or leave blank) any music options that you would **not** actually use.
- Allocate 100 points to a music option if that is the **only** option you would use.

(Please enter whole numbers only)

Music on on-demand music streaming services to replace listening to music on Spotify Premium	
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to iHeart Radio All Access at $9.99 per month or $119.88 per year).	
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).	
I would listen to ad-supported Spotify, which I do not need to pay for.	
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium	
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium	
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium	
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	
I would listen to digital music files, CDs, or vinyl records that I already own.	
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	
Music on video options to replace listening to music on Spotify Premium	
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	
I would listen to music on online video site(s) (e.g., YouTube, Vevo).	
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium	
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	
I would listen to satellite radio through the paid subscription I already have (SiriusXM).	
Other	
I would listen to less music and would do something else instead (e.g., watch TV, read a book).	
I would listen to the following music option to replace listening to music on Spotify Premium: Screenshot Example	
	Total: 0

Continue

Q3

79%

Suppose that **music** on **ad-supported Spotify and Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now.

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click here to review the definitions you read earlier in the survey.

	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	○	○	○
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	○	○	○
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	○	○	○
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Pandora Premium at $9.99 per month or $119.88 per year).	○	○	○
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	○	○	○
I would listen to music on online video site(s) (e.g., YouTube, Vevo).	○	○	○
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would listen to satellite radio through the paid subscription I already have (SiriusXM).	○	○	○
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	○	○	○
I would listen to digital music files, CDs, or vinyl records that I already own.	○	○	○
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book).	○	○	○
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above):			

Continue

83%

In the next question, you will be asked to allocate time across music options that you would **actually** listen to. Some of those options may have a cost associated with them.

In surveys people sometimes **say** they would pay for music options that they may not **actually** be willing to pay for.

Please answer the next question as if you would **actually** pay the cost associated with the options that you would listen to.

8

Q4

88%

In the previous question, you mentioned that if music on **ad-supported Spotify and Spotify Premium** is no longer available, you would **consider** using the following music options to **replace** listening to music on **Spotify Premium**.

Please allocate 100 points across the following music options to indicate the **percentage of time** you would **actually** spend listening to each music option if music on **ad-supported Spotify and Spotify Premium** is no longer available.

The total across all music options should add up to 100.

- Allocate between 0 and 100 points to the music options below.
- Allocate 0 points to (or leave blank) any music options that you would **not** actually use.
- Allocate 100 points to a music option if that is the **only** option you would use.

(Please enter whole numbers only)

Music on not-on-demand music streaming services to replace listening to music on Spotify Premium	
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	
Music on on-demand music streaming services to replace listening to music on Spotify Premium	
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Pandora Premium at $9.99 per month or $119.88 per year).	
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).	
Music on video options to replace listening to music on Spotify Premium	
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	
I would listen to music on online video site(s) (e.g., YouTube, Vevo).	
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium	
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium	
I would listen to satellite radio through the paid subscription I already have (SiriusXM).	
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium	
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	
I would listen to digital music files, CDs, or vinyl records that I already own.	
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	
Other	
I would listen to less music and would do something else instead (e.g., watch TV, read a book).	
I would listen to the following music option to replace listening to music on Spotify Premium: Screenshot Example	
	Total: 0

Continue

APPENDIX F

Regular Monthly Subscription Fees of On-Demand Music Streaming Services[1]

Providers	Ad-Supported or Free[2]	$4.99	$7.99	$9.99	$12.99	$19.99
Amazon Music			✔	✔	✔	
Apple Music				✔		
Deezer	✔			✔		
iHeartRadio				✔	✔	
LiveXLive				✔		
Napster Premier				✔		
Pandora				✔		
SoundCloud	✔	✔		✔		
Spotify	✔			✔		
Tidal				✔		✔
YouTube Music				✔		
Total Number of Services	**3**	**1**	**1**	**11**	**2**	**1**

Source: Music Streaming Service Websites

Note:
[1] Special pricing for consumers in specific groups is excluded (e.g., students, military, family plans). Providers may offer subscription plans at different prices based on sound quality, types of content, listening device, and whether ads are played.
[2] SoundCloud offers on-demand ad-free music for free, all others offer ad-supported music.

Regular Monthly Subscription Fees of Not-On-Demand Music Streaming Services[1]

Providers	Ad-Supported or Free[2]	$3.99	$4.99	$5.99	$9.99
8Tracks	✔		✔		
AccuRadio	✔				
Amazon Music	✔				
Audacy	✔				
iHeartRadio	✔		✔	✔	
LiveXLive	✔	✔			
Napster unRadio			✔		
NPR One	✔				
Pandora			✔		
TuneIn Radio	✔				✔
Total Number of Services	**8**	**1**	**4**	**1**	**1**

Source: Music Streaming Service Websites

Note:
[1] Special pricing for consumers in specific groups is excluded (e.g., students, military, family plans). Providers may offer subscription plans at different prices based on sound quality, types of content, listening device, and whether ads are played.
[2] NPR One offers not-on-demand ad-free content for free, all others offer ad-supported content.

APPENDIX G

Survey Instrument First-Stage Pretests

- As part of the first-stage pretest, 39 people took the full survey while being observed. Respondents were interviewed during or after survey completion.
    - Respondents included individuals who listened to Spotify in the last seven days.
    - All respondents were at least 18 years old.
    - The goal of the first-stage pretest was to approximate the type of respondents who would be eligible to participate in the full-scale survey.
    - First-stage pretest respondents were recruited from the Dynata panel consisting of individuals who indicated in a survey screener that they listened to Spotify within the past seven days.
    - First-stage pretest interviews took place from August 3, 2021 to September 2, 2021.
    - First-stage pretest interviews were conducted by GBK at my direction and were observed by me or by staff from Cornerstone Research.
    - I observed a sample of the first-stage pretest interviews to assure they were conducted according to my specifications.
- Respondents were sent a link to the survey at the start of the pretest interview. All respondents took the survey while on Zoom with the interviewer.
- Interviewers asked questions to evaluate whether respondents understood specific questions in the survey, to evaluate respondents' thoughts on the purpose of the survey, and to test for the presence of any demand artifacts.
- Appendix Table G–1 summarizes the solutions I implemented to address potential issues that were identified during first-stage pretest interviews regarding respondents' comprehension of questions, instructions, and response options.
- First-stage pretests conducted after implementation of the solutions revealed no further issues. These pretests assured respondents did not find the instructions or questions confusing, did not find the survey to be too long, and did not find the survey to be difficult. First-stage pretests also assured respondents were unable to guess the purpose of the survey. There was no evidence of demand artifacts. I conducted second-stage pretests to further confirm these findings. A list of conclusions from specific questions explored in first-stage pretests can be found in Appendix Table G–2.

Appendix Table G–1

Question	Potential Issues / Solutions
Comprehensiveness of Response Options	
Questions Q1, Q3	• Potential issue: Respondents observed that listening to less music and doing something else instead was not included as a response option. • Solution: Added "I would listen to less music and would do something else instead (e.g., watch TV, read a book)" as a response option. • Potential issue: Respondents observed that some response options were not applicable to them (e.g., the response option "I would listen to satellite radio through the paid subscription I already have (SiriusXM)" for respondents who do not already have a paid subscription) • Solution: Changed "Don't know/Unsure" to "Don't know/Unsure/Not Applicable."
Clarity of Definitions	

Question QINTRO	• Potential issue: A few respondents felt that the definitions were wordy and some of the descriptions of different ways of listening could be clearer.
	• Solutions:
	  ○ Provided additional examples for each of the different ways of listening.
	  ○ Underlined key terms and points of differentiation in definitions.
	  ○ Added line spacing between the definitions to distinguish the different ways of listening.
	
	• Potential issue: A few respondents did not realize they needed to view the definitions for 30 seconds before they could press the "Continue" button to proceed.
	• Solution: Added a timer on the "Continue" button so that respondents understood how much time left they had to remain on the page.

Familiarity and Precision of Response Options	
Question QS11	• Potential issue: Some respondents noted that it was not clear enough that having their "own Spotify account" applied to Duo and Family subscriptions as well. • Solution: Added "(this includes listening to music as a member of a Duo or Family subscription plan)" for the "Yes, I listened to music on Spotify using my own Spotify account" response option

Question	Potential Issues / Solutions
Question QS15	• Potential issue: Some respondents did not realize that Amazon Music Prime is included with an Amazon Prime membership. • Solution: Added "(included with Amazon Prime membership" for the "Amazon Music Prime" response option.

Questions Q1, Q3	• Potential issue: Respondents noted that the phrasing of answer choices for existing and new paid subscription services could be clearer.
	• Solutions:
	  ○ Clarified response options for existing, paid subscription services to "through the paid subscription(s) I already have."
	  ○ Clarified response options for new paid subscription services to "new paid subscription(s)…that I don't currently subscribe to."

Questions Q2, Q4	• Potential issue: Respondents noted it was not obvious whether one could enter 0 or could leave blank the music options to which they would not allocate any time. • Solutions: Added the instruction "Allocate 0 points to (or leave blank) any music options that you would **not** actually use."
Comprehension of Questions	
Questions Q1, Q3	• Potential issue: Some respondents could not remember that the question asked what they would consider using to replace listening to music on Spotify as they reviewed the list of options. • Solution: Added "to replace listening to music on Spotify" to the category headers in the response table as a reminder.
Questions Q2, Q4	• Potential issue: Initially, after respondents indicated which music options they would consider in Questions Q1, Q3, they were first asked to indicate which of the considered music options they would actually choose. Then, respondents were asked to allocate time across the chosen options. Respondents indicated that the intermediate step of indicating which of the considered music options they would actually choose was redundant because they could indicate to which music options they would actually choose by allocating time. • Solution: Removed the question between consideration of music options and allocation of time across music options.

Appendix Table G–2

Question	Conclusions Based on Pretest Interviews
Question QS2	• Pretests assured that respondents did not request additional options beyond "male" and "female."
Question QS6	• Pretests assured that respondents understood the meanings of "music streaming service company," "music publisher," "record label," and "market research company or public relations agency."
Question QS7	• Pretests assured that respondents understood the meanings of "music streaming services."
Question QS8	• Pretests assured that respondents were able to recall their activities, including whether they listened to music over the prior seven days. Pretests assured that a shorter time frame was not necessary to elicit recall of these activities. • Pretests assured that respondents understood the meaning of "music." • Pretests assured that respondents understood that "(s)" at the end of an option could refer to the singular or plural version of the option.
Question QINTRO	• After edits outlined in Appendix Table G–1, pretests assured that respondents understood the meaning of "satellite radio (SiriusXM)," "on-demand music streaming services," and "not-on-demand music streaming services." • After edits outlined in Appendix Table G–1, pretests assured that respondents understood the differences between on-demand and not-on-demand music streaming services. • After edits outlined in Appendix Table G–1, pretests assured respondents understood the examples provided for the ways of listening.
Question QS9	• Pretests assured that respondents viewed the list of ways of listening to music as reasonably comprehensive. • Pretests assured that respondents understood the meaning of "online video site(s)," "mobile short-form video platform(s)," and "peer-to-peer file sharing or free download sites." • Pretests assured that respondents were able to recall their listening behavior, including whether they listened to on-demand music streaming services, over the last seven days. Pretests assured that a shorter time frame was not necessary to elicit recall of this listening behavior. • Pretests assured that respondents understood they could provide an open-ended response in the text box following "Other."

Question	Conclusions Based on Pretest Interviews
Question QS10	• Pretests assured that respondents viewed the list of on-demand music streaming services as reasonably comprehensive. • Pretests assured that respondents were able to recall which on-demand music streaming services on which they listened to music, including Spotify, over the last seven days. Pretests assured that a shorter time frame was not necessary to elicit recall of listening to music on on-demand music streaming services. • Pretests assured that respondents understood they could provide an open-ended response in the text box following "Other."
Question QS11	• After edits outlined in Appendix Table G–1, pretests assured that respondents understood that all types of Spotify subscription plans were included in the phrase "my own Spotify account," including Duo and Family.
Question QS12	• Pretests assured that respondents viewed the list of ways of obtaining Spotify Premium as comprehensive. • Pretests assured that respondents understood the differences between the list of answer options (e.g., "I have a paid bundle subscription to Spotify Premium and another service (e.g., Hulu or Showtime)" is different from "I have Spotify Premium as a free benefit from another service (e.g., some AT&T subscribers receive Spotify Premium for free).")
Question QS13	• Pretests assured that respondents understood the types of subscription plans listed and that the list was comprehensive.
Question QS14	• Pretests assured that respondents understood the list of decision-making roles.
Question QS15	• After edits outlined in Appendix Table G–1, pretests assured that respondents understood Amazon Music Prime was included with Amazon Prime membership.
Questions Q1, Q3	• After edits outlined in Appendix Table G–1, pretests assured that respondents were able to identify and select music options from the list that accurately reflected what they would consider if music on Spotify was no longer available. • After edits outlined in Appendix Table G–1, pretests assured that respondents viewed the list of options to replace listening to music on Spotify as reasonably comprehensive. Confirmed in second-stage pretest. (continued on next page)

Question	Conclusions Based on Pretest Interviews
Questions Q1, Q3 (continued)	• After edits outlined in Appendix Table G–1, pretests assured that respondents understood differences between choices about paid subscription services they "already have" and paid subscription services they "don't currently subscribe to." • After edits outlined in Appendix Table G–1, pretests assured that respondents remembered to select music options they would consider doing to replace listening to music on Spotify. • After edits outlined in Appendix Table G–1, pretests assured that respondents understood they could select "Not Applicable" for any music options that were not applicable to them. • Pretests assured that respondents understood the hypothetical, the task posed in the question, and that they no longer have to pay the Spotify subscription fee in the hypothetical. Confirmed in second-stage pretest. • Pretests assured that respondents understood that the hypothetical of music on Spotify being "no longer available" meant that music on Spotify would not return at some point in the future and would be gone forever. • Pretests assured that respondents understood that prices listed were examples and did not include discounts, fees, or taxes and were for individual subscription plans only (as opposed to student or family plans). • Pretests assured that respondents did not answer questions on the survey differently because of whom they thought the sponsor of the survey might be and that they answered questions truthfully. Confirmed in second-stage pretest. • Pretests assured that respondents understood they could provide an open-ended response in the text box following "I would listen to the following music option to replace listening to music on Spotify" if there was an option they would use to replace music on Spotify Premium that was not listed. Confirmed in second-stage pretest.
Questions Q2, Q4	• After edits outlined in Appendix Table G–1, pretests assured that respondents understood the task and could allocate 100 points across the music options they would consider to accurately reflect the time they would actually spend listening to various music options if music on Spotify was no longer available. Confirmed in second-stage pretest. (continued on next page)

Question	Conclusions Based on Pretest Interviews
Questions Q2, Q4 (continued)	• After edits outlined in Appendix Table G–1, pretests assured that respondents understood the difference between the consideration of music options in Questions Q1, Q3 and the allocation of time across music options to which they would actually listen. • After edits outlined in Appendix Table G–1, pretests assured that respondents understood they could enter 0 or leave blank the music options to which they would not allocate any time. • Pretests assured that respondents understood that Q2INTRO or Q4INTRO were instructing them to take into account the cost of music services when allocating points. Confirmed for most respondents in second-stage pretest. • Pretests assured that respondents understood the difference between response options "I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have" and "I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to." Respondents who selected both options did not do so because of any confusion. Some respondents selected both options because they might consider having multiple subscriptions to different paid on-demand streaming services as once to replace listening to music on Spotify Premium. • Pretests assured that respondents understood the difference between response options "I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have" and "I would purchase new paid subscription(s) to not-on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to." Respondents who selected both options did not do so because of any confusion. Some respondents selected both options because they might consider having multiple subscriptions to different paid not-on-demand streaming services as once to replace listening to music on Spotify Premium. • Pretests assured that respondents understood the difference between the response options "I would listen to satellite radio through the paid subscription I already have (SiriusXM)" and "I would purchase a new paid subscription to satellite radio that I don't currently subscribe to." Respondents who selected both options did not do so because of any confusion. Some respondents selected both options because their existing SiriusXM subscription was device-specific (e.g., it came with their car and did not work on another device) so they would need a new subscription to listen to SiriusXM outside their car. Other respondents who selected both options said they currently have the most basic tier of SiriusXM, but if Spotify is removed, they would consider getting another higher tier subscription to replace listening to music on Spotify.

APPENDIX H

Second-Stage Pretest Questions

[PROGRAMMER NOTES IN BOLD CAPS AND BRACKETS]
Notes to respondent in italics

1. Which of the following companies, if any, do you think could be the likely sponsor of the survey you just completed? (*Select all that apply*) **[RANDOMIZE FIRST SEVEN RESPONSES; ANCHOR "Other" AND "Don't Know" LAST]**
    a. Spotify
    b. Pandora
    c. YouTube
    d. SiriusXM
    e. Universal Music Group
    f. Warner Music Group
    g. Sony Music Entertainment
    h. Other
    i. Don't know/Unsure **[EXCLUSIVE; SKIP TO QUESTION 3 IF SELECTED]**
2. Did you or did you not answer the questions on the survey differently because of whom you think is the sponsor of the survey? *(Select one only)* **[ROTATE; ANCHOR "DON'T KNOW/UNSURE" LAST]**
    a. Yes, I answered the questions on the survey differently because of whom I think is the sponsor of the survey
    b. No, I did <u>not</u> answer the questions on the survey differently because of whom I think is the sponsor of the survey
    c. Don't know/Unsure
3. Below we show an image of a question you answered in the survey that listed a number of options. The image below is just to refresh your memory about what the question asked.

    Were you or were you not able to identify and select the music-listening options from this list that accurately reflected what you would consider if music on Spotify was no longer available? *(Select one only)* **[ROTATE; ANCHOR "DON'T KNOW/UNSURE" LAST]**

a. Yes, I was able to identify and select the options that accurately reflected what I would consider if music on Spotify was no longer available

b. No, I was not able to identify and select the options that accurately reflected what I would consider if music on Spotify was no longer available

c. Don't know/Unsure

Note that the options shown in the image below may appear in a different order than what you saw during the survey.

[IF CELL A, SHOW SCREENSHOT OF CELL A Q1 INCLUDING THE ANSWER OPTIONS. IF CELL B, SHOW SCREENSHOT OF CELL B Q3 INCLUDING THE ANSWER OPTIONS.]

Q1 CELL A:

80%

Suppose that **music** on **Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now (including music on ad-supported Spotify).

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click **here** to review the definitions you read earlier in the survey.

	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	○	○	○
I would listen to satellite radio through the paid subscription I already have (SiriusXM).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music on online video site(s) (e.g., YouTube, Vevo).	○	○	○
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	○	○	○
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	○	○	○
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	○	○	○
I would listen to digital music files, CDs, or vinyl records that I already own.	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	○	○	○
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Amazon Music Unlimited at $9.99 per month or $119.88 per year).	○	○	○
I would listen to ad-supported Spotify, which I do not need to pay for.	○	○	○
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	○	○	○
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	○	○	○
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book).	○	○	○
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above):			

Continue >

Q3 CELL B:

80%

Suppose that **music** on **ad-supported Spotify and Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now.

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click here to review the definitions you read earlier in the survey.

	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	○	○	○
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	○	○	○
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	○	○	○
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).	○	○	○
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to SoundCloud Go+ at $9.99 per month or $119.88 per year).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would listen to satellite radio through the paid subscription I already have (SiriusXM).	○	○	○
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	○	○	○
I would listen to music on online video site(s) (e.g., YouTube, Vevo).	○	○	○
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	○	○	○
I would listen to digital music files, CDs, or vinyl records that I already own.	○	○	○
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	○	○	○
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book).	○	○	○
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above):			

Continue >

4. Did you or did you not think the list of music options provided in this question was sufficiently comprehensive such that you could indicate all music options you would consider if music on Spotify was no longer available? *(Select one only)* **[ROTATE; ANCHOR "DON'T KNOW/UNSURE" LAST]**

    a. Yes, the list of music options was sufficiently comprehensive

    b. No, the list of music options was not sufficiently comprehensive

    c. Don't know/Unsure

5. Imagine that there was a music option that you would consider using to replace listening to music on Spotify that was not on the list of options. Did you or did you not understand you could write that music option in the text box at the end of the list of options? *(Select one only)* **[ROTATE; ANCHOR "DON'T KNOW/UNSURE" LAST]**

    a. Yes, I understood I could write that music option in the text box at the end of the list of options

    b. No, I did not understand I could write that music option in the text box at the end of the list of options

    c. Don't know/Unsure

6. Below we show an image of a question you answered in the survey. The image below is just to refresh your memory about what the question asked.

    Did or did not your point allocation accurately reflect the time you would actually spend listening to various music options? *(Select one only)* **[ROTATE; ANCHOR "DON'T KNOW/UNSURE" LAST]**

    a. Yes, my point allocation accurately reflected the time I would actually spend listening to various music options

    b. No, my point allocation did not accurately reflect the time I would actually spend listening to various music options

    c. Don't know/Unsure

[IF CELL A, SHOW SCREENSHOT OF CELL A Q2 EXCLUDING THE ANSWER OPTIONS. IF CELL B, SHOW SCREENSHOT OF CELL B Q4 EXCLUDING THE ANSWER OPTIONS.]

Q2 Cell A:

89%

In the previous question, you mentioned that if music on **Spotify Premium** is no longer available, you would **consider** using the following music options to **replace** listening to music on **Spotify Premium**.

Please allocate 100 points across the following music options to indicate the **percentage of time** you would **actually** spend listening to each music option if music on **Spotify Premium** is no longer available.

The total across all music options should add up to 100.

- Allocate between 0 and 100 points to the music options below.
- Allocate 0 points to (or leave blank) any music options that you would **not** actually use.
- Allocate 100 points to a music option if that is the **only** option you would use.

(Please enter whole numbers only)

Q4 Cell B:

89%

In the previous question, you mentioned that if music on **ad-supported Spotify and Spotify Premium** is no longer available, you would **consider** using the following music options to **replace** listening to music on **Spotify Premium**.

Please allocate 100 points across the following music options to indicate the **percentage of time** you would **actually** spend listening to each music option if music on **ad-supported Spotify and Spotify Premium** is no longer available.

The total across all music options should add up to 100.

- Allocate between 0 and 100 points to the music options below.
- Allocate 0 points to (or leave blank) any music options that you would **not** actually use.
- Allocate 100 points to a music option if that is the **only** option you would use.

(Please enter whole numbers only)

7. Below we show an image of the instructions you saw prior to allocating time across music options that you would actually listen to. The image below is just to refresh your memory about what the instructions said.

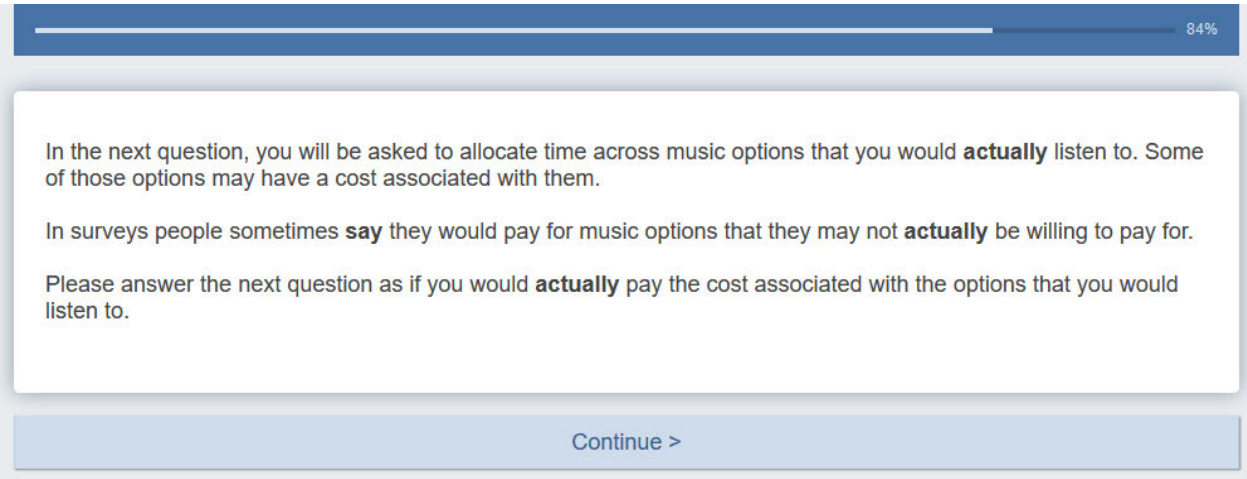
   Did you or did you not take into account the costs of the music options in deciding which music options you would actually listen to? *(Select one only)* **[ROTATE; ANCHOR "DON'T KNOW/UNSURE" LAST]**

   a. Yes, I took into account the costs of the music options in deciding which music options I would actually listen to

   b. No, I did not take into account the costs of the music options in deciding which music options I would actually listen to

   c. Don't know/Unsure

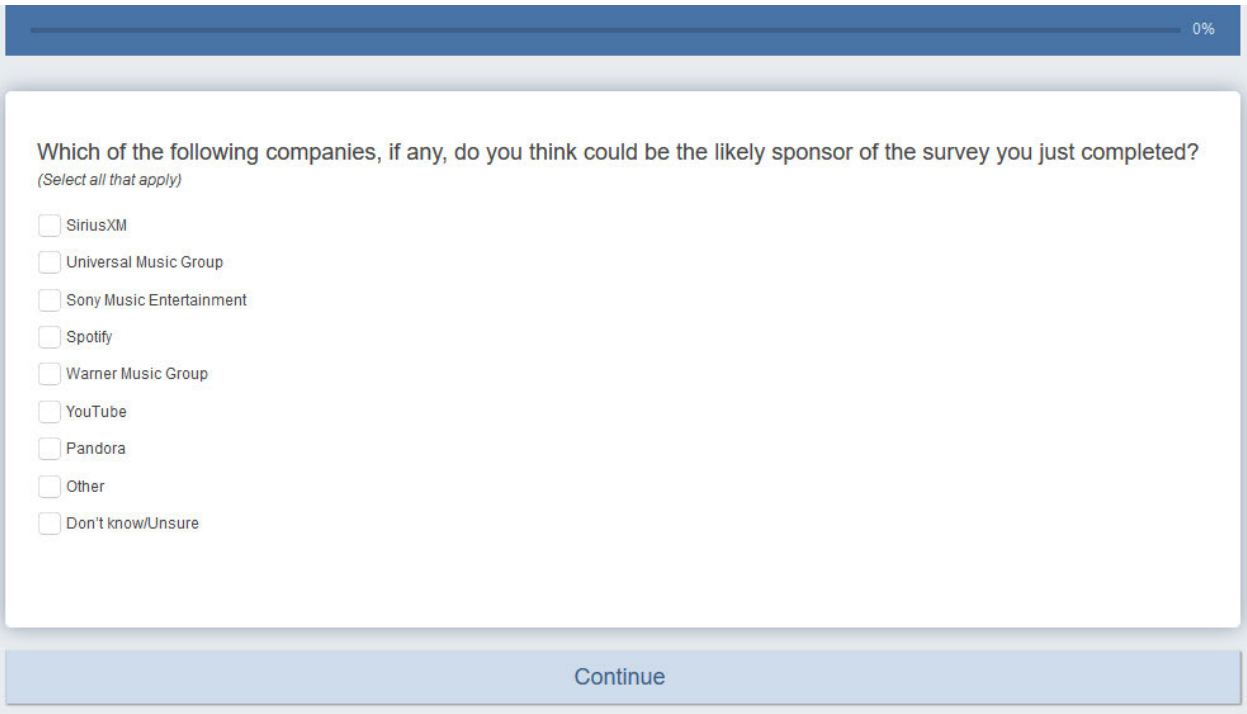
[SHOW SCREENSHOT OF Q2INTRO]:



APPENDIX I

Spotify – Cell A
Second-Stage Survey Screenshots
September 2021

Q1



Q2

0%

Did you or did you not answer the questions on the survey differently because of whom you think is the sponsor of the survey?

(Select one only)

- No, I did not answer the questions on the survey differently because of whom I think is the sponsor of the survey
- Yes, I answered the questions on the survey differently because of whom I think is the sponsor of the survey
- Don't know/Unsure

Continue

Q3

7%

Below we show an image of a question you answered in the survey that listed a number of options. The image below is just to refresh your memory about what the question asked.

Were you or were you not able to identify and select the music-listening options from this list that accurately reflected what you would consider if music on Spotify was no longer available?

(Select one only)

- Yes, I was able to identify and select the options that accurately reflected what I would consider if music on Spotify was no longer available
- No, I was not able to identify and select the options that accurately reflected what I would consider if music on Spotify was no longer available
- Don't know/Unsure

Note that the options shown in the image below may appear in a different order than what you saw during the survey.

80%

Suppose that **music** on **Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now (including music on ad-supported Spotify).

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click here to review the definitions you read earlier in the survey.

	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).			
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).			
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).			
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).			
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to iHeart Radio All Access at $9.99 per month or $119.88 per year).			
I would listen to ad-supported Spotify, which I do not need to pay for.			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).			
I would listen to satellite radio through the paid subscription I already have (SiriusXM).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).			
I would listen to digital music files, CDs, or vinyl records that I already own.			
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).			
I would listen to music on online video site(s) (e.g., YouTube, Vevo).			
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book).			
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above):			

Continue >

Continue

Q4

21%

Did you or did you not think the list of music options provided in this question was sufficiently comprehensive such that you could indicate all music options you would consider if music on Spotify was no longer available?

(Select one only)

- Yes, the list of music options was sufficiently comprehensive
- No, the list of music options was not sufficiently comprehensive
- Don't know/Unsure

Note that the options shown below may appear in a different order than what you saw during the survey.

Suppose that **music** on **Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now (including music on ad-supported Spotify).

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click here to review the definitions you read earlier in the survey.

	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).			
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, Live365Lite Plus).			
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).			
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).			
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to iHeart Radio All Access at $9.99 per month or $119.88 per year).			
I would listen to ad-supported Spotify, which I do not need to pay for.			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).			
I would listen to satellite radio through the paid subscription I already have (SiriusXM).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Mixcloud).			
I would listen to digital music files, CDs, or vinyl records that I already own.			
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).			
I would listen to music on online video site(s) (e.g., YouTube, Vevo).			
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).			
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book).			
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above):			

Continue >

Continue

Q5

37%

Imagine that there was a music option that you would consider using to replace listening to music on Spotify that was not on the list of options. Did you or did you not understand you could write that music option in the text box at the end of the list of options?

(Select one only)

- Yes, I understood I could write that music option in the text box at the end of the list of options
- No, I did not understand I could write that music option in the text box at the end of the list of options
- Don't Know/Unsure

Note that the options shown below may appear in a different order than what you saw during the survey.

80%

Suppose that **music** on **Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now (including music on ad-supported Spotify).

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click here to review the definitions you read earlier in the survey.

	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	○	○	○
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	○	○	○
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	○	○	○
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).	○	○	○
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to iHeart Radio All Access at $9.99 per month or $119.88 per year).	○	○	○
I would listen to ad-supported Spotify, which I do not need to pay for.	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	○	○	○
I would listen to satellite radio through the paid subscription I already have (SiriusXM).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	○	○	○
I would listen to digital music files, CDs, or vinyl records that I already own.	○	○	○
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	○	○	○
I would listen to music on online video site(s) (e.g., YouTube, Vevo).	○	○	○
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	○	○	○
	Would consider	Would not consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book).	○	○	○
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above):			

Continue >

Continue

Q6

52%

Below we show an image of a question you answered in the survey. The image below is just to refresh your memory about what the question asked.

Did or did not your point allocation accurately reflect the time you would actually spend listening to various music options?

(Select one only)

- No, my point allocation did not accurately reflect the time I would actually spend listening to various music options
- Yes, my point allocation accurately reflected the time I would actually spend listening to various music options
- Don't know/Unsure

89%

In the previous question, you mentioned that if music on **Spotify Premium** is no longer available, you would **consider** using the following music options to **replace** listening to music on **Spotify Premium**.

Please allocate 100 points across the following music options to indicate the **percentage of time** you would **actually** spend listening to each music option if music on **Spotify Premium** is no longer available.

The total across all music options should add up to 100.

- Allocate between 0 and 100 points to the music options below.
- Allocate 0 points to (or leave blank) any music options that you would **not** actually use.
- Allocate 100 points to a music option if that is the **only** option you would use.

(Please enter whole numbers only)

Continue

Q7

68%

Below we show an image of the instructions you saw prior to allocating time across music options that you would actually listen to. The image below is just to refresh your memory about what the question asked.

Did you or did you not take into account the costs of the music options in deciding which music options you would actually listen to?

(Select one only)

- Yes, I took into account the costs of the music options in deciding which music options I would actually listen to
- No, I did not take into account the costs of the music options in deciding which music options I would actually listen to
- Don't know/Unsure

84%

In the next question, you will be asked to allocate time across music options that you would **actually** listen to. Some of those options may have a cost associated with them.

In surveys people sometimes **say** they would pay for music options that they may not **actually** be willing to pay for.

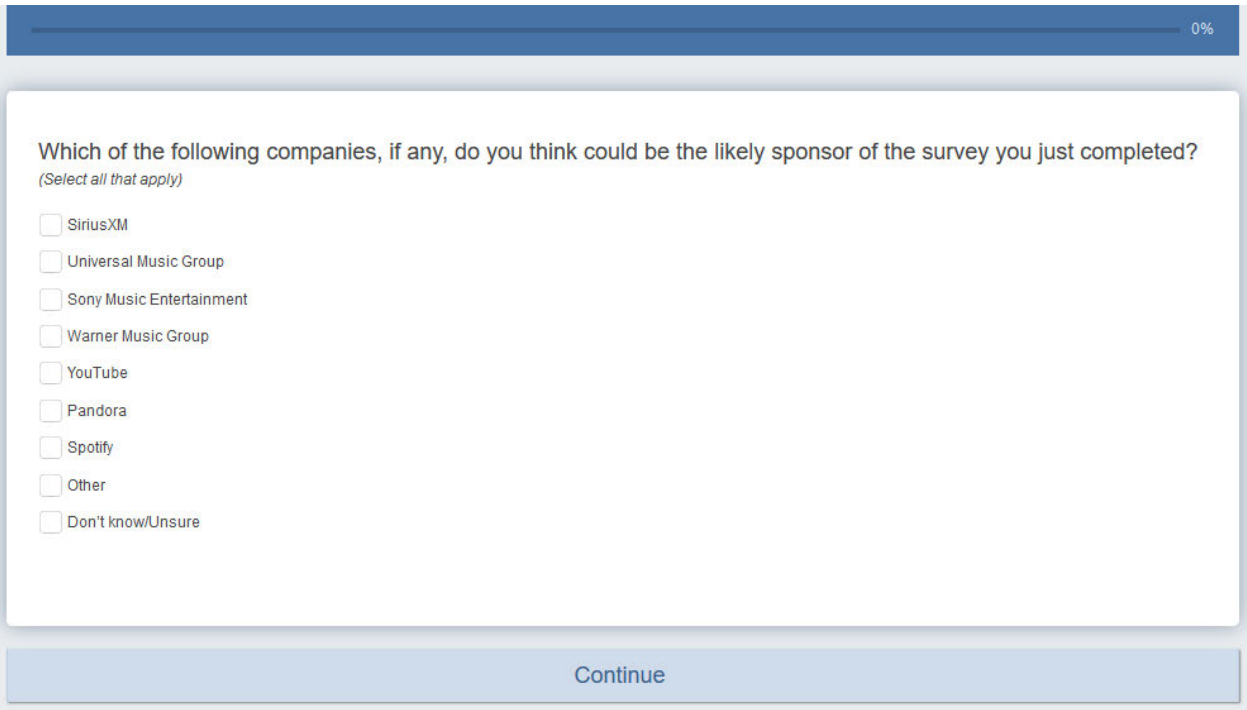
Please answer the next question as if you would **actually** pay the cost associated with the options that you would listen to.

Continue >

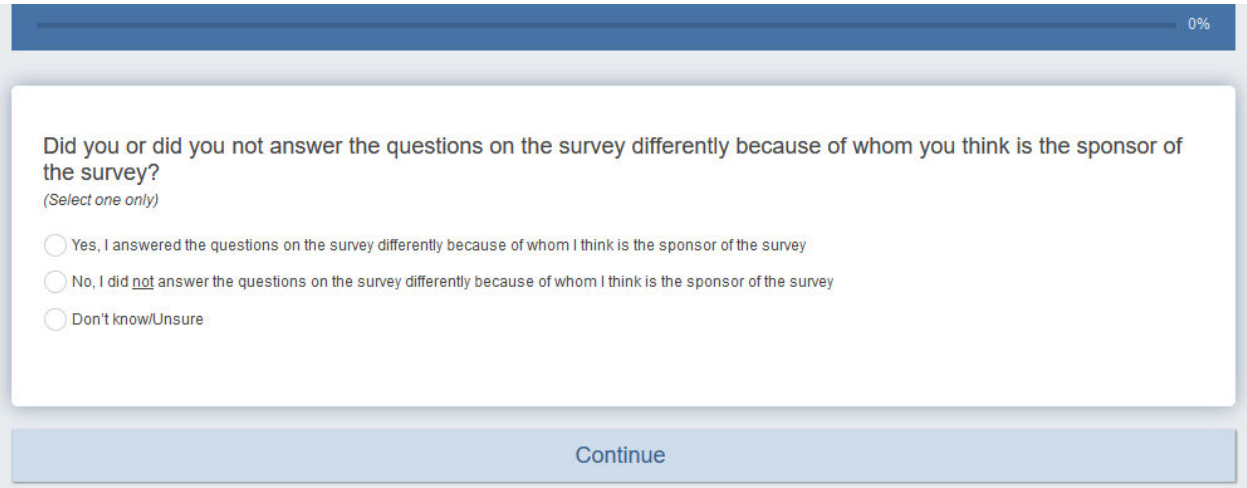
Continue

Spotify – Cell B
Second-Stage Survey Screenshots
September 2021

Q1



Q2


0%
Did you or did you not answer the questions on the survey differently because of whom you think is the sponsor of the survey?
(Select one only)
Yes, I answered the questions on the survey differently because of whom I think is the sponsor of the survey
No, I did not answer the questions on the survey differently because of whom I think is the sponsor of the survey
Don't know/Unsure
Continue

Q3

7%

Below we show an image of a question you answered in the survey that listed a number of options. The image below is just to refresh your memory about what the question asked.

Were you or were you not able to identify and select the music-listening options from this list that accurately reflected what you would consider if music on Spotify was no longer available?

(Select one only)

- No, I was not able to identify and select the options that accurately reflected what I would consider if music on Spotify was no longer available
- Yes, I was able to identify and select the options that accurately reflected what I would consider if music on Spotify was no longer available
- Don't know/Unsure

Note that the options shown in the image below may appear in a different order than what you saw during the survey.

80%

Suppose that **music** on **ad-supported Spotify and Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now.

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click here to review the definitions you read earlier in the survey

	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year)			
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).			
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).			
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to LiveXLive Premium at $9.99 per month or $119.88 per year).			
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).			
I would listen to satellite radio through the paid subscription I already have (SiriusXM).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).			
I would listen to digital music files, CDs, or vinyl records that I already own.			
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music on online video site(s) (e.g., YouTube, Vevo).			
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).			
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book).			
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above):			

Continue >

Continue

Q4

21%

Did you or did you not think the list of music options provided in this question was sufficiently comprehensive such that you could indicate all music options you would consider if music on Spotify was no longer available?

(Select one only)

- No, the list of music options was not sufficiently comprehensive
- Yes, the list of music options was sufficiently comprehensive
- Don't know/Unsure

Note that the options shown below may appear in a different order than what you saw during the survey.

80%

Suppose that **music** on **ad-supported Spotify and Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now.

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click here to review the definitions you read earlier in the survey.

	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).			
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).			
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music).			
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to LiveXLive Premium at $9.99 per month or $119.88 per year).			
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).			
I would listen to satellite radio through the paid subscription I already have (SiriusXM).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, like iHeart Radio, TuneIn).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).			
I would listen to digital music files, CDs, or vinyl records that I already own.			
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music on online video site(s) (e.g., YouTube, Vevo).			
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).			
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book).			
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above):			

Continue >

Continue

Q5

37%

Imagine that there was a music option that you would consider using to replace listening to music on Spotify that was not on the list of options. Did you or did you not understand you could write that music option in the text box at the end of the list of options?

(Select one only)

- No, I did not understand I could write that music option in the text box at the end of the list of options
- Yes, I understood I could write that music option in the text box at the end of the list of options
- Don't know/Unsure

Note that the options shown below may appear in a different order than what you saw during the survey.

80%

Suppose that **music** on **ad-supported Spotify and Spotify Premium** is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now.

Which of the following music options, if any, would you **consider** using to **replace** listening to **music** on **Spotify Premium**?

The prices below are examples and do not include promotional discounts, taxes, or fees.

(Select one response per row)

You may click here to review the definitions you read earlier in the survey.

	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year)			
I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus)			
I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora)			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on on-demand music streaming services to replace listening to music on Spotify Premium			
I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Apple Music)			
I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to LiveXLive Premium at $9.99 per month or $119.88 per year)			
I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud)			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content)			
I would listen to satellite radio through the paid subscription I already have (SiriusXM)			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn)			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Owned, purchased, or downloaded music to replace listening to music on Spotify Premium			
I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen)			
I would listen to digital music files, CDs, or vinyl records that I already own			
I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99)			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Music on video options to replace listening to music on Spotify Premium			
I would listen to music on online video site(s) (e.g., YouTube, Vevo)			
I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice)			
I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels)			
	Would not consider	Would consider	Don't know/Unsure/Not Applicable
Other			
I would listen to less music and would do something else instead (e.g., watch TV, read a book)			
I would listen to the following music option to replace listening to music on Spotify Premium. (Please specify, if not already selected in the list above)			

Continue >

Continue

Q6

52%

Below we show an image of a question you answered in the survey. The image below is just to refresh your memory about what the question asked.

Did or did not your point allocation accurately reflect the time you would actually spend listening to various music options?

(Select one only)

- No, my point allocation did not accurately reflect the time I would actually spend listening to various music options
- Yes, my point allocation accurately reflected the time I would actually spend listening to various music options
- Don't know/Unsure

89%

In the previous question, you mentioned that if music on **ad-supported Spotify and Spotify Premium** is no longer available, you would **consider** using the following music options to **replace** listening to music on **Spotify Premium**.

Please allocate 100 points across the following music options to indicate the **percentage of time** you would **actually** spend listening to each music option if music on **ad-supported Spotify and Spotify Premium** is no longer available.

The total across all music options should add up to 100.

- Allocate between 0 and 100 points to the music options below.
- Allocate 0 points to (or leave blank) any music options that you would **not** actually use.
- Allocate 100 points to a music option if that is the **only** option you would use.

(Please enter whole numbers only)

Continue

Q7

68%

Below we show an image of the instructions you saw prior to allocating time across music options that you would actually listen to. The image below is just to refresh your memory about what the question asked.

Did you or did you not take into account the costs of the music options in deciding which music options you would actually listen to?

(Select one only)

- No, I did not take into account the costs of the music options in deciding which music options I would actually listen to
- Yes, I took into account the costs of the music options in deciding which music options I would actually listen to
- Don't know/Unsure

84%

In the next question, you will be asked to allocate time across music options that you would **actually** listen to. Some of those options may have a cost associated with them.

In surveys people sometimes **say** they would pay for music options that they may not **actually** be willing to pay for.

Please answer the next question as if you would **actually** pay the cost associated with the options that you would listen to.

Continue >

Continue

APPENDIX J

Second-Stage Pretest Results

Question Number	Question	Response Options	Remove Spotify Premium Hypothetical (N = 10)		Remove All Spotify Hypothetical (N = 10)	
			Count	Percentage	Count	Percentage
Q1	Which of the following companies, if any, do you think could be the likely sponsor of the survey you just completed? (Select all that apply)	Spotify	6	60%	6	60%
		Pandora	8	80%	6	60%
		YouTube	4	40%	2	20%
		SiriusXM	5	50%	7	70%
		Universal Music Group	0	0%	2	20%
		Warner Music Group	2	20%	2	20%
		Sony Music Entertainment	2	20%	2	20%
		Other	1	10%	1	10%
		Don't know/Unsure	0	0%	0	0%
Q2	Did you or did you not answer the questions on the survey differently because of whom you think is the sponsor of the survey? (Select one only)	Yes, I answered the questions on the survey differently because of whom I think is the sponsor of the survey	0	0%	0	0%
		No, I did not answer the questions on the survey differently because of whom I think is the sponsor	10	100%	10	100%
		Don't know/Unsure	0	0%	0	0%
Q3	Were you or were you not able to identify and select the music-listening options from this list that accurately reflected what you would consider if music on Spotify was no longer available? (Select one only)	Yes, I was able to identify and select the options that accurately reflected what I would consider if music on Spotify was no longer available	10	100%	10	100%
		No, I was not able to identify and select the options that accurately reflected what I would consider if music on Spotify was no longer available	0	0%	0	0%
		Don't know/Unsure	0	0%	0	0%

Question Number	Question	Response Options	Remove Spotify Premium Hypothetical (N = 10) Count	Remove Spotify Premium Hypothetical (N = 10) Percentage	Remove All Spotify Hypothetical (N = 10) Count	Remove All Spotify Hypothetical (N = 10) Percentage
Q4	Did you or did you not think the list of music options provided in this question was sufficiently comprehensive such that you could indicate all music options you would consider if music on Spotify was no longer available? (Select one only)	Yes, the list of music options was sufficiently comprehensive	9	90%	10	100%
		No, the list of music options was not sufficiently comprehensive	0	0%	0	0%
		Don't know/Unsure	1	10%	0	0%
Q5	Imagine that there was a music option that you would consider using to replace listening to music on Spotify that was not on the list of options. Did you or did you not understand you could write that music option in the text box at the end of the list of options? (Select one only)	Yes, I understood I could write that music option in the text box at the end of the list of options	10	100%	9	90%
		No, I did not understand I could write that music option in the text box at the end of the list of options	0	0%	0	0%
		Don't know/Unsure	0	0%	1	10%
Q6	Did or did not your point allocation accurately reflect the time you would actually spend listening to various music options? (Select one only)	Yes, my point allocation accurately reflected the time I would actually spend listening to various music options	10	100%	9	90%
		No, my point allocation did not accurately reflect the time I would actually spend listening to various music options	0	0%	0	0%
		Don't know/Unsure	0	0%	1	10%
Q7	Did you or did you not take into account the costs of the music options in deciding which music options you would actually listen to? (Select one only)	Yes, I took into account the costs of the music options in deciding which music options I would actually listen to	6	60%	9	90%
		No, I did not take into account the costs of the music options in deciding which music options I would actually listen to	3	30%	1	10%
		Don't know/Unsure	1	10%	0	0%

Source: Second-Stage Pretest

APPENDIX K

PUBLIC VERSION

APPENDIX K-1

dynata™

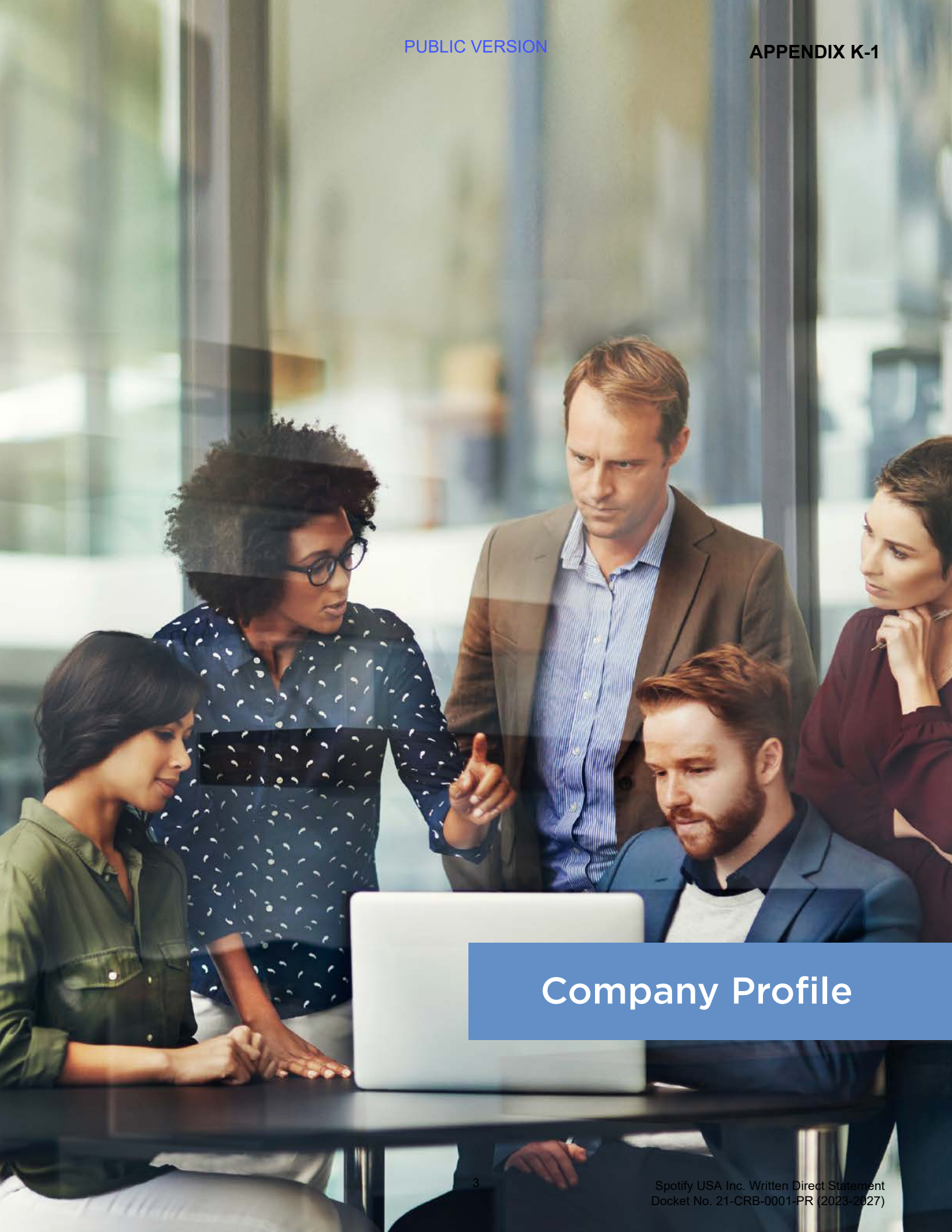
Panel Quality: Our Values

Answers to ESOMAR's 28 Questions

Introduction

Dynata is a proud member of the ESOMAR community and is pleased to provide our responses to the ESOMAR 28 Questions.

The primary aim of these 28 Questions is to increase transparency and raise awareness of key issues when considering online sampling. A related aim is to ensure that what clients receive meets their expectations.



Company Profile

1.

What experience does your company have in providing online samples for market research?

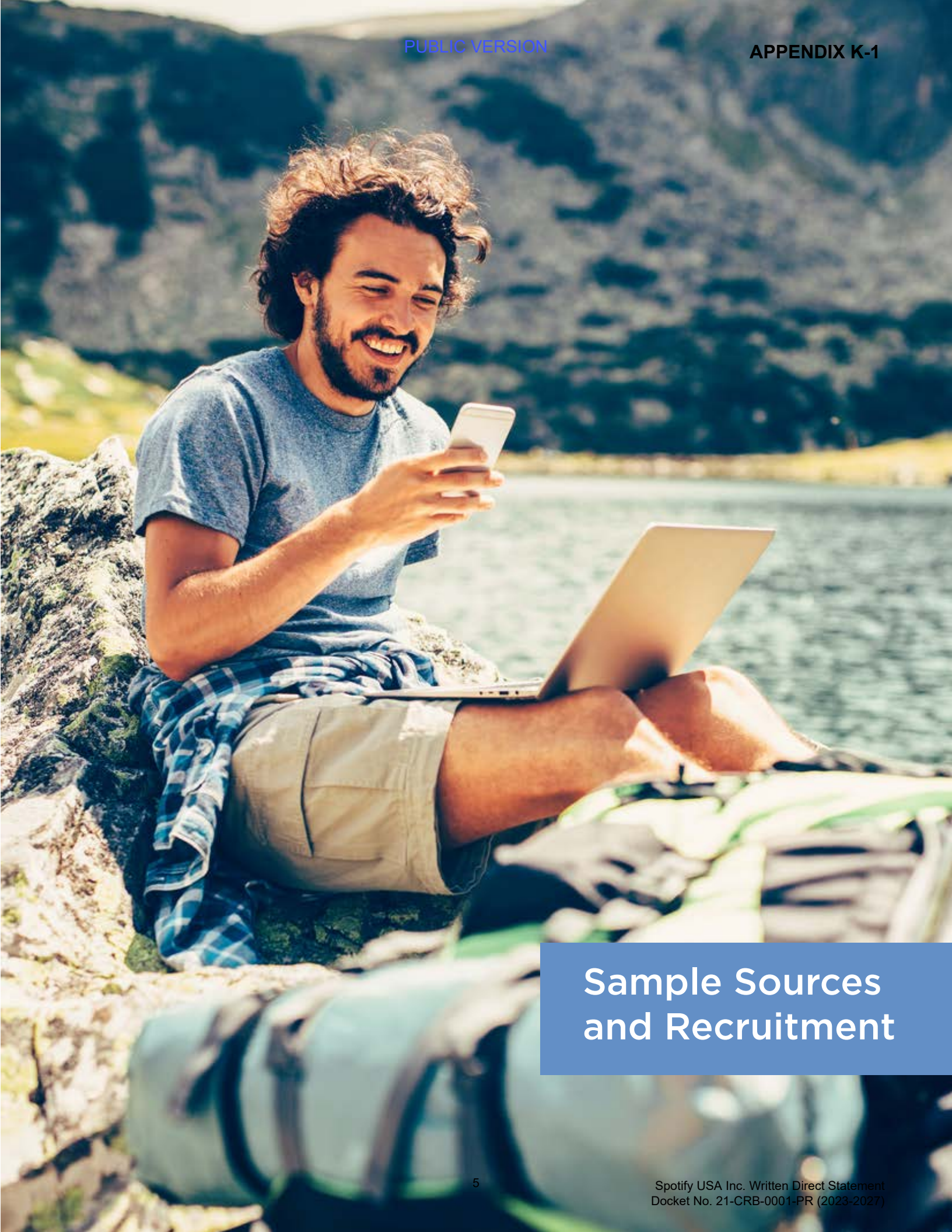
With almost 60 years of leadership experience and innovation, Dynata (formerly Research Now SSI) is uniquely positioned to deliver world class market research sample and data services. Dynata was the first to make random sample available to researchers and were the inventors of online and B2B panels with the advent of online research. Dynata is the only provider to offer sample across the full range of modes and can therefore recommend the best methodology for each research project. We are an independent single–source for permission-based data collection across the globe. We manage thousands of projects each month for which we provide sample, survey programming, data processing and other field services. These are executed by industry-leading programming and project management teams. We are experienced, research-literate, multi-lingual data collection specialists, servicing clients from across 41 offices worldwide. Dynata uses proprietary technology to deliver consistent data, products and services no matter how complex the project or where in the world clients choose to do business with us. Dynata adheres to the highest standards of sampling science across every aspect of every project and sponsors extensive "research on research" revealing critical insights into better sampling and survey design. We are active contributors to 24 market research associations around the world.

2.

Please describe and explain the type(s) of online sample sources from which you get respondents. Are these databases? Actively managed research panels? Direct marketing lists? Social networks? Web intercept (also known as river) samples?

Dynata has a variety of sample sources such as panel, web intercept sample, and specialty lists available to meet our clients' unique project requirements. All panels are actively managed, online access panels built from two decades of experience. All our panels are localized – not just translated – with native language panel support and country-specific reward choices. We run "open enrollment" and "by-invitation-only" ® recruitment campaigns, via direct email and through online marketing channels, utilizing hundreds of diverse, online affiliate partners and targeted websites. "By-Invitation-Only" is a proprietary method of exclusively inviting pre-validated individuals, or individuals who share known characteristics, to enroll into our market research panels. We achieve "By-Invitation-Only" by partnering with a diverse set of globally recognized consumer and business-facing brands.

PUBLIC VERSION



Sample Sources and Recruitment

3.

If you provide more than one type of sample source: How are the different sample sources blended together to ensure validity? How can this be replicated over time to provide reliability? How do you deal with the possibility of duplication of respondents across sources?

Dynata works to optimally blend our proprietary sample sources by conducting comparability tests and modeling the blend that will achieve the closest match to census and social benchmarks. To ensure reliability over time, we control the blend of multiple sample sources based upon our client's research requirements. We ensure full transparency with our clients regarding sample sources used, including times when an external panel partner may be required. To prevent duplication, we use third-party digital fingerprint technology.

4.

Are your sample source(s) used solely for market research? If not, what other purposes are they used for?

No marketing action is directed at any panelists by Dynata as a result of their participation in research activities.

5.

How do you source groups that may be hard to reach on the internet?

We design recruitment campaigns to target hard-to-reach population segments by selecting unique sources and applying tailored campaigns. To guarantee detailed knowledge of the specifics of panelists, we employ hundreds of profiling attributes on our panels. Due to the size of our panels, low incidence groups are accessible. To facilitate this process, we deeply target our panels and deploy pre-screeners to collect information for niche sample targets such as finance, IT decision-makers and health ailments. Dynata recognizes that online may not be the only solution to reach rare groups and can assist clients in understanding the tradeoffs of different data collection modes and recommend the best methodology to achieve the research goal.

6.

If, on a particular project, you need to supplement your samples with samples from other providers, how do you select those partners? Is it your policy to notify a client in advance when using a third-party provider?

If we need to supplement sample and we need another provider an external, non-API, panel partner be required, we operate a policy of complete transparency with our clients. We only use trusted panel partners and maintain a preferred supplier list. We always communicate to our clients in the event of using a non-proprietary source. Our dedicated panel partner team has built, and maintains, an extensive global database of quality panel suppliers. Before employing third-party sample, external providers must comply with a pre-identified set of questions and provide credentials. For example, we would ask them whether they have specialty panels, which countries they can cover, what targets their panels include, whether they have a set minimum incidence or a maximum length of interview, etc.

7.

What steps do you take to achieve a representative sample of the target population?

Sample selection is based on the sample needs and client requirements for each individual survey, driven by a study's research objectives. Where possible, pre-targeted sample is used to minimize screen-outs and provide a better quality panelist experience. Customized sampling, e.g. nationally representative, is also available. Dynata can balance sample on outbound invitations, surveys starts or completed interviews. We do this using a wide range of targeting criteria, from simple demographics to more complex behavioral and attitudinal targeting.

Sampling and Project Management

8.

Do you employ a survey router?

Yes, Dynata uses routing technology. Dynata's next generation technology has been carefully designed to improve both the research participant experience and feasibility while maintaining sampling quality. The amount of sample sourced through our routing technology can be customized per project to meet our clients' unique research requirements.

9.

If you use a router: Please describe the allocation process within your router. How do you decide which surveys might be considered for a respondent? On what priority basis are respondents allocated to surveys?

Dynata's routing technology uses weighted randomization to assign surveys to participants. Upon entry into the system, panelists are checked to ensure they have not exceeded survey participation limits. A list of potential survey matches is determined for each panelist based upon the information we know about them. Panelists may be asked additional screening questions within the system to ensure they meet the project criteria. Priority may be given to surveys that are behind schedule; however, this is kept to a minimum as survey randomization must remain in place as a key element for preventing bias.

10.

If you use a router: What measures do you take to guard against, or mitigate, any bias arising from employing a router? How do you measure and report any bias?

From the outset, Dynata's routing technology was designed to ensure high–quality sampling and minimize bias. In the development of our technology, we believed an element of randomization was essential to minimize the risk of assignment bias. Dynata has tested its technology settings using multiple data points to ensure that bias is limited. Dynata has also partnered with external consultants to review and validate its routing technology design. Finally, we review reports of system statistics and conversion rates to ensure consistency.

11.

If you use a router: Who in your company sets the parameters of the router? Is it a dedicated team or individual project managers?

No single person at Dynata is authorized to unilaterally change technology settings. Our Research Science team is responsible for routing practices, configuration and settings. This team establishes, tests, and measures all aspects of system performance, including sampling rules, router settings, data quality, and panelist participation limits and guidelines, and works together to propose and approve any needed changes. Research Science leaders head a global team of sampling and research experts who assist with thought leadership and research on research best practices and methodologies.

12.

What profiling data is held on respondents? How is it done? How does this differ across sample sources? How is it kept up-to-date? If no relevant profiling data is held, how are low incidence projects dealt with?

The collection and updating of information about our panelists is managed and controlled through various approaches. Basic demographic information (e.g. age, gender, region, household demographic) is collected at registration. A verification message and short survey are immediately sent to collect further information. Panelists also have the option to enter information about themselves via their member page at any point. Specific screener surveys are run when Dynata is building a particular sub-group (e.g. automotive, mobile phone habits, financial services) or for a particular project. If the data collected as part of this process is reusable it becomes part of the member profile. Profiling data is consistently updated through Dynamic Profile Enrichment™ solution. Panelists are periodically re-asked profile questions both to qualify them for surveys and to refresh data as appropriate. For screening and targeting needs that are not part of our global profile library, questions are asked as part of the survey flow either through in-router refinement or as part of the programmed survey.

13.

Please describe your survey invitation process. What is the proposition people are offered to take part in individual surveys? What information about the project itself is given in the process? Apart from direct invitations to specific surveys (or to a router), what other means of invitation to surveys are respondents exposed to? You should note that not all invitations to participate take the form of emails.

Dynata uses invitations of all types including e-mail invitations, phone alerts, banners and messaging on panel community sites to include people with a diversity of motivations to take part in research. At the time of enrollment, new panelists are asked to join an online market research panel. At this point it is made clear that it is not part of a sales process. Our survey invitations provide only basic links and information that is non-leading. Panelists are rewarded for taking part in surveys according to a structured incentive scheme, with the incentive amount offered for a survey determined by the length and content of the survey, the type of data being collected, the nature of the task and the sample characteristics. Panelists are supported by a dedicated team and have the option to unsubscribe at any time. Our panel management is compliant with market research industry standards, data protection and privacy laws.

14.

Please describe the (various) incentives that respondents are offered for taking part in your surveys. How does this differ by sample source, by interview length, by respondent characteristics?

Dynata uses an incentive scale which is based on set time increments and panelist characteristics. For example, a medical practitioner would generally be paid a significantly higher incentive per completed survey than the average consumer. The incentives to be awarded for these “specialist” opinions are discussed with the client so that they are attractive enough for time-poor/money-rich individuals to want to participate. All incentives are awarded only once the survey has been completed. The incentive options allow panelists to redeem from a large range of gift cards, points programs, charitable contributions, and partner products or services.

15.

What information about a project do you need in order to give an accurate estimate of feasibility using your own resources?

We will need to know:

1) Who you wish to speak to;
2) What you will ask of them;
3) What other types of data you will be collecting (for example, cookies, behavioral data etc.)
4) How much time is available to gather the data.

The first item incorporates geography, demographics, incidence, quotas and the number of interviews required; the second covers the length of the survey, any special tasks required, the questionnaire design and completion difficulty for the participant; the third defines the data gathered, and the fourth the fielding period.

16.

Do you measure respondent satisfaction? Is this made available to clients?

Yes, we conduct member satisfaction surveys and project feedback studies. We regularly measure panelist satisfaction on elements such as frequency of invitations, value and diversity of incentives and redemption choices, their willingness to complete various lengths of surveys, and our level of responsiveness to any questions or concerns they share with our Member Services team. Additionally, at the end of completed surveys, we gather feedback from participants on their experience. This data is available to clients in aggregate as a benchmark and for each of the surveys they run. Dynata's Engagement Team is dedicated to providing a positive participant experience. The team responds quickly to participant inquiries and takes immediate action to resolve any issues or dissatisfaction.

17.

What information do you provide to debrief your client after the project has finished?

For projects where Dynata provides programming and hosting services, we capture all participation history, the date of entry and panel recruitment source for each member. Provided it does not involve the disclosure of personally identifiable information, we can provide this to clients as a report upon request. For projects where Dynata hosts the survey, it is also possible to see a full survey activity report for each project. The key statistics from such a report include:

- Fieldwork dates
- Total number of survey invitations sent
- Number of surveys started
- Number of screen-outs/quota-fulls and survey drop-outs
- Number of completes

Additionally, we collect our panelists' feedback about their survey experience to measure their satisfaction. We can provide this data on demand. It can be helpful to spot strong points and weaknesses in the research design itself.

Data Quality and Validation

18.

Who is responsible for data quality checks? If it is you, do you have in place procedures to reduce or eliminate undesired within survey behaviors, such as (a) random responding, (b) illogical or inconsistent responding, (c) overuse of item non-response (e.g. "Don't Know"), or (d) speeding (too rapid survey completion).

Please describe these procedures.

Dynata believes that data quality is a shared responsibility, and that a well-designed survey is the best way to reduce data quality issues and reduce the chance of error from removing too much data. Dynata can help clients and provide feedback based on our rich experience and industry best practices. Data quality is at the forefront of Dynata's role as a provider of digital data, so for surveys where Dynata provides the hosting and programming, we will run a series of quality checks on the data collected. We monitor the quality of our data via the use of:

a. Random responding: Review of the data to ensure that answers are logical; we also have additional logic checks that can be built into the script to ensure participants cannot continue if they try to submit an illogical answer.

b. Illogical or inconsistent responding: This is monitored and detected by use of logic checks that can be programmed into the script. To ensure that these are fully activated, the project manager completes the survey and attempts to bypass the logic. The project team will also re-check the link to ensure that the programmed logic is operating correctly, prior to the survey going live.

c. Overuse of item non-response (e.g. 'Don't Know'): Dynata refers to these participants as flat-liners, who can be identified and removed from the final data during our quality checks.

Responses where the completion time is less than 30% of the median length of the survey are identified across the entire sample. The project manager checks the route that the participant followed to ensure they have not bypassed a significant section of the survey, and completes a sense check of any verbatim. Based on these checks, fast responders are classified as speeders and are removed from the final data. We work closely with our clients to reduce occurrences of survey offending and monitor offenders, employing different techniques to address the behavior of participants who regularly provide poor quality data.

19.

How often can any individual be contacted to take part in a survey whether they respond to the contact or not? How does this vary across your sample sources?

Each panelist is assigned an individual ID, so we can record their entire survey participation history. This means we can carefully select panel members for each survey to ensure that they are not only relevant, but also are not being over-contacted. We therefore have limits on how many survey invitations panelists are sent. These limits vary depending on country and sample source. Upon request, we can exclude re-invites to participants who have participated in either a survey of the same topic or for the same client. The timeframe on these limits can be stipulated by the client.

20.

How often can any individual take part in a survey? How does this vary across your sample sources? How do you manage this within categories and/or time periods?

Participation limits vary across Dynata's sources. Some restrictions are hard limits, others soft guidelines. Diversity of participation level increases the diversity of the sample and improves its ability to reflect the target population. Restricting participation must be weighed against the risk of excluding certain people from a survey solely based on their previous participation.

21.

Do you maintain individual level data, such as recent participation history, date of entry, source, etc., on your survey respondents? Are you able to supply your client with a project analysis of such individual level data?

We hold the complete survey participation history of every participant on our panel. Each panelist is assigned an individual ID number which stays with them throughout their entire panel membership and allows us to track their history, date of entry, source, etc. We can also provide a per-job analysis to clients.

22.

Do you have a confirmation of respondent identity procedure? Do you have procedures to detect fraudulent respondents? Please describe these procedures as they are implemented at sample source registration or at the point of entry to a survey or router. If you offer B2B samples what are the procedures there, if any?

Yes, we have a series of defined processes in place to ensure the high quality of our participants. It includes checking for duplicate participants by evaluating variables such as email address, matches across several demographic data, and device-related data through our use of digital fingerprint technology. Additionally, the nature of our "By-Invitation Only"® panelist recruitment allows us to be confident that real people with valid identities are enrolling in our program. Dynata supports a wide variety of other techniques to ensure sample quality such as external list matching.

Policies and Compliance

23.

Please describe the 'opt-in for market research' processes for all your online sample sources.

All our research activities are opt-in and permission-based. Initial enrollment messaging is clear about the purpose of their membership, with complete and detailed information provided at the time of enrollment. New panelists who click through an invitation to join our panels must complete enrollment at the panel registration website and opt-in to all terms and conditions.

24.

Please provide a link to your Privacy Policy. How is your Privacy Policy provided to your respondents?

We follow all national, regional and local laws with respect to privacy and data protection. As such, the privacy policy for each panel adheres to local law. We ensure our panels comply with all applicable industry standards set by ESOMAR, MRS (UK), AMSRS (Australia), BVM (Germany), Insights Association (U.S.), etc.

Among others, this includes observing the following guidelines:

- Voluntary co-operation of panelists
- Protection of researchers' and participants' identities
- Terms & conditions and privacy policies compliant with local laws
- State-of-the-art data security policies and measures
- Reliable and validated data procedures
- Strict adherence to rules governing the interviewing of children and young people.

For examples of our privacy policies in individual markets, please refer to:

- EU privacy policy:
  http://www.opinionoutpost.co.uk/en-gb/policies/privacy

- All other countries privacy policy:
  https://www.surveyspot.com/policies/privacy

25.

Please describe the measures you take to ensure data protection and data security.

Dynata follows all local data protection regulations. Our training teams conduct extensive trainings on Data Protection with client-facing staff highlighting industry (ESOMAR, Insights Association, etc.) guidelines and legal recommendations. We have secure servers to carry out the collection of survey data. Sampling is undertaken with highly encrypted links to the database servers. Personal information is fully protected and can only be communicated following a strict procedure. We also use randomization procedures to ensure there is no preferential treatment of certain parts of the database. Our sampling teams do not have direct access to the database to reveal the identity of users. Survey data is linked to the panel database using numeric IDs so the identity of the end-user (panelist) is always protected. As a company with extensive panel data assets based on recruitment and a "permissioned" approach, we understand the importance of having a mutually beneficial relationship with our research participants – whether consumers or business professionals – and the value which such a relationship brings to enriching marketing and communications. To protect our respondents' valuable personal information, Dynata has a team dedicated to privacy law compliance, including the GDPR.

26.

What practices do you follow to decide whether online research should be used to present commercially sensitive client data or materials to survey respondents?

Upon the commission of fieldwork, we will make sure the client is comfortable with any commercially-sensitive material being presented or discussed in the course of the project. During sign-up, our panelists agree that they will treat the information they come across in confidence. There are two levels of security features for scripting. Standard security is available by default on all projects, while premium security is only enabled on request and may incur an additional charge. For example, among the solutions developed by our scripting teams, we have tools to disable screenshots and copy-pasting on a computer and we use streaming video to circumvent video buffering and web browser storage of files. We can also watermark an image with the participant's ID number.

27.

Are you certified to any specific quality system ? If so, which one(s)?

Dynata has established a defined project management process and associated systems for each of the thousands of projects managed each month globally. Dynata routinely reviews quality metrics to maintain high quality. Our Australian offices are certified and comply with ISO 20252 standards.

28.

Do you conduct online surveys with children and young people? If so, do you adhere to the standards that ESOMAR provides? What other rules or standards, for example COPPA in the United States, do you comply with?

Yes, we conduct online surveys with children and young adults. In these instances, we adhere to ESOMAR standards and all applicable local regulatory and legal requirements, including COPPA in the U.S.

About Dynata

Dynata is one of the world's leading single providers of first-party data contributed by people who opt-in to member-based panels that the company manages and maintains. With a reach that encompasses 60+ million people globally and an extensive library of individual profile attributes collected through surveys, Dynata is the cornerstone for precise, trustworthy quality data. The company has built innovative data services and solutions around this core asset to bring the voice of the individual to the entire marketing spectrum, from market research to marketing and advertising. Dynata serves nearly 6,000 market research agencies, media and advertising agencies, consulting & investment firms and healthcare and corporate customers in the North America, South America, Europe, and Asia-Pacific. For more information, go to dynata.com.

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ESOMAR'S 28 QUESTIONS

ESOMAR has provided 28 questions to help market researchers and buyers of online sample determine if an online sample provider's practices fit with their research objectives. Schlesinger Group is delighted to provide clear answers to these questions to help you gain a better understanding of how we manage and maintain our panels to ensure the highest quality data.

ESOMAR member

COMPANY PROFILE

1 What experience does your company have in providing online samples for market research?

For a half century, Schlesinger Group has been constantly perfecting the art and science of qualitative and quantitative data collection. Our rich history of quality, partnerships and service excellence has formed the foundation of our global online panels. With 25 facilities, placed in key markets around the globe, we provide global samples for online and offline research projects across multiple methodologies including, but not limited to, online communities, focus-groups, chat and video sessions, IHUTs, bulletin boards, online surveys and mixed-methodology projects that encompass both on and offline strategies. Our extensive market knowledge, personal interaction with respondents and blended recruitment strategy have yielded a highly validated and quality panel. Schlesinger Group provides sampling for many market sectors including consumers, healthcare (physicians, professionals and patients), business-to-business, financial services, insurance, technology, media and others. With more than 600 global employees, our highly trained staff has a diverse set of research experience, including full-service market research, data collection, end-client research, online research, and research technology. Schlesinger Group employs industry leaders who take an active role in the continuing development of our panels and data quality.

SAMPLE SOURCE AND RECRUITMENT

2

Please describe and explain the type(s) of online sample sources from which you get respondents. Are these databases? Actively managed research panels? Direct marketing lists? Social networks? Web intercept (also known as river) samples?

Schlesinger Group relies heavily on our extensive experience with traditional research methodologies to shape our approach to panel management. Our panels are not managed as faceless lists, but as highly valuable assets, managed for long term engagement with highly profiled respondents. Sample sourcing is an integral part of creating a valid panel asset and as such, Schlesinger follows industry best practices, across multiple methodologies, to recruit our panels in a broad number of ways. Leveraging our 25 research facilities worldwide, we use offline methods such as phone and in-person recruitment that yield validated panelists who have a genuine interest in research participation. We also utilize online methodologies, including, targeted e-mail campaigns, social media, direct marketing and banner placements. However, we do not directly recruit into online projects using web intercepts. Schlesinger works closely with internal and externally sourced partner networks and highly targeted strategic partnerships to identify hard to reach sample targets and round out recruitment efforts. In all cases, we carefully monitor panel conversion, attrition and demographic makeup to ensure we meet the needs of all project specifications.

For low incidence projects, we may utilize our rigorously vetted partnerships to augment our panels. For all partnerships, we employ an initial and regular periodic review process to ensure partners' quality levels are consistent with our high standards.

3

If you provide samples from more than one source: How are the different sample sources blended together to ensure validity? How can this be replicated over time to provide reliability? How do you deal with the possibility of duplication of respondents across sources?

Based on each particular project, we actively participate in discussions with our clients to understand the research need and ultimately recommend the most appropriate sample solution. In all cases, we build appropriate sample frames to meet the methodological needs of each project, eliminating any unnecessary bias. To the highest extent possible, we use our proprietary panels to fulfil the needs of each project. When using our panels, replication does not pose a challenge as we are easily able to recreate a sample frame and fill cells accordingly. In the cases where we utilize a panel partner to reach a difficult target, we work closely with our preferred and validated partners to ensure they understand the needs of each project and can fulfil the requirements of a particular sample frame, leading to ease of replication when needed. In all cases, we use RELEVANTID® digital fingerprinting technology to ensure there are no duplicate respondents in the sample.

4

Are your sample source(s) used solely for market research? If not, what other purposes are they used for?

Schlesinger Group's online panels are used solely for market research purposes.

5 **How do you source groups that may be hard to reach on the internet?**

Schlesinger Group is uniquely positioned to reach low-incidence or hard-to-reach populations using online and offline recruiting techniques. In conjunction with specialized recruitment partners that include both broad-reach and special interests, we also have the flexibility to tap into relationships developed over years of recruiting respondents for our clients. We continually develop and maintain relationships with special interest groups, industry associations, affinity groups and others to recruit qualified sample that is relevant for client work. We utilize traditional techniques such as online partnerships, email campaigns, banner ads, social media (Facebook, LinkedIn and Twitter), phone, fax and email to source some special interest groups. When leveraging our internal assets, we have hundreds of data points on each respondent to help us specific target based on the client's needs.

6 **If, on a particular project, you need to supplement your sample(s) with sample(s) from other providers, how do you select those partners? Is it your policy to notify a client in advance when using a third party provider?**

While Schlesinger Group maintains its own panel assets, there are times we need to work in cooperation with a partner to complete a project. We go through a rigorous vetting process with each panel partner to ensure there are similar standards in recruitment practice, engagement, profiling and panel management. As part of this process, each preferred partner must pass our stringent testing. We believe transparency to be a strong principle of client relationships and as such, our clients can be informed of, and approve, any supplemental partner sample in the event we find it necessary.

SAMPLING AND PROJECT MANAGEMENT

7 **What steps do you take to achieve a representative sample of the target population?**

Working closely with each client to understand the research and methodological requirements of a project, we begin by developing necessary targets to match the goal. Whether the project specifies national representation, census targets, or balancing specific targets within a general population, we create an appropriate sample frame to fit the need. Response rates are taken into consideration for various demographic groups. Quota management is driven by the specific project objective and random sampling is used to fill each quota, balancing both targets and screening criteria. If required, we can exclude panelists based on past research participation or category criteria set by our clients.

8 **Do you employ a survey router?**

We do not currently employ a router. We have a wide variety of research-on-research and training materials for those who care to understand more about survey routers.

9 **If you use a router: Please describe the allocation process within your router. How do you decide which surveys might be considered for a respondent? On what priority basis are respondents allocated to surveys?**

Not applicable.

10 If you use a router: What measures do you take to guard against, or mitigate, any bias arising from employing a router? How do you measure and report any bias?

Not applicable.

11 If you use a router: Who in your company sets the parameters of the router? Is it a dedicated team or individual project managers?

Not applicable.

12 What profiling data is held on respondents? How is it done? How does this differ across sample sources? How is it kept up-to-date? If no relevant profiling data is held, how are low incidence projects dealt with?

Upon registration, each panelist provides the following variables at a minimum:

Name / Email / Complete Mailing Address / Age / Gender / Ethnicity (US Only) / Contact Preferences

In addition to the mandatory registration variables, we capture hundreds of data points through on-going profiling including topics such as household demographics, health, technology, business, financial, automotive and the environment. For healthcare data points in Europe, we ask for panelist consent prior to storing any of these data points to comply with GDPR regulations.

Profiling is updated every 6 months or earlier if the panelist chooses to update their profile more more often.

13 Please describe your survey invitation process. What is the proposition that people are offered to take part in individual surveys? What information about the project itself is given in the process? Apart from direct invitations to specific surveys (or to a router), what other means of invitation to surveys are respondents exposed to? You should note that not all invitations to participate take the form of emails.

Panelists receive a personalized e-mail invitation that includes general survey details such as survey reference number, length of interview, study requirements (in-person, TDI, online, etc.), and incentive. Each invitation is CAN-SPAM compliant and includes links to the unique survey or screener, Schlesinger Group's privacy policy and opt-out information, panelist support contact and a physical address. Invitation language is carefully framed to avoid self-selection. In addition to e-mail invitations we also invite panelists via phone, fax and mail to participate in research opportunities provided that they have opted in to that method of contact. In all instances, respondents' preferences are honored with regard to contact options.

14 Please describe the incentives that respondents are offered for taking part in your surveys. How does this differ by sample source, by interview length, by respondent characteristics?

Our panelists receive appropriate incentives based on the nature of their participation. The amount earned is based on a number of factors, including length of interview, target audience and study type. We use several disbursement methodologies which is dependent on the participant and type of research. For online consumers we use a points-based system and our members can earn points for activities such as profile completion in addition to their survey participation. Panelists must accumulate a certain threshold level of points prior to redemption of a reward that can include Amazon digital gift cards or virtual Visa pre-paid cards. We employ a threshold model to avoid empanelling members who have registered for an immediate earning opportunity with little regard to providing attentive, honest responses.

Our offline, or qualitative-only, consumer and patient panels are paid via Visa debit cards after their verified participation. All physicians and other HCPs receive Visa debit cards, regardless of method of participation.

15 What information about a project do you need in order to give an accurate estimate of feasibility using your own resources?

We can provide an educated assessment of project feasibility based on:

Definition of sample / Number of completed interviews per segment or quota / Demographic requirements / Additional screening or targeting criteria / Length of interview, in minutes / Estimated incidence rate / Time in field

This basic information will allow us to estimate whether we can complete a project with our proprietary resources, or if we need to engage with a preferred partner. Often times, we can pre-target to boost incidence rate to maximize sample efficiency and provide lower costs.

16 Do you measure respondent satisfaction? Is this information made available to clients?

Respondent satisfaction is monitored on an on-going basis. Surveys are issued to our members to gauge both survey and panel satisfaction on a regular basis. In addition to dedicated surveys, we interact daily with our members via our panel team. Questions and feedback are gathered and analyzed to ensure we keep our finger on the pulse of our panel member experience.

Panel satisfaction is available to our clients on request. We can include survey satisfaction questions within a client's questionnaire at no charge to the client.

17 What information do you provide to debrief your client after the project has finished?

Schlesinger can provide a full debrief of all sample, screener, and survey statistics. We provide standard field reports, customized reports after the project is completed or real-time reports when the project is in field. An assessment of project reports and format is discussed at the inception of each project.

DATA QUALITY AND VALIDATION

18

Who is responsible for data quality checks? If it is you, do you have in place procedures to reduce or eliminate undesired within survey behaviors, such as (a) random responding, (b) Illogical or inconsistent responding, (c) overuse of item non-response (e.g. "Don't Know") or (d) speeding (too rapid survey completion)? Please describe these procedures.

Schlesinger Group takes data quality seriously and understands that our clients take data integrity equally seriously. Techniques and tools for eliminating invalid data begin with proper survey/screener length and design. We work closely in a consultative manner to protect our panel assets by helping our clients develop and deploy surveys and screeners that mitigate risk against invalid data. We employ a variety of methods to track our panelists' behavior over their tenure in our panels. Starting from the initial point of registration, we use methods like CAPTCHA, IP verification and proxy server detection to weed out potential bad respondents. At a survey level, we use controls to monitor speeding, straight-lining and other satisficing or questionable survey taking practices. We use RELEVANTID® at the project level to help protect against duplication with our proprietary panel sample as well as with preferred partner samples.

19

How often can the same individual be contacted to take part in a survey within a specified period whether they respond to the contact or not? How does this vary across your sample sources?

Schlesinger's standard rule is to limit panelist participation to a maximum of 4 projects per month, with contact frequency ranging from 4 – 10 touchpoints such as invitations or requests for profile updates.

20

How often can the same individual take part in a survey within a specified period? How does this vary across your sample sources? How do you manage this within categories and/or time periods?

Schlesinger Group generally limits panelist participation to a maximum of 4 projects per month, but can work with clients to fulfil special requests if more stringent rules are needed. We also adhere to client past participations rules and category exclusions as provided.

21

Do you maintain individual level data such as recent participation history, date of entry, source, etc., on your survey respondents? Are you able to supply your client with a project analysis of such individual level data?

Schlesinger Group maintains vast historical participation history at the respondent level. We can provide detailed information on each panelist, including tenure, recruitment source and participation data.

22 Do you have a confirmation of respondent identity procedure? Do you have procedures to detect fraudulent respondents? Please describe these procedures as they are implemented at sample source registration and/or at the point of entry to a survey or router. If you offer B2B samples what are the procedures there, if any?

We actively validate a large number of our recruits in person or via phone. All physicians are validated with a variety of purchased healthcare information.

We also apply technologies/concepts such as:

- CAPTCHA to prevent automatic, bot registrations
- Duplicate Detection established via a unique combination of email, digital fingerprinting and other proprietary variables, and RELEVANTID®
- IP address identification to confirm a respondent's country
- Proxy Server Detection to identify a panelist's geographic location and compare against self-reported data
- Collection of full postal address and phone number for validation at initial registration

We also employ human resources to review project level data including data inconsistencies and irrelevant open-ends.

POLICIES AND COMPLIANCE

23 Please describe the 'opt-in for market research' processes for all your online sample sources.

Schlesinger Group uses a traditional "double-opt-in" process for all panelist recruitment. All potential respondents are required to complete a registration page where they must provide valid e-mail address, a valid photo ID, and other key demographics in addition to agreeing to Schlesinger's Privacy Policy and Terms & Conditions. Upon completion of initial registration, panelists receive a confirmation e-mail to the address provided. Only after clicking on the confirmation link within the follow-up e-mail, is a respondent considered a valid, double-opt-in panelist.

24 Please provide a link to your Privacy Policy. How is your Privacy Policy provided to your respondents?

Potential and existing panelists can view Schlesinger's privacy policy, which is posted on our websites, within e-mails and presented at initial registration, by visiting the following URL:
SchlesingerGroup.com/company/privacy/#privacy-policy

Our policies and procedures related to privacy and data security are complaint with all relevant laws and best practices with respect to privacy, data protection, and interviewing children. Schlesinger Group or its companies is an active member of all major research industry standards bodies in the countries in which we are based and we conform to all standards and guidelines, including being fully GDPR compliant.

Insights Association | Intellus Worldwide | AMA | MRS | AQR | BHBIA | ESOMAR | EphMRA | BVM ADM | SYNTEC | ASOCS | AEDEMO

25 Please describe the measures you take to ensure data protection and data security.

Security and data protection are vital for any market research undertaking and advanced protection is a top priority at Schlesinger Group. Our internal control system has been developed for the highest security of client and participant data during all stages of a study in addition to being GDPR complaint. In every service of our business and at every level, staff are trained and monitored to ensure they understand and adhere to our security directives. From welcoming clients who wish to remain anonymous at focus groups, to contacting client customers, to storing and transmitting data, our employees follow strict rules of conduct throughout the lifecycle of data or products to protect the security interests of all stakeholders. Schlesinger Group takes privacy and data protection seriously. As such, we have strict processes and practices in place to ensure the highest level of security. These practices include:

Appointed officer

The appointment of a Privacy Officer to deal with any employee inquiries, to handle any respondent complaints of noncompliance and to coordinate with US federal, state and international organizations regarding the implementation of, and updates to, our policy. We have assigned Data Protection Officers (DPOs) in all European countries and for mulit-national projects our DPOs will assist and answer requests for local respondents and clients. All DPOs train our staff teams regulary.

Custom security agreements

We understand that different clients have company-specific security needs. Clients with very particular requirements are assigned a dedicated Account Manager responsible for implementing and overseeing adherence to security measures that have been agreed upon. We work with our client to identify on-going opportunities to enhance protection of their data in our rapidly-evolving digital environment.

Association membership codes of conduct

Our employees adhere to the security codes of conduct and quality commitments set out by the numerous industry associations to which we belong. See answer 24 for our list of memberships.

Secure technology

We make significant investment in technology to enhance capabilities, efficiencies and most importantly, our security. Examples of technology solutions in place for data security include:

- Secure FTP site (SFTP) for transfer of files from client to Schlesinger Group
- Ability to encrypt files when transferred from client to Schlesinger Group
- Secure, closed corporate network
- Corporate network is secured by Cisco ASA devices, intrusion prevention system, and IronPort proxy server
- Anti-virus protection is provided at the gateway
- Documents at rest are automatically encrypted by our file system
- The collocation site we use issues a yearly certified SAS 70 report

Secure processes

- We work to ISO 27001 IT security standards
- Security codes of conduct form part of employment contracts and handbooks. The disciplinary consequences for failure to adhere to these codes are clearly communicated
- Classification of data sensitivity and “need to know” principles with accompanying matrix to ensure appropriate treatment of data according to sensitivity

- Physical and data destruction follow industry standards and US Department of Defense requirements
- Strict operating guidelines for receipt and secure storage of client products
- Recruitment phone room call monitoring for quality and security compliance purposes
- Highly restricted administration access to systems
- Strong password mechanism for employee login
- Secure back-up of collected data: Full nightly back-up, quarterly transfers to a data vault
- Formal business continuity plan and disaster recovery processes
- Desktop lockout after 10 minutes of inactivity
- Storage of client data on desktops or mobile devices is prohibited
- Full list of all procedures that work with personal data
- Perform a Data Protection Impact Assessment for risks on procedures
- Address data breach requirements to authorities within 24h
- Using internal and external tools that cover a high level of data protection by design

Secure panel management

Our panel management team is dedicated to a quality panel on which our clients can rely and on which our members' rights are protected. Some of our security systems for a reliable panel include:

- Regular validation of participant access rights to the systems (operating and applications)
- Log analyses and tracking for unauthorized access or access attempts
- Compliance with personal data processing and deletion procedures
- Use of only encrypted protocols (SSL or similar), internal and external authentication and IP address restrictions

Additional Physical Security Practices:

- Access control and restricted domain access
- Security Guards posted around the clock at all server locations and data centers
- Air locked doors, CCTV, Intrusion detection and monitored alarm systems at all data centers
- Wet/dry fire systems
- Monitored entry by all Schlesinger staff
- Limited staff authorization at data centers. All non-staff have a mandated staff escort

26 What practices do you follow to decide whether online research should be used to present commercially sensitive client data or materials to survey respondents?

Schlesinger Group employs a consultative approach with clients to ensure any risk associated with a client's need to publish sensitive materials is mitigated. Ultimately, there is no guarantee that online information can be made 100% confidential due to constant technological developments. If the survey/interview material is highly sensitive, we would advise it not be employed digitally. For other sensitive information, we can incorporate project-specific NDA, or consent to hold information confidential on a project basis. In Europe we provide video recordings/downloads only if we obtain written consent from client that recordings are only allowed to be used/viewed for the market research project purpose for reporting and analysis for 3 months. Publishing of videos/audios/photographs of respondents in mass media, congresses, third-party companies and advertising is fully prohibited according to the ESOMAR standard. Our recordings will be deleted 3 months after recording by automatic procedure.

27 Are you certified to any specific quality system? If so, which one(s)?

Our process and platform are reviewed and approved by various clients on a proprietary basis. At Consumed in France, at The Research House in the UK, and at BDI Research in Spain we are ISO certified: ISO 9001 Quality Management Standard and ISO 20252 Market Research Business & Quality Standard. We are working toward other ISO certifications.

28 Do you conduct online surveys with children and young people? If so, do you adhere to the standards that ESOMAR provides? What other rules or standards, for example COPPA in the United States, do you comply with?

Schlesinger Group is compliant with all industry guidelines and standards related to interviewing young people, including children and adolescents. We are compliant with ESOMAR Online Research Guidelines and the Children's Online Privacy Protection Act (COPPA).

GET IN TOUCH

Whether it be for online sample, projects requiring cutting-edge survey programming techniques, online community creation and engagement, custom panels or multi-method studies, our expert teams at Schlesinger help you to hold powerful customer conversations that create valuable insight.

Matt Campion, Executive Vice President
Schlesinger Group
Info@SchlesingerQuantitative.com

ESOMAR member

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APPENDIX L

Survey Click Balancing Demographics

	U.S. Census Target[1]	Incoming Sample of Interactive Streaming Switching Survey (N = 22,071)		Difference
		Count[2]	Percentage	
Age				
18 - 34	30%	6,849	31.0%	1.0%
35 - 49	24%	5,161	23.4%	-0.6%
50 - 64	25%	5,004	22.7%	-2.3%
65 or older	21%	5,057	22.9%	1.9%
Gender				
Male	49%	11,105	50.3%	1.3%
Female	51%	10,966	49.7%	-1.3%
Region				
Midwest	21%	4,413	20.0%	-1.0%
Northeast	17%	4,334	19.6%	2.6%
South	38%	8,620	39.1%	1.1%
West	24%	4,704	21.3%	-2.7%

Source: Interactive Streaming Switching Survey; "Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2010 to July 1, 2019," U.S. Census Bureau, available at https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html; "Estimates of the Total Resident Population and Resident Population Age 18 Years and Older for the United States, States, and Puerto Rico: July 1, 2019," U.S. Census Bureau, available at https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html

Note:
[1] Age, gender, and region quotas for the survey were set using U.S. Census Bureau postcensal population estimates from July 1, 2019.
[2] This tabulation uses panel data on age, gender, and region of survey respondents.

APPENDIX M

Survey Respondent Demographics

	Remove Spotify Premium Hypothetical (N = 605)		Remove All Spotify Hypothetical (N = 600)		
	Count [1]	Percentage	Count [1]	Percentage	Difference
Age [2]					
18 - 34	301	49.8%	276	46.0%	3.8%
35 - 49	187	30.9%	190	31.7%	-0.8%
50 - 64	87	14.4%	95	15.8%	-1.5%
65 or older	30	5.0%	39	6.5%	-1.5%
Gender [2]					
Female	300	49.6%	291	48.5%	1.1%
Male	305	50.4%	309	51.5%	-1.1%
Region [2]					
Midwest	100	16.5%	108	18.0%	-1.5%
Northeast	125	20.7%	120	20.0%	0.7%
South	241	39.8%	242	40.3%	-0.5%
West	139	23.0%	130	21.7%	1.3%

Source: Interactive Streaming Switching Survey

Note:
[1] This tabulation uses panel data on age, gender, and region of survey respondents.
[2] I performed a standard Pearson chi-squared test on the distributions of each demographic variable between respondents shown the Remove Spotify Premium Hypothetical and those shown the Remove All Spotify Hypothetical. I found no statistically significant difference at the 5 percent level in each of these three demographic variables across the two hypotheticals (p-value = 0.46 for age, 0.71 for gender, 0.88 for region).

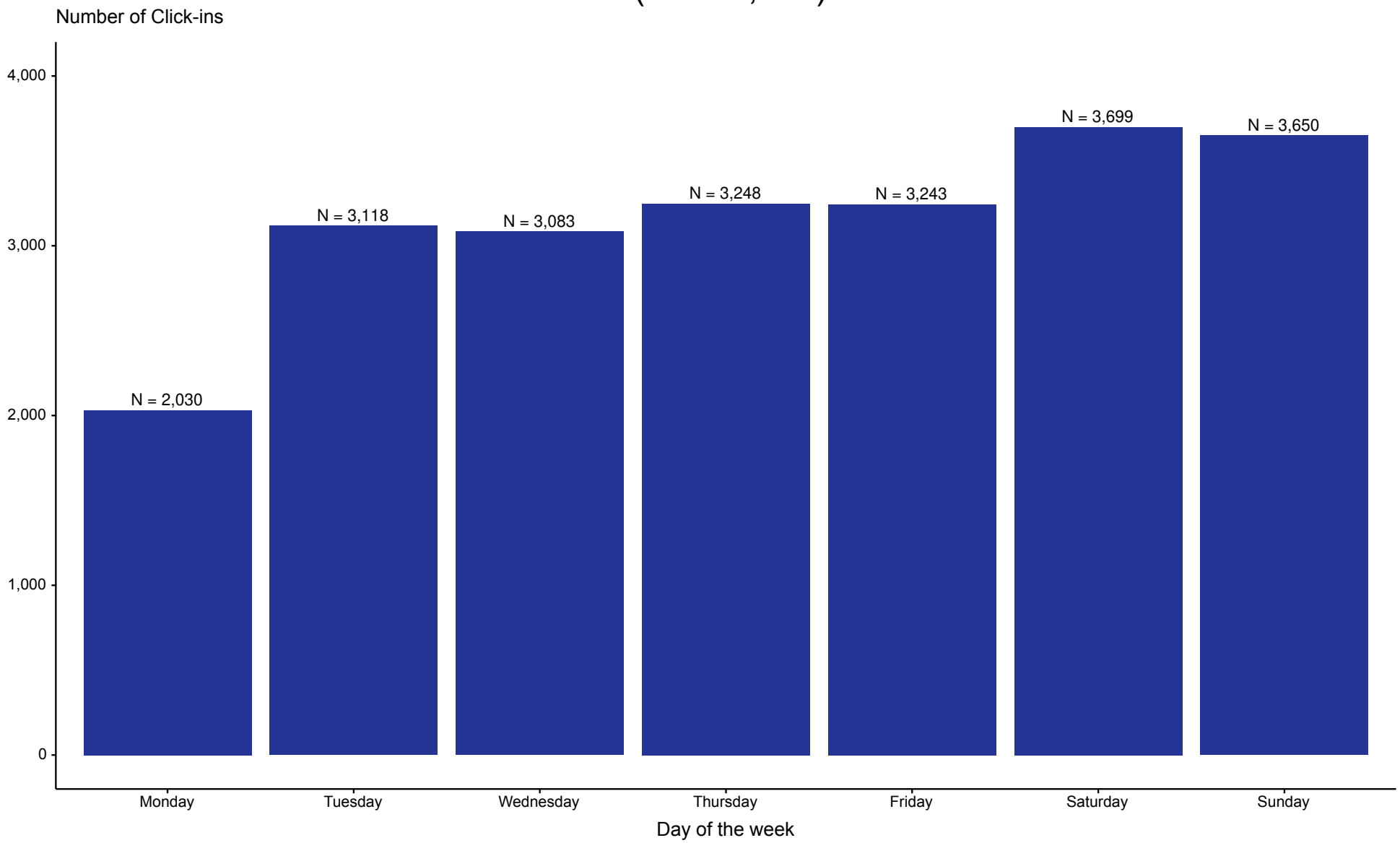
APPENDIX N

PUBLIC VERSION

Summary of Survey Responses

Distribution of Click-ins by Day of the Week

(N = 22,071)

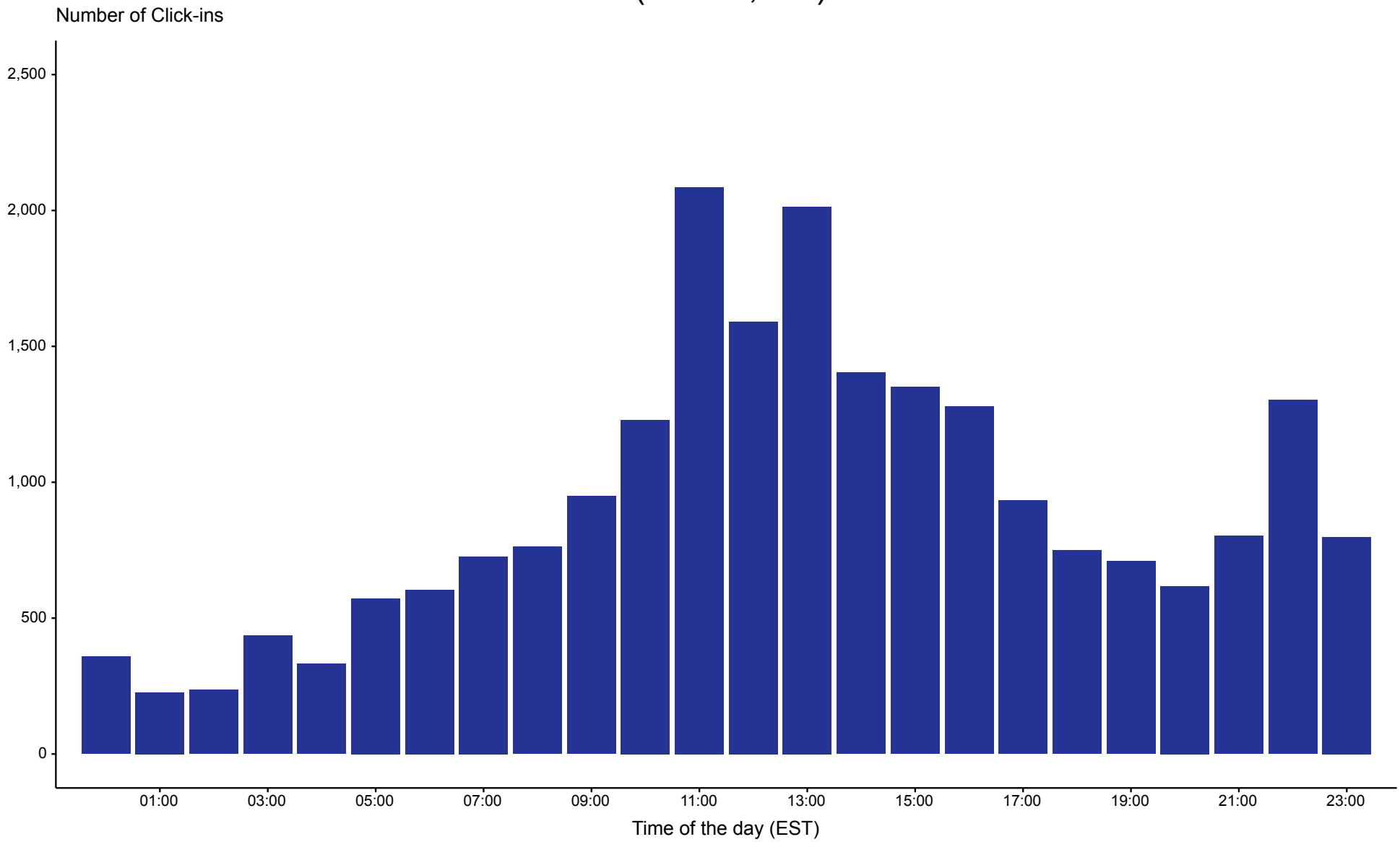


Source: Interactive Streaming Switching Survey

Summary of Survey Responses

Distribution of Click-ins by Time of the Day

(N = 22,071)



Source: Interactive Streaming Switching Survey

APPENDIX O

Survey Sample Disposition

		Number of Respondents	% of Total
[A]	Total Survey Click-ins	22,071	
[B]	Terminated during Screener[1]	20,772	
[C]=[A]-[B]	Total Survey Participants	1,299	100.0%
[D]	Self-Terminated during Survey	5	0.4%
[E]=[C]-[D]	Survey Completions[2]	1,294	99.6%
[F]	"Straight-line" Responses[3]	85	6.5%
[G]	Incoherent Open-Ended Responses[4]	4	0.3%
[H]=[E]-[F]-[G]	Qualified Completions[5]	1,205	92.8%

Source: Interactive Streaming Switching Survey Termination Report

Note:
[1] Respondents who voluntarily left the survey at QS1–QS16 or at logon, did not provide user information that matched values in the panel provider's database, or were terminated based on responses to QS1–QS16.
[2] Of the 22,071 screener participants, 1,294 respondents (5.9 percent) completed the survey.
[3] Respondents who selected the same answer for every option in Q1 ("Suppose that music on Spotify Premium is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now (including music on ad-supported Spotify). Which of the following music options, if any, would you consider using to replace listening to music on Spotify Premium?") or Q3 ("Suppose that music on ad-supported Spotify and Spotify Premium is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now. Which of the following music options, if any, would you consider using to replace listening to music on Spotify Premium?").
[4] Incoherent open-ended responses within the "Other" category of Q1 and Q3 included: "???," "Incididunt asperiore," "1," and "Hey sorry."
[5] *See* Section V.A.1 for an analysis of time taken to complete the survey. No respondents were dropped from the sample of qualified completions based on the time it took respondents to complete the survey.

APPENDIX P

Sources of Music Content

QS9

Media Options [1]	Interactive Streaming Switching Survey [3][4][5] (N = 10,664)		Edison Research [6]
	Count	Percentage	Share of Time Spent Listening to Music
Music Streaming Services	7,580	26.1%	21.0%
Video Sites (Youtube)	4,849	16.7%	15.0%
AM/FM Radio	6,857	23.7%	37.0%
Owned Music	3,357	11.6%	12.0%
SiriusXM	2,839	9.8%	9.0%
TV Music Channels	1,443	5.0%	5.0%
Others [2]	2,062	7.1%	1.0%

Source: Interactive Streaming Switching Survey; Edison Research, "Share of Ear - Americans' Share of Time Spent Listening to Audio Sources," Q2, 2021, p. 29.

Note:
[1] QS9: "You mentioned that you listened to music in the last seven days. In which of the following ways, if any, did you listen to music? (Select all that apply)".
[2] "Others" includes respondents who selected "I listened to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels)" and/or "Other" in QS9.
[3] Interactive Streaming Switching Survey is restricted to respondents 18 years old or older. Results shown are for all incoming respondents who answered QS9, which is only shown to respondents who selected "I listened to music (e.g., pop, country, rock)" in QS8 of the survey ("There is a variety of media content available for people to watch, listen to, or read. The next questions ask about your media habits. Thinking of the last seven days, which of the following types of activities did you engage in? (Select all that apply)").
[4] Results exclude respondents who selected "Don't know/Unsure" in QS9.
[5] These figures include 28,987 responses in QS9 of the Interactive Streaming Switching Survey from 10,664 respondents. On average, a respondent made 2.7 selections.
[6] The Edison Research study is limited to Americans 13 years old or older.

APPENDIX Q

Versions of Spotify for Which Respondents Have an Account

QS12

Response Options[1]	Remove Spotify Premium Hypothetical (N = 605)		Remove All Spotify Hypothetical (N = 600)		All Respondents (N = 1,205)	
	Count[2]	Percentage	Count[2]	Percentage	Count	Percentage
I have a paid subscription to Spotify Premium (including Duo, Family, Student subscription plans) that is not bundled with a subscription to another service	464	76.7%	438	73.0%	902	74.9%
I have a paid bundle subscription to Spotify Premium and another service (e.g., Hulu or Showtime)	101	16.7%	119	19.8%	220	18.3%
I have Spotify Premium as a free benefit from another service (e.g., some AT&T subscribers receive Spotify Premium for free)	40	6.6%	43	7.2%	83	6.9%

Source: Interactive Streaming Switching Survey

Note:
[1] QS12: "You mentioned that you listened to music on Spotify in the last seven days using your own Spotify account. Which version of Spotify do you have? (Select one only)"
[2] I performed a standard Pearson chi-squared test on the distribution of responses to QS12 between respondents shown the Remove Spotify Premium Hypothetical and those shown the Remove All Spotify Hypothetical. I found no statistically significant difference at the 5 percent level (p-value = 0.32).

APPENDIX R

Paid Subscriptions to Streaming Services Other Than Spotify to Which Respondents Subscribe

QS15

Response Options[1]	Remove Spotify Premium Hypothetical (N = 605)		Remove All Spotify Hypothetical (N = 600)	
	Count[2]	Percentage	Count[2]	Percentage
Amazon Music Prime (included with Amazon Prime membership)	189	31.2%	212	35.3%
Amazon Music Unlimited	70	11.6%	74	12.3%
Apple Music	136	22.5%	149	24.8%
Deezer Premium	18	3.0%	15	2.5%
iHeart Radio All Access	55	9.1%	49	8.2%
LiveXLive Premium	4	0.7%	9	1.5%
Napster Premier	2	0.3%	4	0.7%
Pandora Premium	87	14.4%	89	14.8%
SoundCloud Go+	36	6.0%	34	5.7%
Tidal	17	2.8%	12	2.0%
YouTube Music Premium	119	19.7%	130	21.7%
Other	3	0.5%	5	0.8%
Don't know/Unsure	2	0.3%	6	1.0%
None of the above	248	41.0%	223	37.2%

Source: Interactive Streaming Switching Survey

Note:
[1] QS15: "On which on-demand music streaming service(s) other than Spotify do you have your own account with a paid subscription (including as part of a group or family plan)? (Select all that apply)"
[2] I performed a first-order Rao-Scott chi-squared test on the distribution of responses to QS15 between respondents shown the Remove Spotify Premium Hypothetical and those shown the Remove All Spotify Hypothetical. I found no statistically significant difference at the 5 percent level (p-value = 0.64).

APPENDIX S

Music Options Which Respondents Would Consider Using

Remove Spotify Premium Hypothetical (N = 605)

Q1

Response Options [1][2]	Would consider	Would not consider	Don't know/ Unsure/ Not Applicable
A) Music on on-demand music streaming services to replace listening to music on Spotify Premium			
1. I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have. [3]	312 (51.6%)	28 (4.6%)	15 (2.5%)
2. I would listen to ad-supported Spotify, which I do not need to pay for.	366 (60.5%)	186 (30.7%)	53 (8.8%)
3. I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Apple Music at $9.99 per month or $119.88 per year).	361 (59.7%)	166 (27.4%)	78 (12.9%)
4. I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	376 (62.1%)	173 (28.6%)	56 (9.3%)
B) Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
5. I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	269 (44.5%)	220 (36.4%)	116 (19.2%)
6. I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	277 (45.8%)	254 (42%)	74 (12.2%)
7. I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	310 (51.2%)	237 (39.2%)	58 (9.6%)

Music Options Which Respondents Would Consider Using

Remove Spotify Premium Hypothetical (N = 605)

Q1

Response Options [1][2]	Would consider	Would not consider	Don't know/ Unsure/ Not Applicable
C) Music on video options to replace listening to music on Spotify Premium			
8. I would listen to music on online video site(s) (e.g., YouTube, Vevo).	464 (76.7%)	111 (18.3%)	30 (5%)
9. I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	265 (43.8%)	268 (44.3%)	72 (11.9%)
10. I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	266 (44%)	249 (41.2%)	90 (14.9%)
D) Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
11. I would listen to satellite radio through the paid subscription I already have (SiriusXM).	256 (42.3%)	227 (37.5%)	122 (20.2%)
12. I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	223 (36.9%)	289 (47.8%)	93 (15.4%)
E) Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
13. I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	392 (64.8%)	174 (28.8%)	39 (6.4%)

Music Options Which Respondents Would Consider Using

Remove Spotify Premium Hypothetical (N = 605)

Q1

Response Options [1][2]	Would consider	Would not consider	Don't know/ Unsure/ Not Applicable
F) Owned or purchased music to replace listening to music on Spotify Premium			
14. I would listen to digital music files, CDs, or vinyl records that I already own.	377 (62.3%)	163 (26.9%)	65 (10.7%)
15. I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	250 (41.3%)	264 (43.6%)	91 (15%)
G) Downloaded music to replace listening to music on Spotify Premium			
16. I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	214 (35.4%)	299 (49.4%)	92 (15.2%)
Other			
17. I would listen to less music and would do something else instead (e.g., watch TV, read a book).	220 (36.4%)	273 (45.1%)	112 (18.5%)
18. I would listen to the following music option to replace listening to music on Spotify Premium. [4]	60 (9.9%)	-	-

Source: Interactive Streaming Switching Survey

Note:
[1] Q1: "Suppose that music on Spotify Premium is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now (including music on ad-supported Spotify). Which of the following, if any, would you consider using to replace listening to music on Spotify Premium?"
[2] On average, respondents chose 8.7 music options that they "Would consider," 5.9 music options that they "Would not consider," and 2.1 music options as "Don't know/Unsure/Not applicable."
[3] 250 respondents did not see this option because they did not indicate in QS15 that they have a paid subscription to any on-demand music streaming services other than Spotify.
[4] The unique responses given by those who self-entered a music option were: "Already listed above", "Amazon music", "Amazon Music", "Amazon music prime", "Amazon Music Unlimited", "Amazon unlimited", "apple music", "Apple music", "Apple Music", "Apple Music/Pandora's", "AppleMusic", "Burnt cds", "don't know", "Don't know/Unsure/Not Applicable", "I thoroughly enjoy my ad-free on demand Spotify", "N/a", "Na", "None", "Not applicable.", "Not sure", "nothing", "Pandora", "Pandora- ad sponsored", "Pandora", " YouTube music", "Radio", "Soundcloud", "Spotify", "Tidal hifi", "Unsure", "Vinyl", "Would not consider", "XM", "You Tube Music", "youtube", "Youtube", "YouTube", "Youtube music", "YouTube Music", "YouTube music with ads".

Music Options to Which Respondents Would Actually Spend Time Listening

Remove Spotify Premium Hypothetical (N = 604) [1]

Q2

Response Options [2]	Count [3][4]	Percentage	95% Confidence Interval
A) Music on on-demand music streaming services to replace listening to music on Spotify Premium			
1. I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have. [5]	288	47.7%	[43.7%, 51.7%]
2. I would listen to ad-supported Spotify, which I do not need to pay for.	304	50.3%	[46.3%, 54.3%]
3. I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Apple Music at $9.99 per month or $119.88 per year).	289	47.8%	[43.9%, 51.8%]
4. I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	287	47.5%	[43.5%, 51.5%]
Total Respondents	**539**	**89.2%**	**[86.8%, 91.7%]**
B) Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
5. I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	174	28.8%	[25.2%, 32.4%]
6. I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	196	32.5%	[28.7%, 36.2%]
7. I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	218	36.1%	[32.3%, 39.9%]
Total Respondents	**340**	**56.3%**	**[52.3%, 60.3%]**

Music Options to Which Respondents Would Actually Spend Time Listening

Remove Spotify Premium Hypothetical (N = 604) [1]

Q2

Response Options [2]	Count [3][4]	Percentage	95% Confidence Interval
C) Music on video options to replace listening to music on Spotify Premium			
8. I would listen to music on online video site(s) (e.g., YouTube, Vevo).	409	67.7%	[64%, 71.5%]
9. I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	205	33.9%	[30.2%, 37.7%]
10. I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	185	30.6%	[26.9%, 34.3%]
Total Respondents	**463**	**76.7%**	**[73.3%, 80%]**
D) Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
11. I would listen to satellite radio through the paid subscription I already have (SiriusXM).	201	33.3%	[29.5%, 37%]
12. I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	161	26.7%	[23.1%, 30.2%]
Total Respondents	**270**	**44.7%**	**[40.7%, 48.7%]**
E) Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
13. I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	344	57%	[53%, 60.9%]
Total Respondents	**344**	**57%**	**[53%, 60.9%]**

Music Options to Which Respondents Would Actually Spend Time Listening

Remove Spotify Premium Hypothetical (N = 604) [1]

Q2

Response Options [2]	Count [3][4]	Percentage	95% Confidence Interval
F) Owned or purchased music to replace listening to music on Spotify Premium			
14. I would listen to digital music files, CDs, or vinyl records that I already own.	293	48.5%	[44.5%, 52.5%]
15. I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	191	31.6%	[27.9%, 35.3%]
Total Respondents	**348**	**57.6%**	**[53.7%, 61.6%]**
G) Downloaded music to replace listening to music on Spotify Premium			
16. I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	131	21.7%	[18.4%, 25%]
Total Respondents	**131**	**21.7%**	**[18.4%, 25%]**
Other			
17. I would listen to less music and would do something else instead (e.g., watch TV, read a book).	121	20%	[16.8%, 23.2%]
18. I would listen to the following music option to replace listening to music on Spotify Premium.	31	5.1%	[3.4%, 6.9%]
Total Respondents	**143**	**23.7%**	**[20.3%, 27.1%]**

Source: Interactive Streaming Switching Survey

Note:
[1] 1 respondent was not directed to this question because they did not select "Would consider" for any music option in Q1.
[2] Q2: "In the previous question, you mentioned that if music on Spotify Premium is no longer available you would consider using the following music options to replace listening to music on Spotify Premium. Please allocate 100 points across the following music options to indicate the percentage of time you would actually spend listening to each music option if music on Spotify Premium is no longer available."
[3] On average, respondents allocated points to 6.7 music options.
[4] In Q1, 18 respondents chose only one option that they "Would consider" and therefore were not directed to this question. They are included in this exhibit, assuming that they would allocate 100 points to that one option.
[5] 249 respondents did not see this option because they did not indicate in QS15 that they have paid subscriptions to any on-demand music streaming services other than Spotify.

Percent of Time Allocated to Music Options [1]

Remove Spotify Premium Hypothetical (N = 604) [2]

Q2

Response Options [3]	Percent of Time Allocated [4]	95% Confidence Interval [5]
A) Music on on-demand music streaming services to replace listening to music on Spotify Premium		
1. I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have. [6]	10.3%	[9%, 11.7%]
2. I would listen to ad-supported Spotify, which I do not need to pay for.	8%	[7%, 9%]
3. I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Apple Music at $9.99 per month or $119.88 per year).	11.7%	[10%, 13.3%]
4. I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	6.9%	[5.9%, 7.8%]
Total Percentage of Time	**36.9%**	**[35.6%, 38.2%]**
B) Music on not-on-demand music streaming services to replace listening to music on Spotify Premium		
5. I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	3.1%	[2.6%, 3.6%]
6. I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	4.7%	[3.7%, 5.6%]
7. I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	4%	[3.4%, 4.6%]
Total Percentage of Time	**11.8%**	**[11.1%, 12.5%]**

Percent of Time Allocated to Music Options [1]

Remove Spotify Premium Hypothetical (N = 604) [2]

Q2

Response Options [3]	Percent of Time Allocated [4]	95% Confidence Interval [5]
C) Music on video options to replace listening to music on Spotify Premium		
8. I would listen to music on online video site(s) (e.g., YouTube, Vevo).	12.3%	[11%, 13.7%]
9. I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	3.6%	[3%, 4.3%]
10. I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	2.7%	[2.3%, 3.2%]
Total Percentage of Time	**18.7%**	**[17.8%, 19.7%]**
D) Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium		
11. I would listen to satellite radio through the paid subscription I already have (SiriusXM).	5.2%	[4.2%, 6.2%]
12. I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	3.2%	[2.5%, 3.9%]
Total Percentage of Time	**8.5%**	**[7.6%, 9.3%]**
E) Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium		
13. I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	8.7%	[7.6%, 9.8%]
Total Percentage of Time	**8.7%**	**[7.6%, 9.8%]**

Percent of Time Allocated to Music Options [1]

Remove Spotify Premium Hypothetical (N = 604) [2]

Q2

Response Options [3]	Percent of Time Allocated [4]	95% Confidence Interval [5]
F) Owned or purchased music to replace listening to music on Spotify Premium		
14. I would listen to digital music files, CDs, or vinyl records that I already own.	5.7%	[4.8%, 6.5%]
15. I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	3.1%	[2.6%, 3.5%]
Total Percentage of Time	**8.7%**	**[8%, 9.4%]**
G) Downloaded music to replace listening to music on Spotify Premium		
16. I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	2.4%	[1.9%, 2.9%]
Total Percentage of Time	**2.4%**	**[1.9%, 2.9%]**
Other		
17. I would listen to less music and would do something else instead (e.g., watch TV, read a book).	3%	[2.2%, 3.8%]
18. I would listen to the following music option to replace listening to music on Spotify Premium.	1.3%	[0.5%, 2%]
Total Percentage of Time	**4.3%**	**[3.5%, 5%]**

Source: Interactive Streaming Switching Survey

Note:
[1] Percent of time allocated to a music option is calculated as the sum of all points allocated to that music option, divided by the total number of points allocated to all music options.
[2] 1 respondent was not directed to this question because they did not select "Would consider" for any music option in Q1.
[3] Q2 is asked for each respondent who selected "Would consider" to more than one music option in Q1. Q2: "In the previous question, you mentioned that if music on Spotify Premium is no longer available you would consider using the following music options to replace listening to music on Spotify Premium. Please allocate 100 points across the following music options to indicate the percentage of time you would actually spend listening to each music option if music on Spotify Premium is no longer available."
[4] In Q1, 18 respondents chose only one option that they "Would consider" and therefore were not directed to this question. They are included in this exhibit, assuming that they would allocate 100 points to that one option.
[5] The lower bound of the confidence interval is set to zero when the 95% symmetric confidence interval would otherwise include values smaller than zero.
[6] 249 respondents did not see this option because they did not indicate in QS15 that they have paid subscriptions to any on-demand music streaming services other than Spotify.

APPENDIX T

Music Options Which Respondents Would Consider Using

Remove All Spotify Hypothetical (N = 600)

Q3

Response Options [1][2]	Would consider	Would not consider	Don't know/ Unsure/ Not Applicable
A) Music on on-demand music streaming services to replace listening to music on Spotify Premium			
1. I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have. [3]	313 (52.2%)	35 (5.8%)	23 (3.8%)
3. I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Apple Music at $9.99 per month or $119.88 per year).	339 (56.5%)	191 (31.8%)	70 (11.7%)
4. I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	372 (62%)	175 (29.2%)	53 (8.8%)
B) Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
5. I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	271 (45.2%)	220 (36.7%)	109 (18.2%)
6. I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	297 (49.5%)	230 (38.3%)	73 (12.2%)
7. I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	303 (50.5%)	232 (38.7%)	65 (10.8%)

Music Options Which Respondents Would Consider Using

Remove All Spotify Hypothetical (N = 600)

Q3

Response Options [1][2]	Would consider	Would not consider	Don't know/ Unsure/ Not Applicable
C) Music on video options to replace listening to music on Spotify Premium			
8. I would listen to music on online video site(s) (e.g., YouTube, Vevo).	464 (77.3%)	103 (17.2%)	33 (5.5%)
9. I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	252 (42%)	283 (47.2%)	65 (10.8%)
10. I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	283 (47.2%)	225 (37.5%)	92 (15.3%)
D) Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
11. I would listen to satellite radio through the paid subscription I already have (SiriusXM).	266 (44.3%)	226 (37.7%)	108 (18%)
12. I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	204 (34%)	320 (53.3%)	76 (12.7%)
E) Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
13. I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	397 (66.2%)	162 (27%)	41 (6.8%)
F) Owned or purchased music to replace listening to music on Spotify Premium			
14. I would listen to digital music files, CDs, or vinyl records that I already own.	383 (63.8%)	158 (26.3%)	59 (9.8%)

Music Options Which Respondents Would Consider Using

Remove All Spotify Hypothetical (N = 600)

Q3

Response Options [1][2]	Would consider	Would not consider	Don't know/ Unsure/ Not Applicable
F) Owned or purchased music to replace listening to music on Spotify Premium			
15. I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	251 (41.8%)	285 (47.5%)	64 (10.7%)
G) Downloaded music to replace listening to music on Spotify Premium			
16. I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	206 (34.3%)	297 (49.5%)	97 (16.2%)
Other			
17. I would listen to less music and would do something else instead (e.g., watch TV, read a book).	238 (39.7%)	266 (44.3%)	96 (16%)
18. I would listen to the following music option to replace listening to music on Spotify Premium. [4]	52 (8.7%)	-	-

Source: Interactive Streaming Switching Survey

Note:
[1] Q3: "Suppose that music on Spotify Premium and ad-supported Spotify is no longer available and you no longer have to pay the Spotify subscription fee. Assume that music on all other services is available as it is now. Which of the following, if any, would you consider using to replace listening to music on Spotify Premium?"
[2] On average, respondents chose 8.2 music options that they "Would consider," 5.7 music options that they "Would not consider," and 1.9 music options as "Don't know/Unsure/Not applicable."
[3] 229 respondents did not see this option because they did not indicate in QS15 that they have a paid subscription to any on-demand music streaming services other than Spotify.
[4] The unique responses given by those who self-entered a music option were: "Ad supported Spotify", "AM radio", "amazon music", "Amazon Music Premium", "Amazon prime", "apple music", "Apple music", "Apple Music", "Apple Music or Tidal", "Apply music", "CD's", "Don't know", "Don't know unsure not applicable", "Don't Know unsure not applicable", "Don't know/unsure/not applicable", "Freegal", "Google music", "I would most likely have other people play their music when I am in a group setting and use CD's in the car.", "Live radio", "Music channel", "N/a", "N/A", "No", "None", "Not applicable", "Not Applicable", "nothing", "Pandora", "Pandora Plus", "pRIME", "simply make my own playlist from downloaded digital files", "Tidal", "Unsure", "Would consider", "Would Consider", "Would not condider", "Yahoo Music", "Youtube", "YouTube", "YouTube music", "YouTube premium".

Music Options to Which Respondents Would Actually Spend Time Listening

Remove All Spotify Hypothetical (N = 596) [1]

Q4

Response Options [2]	Count [3][4]	Percentage	95% Confidence Interval
A) Music on on-demand music streaming services to replace listening to music on Spotify Premium			
1. I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have. [5]	287	48.2%	[44.1%, 52.2%]
3. I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Apple Music at $9.99 per month or $119.88 per year).	265	44.5%	[40.5%, 48.5%]
4. I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	287	48.2%	[44.1%, 52.2%]
Total Respondents	**471**	**79%**	**[75.7%, 82.3%]**
B) Music on not-on-demand music streaming services to replace listening to music on Spotify Premium			
5. I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	186	31.2%	[27.5%, 34.9%]
6. I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	225	37.8%	[33.8%, 41.7%]
7. I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	220	36.9%	[33%, 40.8%]
Total Respondents	**362**	**60.7%**	**[56.8%, 64.7%]**

Music Options to Which Respondents Would Actually Spend Time Listening

Remove All Spotify Hypothetical (N = 596) [1]

Q4

Response Options [2]	Count [3][4]	Percentage	95% Confidence Interval
C) Music on video options to replace listening to music on Spotify Premium			
8. I would listen to music on online video site(s) (e.g., YouTube, Vevo).	401	67.3%	[63.5%, 71.1%]
9. I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	202	33.9%	[30.1%, 37.7%]
10. I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	214	35.9%	[32%, 39.8%]
Total Respondents	**442**	**74.2%**	**[70.6%, 77.7%]**
D) Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium			
11. I would listen to satellite radio through the paid subscription I already have (SiriusXM).	212	35.6%	[31.7%, 39.4%]
12. I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	146	24.5%	[21%, 28%]
Total Respondents	**267**	**44.8%**	**[40.8%, 48.8%]**
E) Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium			
13. I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	329	55.2%	[51.2%, 59.2%]
Total Respondents	**329**	**55.2%**	**[51.2%, 59.2%]**

Music Options to Which Respondents Would Actually Spend Time Listening

Remove All Spotify Hypothetical (N = 596) [1]

Q4

Response Options [2]	Count [3][4]	Percentage	95% Confidence Interval
F) Owned or purchased music to replace listening to music on Spotify Premium			
14. I would listen to digital music files, CDs, or vinyl records that I already own.	315	52.9%	[48.8%, 56.9%]
15. I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	189	31.7%	[28%, 35.5%]
Total Respondents	**356**	**59.7%**	**[55.8%, 63.7%]**
G) Downloaded music to replace listening to music on Spotify Premium			
16. I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	135	22.7%	[19.3%, 26%]
Total Respondents	**135**	**22.7%**	**[19.3%, 26%]**
Other			
17. I would listen to less music and would do something else instead (e.g., watch TV, read a book).	139	23.3%	[19.9%, 26.7%]
18. I would listen to the following music option to replace listening to music on Spotify Premium.	23	3.9%	[2.3%, 5.4%]
Total Respondents	**158**	**26.5%**	**[23%, 30.1%]**

Source: Interactive Streaming Switching Survey

Note:
[1] 4 respondents were not directed to this question because they did not select "Would consider" for any music option in Q3.
[2] Q4: "In the previous question, you mentioned that if music on ad-supported Spotify and Spotify Premium is no longer available you would consider using the following music options to replace listening to music on Spotify Premium. Please allocate 100 points across the following music options to indicate the percentage of time you would actually spend listening to each music option if music on ad-supported Spotify and Spotify Premium is no longer available."
[3] On average, respondents allocated points to 6.3 music options.
[4] In Q3, 11 respondents chose only one option that they "Would consider" and therefore were not directed to this question. They are included in this exhibit, assuming that they would allocate 100 points to that one option.
[5] 226 respondents did not see this option because they did not indicate in QS15 that they have paid subscriptions to any on-demand music streaming services other than Spotify.

Percent of Time Allocated to Music Options [1]

Remove All Spotify Hypothetical (N = 596) [2]

Q4

Response Options [3]	Percent of Time Allocated [4]	95% Confidence Interval [5]
A) Music on on-demand music streaming services to replace listening to music on Spotify Premium		
1. I would listen to on-demand music streaming service(s) through the paid subscription(s) I already have. [6]	10.9%	[9.5%, 12.3%]
3. I would purchase new paid subscription(s) to on-demand music streaming service(s) (other than Spotify) that I don't currently subscribe to (e.g., an individual subscription to Apple Music at $9.99 per month or $119.88 per year).	10.3%	[8.7%, 11.9%]
4. I would listen to on-demand music streaming service(s) (other than Spotify) that have ads and that I do not need to pay for (e.g., ad-supported YouTube Music, ad-supported SoundCloud).	7.5%	[6.5%, 8.6%]
Total Percentage of Time	**28.8%**	**[27.4%, 30.2%]**
B) Music on not-on-demand music streaming services to replace listening to music on Spotify Premium		
5. I would listen to not-on-demand music streaming service(s) through the paid subscription(s) I already have (e.g., Pandora Plus, LiveXLive Plus).	3.9%	[3.2%, 4.7%]
6. I would purchase new paid subscription(s) to not-on-demand music streaming service(s) that I don't currently subscribe to (e.g., an individual subscription to Pandora Plus at $4.99 per month or $59.88 per year).	6.7%	[5.5%, 7.8%]
7. I would listen to not-on-demand music streaming service(s) that have ads and that I do not need to pay for (e.g., ad-supported Pandora).	4.7%	[4%, 5.5%]
Total Percentage of Time	**15.3%**	**[14.4%, 16.3%]**

Percent of Time Allocated to Music Options [1]

Remove All Spotify Hypothetical (N = 596) [2]

Q4

Response Options [3]	Percent of Time Allocated [4]	95% Confidence Interval [5]
C) Music on video options to replace listening to music on Spotify Premium		
8. I would listen to music on online video site(s) (e.g., YouTube, Vevo).	11.7%	[10.3%, 13%]
9. I would listen to music on mobile short-form video platform(s) (e.g., TikTok, Instagram Reels).	3.4%	[2.9%, 3.9%]
10. I would listen to music channels through my existing cable or satellite television subscription (e.g., Music Choice).	3.6%	[3%, 4.1%]
Total Percentage of Time	**18.6%**	**[17.7%, 19.6%]**
D) Music on satellite radio (SiriusXM) on the radio or over the internet to replace listening to music on Spotify Premium		
11. I would listen to satellite radio through the paid subscription I already have (SiriusXM).	6.2%	[5.2%, 7.3%]
12. I would purchase a new paid subscription to satellite radio that I don't currently subscribe to (e.g., a SiriusXM subscription at $10.99 per month or $131.88 per year for ad-free music, $15.99 per month or $191.88 per year for ad-free music, news, traffic, weather, and other content).	2.8%	[2.3%, 3.3%]
Total Percentage of Time	**9%**	**[8.2%, 9.9%]**
E) Music on live AM/FM radio broadcasts to replace listening to music on Spotify Premium		
13. I would listen to live AM/FM radio broadcasts through a radio or over the internet (e.g., radio built into a car, live iHeart Radio, TuneIn).	8.9%	[7.8%, 10.1%]
Total Percentage of Time	**8.9%**	**[7.8%, 10.1%]**

Percent of Time Allocated to Music Options [1]

Remove All Spotify Hypothetical (N = 596) [2]

Q4

Response Options [3]	Percent of Time Allocated [4]	95% Confidence Interval [5]
F) Owned or purchased music to replace listening to music on Spotify Premium		
14. I would listen to digital music files, CDs, or vinyl records that I already own.	8.2%	[7.1%, 9.4%]
15. I would purchase and listen to digital music files, CDs, or vinyl records that I don't currently own (e.g., an individual song from iTunes for $0.99, a CD for $13.99, a vinyl record for $23.99).	3.4%	[2.9%, 4%]
Total Percentage of Time	**11.7%**	**[10.7%, 12.6%]**
G) Downloaded music to replace listening to music on Spotify Premium		
16. I would listen to music obtained through peer-to-peer file sharing or free download sites (e.g., The Pirate Bay, Free Music Archive, Musopen).	2.7%	[2%, 3.3%]
Total Percentage of Time	**2.7%**	**[2%, 3.3%]**
Other		
17. I would listen to less music and would do something else instead (e.g., watch TV, read a book).	3.9%	[2.9%, 4.8%]
18. I would listen to the following music option to replace listening to music on Spotify Premium.	1.1%	[0.5%, 1.8%]
Total Percentage of Time	**5%**	**[4.2%, 5.8%]**

Source: Interactive Streaming Switching Survey

Note:
[1] Percent of time allocated to a music option is calculated as the sum of all points allocated to that music option, divided by the total number of points allocated to all music options.
[2] 4 respondents were not directed to this question because they did not select "Would consider" for any music option in Q3.
[3] Q4 is asked for each respondent who selected "Would consider" to more than one music option in Q3. Q4: "In the previous question, you mentioned that if music on ad-supported Spotify and Spotify Premium is no longer available you would consider using the following music options to replace listening to music on Spotify Premium. Please allocate 100 points across the following music options to indicate the percentage of time you would actually spend listening to each music option if music on ad-supported Spotify and Spotify Premium is no longer available."
[4] In Q3, 11 respondents chose only one option that they "Would consider" and therefore were not directed to this question. They are included in this exhibit, assuming that they would allocate 100 points to that one option.
[5] The lower bound of the confidence interval is set to zero when the 95% symmetric confidence interval would otherwise include values smaller than zero.
[6] 226 respondents did not see this option because they did not indicate in QS15 that they have paid subscriptions to any on-demand music streaming services other than Spotify.

APPENDIX U

RESTRICTED – Subject to Protective Order in Docket No. 21-CRB-0001-PR(2023-2027)

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)	Docket No. 21-CRB-0001-PR (2023-2027)

DECLARATION OF JOHN R. HAUSER

I, John R. Hauser, declare under penalty of perjury that the statements contained in my Written Direct Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief. Executed this 13th day of October 2021 in Osterville, Massachusetts.

TAB C

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: **DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)**	**Docket No. 21-CRB-0001-PR (2023-2027)**

WRITTEN DIRECT TESTIMONY OF DAVID KAEFER
(On behalf of Spotify USA Inc.)

1. My name is David Kaefer. I am the Vice President and Global Head of Business Affairs at Spotify USA Inc. ("Spotify"). My statement below is submitted in support of Spotify's written direct case in the above-captioned proceeding.

2. First, I provide an overview of Spotify's products and offerings, including music and non-music content. Second, I discuss Spotify's songwriter initiatives and longstanding efforts to promote artists and songwriters. Third, I explain that, despite Spotify's meaningful efforts to support and promote songwriters, [redacted]. Finally, I discuss

several key proposed modifications to the regulatory terms in connection with the section 115 compulsory license based on Spotify's experience in the marketplace.

I. BACKGROUND AND QUALIFICATIONS

3. I have served as Vice President and Global Head of Business Affairs at Spotify since August 2018. In this role, I oversee nearly 70 employees and am responsible for content licensing negotiations with publishers, performing rights organizations, and record companies and distributors. I also manage publisher relations from an operational perspective, and, previously during my time at Spotify, have overseen songwriter relations, including Spotify's promotional and marketing initiatives across the platform to promote songwriters and their songs, expand songwriters' audience base, and ultimately enhance rightsholders' commercial opportunities.

4. Before joining Spotify, I held several roles at Microsoft, where I worked for over 19 years, with 14 of those years focused on structuring intellectual property licensing partnerships across the software and hardware industry. During my time at Microsoft, I most recently served as the General Manager of Business Development (January 2015 – February 2018) for the Microsoft Windows, Devices & Research divisions (including licensing for consumer music, video, and e-book services). My prior positions also included General Manager of Strategic Relations (2013 – 2014) and General Manager of Intellectual Property Licensing (responsible for all patent licensing) (2003 – 2013), as well as roles in Government Affairs (2000 – 2002) and Corporate Market Research (1998 – 2000). I graduated with a BA in Economics and Government from the University of Virginia in 1995.

II. OVERVIEW OF SPOTIFY'S BUSINESS MODEL, PRODUCTS, AND SERVICE OFFERINGS

5. Spotify is the world's most popular audio streaming platform, offering over 70 million tracks to Spotify users across 178 markets. Since its U.S. launch in the summer of 2011,

Spotify has grown substantially. By the end of 2020, Spotify touted 345 million monthly active users ("MAU") worldwide across all tiers of service.[1] This number increased to 365 million MAU by the end of June 2021, approximately [redacted] of which are in the U.S.[2] Meanwhile, Spotify's paid subscribers have also increased significantly, totaling 155 million subscribers globally by the end of 2020.[3] As of June 2021, that number had grown to 165 million subscribers globally,[4] of which approximately [redacted] subscribers ([redacted]) were in the U.S.[5]

6. Key to Spotify's success is its increasingly sophisticated data collection and analytics, which allow it to act as much more than just a "pipe" for content supplied by others. This technology is what enables Spotify to create innovative playlists, like Daily Mix, that are tailored to a users' music preferences, or others that help listeners discover new music, like the Fresh Finds suite of playlists.[6] It is also what enables us to recommend tracks that individual Spotify users might want to add to personal playlists and listen to at the right time. Our innovative data collection and analytics, coupled with thoughtful curation, allow us to develop and release new products that draw and retain users. And—consistent with Spotify's commitment to giving a million creative artists the opportunity to live off their art—it is how we provide creators with new opportunities to be discovered and data analytics that can help them succeed within the industry.[7]

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[1] Spotify Ex. 39, Spotify Technology S.A., Annual Report (Form 20-F) (Feb. 5, 2021) at 36.
[2] Company Info, SPOTIFY, https://newsroom.spotify.com/company-info/ (last visited Oct. 13, 2021).
[3] Spotify Ex. 39, Spotify Technology S.A., Annual Report (Form 20-F) (Feb. 5, 2021) at 36
[4] Company Info, SPOTIFY, https://newsroom.spotify.com/company-info/ (last visited Oct. 13, 2021).
[5] Spotify Ex. 22 (SPOT_P4_000001242), [redacted]
[6] *See* Maura Johnston, *Behind the Playlists: Fresh Finds*, Spotify For Artists (Sept. 20, 2020), https://artists.spotify.com/blog/behind-the-playlists-fresh-finds; *see also, e.g.*, Made for You, SPOTIFY https://explore.spotify.com/us/pages/made-for-you# (last visited Oct. 13, 2021).
[7] Company Info, SPOTIFY, https://newsroom.spotify.com/company-info/ (last visited Oct. 13, 2021).

7. Spotify—and streaming generally—have fundamentally changed the music industry. Streaming has lowered barriers to entry for creators, democratized access to audio for all listeners, and singlehandedly fueled the rebirth of the music industry. Ten years ago, at the height of piracy, the question was whether the music industry would survive.[8] Because of Spotify (and other streaming services), today the industry is focused on how *growing* revenues should be distributed.[9] Indeed, music revenues have returned to double-digit growth (27%), even on the heels of a global pandemic.[10] That growth was largely due to streaming royalties, which now account for 84% of sound recording revenues.[11]

8. [redacted]

[8] Spotify Ex. 26, Andrew Nusca, *Spotify Saved The Music Industry. Now What?*, FORTUNE (Oct. 21, 2019).
[9] Spotify Ex. 41, [redacted]; *see also* Spotify Ex. 74, Anna Nicolau, *Wall Street Weighs In On What Music Is Really Worth*, FINANCIAL TIMES (Sept. 23, 2021).
[10] Spotify Ex. 43, Dan Rys, *U.S. Recorded Music Revenues Return to Double-Digit Growth: RIAA Mid-Year Report*, BILLBOARD (Sept. 14, 2021), https://static.billboard.com/files/2021/09/september-13-2021-billboard-bulletin-1631570706.pdf.
[11] *Id.*

[redacted].

A. Spotify's Products and Service Offerings

9. Generally speaking, Spotify currently offers two types of music streaming products in the U.S.: a free-to-user ad-supported service ("Free Service"), and a paid subscription service that is typically priced to consumers at $9.99 per month ("Subscription Service" or "Premium Service"). I'll refer to them together as the "Spotify Service." In connection with the Premium Service, Spotify offers several offerings that are discounted on a per-user basis. These include Student Plans, typically priced at $4.99 per month, as well as Family Plans, priced at $15.99 per month. Spotify also recently launched a "Duo" subscription plan, which allows couples under one roof to subscribe together at a price of $12.99 per month. Additionally, Spotify also offers its Premium Service alongside or bundled with other entertainment products and services, such as in the Spotify Student Plan bundled with Hulu and Showtime. This bundled offering is available to eligible students at a price of $4.99 per month.[12]

10. [redacted]

[12] *See, e.g.,* Student, SPOTIFY, https://www.spotify.com/us/student/ (last visited Oct. 13, 2021).

11. To date, Spotify has operated the Spotify Service under a "Freemium" model. This model is an important part of Spotify's success and is fundamental to the continued growth of Spotify's revenue, MAU base, and paying Premium subscriber base. Since its founding, Spotify's mission has been to create an attractive licensed alternative to piracy that compensates music rightsholders, benefitting the music industry as a whole. [redacted]

12. [redacted].[13] The Free Service enables the acquisition of users who historically have had lower willingness (or no willingness at all) to pay and who may have previously been using alternative forms of music listening that paid nothing to rightsholders (i.e., piracy).[14]

13. [redacted],

[13] Spotify Ex. 30, [redacted]; *see also* Spotify Ex. 25, [redacted] at 20.

[14] Kristin Robinson, *15 Years of Spotify*: How the Streaming Giant Has Changed and Reinvented the Music Industry, VARIETY (2021), https://variety.com/2021/music/news/spotify-turns-15-how-the-streaming-giant-has-changed-and-reinvented-the-music-industry-1234948299/.

[15] Spotify Ex. 30, [redacted].

14.

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15.

[16] Spotify Ex. 40, at 2.
[17] *Id*. at 2-3; *see also* Spotify Ex. 23, at 2 (“ .”).
[18] Spotify Ex. 27, at 10.
[19] Spotify Ex. 29,
[20] *See* Spotify Ex. 33 (SPOT_P4_000001228), ; *see also* Spotify Ex. 32 (SPOT_P4_000001241), .

16. ***Discounted plans.*** As described above, Spotify makes available three Premium Service offerings other than the original, single-account individual Premium Plan—all of which have differentiated features to meet varying user needs. Each is designed to target a specific demographic in hopes of maximizing subscriber and revenue growth by capturing users with a lower willingness to pay for the Premium Service.

17. Spotify's Family Plan first launched in 2014 at a price of $14.99. It was upgraded in 2016. The current Family Plan offered in the U.S. allows for up to six Premium accounts for family members under one roof at $15.99 a month.[21] The plan targets families with young children or teens and includes family-oriented features, such as "Family Mix," a playlist for the whole family, curating everyone's listening choices, a Spotify Kids app, and parental controls for restricting explicit music.

[21] Premium Family, SPOTIFY, https://www.spotify.com/us/family/ (last visited Oct. 13, 2021).

[redacted].[22]

18. In 2020, Spotify introduced a first-of-its-kind subscription discount plan called Duo, which includes two Premium accounts for $12.99 per month for two individuals living in the same household.[23] [redacted]

[22] Spotify Ex. 35, [redacted]
[23] New Spotify Premium Duo Subscription Launches in 55 Markets, SPOTIFY (July 1, 2020), https://newsroom.spotify.com/2020-07-01/new-spotify-premium-duo-subscription-plan-launches-in-55-markets/; *see also* [redacted] at 4 ([redacted]).
[24] *See* Spotify Ex. 24, [redacted] at 3-4 (noting that [redacted].
[25] *Id*. at 2, 6.
[26] *Id*. at 5-7.
[27] *Id*. at 6.

19. In addition to Spotify's Family Plan and Duo Plans, Spotify's Student Plan has proven extraordinarily successful at capturing a particular segment of lower willingness-to-pay consumers: students.[28] In the U.S., the Student Plan, priced at $4.99 a month, [redacted]

20. ***Trial Offerings.*** Similar to discounted plans, Spotify is continually experimenting with various structures for trial offerings, in an effort to encourage more people to try Spotify and subscribe to the Premium Service. [redacted]

[28] Spotify Ex. 39, Spotify Technology S.A., Annual Report (Form 20-F) (Feb. 5, 2021) at 45 (noting that discount plans like the Student Plan "ha[ve] helped improve retention across the Premium Service").
[29] Spotify Ex. 35, [redacted]
[30] *See* Spotify Ex. 45, [redacted], at 2.

B. Spotify's Non-Music Content and the Rise of Podcasts

21. At the time both the *Phonorecords II* and initial *Phonorecords III* rates were established, Spotify was largely a pure music service. This is because Spotify has made a greater push to diversify its offerings beyond music. In addition to Spotify's music library, Spotify offers non-music content and social experiences for its users. This segment of the business is expanding and includes, for example: Spotify's original and exclusive podcasts, Spotify's morning show *The Get Up*, and Spotify Greenroom—a social audio app that lets users host and participate in live discussions about music, sports, and culture.

22. In line with our goal of becoming the world's number one audio streaming platform, Spotify has made substantial investments in podcasting through a series of acquisitions and exclusive podcast license deals. Over the last two years, on building a podcasting business, including by acquiring reputable podcast networks Gimlet, The Ringer, and Parcast, as well as Anchor—a podcast creation and distribution app. Spotify rounded out its podcast portfolio by purchasing Megaphone,[32] a leading podcast advertising and publishing platform, and most recently Podz, a podcast discovery platform.

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[31] *See* Spotify Ex. 28, .

[32] Press Release, Spotify Announces Strategic Acquisition of Podcast Technology Leader, Megaphone (Nov. 10, 2020), https://investors.spotify.com/financials/press-release-details/2020/Spotify-Announces-Strategic-Acquisition-of-Podcast-Technology-Leader-Megaphone/default.aspx.

23. As of July 2021, Spotify had 2.9 million podcasts on the platform,[33] including several notable exclusive deals, such as *The Joe Rogan Experience*, *Call Her Daddy*, and *The Bill Simmons Podcast*, as well as Spotify Original podcasts, such as *How to Save a Planet* and *The Renegades: Born in the USA*. These podcasts have unlocked a new class of content that serves as a key differentiator for the business. The consumption statistics bear that out: 25% of our total MAUs engaged with podcast content during Q4 of 2020, with consumption hours nearly doubling since Q4 of 2019.[34] These positive trends have continued through 2021 as overall consumption of podcast hours on Spotify has reached an all-time high.[35]

III. SPOTIFY'S MISSION AND EFFORTS TO SUPPORT AND PROMOTE SONGWRITERS

24. As the world's most popular audio streaming service, Spotify's mission is to unlock the potential of human creativity—by giving a million creative artists the opportunity to live off their art and billions of fans the opportunity to enjoy and be inspired by it. For that reason, in addition to the royalties Spotify pays to rightsholders, Spotify has made considerable investments in promoting creators, including both songwriters and performing artists. Consistent with these objectives, Spotify strives to be a strong commercial and creative partner to songwriters and the publishers that represent them. Although Spotify has a wide range of creator initiatives, I will focus on (1) Spotify's promotion and discovery initiatives through playlisting; (2) songwriter-specific promotional initiatives designed to generate music discovery and exposure for songwriters (e.g., Songwriters Hub, Songwriter Pages, Song Credits, Songwriter Camps and Studios); and (3) the valuable and up-to-date listenership and demographic data Spotify makes available to

[33] Spotify Ex. 37, Spotify Technology S.A., Letter to Shareholders (July 28, 2021) at 6 ("July 28, 2021 Spotify Shareholder Letter").
[34] Spotify Ex. 38, Spotify Technology S.A., Letter to Shareholders (Feb. 3, 2021), at 5.
[35] Spotify Ex. 37, July 28, 2021 Spotify Shareholder Letter at 6.

publishers. These investments provide enhanced revenue potential for direct on-platform benefits, as well as indirect off-platform benefits, to songwriters and publishers.

A. Spotify's Promotion and Music Discovery Initiatives

25. As a general matter, Spotify promotes creators—songwriters and performing artists alike—through its popular playlists. Music discovery on Spotify generally occurs through one of three main forms of playlisting: (1) Spotify-curated playlists, (2) algorithmic playlists, and (3) user-created playlists. Spotify also has flagship "re-discovery" initiatives that give users individually-tailored experiences that help users re-discover songs they used to listen to.

26. Spotify provides users with playlists curated by the Editorial team that are generated based on specific listening situations (e.g., by genre, activity or mood) such as "RapCaviar" (14.1 million followers as of October 2021),[36] "Rock This" (4.5 million followers as of October 2021),[37] "Today's Top Hits" (29 million followers as of October 2021),[38] and "Hot Country" (6.5 million followers as of October 2021).[39] Spotify also uses a blend of editorial and algorithmic playlisting (referred to as "algotorial"), where algorithms assist human curators in creating playlists for users. A prominent example of this is Spotify's Fresh Finds feature, launched in 2016, which helps users find emerging creators (while also helping creators build a fan base).

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[36] Spotify Ex. 34, RapCaviar Playlist, SPOTIFY, https://open.spotify.com/playlist/37i9dQZF1DX0XUsuxWHRQd, (last visited Oct. 13, 2021).

[37] Spotify Ex. 36, Rock This Playlist, SPOTIFY, https://open.spotify.com/playlist/37i9dQZF1DXcF6B6QPhFDv (last visited Oct. 13, 2021).

[38] Spotify Ex. 42, Today's Top Hits Playlist, SPOTIFY, https://open.spotify.com/playlist/37i9dQZF1DXcBWIGoYBM5M?si=97f306a8a6124d88&_branch_match_id=715742138629071561&utm_medium=marketing&nd=1 (last visited Oct. 13, 2021); *see also* Spotify Talks Today's Top Hits Playlist Amid Visual Rebrand, Musically (June 24, 2021), https://musically.com/2021/06/24/spotify-talks-todays-top-hits-playlist-amid-visual-rebrand/.

[39] Spotify Ex. 31, Hot Country Playlist, SPOTIFY, https://open.spotify.com/playlist/37i9dQZF1DX1lVhptIYRda (last visited Oct. 13, 2021); Spotify's Hot Country Playlist Turns Five and Hits Over 5 Billion Streams, SPOTIFY (Nov. 24, 2020), https://newsroom.spotify.com/2020-11-24/spotifys-hot-country-playlist-turns-five-and-hits-over-5-billion-streams/.

The tool uses algorithms to identify "tastemakers" among users by matching their streaming to songs highlighted in blogs, reviews and elsewhere online. The algorithms identify the songs generating the most discussion and intrigue among tastemakers before sending these results to Spotify's Editorial team, who then collate the songs into organized playlists.[40]

27. Spotify also invests in audience-understanding technology to algorithmically generate playlists that are often personalized to an individual user. These playlists allow users to discover new music and re-discover old favorites, and include:

a. **Discover Weekly**: Discover Weekly launched in 2015 and is delivered to users each week as a unique 30-song Spotify playlist.[41] The curated playlist is personalized the more a user engages with it, and can be further personalized based on what a user follows, "hearts," or listens to elsewhere on the platform. From 2015-2020, Spotify users have spent over 2.3 billion hours, or 266,500 years, listening to "Discover Weekly" alone.[42]

b. **Daily Mix**: Daily Mix launched in 2016. This tool uses machine learning and data clustering to deliver personalized content based on a user's listening preferences and activity. Such content is grouped together and sent to the user in 6 packaged playlists every day, grouping similar content together.[43] Daily Mix is a blend of both familiar and new content for the user.[44]

c. **Release Radar**: Also launched in 2016, Release Radar is a personalized playlist of 30 songs that is delivered every Friday in the form of a weekly roundup of new

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[40] *See, e.g.,* Maura Johnston, *Behind the Playlists: Fresh Finds*, SPOTIFY FOR ARTISTS (Sept. 29, 2020), https://artists.spotify.com/blog/behind-the-playlists-fresh-finds.

[41] Five Ways to Make Your Discover Weekly Playlists Even More Personalized, SPOTIFY (May 2, 2019), https://newsroom.spotify.com/2019-05-02/five-ways-to-make-your-discover-weekly-playlists-even-more-personalized/.

[42] Spotify Users Have Spent Over 2.3 Billion Hours Streaming Discover Weekly Playlists Since 2015, SPOTIFY (July 9, 2020), https://newsroom.spotify.com/2020-07-09/spotify-users-have-spent-over-2-3-billion-hours-streaming-discover-weekly-playlists-since-2015/; *see also* Spotify Ex. 23, [redacted] at 20 ([redacted]).

[43] How Your Daily Mix Just Gets You, SPOTIFY (May 18, 2018), https://newsroom.spotify.com/2018-05-18/how-your-daily-mix-just-gets-you/.

[44] *See id.*

music. Release Radar is one of the top three personalized playlists on Spotify, with 18- to 29-year-olds constituting more than 50% of the playlist's audience.[45]

d. **On Repeat and Repeat Rewind**: Both On Repeat and Repeat Rewind were launched in 2019 and are designed to redeliver a user's most-played songs. While On Repeat creates a personalized playlist from the tracks a user has been playing most over the last 30 days, Repeat Rewind goes back further, helping a user rediscover songs he or she used to play in the past.[46]

28. Spotify's user-generated (or listener) playlists are yet another form of playlisting on the Spotify service that promotes creators, resulting in potential long-term audience growth. As the name suggests, user-generated playlists are created and maintained by Spotify users. They can be accessed by the specific user or by other Spotify users if the playlist is marked "public," as opposed to "private." These playlists can sometimes attract a significant following, resulting in substantial streams, and royalties, for an emerging creator. User-generated playlists can also be connected with algorithmic playlists, allowing a user to add a track to their own playlist and providing valuable data to Spotify about the type of music the particular user likes. That data can then be used by Spotify to recommend the creator's track to other users with similar listening habits and preferences, expanding the creator's audience base. Spotify's data and ability to provide such song recommendations—which users may then add to their personal playlists—is an additional form of music discovery and artist promotion.

29. There is no question that Spotify's playlists generate music discovery and significant exposure for creators. Our playlists drive 16 billion artist discoveries each month,

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[45] Spotify's Release Radar Personalized Playlist Celebrates Five Years and 16 Billion Streams, SPOTIFY (Sept. 8, 2021), https://newsroom.spotify.com/2021-09-08/spotifys-release-radar-personalized-playlist-celebrates-five-years-and-16-billion-streams/.

[46] Introducing Two New Personalized Playlists: On Repeat and Repeat Rewind, SPOTIFY (Sept. 24, 2019), https://newsroom.spotify.com/2019-09-24/introducing-two-new-personalized-playlists-on-repeat-and-repeat-rewind/.

helping fans discover creators that they have never heard before.[47] Just last year, 76,000 artists were playlisted for the first time.[48] These discoveries lead to increased opportunities for songwriters, connecting them with new fans and audiences.

B. Spotify's Songwriter-Specific Promotional Initiatives

30. [redacted] In recent years, Spotify has worked to increase both on- and off-platform promotional opportunities for songwriters and publishers. Spotify's flagship "Noteable" brand for songwriters, producers, and publishers launched in February 2021 as a home and central place for publishing tools, opportunities, and resources.[49] The tools discussed in more detail below unlock opportunities for publishers and songwriters, expanding their reach and platform.

31. ***Songwriters Hub.*** Spotify has innovated its curated playlists and playlist-related features to further bridge the gap between songwriters and fans. For instance, in December 2020, Spotify launched the Songwriters Hub, which provides Spotify users with opportunities to specifically discover songwriter content. Spotify users can listen to podcasts about songwriting,

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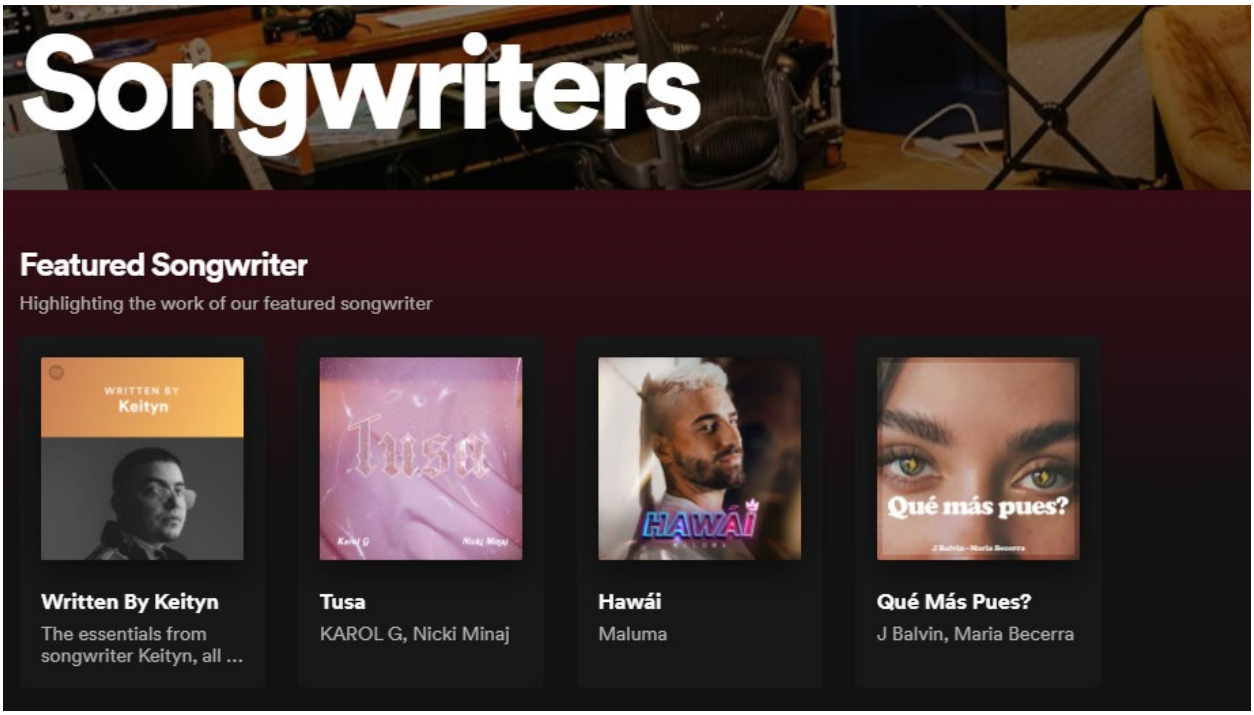
[47] Amplifying Artist Input in Your Personalized Recommendations, SPOTIFY (Nov. 2, 2020), https://newsroom.spotify.com/2020-11-02/amplifying-artist-input-in-your-personalized-recommendations/.

[48] Recapping the Year at Spotify for Artists, SPOTIFY (Dec. 10, 2020), https://artists.spotify.com/blog/2020-recapping-the-year-at-spotify-for-artists; Stream On, SPOTIFY, https://newsroom.spotify.com/stream-on/.

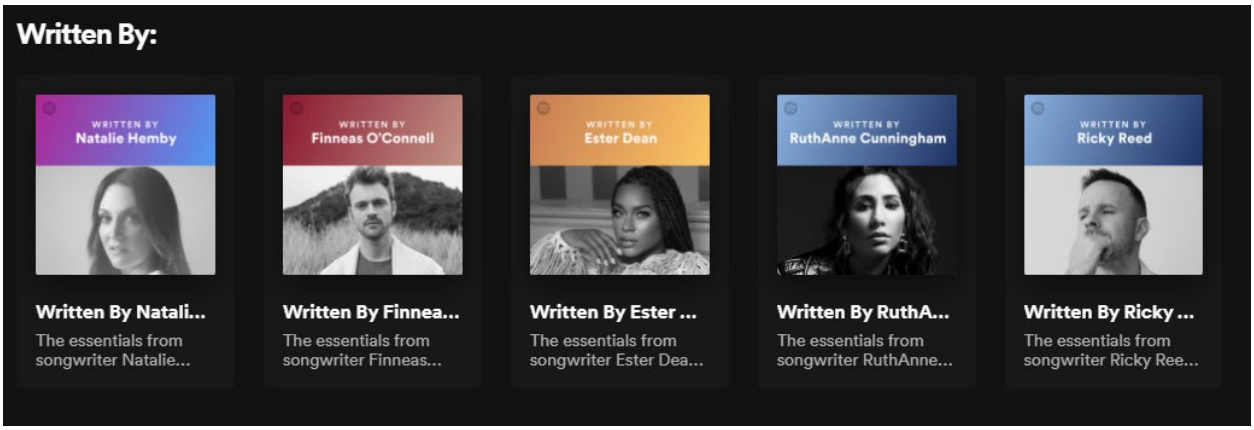
[49] Notable, SPOTIFY, https://noteable.spotify.com/ (last visited Oct. 13, 2021). The Instagram channel offers opportunities such as weekly video liners highlighting songwriters behind that week's releases and Writer's Pad, a chance to share a songwriter's work and studio via video with fans and the music industry.

visit hundreds of dedicated songwriter pages, stream songwriter-centric playlists, and find music released by featured songwriters.[50] Spotify rotates established and emerging creators when it features songwriters on the landing page, thus broadening the reach of both new and veteran songwriters.



32. As one example, the Songwriters Hub also spotlights "Written By" playlists, which collect and display works by a single songwriter. These are particularly helpful in building devoted fan bases for songwriters who may not be the face of a particular recording of their works and who may otherwise be unknown to users who associate songs with certain performing artists. By isolating the works of these songwriters, "Written By" playlists provide the songwriter with valuable exposure and allow fans to connect not only with the artists who perform the recording but also the songwriters responsible for writing the music.

[50] Introducing the Songwriters Hub on Spotify, SPOTIFY (Dec. 17, 2020), https://artists.spotify.com/blog/songwriters-hub-on-spotify.

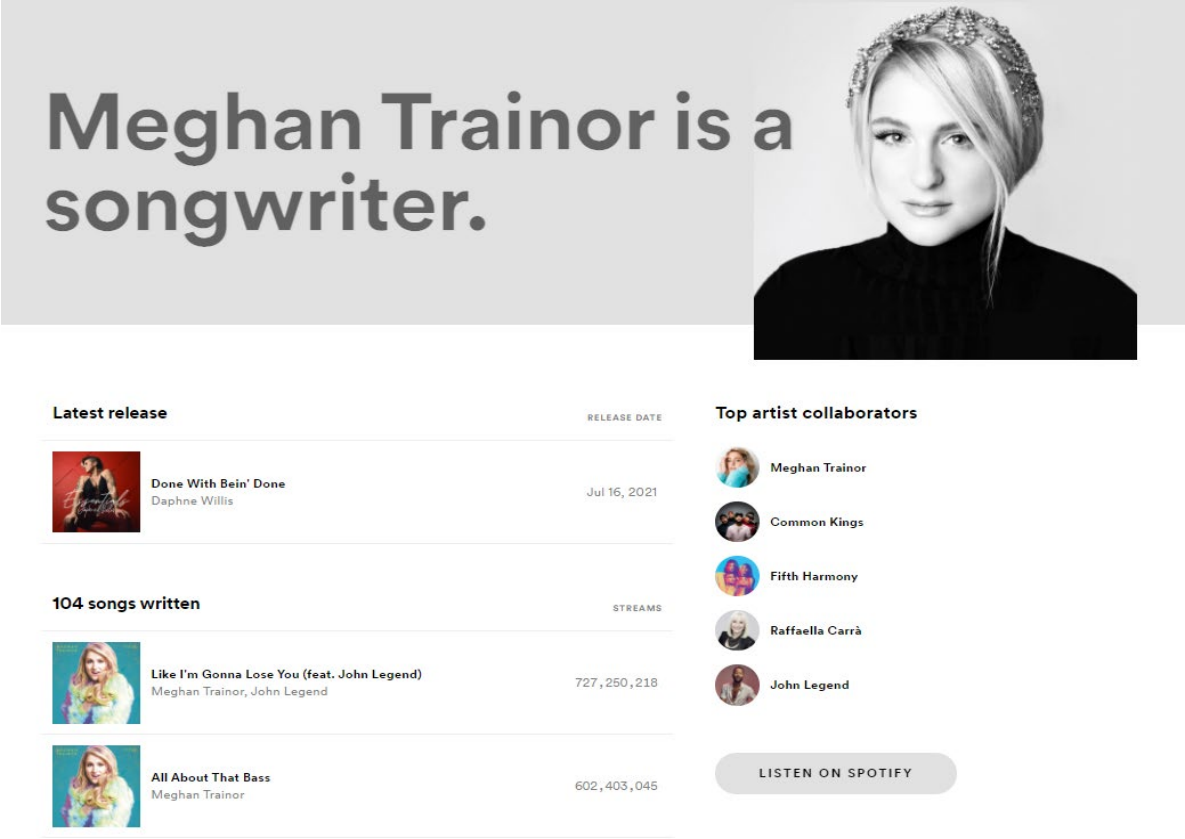


33. Spotify's Songwriter & Publishing Relations team highlights songwriters across different shelves in the Songwriters Hub on either a weekly or monthly cadence depending on the promotional opportunity.[51] [redacted]

[51] *E.g.,* Weekly "Noteable Releases" are supported with social posts and by a dedicated playlist. Kristin Robinson, *Spotify Launches Weekly 'Noteable Releases' Playlist as a Songwriter's New Music Friday,"* BILLBOARD (July 30, 2021), https://www.billboard.com/articles/business/streaming/9608186/spotify-noteable-releases-playlist-songwriters/.

[52] Other featured songwriters saw similar stream increases in connection with "Written By" Playlist features, [redacted]

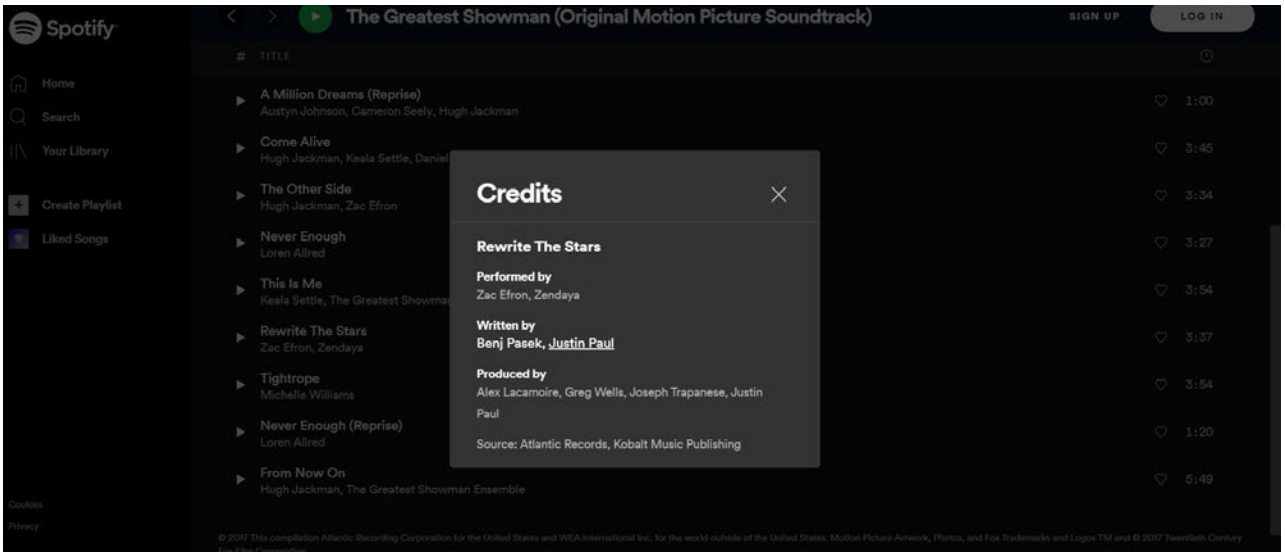
34. ***Songwriter Pages.*** Spotify has also rolled out a beta version of Songwriter Pages—individualized webpages on the Spotify platform that act as profiles for individual songwriters. Meghan Trainor had one of the first Songwriter Pages, which shows her latest release, top artist collaborators, and songs. Songwriter Pages provide another opportunity for songwriter promotion by listing out *every* published song written by the artist, facilitating discovery of the songwriter's entire catalog. Creators can also share links to their Songwriter Pages on social media or on their websites so that even non-Spotify users can view their music.[53]



35. ***Song Credits.*** Spotify also displays songwriter credits—known as Song Credits—on its platform, allowing listeners to click on certain songs and access information about the

[53] A New Way to Share Songs You've Written on Spotify, SPOTIFY (Feb. 12, 2020), https://artists.spotify.com/blog/songwriter-pages.

creators that performed, wrote the underlying music, and produced that recording. While the idea of including credits is nothing new to the music industry, Spotify has compounded the value of songwriter credits by linking from the Song Credits page to the songwriter's Songwriter Page. A user enjoying a song can simply click on a songwriter's name and discover more of that songwriter's music, including recordings by different performing artists.



36. For example, a listener who had searched for the soundtrack for the motion picture *The Greatest Showman*, could be listening to a song from the movie—e.g., "Rewrite the Stars" as performed by Zac Efron and Zendaya. The listener could then click into the Song Credits menu and see that Benj Pasek and Justin Paul co-wrote the song. After clicking on Justin Paul's name, for example, the listener would be taken to his Songwriter Page, which would expose that listener to 76 songs Justin Paul has written and published. This could drive traffic to these songs, increasing not only the revenue gained from an increased number of streams on Spotify, but also Justin Paul's popularity more generally such that, for example, his music could be more easily placed for synchronization purposes, or more artists would hire him to write music for them.

37. With even more detailed information from our publishing partners related to songwriter credits, Spotify can introduce new audiences to the talented songwriters behind the sound recordings.

38. ***Songwriting Camps and Spotify Studios.*** In non-COVID times, Spotify also facilitates songwriter collaboration by providing a physical space for songwriters to get together and create new musical works. For example, Spotify hosts songwriting camps for creators, often centered around Spotify-centric playlists, genres, or specific projects. Spotify's songwriting camps have generated several hit songs, including Grammy-winning "a lot" by 21 Savage, which has been streamed over 523 million times, providing significant revenue back to the songwriters and publishers. The camps also provide an opportunity for collaboration in creating songs that may appear on Spotify's flagship playlists. That feature, as discussed, can expand music discovery and provide substantial exposure for undiscovered songwriters.

39. In addition to the songwriting camps, Spotify has also invested in fully equipped, professional recording studios in Los Angeles, Atlanta, Nashville, Toronto, and London—all available for use free of charge. Prior to the pandemic, songwriters and publishers were able to make use of these professional Spotify studios to create their next big hit.[54]

C. Supporting Songwriters and Publishers with Listenership Data

40. Spotify has also invested heavily in building analytics tools for publishers using Spotify's robust listenership data. Creator services like Spotify Publishing Analytics are designed

[54] Head of Songwriter and Publishing Relations Jules Parker Explains How Spotify Is Bringing Behind-the-Scenes Creators Into the Spotlight, SPOTIFY (July 8, 2020), https://newsroom.spotify.com/2020-07-08/head-of-songwriter-and-publishing-relations-jules-parker-explains-how-spotify-is-bringing-behind-the-scenes-creators-into-the-spotlight/.

to help creators enhance and pivot their monetization strategies, providing data and information to publishers about where their fans can be found, what they like best, and real-time stream counts.

41. Spotify Publishing Analytics, launched in 2017, is a portal built specifically for publishers to provide insights both at the catalog level and on a song-by-song basis.[55] The data available in Spotify Publishing Analytics includes global and territory-specific streaming statistics, information about playlists, and certain listener demographics. The data is available to publishers the day after it is collected by Spotify.

42. Data is a valuable commodity in the music industry, and publishers do not themselves have the ability to provide detailed listenership data to their songwriters. Spotify therefore fills a crucial void. For publishers in particular, listenership data, including demographic information, could be immensely important for synchronization placement, which is driven by the popularity of a song. Spotify Publishing Analytics provides demographic data on a song-by-song and catalog basis. Armed with this knowledge, publishing synchronization teams can provide concrete data of who listens to the songs they are pitching for these uses, capitalizing on the popularity of a certain song or songwriter in connection with a certain demographic. And more placements for a track result in more revenue for publishers, and by extension songwriters. Publishers can also use this demographic information to determine what type of merchandise to create that would appeal to the segments of the population that most listen to their songwriters.

43. For songwriters, the data Spotify provides can inform the type of music they create and present to artist and repertoire ("A&R") personnel for recording artists and labels. A&R representatives are often looking for the perfect song to reach the widest audience. Spotify

[55] Spotify Publishing Analytics, SPOTIFY, https://noteable.spotify.com/pages/publishing-analytics (last visited Oct. 13, 2021).

Publishing Analytics can measure the impact and performance of particular releases and the performance of those works and the specific recordings that embody them. Publishers, on behalf of their songwriters, can use this data to support their pitches to co-write new songs or have their own songs matched with certain artists. As with synchronization uses, companies and brands seeking sponsorships or endorsements are often attempting to reach certain segments of the population. Knowledge of demographics, provided by Spotify Publishing Analytics, of top listeners for a songwriter could be helpful in landing sponsorships or endorsements for the songwriter.

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V. COMMERCIAL TRANSACTIONS AND NECESSARY UPDATES TO SECTION 115 TERMS

54. In the *Phonorecords III* remand proceeding, Spotify, along with the other service participants, submitted a joint terms proposal that is pending before the Judges.[59] I understand that Spotify's present *Phonorecords IV* terms proposal incorporates and further modifies the terms proposal proffered by the Services in *Phonorecords III*. Below I provide additional context for certain modifications to the terms proposed by Spotify in this proceeding based on industry practice in the publishing market.[60]

[59] Capitalized terms in this section of the testimony refer to defined terms in the terms proposal.
[60] I reserve the right to modify my testimony and any specific proposals provided in this statement pending the resolution of the *Phonorecords III* remand proceeding.

A. Non-Section-115-Licensed Works

55. As noted above, at the time both the *Phonorecords II* rates were established and the *Phonorecords III* rates were litigated, Spotify was largely a pure music service. Neither *Phonorecords II* nor the vacated *Phonorecords III* determination explicitly excluded revenue attributable to non-music content.

56. Spotify has made a greater push to diversify its offerings in recent years.[61] But our increasing use of non-music content and other non-section 115 activity is, of course, not subject to licensing under section 115. As that content is now an additional draw to Spotify's platform, it would be inappropriate to credit music rightsholders with the additional value generated by non-section-115 works when calculating the royalties Spotify pays for mechanical rights under the statutory license. The terms for the statutory license under section 115 should be adjusted to ensure that it appropriately excludes value attributable to non-section-115 works, such as non-music content (e.g., podcasts, audiobooks, spoken word content) and music videos.

57. In addition, the Judges should adopt three modest adjustments regarding non-section-115 content. **First**, it would be appropriate to adopt an express exclusion for advertising embedded or presented within non-section-115 content such as podcasts and music videos. [redacted] Nonetheless, for the avoidance of any doubt, an explicit exclusion of this type makes sense, and in my experience should be an uncontroversial amendment in a negotiation with a music publisher, as it would help both parties avoid unnecessary disputes over the proper revenue base.

[61] *See supra* ¶¶ 21-23.

58. **Second**, and similar to the point raised above, it would be appropriate for the terms of the statutory license to clarify that amounts paid to record labels for non-section-115 content are not included in TCC, as those amounts would not reflect the value paid to the label for musical works. Again, it is my belief that such a clarification should be uncontroversial in the context of a publisher negotiation, again, as a means of avoiding unnecessary disputes.

59. **Third,** it would be appropriate to adopt a term that provides that when an ad is served between a piece of section-115-licensed content and a piece of non-section-115 content, that only 50% of that advertising revenue should be allocated to the section 115 revenue base. [redacted]

B. Other Clarifications of Service Provider Revenue

60. In the context of a percentage-of-revenue license, it is understood that the section 115 revenue base should reflect revenues directly derived from licensed activity. I understand that Spotify has proposed an amendment to the current terms to expressly call out that the revenue included in the revenue base must be "directly derived" from an entity's engagement in activity covered by the section 115 license. Codifying that basic principle in clearer terms will minimize unnecessary confusion about the kinds of revenue meant to be included in the revenue base, consistent with a simple and undisputed industry practice between services and rightsholders. It is my belief that such a clarification would be well-received in a willing buyer/willing seller negotiation with a publisher, as a means of minimizing disputes.

61. In addition, again consistent with the current regulations, [redacted] But, again, for the avoidance of doubt and to minimize disputes, it would be appropriate to include an explicit clarification; such a clarification would be uncontroversial in a publisher negotiation.

C. Bundled Subscription Offering and Service Revenue Allocation

62. The current regulations have two important terms related to bundled offerings that are highly relevant to Spotify's business model and require adjustment in the face of market conditions and the pending *Phonorecords III* remand proceeding. Bundles—like Family Plans and Student Plans—are another way to price discriminate and capture low willingness to pay consumers for Spotify's Premium Service. [redacted]

63. A critical feature of a bundled offering is that it allows a consumer to purchase more than one product or service in a single transaction for a single price. For instance, Spotify offers students Spotify Premium with Hulu and Showtime at a price of $4.99/month, as a bundle, priced together in a single transaction.[63] The current definition should be maintained, albeit with clarifications to make it easier to understand what qualifies as a bundle under the statute.

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[62] [redacted]

[63] Spotify Premium Now With Hulu and Showtime, SPOTIFY, https://www.spotify.com/us/student/ (last visited Oct. 13, 2021).

64. One particular change related to bundles that Spotify proposes is that the definition of a bundled subscription offering should make explicit that a bundle under section 115 must be offered by the service provider or an affiliate. For instance, [redacted]

65. Another change Spotify is proposing relates to the appropriate revenue allocation for bundled offerings under the regulations. The amount of revenue received from bundles and allocated to the revenue base must ensure the streaming services have appropriate flexibility to price discriminate, and expand the royalty pool by capturing low willingness-to-pay listeners. That in turn benefits both rightsholders and Spotify.

66. Spotify is able to currently provide several kinds of product bundles to consumers. Given the diversity of bundled offerings, it makes little sense to have a "one-size-fits-all" method of determining the amount of revenues that should be allocated to the portion of the bundle that constitutes the music offering. The far more sensible and flexible approach would be to allow Spotify to rely on GAAP to determine the value of the music service component of the bundles it offers.

D. Performance Royalty Allocation

67. I understand that *Phonorecords III* provides a mechanism for allocating royalties paid to performing rights organizations between section-115-licensed activity and non-section-115

activity. Such allocation should be done "on the basis of Plays of musical works," unless "per-play information is unavailable because of bona fide technical limitations."[64] In that case, the allocation "may instead be accomplished in a manner consistent with the methodology used for making royalty payment allocations for the use of individual sound recordings."[65]

68. The existing provision, however, does not expressly account for situations where neither the per-play royalty allocation methodology nor the royalty-based allocation methodology is a sound way to allocate PRO fees. For instance, Spotify now has significant amounts of non-music-centric content in the form of podcasts, [redacted].[66] But it does not make sense to allocate PRO royalties based on "Plays of musical works" because a single podcast play may involve the performance of multiple musical works (e.g., where there is different intro and outro music) or no musical works at all. [redacted].

[64] 37 C.F.R. § 385.21(b)(2).
[65] 37 C.F.R. § 385.21(b)(4).
[66] [redacted]

69. It also doesn't make sense to allocate the performance royalties based on "the methodology used for making royalty payment allocations for the use of individual sound recordings." That provision has in mind a situation where the service is paying royalties to record labels for all sound recordings on the service, and thus must determine how to allocate royalty payments between those sound recordings. [redacted] Moreover, this language does not account for the need to allocate PRO royalties to non-sound-recording content.

70. Rather than trying to make bespoke allocation rules for each potential scenario that has arisen, it would be far better to generalize and allow the service to make reasonable royalty allocation decisions in accordance with GAAP, which is already proven to be an effective and efficient methodology in other aspects of the regulations.

E. Free Trial Offerings and Trial Rights Under the Statutory License

71. [redacted] It thus makes sense to expand trial rights under section 115 to similarly provide for (i) less restrictive usage requirements; and (ii) offerings that are either free-of-charge or available for some nominal amount of money.

72. It also makes sense to remove the requirement in the definition of "Free Trial Offering" that no record label receive compensation. [redacted]

F. Discounted Plans Under Section 115: Household and Student Plans

73. "***Household" Versus "Family" Plan***. The existing rule provides that family plans are limited to members of the same "family."[67] In today's modern age, the task of determining whether two or more people within a household are, in fact, members of the same "family" can be a highly fraught exercise. It could require Spotify and other services to make intrusive inquiries into the most private and sensitive matters of their own customers and could impose an economically arbitrary and seemingly moral lens on a federal statutory license regime. Accordingly, 37 C.F.R. § 385.2 should redefine "Family Plan" as "Household Plan."

74. ***Spotify's Duo Plan***. As discussed above, Spotify is continually experimenting with various structures for discounted plans and offerings, such as Duo, in an effort to encourage more people to try Spotify and sign up for paid accounts.[68]

[67] 37 C.F.R. § 385.2 (Family Plan Definition) (a "discounted subscription to be shared by two or more family members for a single subscription price").
[68] *See supra* ¶ 18 (discussing Spotify's Duo Plan).

This makes logical sense given the analogous benefits the Duo Plan affords rightsholders and Spotify by increasing the royalty pool.

75. ***Number of Subscribers for Discount Plans.*** When the Judges adopted the per-subscriber minimum provision for the Family Plan, the subscriber count was set at 1.5 subscribers for each family plan. Today, Spotify has two plans that would qualify as "Household Plans" (Family and Duo). As noted above, each one targets customers that have low (though different) willingness to pay.[69] The Judges should readopt the 1.5 subscriber count from *Phonorecords III* for the Household Plan category.

76. The Student Plan is another Spotify offering, discussed in detail above, that successfully targets consumers with low willingness to pay.[70] For these reasons, the Judges should similarly maintain the existing accommodation for Student Plans, which provides copyright owners lower per-subscriber "floor" payments for such plans by counting each Student Plan as 0.5 subscribers.

G. Other Statutory License Terms: Public Domain Works, Artificial Plays, and Late Payments

77. In addition to the terms addressed in detail above, Spotify proposes the following changes to the section 115 statutory license regulations:

78. ***Public Domain Works.*** Spotify should not be charged for performances of public domain works, which by definition do not require a section 115 license. ,

[69] *Id.*
[70] *See supra* ¶ 19 (discussing Spotify's Student Plan).

The royalties allocated to public domain works, however, were never actually paid out to any publisher and remained accrued. This was because public domain works, by definition, could not be matched to a copyright owner—since there was no copyright owner.[71]

79. Thus, prior to the establishment of the blanket license, publishers did not receive royalties attributable to the performances of public domain works under the statutory license. But, under the MMA, services are obligated to pay over the entire royalty pool to the MLC, and it is the MLC's job to make the appropriate per-play royalty allocations based on its own matching of musical works. I understand that the MLC intends to take the royalties associated with plays of public domain works, and pay them out as extra royalties to owners of in-copyright works. There is no reason for publishers to receive this windfall; they have done nothing to earn them. Indeed, in no willing buyer/willing seller negotiation would Spotify agree to pay a publisher such a "bonus" based on performances of public domain works.

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[71] Spotify Ex. 44,

80. ***Artificial Plays.*** The *Phonorecords III* regulations include a provision requiring Spotify to carve out "artificial plays"—i.e., plays "not initiated or requested by a human user."[72] The regulations also provide that if a single user streams a track more than 50 straight times, all plays after play 50 *must* be deemed not to have been initiated by a human user.[73] Spotify supports a general rule requiring exclusion of artificial streams, and has developed and continues to refine its sophisticated algorithms to detect such streams. But the "50-straight-play" rule is outdated, rigid, and should be eliminated. In my experience, a bright-line test like the 50-straight-play rule is not consistent with youth music consumption or the protections Spotify would ask for in negotiations with publishers.

81. ***Royalty Underpayments Pursuant to Audit.*** Under the current terms of the statutory license, a licensee is required to pay a late fee of 1.5% per month, or the highest lawful rate, whichever is lower, for any payment owed to a copyright owner that remains unpaid after the due date, which for Spotify is 45 days after the end of the monthly reporting period.[74]

82. That rate was adopted prior to the MMA's creation of an audit right under the section 115 license. Under the MMA, the MLC is permitted to initiate an audit covering up to three full calendar years of reporting. In our experience, audits like these can take many years, especially considering the complexity of the rates and terms, and often the disagreements come down to reasonable disputes about accounting rules, or the discovery of an inadvertent error in royalty accounting.

83. It would be unreasonable to impose an annual 18% interest rate on underpayments discovered years after the close of an accounting period. That sort of incentive is not needed to

[72] 37 C.F.R. § 385.2 (Play Definition).
[73] *Id.*
[74] 37 C.F.R. § 385.3 (Late Payments).

ensure timely and accurate payment of royalties; the threat of elimination of the blanket mechanical license is more than sufficient to do that. Moreover, imposing such a late fee would raise the stakes of audit disputes to such a degree that it will be difficult to resolve them quickly and amicably. That result would only harm copyright owners, withholding royalties from them while a service and the MLC fight over amounts of money that greatly exceed any royalties owed. Accordingly, the Judges should impose a more reasonable interest rate.

84. ***Inapplicability of Late Fee to Permitted Adjustments to Royalties.*** The purpose of the late fee is to ensure that digital services make payments in a timely manner. It presupposes that a service *could have* made a timely and accurate payment, but had failed to. There are a number of scenarios in which a service cannot make a fully accurate payment at the time such payment is due. Spotify believes those real-world scenarios should be accounted for in the regulations.

85. [redacted]

86. Adjustments made to account for these types of changes should not be subject to a late fee. It would be unfair to charge a digital service a late fee simply because there is no way to precisely measure what amounts are owed based on reporting idiosyncrasies.

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (PHONORECORDS IV)	**Docket No. 21-CRB-0001-PR (2023-2027)**

DECLARATION OF DAVID KAEFER

I, David Kaefer, declare under penalty of perjury that the matters set forth in my Written Direct Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief.

Executed this 12th day of October 2021.

David Kaefer

TAB D

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: **DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)**	**Docket No. 21-CRB-0001-PR (2023-2027)**

CORRECTED WRITTEN DIRECT TESTIMONY OF PILAR TSCHOLLAR
(On behalf of Spotify USA Inc.)

1. My name is Pilar Tschollar, and I am employed by Spotify Ltd, a corporate affiliate of Spotify USA Inc. and in the same corporate family of companies as Spotify AB. I refer to all these entities collectively as "Spotify" in this statement. I am the Senior Director, Global Head of Music Publishing Licensing at Spotify. I have held the Senior Director role since September 2019. I have worked in Spotify's Music Publishing Licensing group since July 2013, first as Senior Licensing Manager focusing on Europe, the Middle East, and Africa ("EMEA") (July 2013 – July 2014), then as a Director focusing on EMEA and Latin America (July 2014 – June 2017), then as a Director focusing on EMEA and the Asia and Pacific Region (June 2017 – September 2019) before starting my current role. Before Spotify, I was Head of Partnerships and Business Development at Spoonfed Media (December 2010 – November 2012). I received my Master's Degree in Law from Cambridge University in 2007, my Master of Laws (LLM) from the London School of Economics in 2008, and Legal Practice Course (LPC) from BPP Law School in 2010.

2. As part of my role at Spotify, I have a detailed understanding of Spotify's U.S. publishing licensing landscape and its financial impact on Spotify. That understanding includes

Spotify's obligations under the statutory license for mechanical copyright interests, [redacted]

I. BACKGROUND

3. Spotify must obtain the rights in both the sound recordings and musical works that underlie the tracks it streams, and it must compensate the appropriate rightsholder for its use of those works. In the U.S., Spotify satisfies these licensing obligations via: (1) royalties paid to record labels for the public performance, reproduction, and distribution of sound recordings, subject to direct voluntary license negotiations; (2) royalties paid to performing rights organizations for the public performance of musical works, also subject to voluntary negotiations; and (3) mechanical royalties for reproductions and distributions of musical works, which are now paid to the Music Licensing Collective pursuant to the statutory license set forth in 17 U.S.C. § 115. [redacted]

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Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (PHONORECORDS IV)	**Docket No. 21-CRB-0001-PR (2023-2027)**

DECLARATION OF PILAR TSCHOLLAR

I, Pilar Tschollar, declare under penalty of perjury that the matters set forth in my Corrected Written Direct Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief.

Executed this 29th day of October 2021.

Pilar Tschollar

TAB E

PUBLIC VERSION

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: **DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)**	**Docket No. 21-CRB-0001-PR (2023-2027)**

CORRECTED WRITTEN DIRECT TESTIMONY OF BENJAMIN KUNG
(On behalf of Spotify USA Inc.)

1. My name is Benjamin Kung, and I am employed by Spotify USA Inc. ("Spotify"). I am a Senior Director in the Financial Planning & Analysis ("FP&A") team at Spotify and the Head of Strategic Planning and Licensing Finance. I was a Director within the FP&A group from December of 2018 to September of 2021 and have been Senior Director since September of 2021. My current job responsibilities include overseeing teams that forecast and manage the economics of our music licensing deals, providing guidance and visibility to business teams and senior leadership on matters impacting Spotify's consolidated margins, and providing long-range planning for the company. Prior to my current role, I was a Manager in the Content FP&A team and then Senior Manager of Licensing Finance at Spotify. I have also held a number of finance roles at other companies, including Director of Finance for the New York Red Bulls, Financial Analyst at Touchtunes, and Investment Banking Analyst at Morgan Stanley.

2. I graduated from Princeton University with a B.A. in Economics and Certificate in Finance in 2010.

[redacted]

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7. Spotify licenses from and pays royalties for several sets of copyrights for the music on our service in the U.S.: (1) sound recordings rights; (2) rights for the public performance of musical works; and (3) rights for the reproduction and distribution of musical works ("mechanical rights"). At Spotify, we refer to the public performance and mechanical rights of musical works as the "publishing rights."

[redacted]

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7 [redacted]

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (PHONORECORDS IV)	**Docket No. 21-CRB-0001-PR (2023-2027)**

DECLARATION OF BENJAMIN KUNG

I, Benjamin Kung, declare under penalty of perjury that the matters set forth in my Corrected Written Direct Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief.

Executed this 22nd day of October 2021.

Benjamin Kung

TAB F

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: **DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)**	**Docket No. 21-CRB-0001-PR (2023-2027)**

WRITTEN DIRECT TESTIMONY OF CHRISTOPHER BONAVIA
(On Behalf of Spotify USA Inc.)

1. My name is Christopher Bonavia. I am Global Head of Label and Rights & Clearances Business Affairs at Spotify USA Inc. ("Spotify"). My statement below is submitted in support of Spotify's written direct case in the above-captioned proceeding.

2. I understand that Spotify is proposing a rate structure in this proceeding that includes a capped total content cost ("TCC") prong. I understand that my colleague, Niklas Lundberg, is providing testimony [redacted]

4.

I. BACKGROUND AND QUALIFICATIONS

6. I have served as Spotify's Global Head of Label and Rights & Clearances Business Affairs since September of 2020. My current job responsibilities include managing a team focused on securing sound recording licenses from record labels. In my five years working for Spotify, I have held multiple other positions, including Associate General Counsel, Global Head of Recorded Music Licensing and Original Content, a role I held from July 2017 to September 2020. In this prior role, I also worked on licensing deals with record labels, including negotiating and drafting deal terms with in-house attorneys at record labels.

7. Through my roles at Spotify,

[redacted].

8. Prior to joining Spotify, I worked for UMG for more than three years and held multiple roles during my time there, including Senior Director and Vice President, Business and Legal Affairs. I also worked for SME, where I served as Director, Business and Legal Affairs for more than two years, and at XM Satellite Radio where, among other things, I served as Vice President, Business Affairs and Counsel. I served on the Global Digital Business teams at both UMG and SME, with responsibilities that included negotiating catalog-wide deals with digital streaming services and drafting the terms of those agreements.

9. I graduated with a BA in Economics and Music from the University of Virginia and a JD from George Washington University Law School.

[redacted]

10. [redacted]

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[redacted]

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[1] Spotify Ex. 17 (SPOT_P4_000001584, [redacted]) at 63-76; Spotify Ex. 18 (SPOT_P4_000001773, [redacted]) at 25-33; Spotify Ex. 16 (SPOT_P4_000001504, [redacted] at 27-30.

[2] Spotify Ex. 13 (SPOT_P4_000000645, .) at 81-86.

[3] *Id.*

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

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[4] *Id.*

[5] *Id.*

[6] Spotify Ex. 14 (SPOT_P4_000000255, [redacted]) at 45-56.

[7] *Id.*

19. [redacted].[9]

[redacted]

[redacted]

[redacted]

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[8] *Id.*

[9] *Id.*

[10] Spotify Ex. 15 (SPOT_P4_000001077, [redacted]) at 2-6, 26.

[11] *Id.*

[12] *Id.* at 6.

[13] *Id.* at 15.

[14] *Id.* at 34.

[16]

[15] Spotify Ex. 13 (SPOT_P4_000000645) at 38, 45; *see also* Spotify Ex. 14 (SPOT_P4_000000255,) at 36, 87 (."); Spotify Ex. 18 (SPOT_P4_000001773,) at 20; Spotify Ex. 15 (SPOT_P4_000001077,) at 44.

[16] *See* Spotify Ex. 13 (SPOT_P4_000000645, at 36; Spotify Ex. 14 (SPOT_P4_000000255,) at 58-59; Spotify Ex. 15 (SPOT_P4_000001077,) at 20-22.

[17] Spotify Ex. 7 (SPOT_P4_000000568,); Spotify Ex. 3 (SPOT_P4_000000940,); Spotify Ex. 5 (SPOT_P4_000002080,).

28. Hundreds of independent labels and digital distributors are members of Merlin, an independent digital rights music licensing partner that negotiates sound recording licensing deals on their behalf.

[18] Spotify Ex. 7 (SPOT_P4_000000568, t) at 2-4.

[19] Spotify Ex. 51 (SPOT_P4_000001155,) at 10.

[redacted].[21]

29. [redacted].[22] [redacted].

[20] *Id.* at 13.

[21] Spotify Ex. 8 (SPOT_P4_000000607, [redacted]); Spotify Ex. 12 ([redacted]).

[22] Spotify Ex. 19 (SPOT_P4_000000063, [redacted]) at 10-11.

30.

31.

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32. In my experience,

33. In addition, .

34. Further, it is important to note that .[23]

35.

[23] .

[redacted].

	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]

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[24] Spotify Ex. 4 (SPOT_P4_000000624, [redacted]); Spotify Ex. 7 (SPOT_P4_000000568, [redacted]t); Spotify

37. [redacted]

38. [redacted]

Ex. 11 (SPOT_P4_000001913, [redacted]).

[25] *See* [redacted].

39. [redacted][26] [redacted]."[27] [redacted]

40. [redacted]

[26] Spotify Ex. 3 (SPOT_P4_000000940, [redacted]) at 9-10.

[27] Spotify Ex. 4 (SPOT_P4_000000624, [redacted]) at 2.

[28] *Id.*

[29] Spotify Ex. 3 (SPOT_P4_000000940 [redacted]) at 9.

[redacted].[31]

[redacted]

41. I understand Spotify is seeking to adjust the current section 115 regulatory language to address various terms. [redacted]

A. [redacted]

42. [redacted]

43. [redacted]

---

[30] Spotify Ex. 2 (SPOT_P4_000000981, [redacted]) at 2-3.

[31] Spotify Ex. 11 (SPOT_P4_000001913, [redacted]).

[32] Spotify Ex. 3 (SPOT_P4_000000940, [redacted] at 4-6.

44.

45.

[33] *Id*. at 4-5 (emphasis added).

[34] Spotify Ex. 13 (SPOT_P4_000000645,) at 87-88); *see also* Spotify Ex. 6 (SPOT_P4_000000639,) ¶ 12 ( ).

[35] Spotify Ex. 14 (SPOT_P4_000000255,) at 5-6. *Id*. at 6-7.

[36] *Id*. at 5-8.

[37] *Id*. at 8.

[38] *Id*. at 7; *see also* Spotify Ex. 3 (SPOT_P4_000000940, at 5.

46. I understand that Spotify is also separately proposing certain updates and clarifications with respect to what should be considered revenue under the relevant regulations, including a specific exclusion for taxes.

47. .”[42]

[39] Spotify Ex. 19 (SPOT _P4_000000063, at 5.

[40] *Id.*

[41] *Id.*

[42] *Id.*

48. I understand that Spotify is requesting various changes to the terms of the existing statutory license to more clearly carve out revenues stemming from non-music content, such as embedded podcast advertising.

49.

[43] *Id.*

[44] Spotify Ex. 5 (SPOT_P4_000002080,) at 4.

[45] *Id.* at 3-4.

50.

51. For instance, a Sony Music executive was quoted in December 2020 as noting that Sony's goal "is certainly to be a big player [in podcasts], similar to the way we are in music."[50]

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[46] *Id*. at 3.

[47] *Id*.

[48] *See* Spotify Ex. 9 (SPOT_P4_000000883,) at 1-2.

[49] Colin Stutz, Podcasts Face the Music: The Battle for Audio Streams Heats Up, BILLBOARD (May 23, 2019), https://www.billboard.com/articles/business/8512967/major-labels-podcasts-plans-music-audio-content-spotify; Natalie Jarvey, Sony Music Makes Strategic Investment in Podcast Producer Neon Hum (Exclusive), THE HOLLYWOOD REPORTER (Dec. 12, 2019), https://www.hollywoodreporter.com/business/digital/sony-music-makes-strategic-investment-podcast-producer-neon-hum-1262306/; *see also* Press Release, Universal Music Group and Wondery to Jointly Develop and Produce Podcasts, (Apr. 17, 2019), https://www.universalmusic.com/universal-music-group-and-wondery-to-jointly-develop-and-produce-podcasts/.

[50] Steve Knopper, *Record Labels Lean Into a Pivot to Podcasts: 'People Will See the* Profitability', BILLBOARD (Dec. 9, 2020), https://www.billboard.com/articles/business/9496535/record-labels-podcasts-profitability-strategy/.

D. [redacted]

52. [redacted].[51]

53. [redacted].

54. [redacted]

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[51] *See, e.g.*, Spotify Ex. 7 (SPOT_P4_000000568, [redacted] at 4.

[52] *See* Spotify Ex. 15 (SPOT_P4_000001077, [redacted]) at 6; *see also* Spotify Ex. 5 (SPOT_P4_000002080, [redacted]) at 11; Spotify Ex. 75 ([redacted].

[53] Spotify Ex. 14 (SPOT_P4_000000255, [redacted]) at 46.

[54] Spotify Ex. 13 (SPOT_P4_000000645, [redacted].) at 82; *see also* Spotify Ex. 7 (SPOT_P4_000000568, [redacted] at 4-5.

[55]

55.

[55] *See, e.g.*, Spotify Ex. 7 (SPOT_P4_000000568,) at 4.

[56] *See* Spotify Ex. 13 (SPOT_P4_000000645, .) at 82.

[57] Spotify Ex. 10 (SPOT_P4_000000875,) at ¶ 2; Spotify Ex. 15 (SPOT_P4_000001077,) at 6-7; *see also* Spotify Ex. 75 ( ).

[58] Spotify Ex. 13 (SPOT_P4_000000645,) at 53-54; Spotify Ex. 14 (SPOT_P4_000000255, at 21, 37; Spotify Ex. 5 (SPOT_P4_000002080,) at 11; *see also* Spotify Ex. 18 (SPOT_P4_000001773,) at Ex. A.

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: **DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)**	**Docket No. 21-CRB-0001-PR (2023-2027)**

DECLARATION OF CHRISTOPHER BONAVIA

I, Christopher Bonavia, declare under penalty of perjury that the statements contained in my Written Direct Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief. Executed this 8th of October 2021 in Los Angeles, California.

TAB G

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: **DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)**	**Docket No. 21-CRB-0001-PR (2023-2027)**

WRITTEN DIRECT TESTIMONY OF NIKLAS LUNDBERG
(On Behalf of Spotify USA Inc.)

1. My name is Niklas Lundberg. I am Head of New Markets at Spotify USA Inc. ("Spotify"). My statement below is submitted in support of Spotify's written direct case in the above-captioned proceeding.

2. I understand that Spotify is proposing a rate structure in this proceeding that includes a capped total content cost ("TCC") prong. [redacted]

I. BACKGROUND AND QUALIFICATIONS

4. I have served as Spotify's Head of New Markets since 2019. My current job responsibilities include facilitating Spotify launches in new countries and markets. In my 12 years working for Spotify, I have held multiple other positions, including Head of Label Licensing, a role I held from January 2016 to April 2019. In this prior role, I worked on licensing deals with record labels, including negotiating and drafting deal terms with in-house deal teams at record labels.

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[1]

5. Through my roles at Spotify, [redacted].

6. I graduated with a BSc in Industrial Engineering and Management from Chalmers University of Technology and an M. Sc. Business Design in Innovation and Entrepreneurship from the Chalmers School of Entrepreneurship in Sweden.

II. [redacted]

8. [redacted].

9. [redacted][3] For instance, [redacted]."[4] [redacted]

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[2] *See, e.g.*, Spotify Ex. 17 (SPOT_P4_000001584, [redacted] at 36, 51-52; Spotify Ex. 16 (SPOT_P4_000001504, [redacted]) at 22; Spotify Ex. 18 (SPOT_P4_000001773, [redacted]) at 20-21, 36. [redacted]

[3] *Id.*

[4] Spotify Ex. 17 (SPOT_P4_000001584, [redacted]) at 36.

[5] *Id.* at 51-52.

10.

[6] *Id.* at 52.

[7] Spotify Ex. 13 (SPOT_P4_000000645, at 45; *see also* Spotify Ex. 14 (SPOT_P4_000000255,) at 36; Spotify Ex. 18 (SPOT_P4_000001773,) at 20; Spotify Ex. 15 (SPOT_P4_000001077,) at 44.

[8] " Spotify Ex. 13 (SPOT_P4_000000645,) at 21.

[9] *Id.* at 38; *see also* Spotify Ex. 14 (SPOT_P4_000000255,) at 87 (.").

[10] Spotify Ex. 13 (SPOT_P4_000000645,) at 38, 45, 63, 96; *see also* Spotify Ex. 14 (SPOT_P4_000000255,) at 36; Spotify Ex. 18 (SPOT_P4_000001773,) at 20; Spotify Ex. 15 (SPOT_P4_000001077,) at 44.

11. .[12]

[11] Spotify Ex. 17 (SPOT_P4_000001584,) at 17; Spotify Ex. 13 (SPOT_P4_000000645,) at 21; Spotify Ex. 16 (SPOT_P4_000001504, at 12; Spotify Ex. 14 (SPOT_P4_000000255,) at 19, 22; Spotify Ex. 18 (SPOT_P4_000001773,) at 11; Spotify Ex. 15 (SPOT_P4_000001077,) at 10.

[12] I understand my colleague, Benjamin Kung, is discussing this in more detail.

[13] Spotify Ex. 16 (SPOT_P4_000001504,) at 19; Spotify Ex. 17 (SPOT_P4_000001584,) at 21-22; Spotify Ex. 13 (SPOT_P4_000000645,) at 28-29; Spotify Ex. 14 (SPOT_P4_000000255,) at 31-32.

[redacted]

13. [redacted]

[14] *See* Spotify Ex. 13 (SPOT_P4_000000645, [redacted] at 36; Spotify Ex. 14 (SPOT_P4_000000255, [redacted]) at 58-59; Spotify Ex. 15 (SPOT_P4_000001077, [redacted]) at 20-22.

[15] *See, e.g.*, Spotify Ex. 13 (SPOT_P4_000000645, [redacted]) at 36.

[redacted]. [redacted]

14. [redacted][18]

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[16] Spotify Ex. 13 (SPOT_P4_000000645, [redacted]) at 101-02.

[17] *See* Spotify Ex. 14 (SPOT_P4_000000255, [redacted]) at 84-86; Spotify Ex. 18 (SPOT_P4_000001773, [redacted] at 13-14; Spotify Ex. 15 (SPOT_P4_000001077, [redacted]) at 1 ([redacted]).

[18] Spotify Ex. 19 (SPOT_P4_000000063, [redacted]).

III. [redacted]

15. [redacted]

16. [redacted]

[redacted].

17. [redacted]

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[19] [redacted] I understand my colleague, Benjamin Kung, discusses this in more detail.

[20] Spotify Ex. 49 ([redacted] at 7-8, 17.

[21] Spotify Ex. 48 ([redacted]) at 4.

[22] Spotify Ex. 46 ([redacted]) at 15.

[23] Spotify Ex. 47 ([redacted]) at 8-15.

18. [redacted].

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
LIBRARY OF CONGRESS
Washington, D.C.

In the Matter of: DETERMINATION OF ROYALTY RATES AND TERMS FOR MAKING AND DISTRIBUTING PHONORECORDS (*Phonorecords IV*)	Docket No. 21-CRB-0001-PR (2023-2027)

DECLARATION OF NIKLAS LUNDBERG

I, Niklas Lundberg, declare under penalty of perjury that the statements contained in my Written Direct Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief. Executed this 13th of October 2021 in Stockholm, Sweden.

Proof of Delivery

I hereby certify that on Friday, October 29, 2021, I provided a true and correct copy of the Corrected Written Direct Statement of Spotify USA Inc. (Vol. 2 of 5) [Public Version] to the following:

Copyright Owners, represented by Benjamin K Semel, served via ESERVICE at Bsemel@pryorcashman.com

Amazon.com Services LLC, represented by Joshua D Branson, served via ESERVICE at jbranson@kellogghansen.com

Google LLC, represented by Gary R Greenstein, served via ESERVICE at ggreenstein@wsgr.com

Pandora Media, LLC, represented by Benjamin E. Marks, served via ESERVICE at benjamin.marks@weil.com

Apple Inc., represented by Mary C Mazzello, served via ESERVICE at mary.mazzello@kirkland.com

Powell, David, represented by David Powell, served via ESERVICE at davidpowell008@yahoo.com

Joint Record Company Participants, represented by Susan Chertkof, served via ESERVICE at susan.chertkof@riaa.com

Zisk, Brian, represented by Brian Zisk, served via ESERVICE at brianzisk@gmail.com

Johnson, George, represented by George D Johnson, served via ESERVICE at george@georgejohnson.com

Signed: /s/ Joseph Wetzel