Exhibit A

HC-AEO

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

CONCORD MUSIC GROUP, INC., et al.,
Plaintiffs,
v.
ANTHROPIC PBC,
Defendant.

Case No. 5:24-cv-03811-EKL-SVK

EXPERT REPORT OF ABHISHEK NAGARAJ, PH.D.
Signed in San Francisco, California on December 19, 2025



Abhishek Nagaraj, Ph.D.

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I. INTRODUCTION

A. Qualifications

1. My name is Abhishek Nagaraj. I am an Associate Professor in the Haas School of Business at the University of California, Berkeley, and a Research Associate at the National Bureau of Economic Research ("NBER"). I am also Director of the Data Innovation and AI Lab, and a Faculty Affiliate of the Berkeley Institute of Data Science.

2. My research is in the field of applied microeconomics, with a particular focus on the economics of innovation, entrepreneurship, and the digital economy. Several of my published articles focus on digital technologies and copyright, including "Digitization and the Demand for Physical Works: Evidence from the Google Books Project" published in the *American Economic Journal: Economic Policy*,[1] "Does Copyright Affect Reuse? Evidence from Google Books and Wikipedia" published in *Management Science*,[2] and "Improving data access democratizes and diversifies science" published in the *Proceedings of the National Academy of Sciences.*[3] I was asked by the United States Copyright Office to serve as a contributing author to its volume *Identifying the Economic Implications of Artificial Intelligence for Copyright Policy: Context and Direction for Economic Research*[4] and was the lead author for the chapter titled "Developers' Access to Training Data." I am also currently working on research on the role of book data in shaping the performance of AI systems.[5]

3. I have received numerous grants and awards for my research in digital technologies, including an MIT Initiative on the Digital Economy Grant, an Institute for Business Innovation

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[1] *See* Abhishek Nagaraj and Imke Reimers, "Digitization and the Market for Physical Works: Evidence from the Google Books Project," *American Economic Journal: Economic Policy*, Vol. 15, No. 4 (2023), available at https://www.aeaweb.org/articles?id=10.1257/pol.20210702.

[2] *See* Abhishek Nagaraj, "Does Copyright Affect Reuse? Evidence from Google Books and Wikipedia," *Management Science,* Vol. 64, No. 7 (Jul 2018), available at https://www.jstor.org/stable/48748181.

[3] *See* Abhishek Nagaraj, Esther Shears, and Mathijs de Vaan, "Improving data access democratizes and diversifies science," *Proceedings of the National Academy of Sciences,* Vol. 117, No. 38 (22 Sep 2020), available at https://www.pnas.org/doi/10.1073/pnas.2001682117.

[4] *See* Brent Lutes, Joshua Gans, et al., "Identifying the Economic Implications of Artificial Intelligence for Copyright Policy," *US Copyright Office* (2025), available at https://www.copyright.gov/economic-research/economic-implications-of-ai/Identifying-the-Economic-Implications-of-Artificial-Intelligence-for-Copyright-Policy-FINAL.pdf.

[5] *See* Abhishek Nagaraj and Stella Jia, "Cloze Encounters: The Impact of Pirated Data Access on LLM Performance," *National Bureau of Economic Research* (Mar 2025), available at https://www.nber.org/papers/w33598.

Research Grant, a Facebook Measuring Economic Impact in the Digital Economy grant, a UPenn Center for Technology, Innovation & Competition Research Award, and the Technology and Innovation Management Outstanding Dissertation Award. I have taught graduate-level classes on Entrepreneurial Strategy, the Economics of Innovation, and AI for Business Leaders. I was the co-organizer of the 2024 NBER Digital Economics and AI winter meetings, and a Panelist in the 2024 AI & Copyright Policy Roundtable organized by the United States Copyright Office. I am a contributing author on the forthcoming NBER volume on the Economics of Transformative AI.[6]

4. I hold a Bachelor of Technology in Computer Science from the College of Engineering in Pune, an MBA from the Indian Institute of Management Calcutta, and a Ph.D. in Management from the Sloan School of Management at the Massachusetts Institute of Technology. I have enclosed my CV as Appendix A to this report.

5. I am being compensated at my hourly rate of $1,200. I have not testified in deposition or trial in the last four years. I am being supported in my research for this report by staff at Keystone, an economics consulting firm. Neither my compensation nor Keystone's is affected by the outcome of this matter. My research in this area is ongoing. I reserve the right to modify or change my opinion if additional facts become available to me.

B. Assignment

6. I have been asked by Counsel for Anthropic PBC ("Anthropic") to analyze economic issues related to fair use factor 4, which is "the effect of the use upon the potential market for or value of the copyrighted work."[7] I have been asked to assess this factor in relation to Plaintiffs' claims regarding Anthropic's alleged use of lyrics from songs to which Plaintiffs hold a copyright. Specifically, Plaintiffs allege that the text from the lyrics to those Works-In-Suit were used to train a series of Anthropic's general-purpose large language models ("LLMs") known as

[6] *See generally* "Economics of Transformative AI Workshop, Fall 2025," NBER, available at https://www.nber.org/conferences/economics-transformative-ai-workshop-fall-2025; *see also* "NBER Digital Economics and AI Meeting, Spring 2024," NBER, available at https://www.nber.org/conferences/nber-digital-economics-and-ai-meeting-spring-2024.

[7] 17 U.S. Code § 107, "Limitations on exclusive rights: Fair use," ("In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include…the effect of the use upon the potential market for or value of the copyrighted work.").

"Claude." I have also been asked to assess fair use factor 4 in relation to Claude's outputs and the purported recitation of partial or complete lyrics in songs to which Plaintiffs hold a copyright.

7. Counsel have informed me that Plaintiffs in this case are a group of major music publishers that have registered copyrights to songs whose lyrics Plaintiffs allege were infringed. I further understand that a set of 499 Works-In-Suit is at issue in this case.[8]

C. Summary of Opinions

8. To assess the impact of Anthropic's alleged conduct on various markets, I consider three purported markets. First, I consider whether a market for all of the data needed to train a general-purpose LLM existed at the time of the alleged use, or whether such a market could exist. Second, although I believe the correct market to analyze is the first market because LLM developers need to be able to amass a large enough set of training data in order to train a capable general-purpose LLM, I nevertheless examine whether a market could exist for the use of song lyrics to train general-purpose LLMs. Third, I consider whether Anthropic's alleged display of lyrics in certain Claude outputs harmed Plaintiffs in the existing market for the online display of lyrics.

9. Regarding the first market discussed above—a market for all of the data needed to train a general-purpose LLM— I find that such a market did not exist at the time of the alleged use and is unlikely to exist in the future. I find that because of the scale and diversity of the information needed to train a general-purpose LLM, and because of the high transaction costs associated with obtaining such a dataset, a market for the data required to train a general-purpose LLM is not viable. Moreover, if developers were required to assemble the training data needed to train a general-purpose LLM by only using licensed data from copyright holders combined with data from the public domain, a market would not form because developers would not be able to obtain enough data to train a general-purpose LLM. (See Section III.A.2).

10. The emergence of certain licensing deals between AI developers and copyright holders in recent months does not change my opinion. LLM developers may need to pay to acquire

[8] Exhibit A to First Amended Complaint, 25 Apr 2025.

data in certain, unique circumstances when the value of the data is higher than the transaction costs incurred to acquire it. (See Section III.A.4).

11. While I believe the relevant market should be a market for all of the data needed to train a general-purpose LLM, I nevertheless analyze a second candidate market for the use of song lyrics to train general-purpose LLMs. Here, too, I find that such a market did not exist at the time of the alleged use and is unlikely to exist in the future. Lyrics data are unlikely to be licensed for training general-purpose LLMs because their (small) value does not exceed the transaction costs required to acquire them. Therefore, a market for the use of song lyrics to train general-purpose LLMs is unlikely to emerge. (See Section III.A.3).

12. Because I find that these two markets did not exist and are not likely to emerge, I conclude that Plaintiffs cannot have been economically harmed in such markets.

13. Third, I consider whether Anthropic's alleged display of lyrics in certain outputs harmed Plaintiffs in the third market identified above: the existing market for the online display of lyrics. Economic principles lead me to expect that harms in that market are unlikely. Specifically, I would expect that the degree of substitution between typical use cases for an LLM and online lyrics display services would be too low to lead to any adverse effects on the demand for the latter. I nevertheless conduct several empirical analyses to assess whether the alleged behavior had an impact on Plaintiffs after Claude was commercially released. I do not find impacts on the market for the online display of lyrics that would be consistent with Plaintiffs' theory of harm. (See Section III.B.2).

14. Combined, my conclusion is that Anthropic's conduct did not harm (a) any real or potential market for the data needed to train a general-purpose LLM, (b) any real or potential market for lyric training data, or (c) the existing market for the display of online lyrics. Anthropic's conduct thus had no negative effect on "the potential market for or value of the copyrighted work," as specified by factor 4 of the fair use considerations of U.S. copyright law.[9] (See Section IV).[10]

[9] 17 U.S. Code § 107, "Limitations on exclusive rights: Fair use," ("In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include…the effect of the use upon the potential market for or value of the copyrighted work.").

[10] I reserve the right to supplement my conclusions with newly available evidence in due course.

II. BACKGROUND

A. Anthropic and Claude

15. Anthropic is an "AI safety and research company"[11] founded in 2021 and headquartered in San Francisco, California. Anthropic distinguishes itself from its competitors through its strong commitment to AI safety and investments aimed at ensuring that AI generates positive social impacts.[12] As Jared Kaplan, one of the founders and current Chief Science Officer at Anthropic, said: "At the heart of all of Anthropic's models is a concept called 'Constitutional AI,' which is designed to ensure AI safety. Constitutional AI gives an AI system a set of principles (i.e., a constitution) against which it can evaluate its own outputs during training."[13]

16. Claude is a series of general-purpose LLMs built by Anthropic.[14] The first version of Claude was released to the public in March 2023.[15] Anthropic has advanced Claude's capabilities with each successive generation. Claude's most recent iterations are Claude Sonnet

[11] "Company," Anthropic, available at https://www.anthropic.com/company, accessed on 8 Dec 2025 ("Anthropic is an AI safety and research company.").

[12] Devin Coldewey, "Anthropic is the new AI research outfit from OpenAI's Dario Amodei, and it has $124M to burn," TechCrunch, 28 May 2021, available at https://techcrunch.com/2021/05/28/anthropic-is-the-new-ai-research-outfit-from-openais-dario-amodei-and-it-has-124m-to-burn/, accessed on 8 Dec 2025 ("'Anthropic's goal is to make the fundamental research advances that will let us build more capable, general, and reliable AI systems, then deploy these systems in a way that benefits people,' said Dario Amodei, CEO of the new venture, in a short post announcing the company and its $124 million in funding.").

[13] Declaration of Jared Kaplan in Support of Defendant's Opposition to Plaintiffs' Motion for Preliminary Injunction, 16 Jan 2024 (Kaplan Declaration), at ¶7.

[14] Declaration of Jared Kaplan in Support of Defendant's Opposition to Plaintiffs' Renewed Motion for Preliminary Injunction, 22 Aug 2024 (Second Kaplan Declaration), at ¶8 ("Anthropic's signature product is Claude, a series of general-purpose LLMs.").

[15] "Introducing Claude," Anthropic, 14 Mar 2023, available at https://www.anthropic.com/news/introducing-claude, accessed on 8 Dec 2025 ("After working for the past few months with key partners like Notion, Quora, and DuckDuckGo in a closed alpha, we've been able to carefully test out our systems in the wild, and are ready to offer Claude more broadly so it can power crucial, cutting-edge use cases at scale.").

4.5,[16] Claude Haiku 4.5,[17] and Claude Opus 4.5.[18] Claude is a leading technology among peer AI companies developing general-purpose LLMs.[19]

17. Anthropic describes Claude as "your thinking partner."[20] As a general-purpose LLM, Claude can be used for a range of tasks, including learning, coding, researching, analyzing data, brainstorming, refining concepts, and assisting with writing.[21] Like other LLMs, Claude works via a prompting system in which users interact with Claude using a chat box. The user provides instructions (prompts) and receives outputs that Claude generates in response to those prompts. For example, a user can prompt Claude by stating, "Your task is to analyze the provided Python code snippet and suggest improvements to optimize its performance."[22] In response, Claude can provide outputs with an improved Python code. A user can also prompt Claude to suggest recipe ideas, help plan lessons on any subject, or help interpret dreams.[23]

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[16] "Introducing Claude Sonnet 4.5," Anthropic, 29 Sep 2025, available at https://www.anthropic.com/news/claude-sonnet-4-5, accessed on 8 Dec 2025 ("This is the most aligned frontier model we've ever released, showing large improvements across several areas of alignment compared to previous Claude models. Claude Sonnet 4.5 is available everywhere today.").

[17] "Introducing Claude Haiku 4.5," Anthropic, 15 Oct 2025, available at https://www.anthropic.com/news/claude-haiku-4-5, accessed on 8 Dec 2025 ("Claude Haiku 4.5, our latest small model, is available today to all users.").

[18] "Introducing Claude Opus 4.5," Anthropic, 24 Nov 2025, available at https://www.anthropic.com/news/claude-opus-4-5, accessed on 15 Dec 2025 ("Our newest model, Claude Opus 4.5, is available today.").

[19] Chris Morris, "Anthropic Just Surpassed OpenAI in the $8.4 Billion Enterprise Market, Says New Report," Inc, 31 Jul 2025, available at https://www.inc.com/chris-morris/anthropic-surpassed-openai-8-4-billion-enterprise-market-menlo-ventures/91221352, accessed on 10 Dec 2025 ("Based on a survey of 150 technical startup and enterprise leaders, Menlo claims that while OpenAI has dominated enterprise spending on large language models (LLMs) for some time, Anthropic is now the market leader, with 32 percent of enterprise usage. OpenAI, which had a 50 percent share of that market through 2023, now controls just 25 percent, says Menlo.").

[20] "Meet Claude, your thinking partner," Claude, available at https://claude.com/product/overview, accessed on 8 Dec 2025 ("Claude builds on your ideas, expands on your logic, and simplifies complexity one step at a time.").

[21] "Meet Claude, your thinking partner," Claude, available at https://claude.com/product/overview, accessed on 8 Dec 2025 ("Claude provides expert-level collaboration on the things you need to get done—from coding a product to critical data analysis.").

[22] "Code Consultant," Claude Docs, available at https://platform.claude.com/docs/en/resources/prompt-library/code-consultant, accessed 8 Dec 2025 ("Copy this prompt into our developer Console to try it for yourself! Your task is to analyze the provided Python code snippet and suggest improvements to optimize its performance.").

[23] *See* "Prompt Library," Claude Docs, available at https://docs.claude.com/en/resources/prompt-library/library, accessed on 8 Dec 2025.

18. Claude's primary uses relate to business and enterprise clients—it is among the leading LLMs for enterprise use.[24] While individual users can access Claude for free, power users[25] and enterprise clients who need answers to a larger number of queries can pay for more advanced functionality, including enhanced security and scalable solutions.[26] Claude averages over ten million users on a monthly basis[27] and serves over 300,000 business customers.[28]

B. General-Purpose LLM Training

19. Here I describe certain aspects of the training and operation of general-purpose LLMs that are important to my analysis.

20. At the heart of general-purpose LLMs are text-based generative AI models that are built to perform a wide variety of tasks such as understanding, summarizing, predicting, and generating new content based on vast and diverse data. As Chief Science Officer Dr. Kaplan stated, "LLMs like Claude are general-purpose tools that need to be familiar with everything from how emails are drafted, how to write programs in C++, how many states are in the Union, and on and on."[29]

21. When deployed in chat applications, high-performing general-purpose LLMs generate responses to user queries by iteratively predicting each subsequent word based on context,

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[24] Chris Morris, "Anthropic Just Surpassed OpenAI in the $8.4 Billion Enterprise Market, Says New Report," Inc, 31 Jul 2025, available at https://www.inc.com/chris-morris/anthropic-surpassed-openai-8-4-billion-enterprise-market-menlo-ventures/91221352, accessed on 10 Dec 2025 ("Based on a survey of 150 technical startup and enterprise leaders, Menlo claims that while OpenAI has dominated enterprise spending on large language models (LLMs) for some time, Anthropic is now the market leader, with 32 percent of enterprise usage. OpenAI, which had a 50 percent share of that market through 2023, now controls just 25 percent, says Menlo.").

[25] Davin O'Dwyer, "What is a Power User?," Intercom Blog, 1 Oct 2022, available at https://www.intercom.com/blog/what-is-a-power-user/, accessed on 10 Dec 2025 ("A power user, or a super user, is a customer that uses a company's software more often and in more effective ways than other users.").

[26] *See* "Introducing Claude Pro," Anthropic, 7 Sep 2023, available at https://www.anthropic.com/news/claude-pro, accessed on 8 Dec 2025; *see also* "Introducing the Max Plan," Claude, 9 Apr 2025, available at https://claude.com/blog/max-plan, accessed on 8 Dec 2025; "What is the Enterprise plan?," Claude Support, available at https://support.claude.com/en/articles/9797531-what-is-the-enterprise-plan, accessed on 8 Dec 2025.

[27] *See* Defendant Anthropic PBC's Supplemental Responses and Objections to Plaintiffs' First Set of Interrogatories (No. 4), 5 Nov 2025 (citing to Anthropic 0000570511, a spreadsheet documenting the number of Teams, Pro, Free, Enterprise, and Max Claude users by month).

[28] "Anthropic raises $13B Series F at $183B post-money valuation," Anthropic, 2 Sep 2025, available at https://www.anthropic.com/news/anthropic-raises-series-f-at-usd183b-post-money-valuation, accessed on 8 Dec 2025 ("Anthropic now serves over 300,000 business customers, and our number of large accounts—customers that each represent over $100,000 in run-rate revenue—has grown nearly 7x in the past year.").

[29] Second Kaplan Declaration, at ¶23.

producing remarkably coherent and natural-sounding output. This approach enables them to engage in fluid conversation, answer complex questions, and assist across diverse tasks. General-purpose LLMs are a new technology, with applications spanning healthcare, education, cybersecurity, software development, and numerous other industries.[30]

22. Training advanced LLMs capable of understanding user prompts and generating unique responses requires an enormous amount of training data.[31] Diverse, high-quality textual data[32] is essential for training an LLM with general knowledge.[33] Training starts with a "pre-training corpus," which is generally comprised of vast amounts of textual data, for example internet posts, articles, books, magazines, forum discussions, software code, and other digital texts aiming at capturing the variety of linguistic patterns, interactions, and nuances of human language.[34] To ensure breadth and diversity of data, Anthropic's Claude models are trained on "publicly available information via the internet, content obtained from third parties pursuant to

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[30] For an example of the use of LLMs for understanding and improving coding, *see* Daye Nam, Andrew Macvean, et al., "Using an LLM to Help With Code Understanding," *Proceedings of the IEEE/ACM 46th International Conference on Software Engineering*, 12 Apr 2024, available at https://dl.acm.org/doi/10.1145/3597503.3639187 ("LLM prompts can allow developers to provide more context, which can enable them to receive information that more precisely aligns with their specific needs, potentially reducing the time spent on sifting through the information obtained from the web to suit their particular requirements"); for applications related to data privacy and cybersecurity, *see* Yifan Yao, Jinhao Duan, et al., "A Survey on Large Language Model (LLM) Security and Privacy: The Good, the Bad, and the Ugly," *High-Confidence Computing,* Vol. 4, No. 2 (2024), available at https://www.sciencedirect.com/science/article/pii/S266729522400014X ("LLMs have made contributions to both code security and data security and privacy."); for an assessment of AI's potential in disease diagnosis, *see* Shuang Zhou, Zidu Xu, et al., "Large Language Models for Disease Diagnosis: A Scoping Review," *npj Artificial Intelligence* Vol. 1, No. 9 (2025), available at https://www.nature.com/articles/s44387-025-00011-z ("In summary, prompting LLMs facilitates the development of effective diagnostic systems with minimal effort, contrasting with conventional DL-based approaches that require extensive supervised training on large datasets.").

[31] Reference Figure 2.2 on page 9 illustrates that datasets used to train GPT-3 include a 60% training mix of a filtered Common Crawl dataset. Tom B. Brown et al., "Language Models are Few-Shot Learners," 22 Jul 2020, available at https://arxiv.org/pdf/2005.14165.

[32] That is, the model receives inputs of alphanumeric texts as training data. I understand that Dr. Bilmes will be discussing the technical operation of Claude in more detail in his report.

[33] Wayne Xin Zhao et al., "A Survey of Large Language Models," 24 Nov 2023, available at https://www.researchgate.net/profile/Tang-Tianyi-3/publication/369740832_A_Survey_of_Large_Language_Models/links/665fd2e3637e4448a37dd281/A-Survey-of-Large-Language-Models.pdf ("Recent studies have empirically shown that training on excessive data about a certain domain would degrade the generalization capability of LLMs on other domains (footnotes omitted). In contrast, increasing the data source heterogeneity (e.g., including diverse data sources) is critical for improving the downstream performance of LLMs (footnotes omitted).").

[34] Reference Figure 6: Ratios of various data sources in the pre-training data for existing LLMs spans webpages, conversations, books & news, scientific data, and code. Wayne Xin Zhao et al., "A Survey of Large Language Models," 24 Nov 2023, available at https://www.researchgate.net/profile/Tang-Tianyi-3/publication/369740832_A_Survey_of_Large_Language_Models/links/665fd2e3637e4448a37dd281/A-Survey-of-Large-Language-Models.pdf.

commercial agreements, data that its users or crowd workers provided, and data that it generated internally."[35] The pre-training corpus must then be further refined before being used to train the model.

23. I understand that during training, LLMs learn by predicting the next word across billions of text examples. Dr. Kaplan explains that this learning process relies on neural networks, the foundational technology that enables LLMs to extract statistical and linguistic information from texts.[36] A neural network deconstructs the corpus into basic units called "tokens," which can correspond to words, subwords, or characters.[37] Training an LLM requires trillions of tokens to allow the model to recognize the patterns and relationships between words and phrases, and to eventually develop a comprehensive map of how language works.[38] Anthropic's Claude 3.5 Sonnet version, for example, was trained by using [redacted].[39] In order to generate such volumes of tokens, vast amounts of data are needed. I address those data needs in more detail in Section III.A.2 below.

C. Relevant Plaintiff Allegations

24. Plaintiffs claim Anthropic infringed the copyrights of their songs.[40] They assert that the "scraped" data Anthropic acquired from the internet to train Claude introduced copyrighted materials into Anthropic's training corpus, including lyrics in 499 songs to which Publishers own

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[35] Defendant Anthropic PBC's Amended and Supplemental Response to Plaintiffs' Interrogatory No. 6, 9 Oct 2025, 2:19-23 ("Anthropic trained the Claude models using publicly available information via the Internet, content obtained from third parties pursuant to commercial agreements, data that its users or crowd workers provided, and data that it generated internally. More specifically, with respect to publicly available data, Anthropic used data that it obtained by crawling public web pages, as well as data it obtained from publicly available Internet sources including Common Crawl."); *see also* "Model Card and Evaluations for Claude Models," Anthropic, 21 Nov 2023, available at https://www-cdn.anthropic.com/5c49cc247484cecf107c699baf29250302e5da70/claude-2-model-card.pdf.

[36] Kaplan Declaration, at ¶15.

[37] Kaplan Declaration, at ¶15.

[38] Kaplan Declaration, at ¶18 ("Trillions of tokens are required to properly train an LLM like Claude and to ultimately allow the LLM to recognize patterns in language to any useful degree."); *see also* Kaplan Declaration, at ¶16, ("The neural network then analyzes each token in the context of the overall text to glean language principles and the relationship between the words and phrases in the corpus. As the neural network processes this data, it discovers patterns between words and phrases, and extracts statistical information to develop a comprehensive map of how language works, without the need for human intervention.").

[39] Second Kaplan Declaration, at ¶29 ("All of the Claude models were trained by first converting the text of the materials in the training corpus into tokens. Each version was trained using trillions of tokens: [redacted] Claude 2, [redacted] for Claude 3, and [redacted] for Claude 3.5 Sonnet.").

[40] First Amended Complaint and Demand for Jury Trial (Amended Complaint), 25 Apr 2025, at ¶1.

the copyright.[41] Publishers further allege that Claude generated identical or near-identical copies of their lyrics as a response to prompts.[42]

25. I understand Plaintiffs to allege that Anthropic's use of these textual lyrics data in Claude's training corpus and Claude's display of outputs harmed them in one or more potential markets for their copyrighted works.[43] To analyze this further, I consider three purported markets: (1) a purported market for all of the data needed to train a general-purpose LLM, (2) in the alternative, a purported market for song lyrics to train a general-purpose LLM, and (3) a market for the online display of lyrics. This report assesses the effect on these three purported markets of Anthropic's alleged use of lyrics from the Works-In-Suit to train commercial models of Claude and Claude's alleged display of those lyrics as outputs.

III. FACTOR FOUR ANALYSIS

26. Anthropic's counsel has asked me to analyze whether Anthropic's alleged use of lyrics from the Works-In-Suit to train commercial models of Claude and Claude's alleged display of those lyrics as outputs had an effect on the three purported markets listed above.

27. I first consider whether actual or potential markets exist for assembling (1) all of the data needed to train general-purpose LLMs and (2) lyrics for use in LLM training. As an economic matter, I find that these markets did not exist at the time of the alleged use and are unlikely to exist in the future. I therefore conclude there can have been no harm to Plaintiffs in these (nonexistent) markets.

28. Because Plaintiffs have claimed that Claude was able to display song lyrics to its users, I then consider the alleged harm to Plaintiffs in the existing market for the online display of lyrics. Economic principles lead me to expect that harm in that market is unlikely. To test my hypothesis, I examine whether Anthropic's alleged display of lyrics from the Works-In-Suit impacted Plaintiffs in the existing market for online display of lyrics after Claude was

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[41] *See* Exhibit A to Amended Complaint. The initial complaint listed 500 songs, but I understand Plaintiffs no longer assert infringement of the song, "Girls Just Wanna Have Fun," which has been removed from the list of asserted works in the Amended Complaint. Consequently, certain prior citations or references may still indicate 500 songs. *See* Order to Revise Exhibit A to Plaintiffs' First Amended Complaint, 25 Apr 2025.

[42] Amended Complaint, at ¶8.

[43] Amended Complaint, at ¶156.

commercially released. My empirical analyses find no impact on this existing market that would be consistent with Plaintiffs' theory of harm.

A. Effect on the Market to Assemble All of the Data Needed to Train a General-Purpose LLM

1. The Size of Transaction Costs Relative to Value Are Important in Evaluating the Viability and Existence of Markets

29. I begin with a general overview of how markets form from an economics perspective. Markets develop only when particular economic conditions are met. One foundational condition relates to transaction costs. Transaction costs are the costs of using the market mechanism to consummate economic exchange. These costs include all costs associated with executing a transaction beyond the price of the good itself. A simple way to conceptualize transaction costs is to think of the administrative costs involved in finalizing a business deal, which include the costs of finding the right counterparty, hiring professionals to gather relevant information and negotiate the deal, spending time negotiating deal terms, performing due diligence, reviewing legal agreements, and enforcing contracts.

30. Markets can fail to form if transaction costs are prohibitively high relative to the value of the good being purchased.[44] For a market to exist, the value of a good to the buyer must exceed the cost of acquiring it, including transaction costs. A buyer might value a good more than the direct price charged for the good, but if total acquisition costs—i.e., the cost of the good and the associated transaction costs—exceed the buyer's value for the good, the buyer will not purchase it.

31. Turning to the case at hand, in a market for training data, the buyers would be companies like Anthropic that are building general-purpose LLMs. The relevant sellers would be entities that possess rights to data that can be used to train general-purpose LLMs. In the next sections, I apply the economic framework of value and transaction costs to evaluate whether there

[44] N. Gregory Mankiw, *Principles of Microeconomics*, 6th ed., 2012, at pp. 211–212 ("In the real world, however, bargaining does not always work, even when a mutually beneficial agreement is possible. Sometimes the interested parties fail to solve an externality problem because of transaction costs, the costs that parties incur in the process of agreeing to and following through on a bargain…Reaching an efficient bargain is especially difficult when the number of interested parties is large because coordinating everyone is costly.").

are actual or potential markets for (1) all of the data needed to train a general-purpose LLM, or (2) song lyrics to train a general-purpose LLM.

2. There Is No Actual or Potential Market for Assembling All of the Data Needed to Train a General-Purpose LLM

32. Developers looking to train a general-purpose LLM could in theory seek to train their LLMs using only data they have purchased or public domain data. As I outline in Section II.B above, such training corpuses must include tokens generated from an enormous quantity of human-generated text, like software code, books, articles, web pages, and blog posts.

33. Based on the materials I have considered, I conclude that there is no actual or potential market likely to develop for assembling all of the data needed to train a general-purpose LLM. The data needed to train a general-purpose LLM is immense and incredibly diverse, and the potential holders of rights in that data are enormous and highly distributed. For those reasons, a developer seeking to assemble all of the data needed to train a general-purpose LLM would be forced to incur prohibitively large transaction costs to find the right counterparties and negotiate licensing rights at mutually acceptable prices for any sufficiently extensive training dataset. Therefore, even though occasional deals for training data might materialize, no market for assembling all such data exists or is likely to emerge because the transaction costs of conducting these transactions at the scale necessary to successfully train a general-purpose LLM would be prohibitively high. Moreover, because the training corpus for a general-purpose LLM is extremely large, the value of each individual piece of training data to a LLM developer is comparatively very small, and the incremental value of that individual piece of data to the corpus is minimal. And as the size of the training corpus increases, the incremental value of that individual piece of data diminishes. This small incremental value of any one piece of data further reinforces that the transaction costs would vastly outweigh the value of the data and prevent a market from forming.

a) In a Market to Assemble All of the Data Needed to Train a General-Purpose LLM to Exist, Developers Must Be Able to Purchase Vast and Diverse Datasets

34. I first look at whether a market to assemble all of the data needed to train a general-purpose LLM does or could exist. I focus on and start with this market because it is the most relevant market for LLM developers, who need to be able to acquire a large enough set of training

data to train a capable general-purpose AI model. If developers cannot assemble the datasets required to train general-purpose models, the market cannot exist—both buyers and sellers are necessary for a market to function. Put differently, an LLM developer is in the market for trillions of tokens. While these tokens could come from different sources or providers, in the end, they form a common input that are combined to train the final model.

35. Seen this way, the bottom line is that the scale and variety of data required to train a general-purpose LLM means that no actual or potential market is likely to exist in which a developer can assemble all of the data it needs to train a general-purpose LLM.

36. I understand that training advanced LLMs requires an enormous number of tokens, which in turn requires an enormous amount of data. Without a training dataset of sufficient size, a general-purpose LLM could not draw the statistical inferences it needs to provide answers to general questions. According to Anthropic's Chief Science Officer, Dr. Kaplan, LLMs like Claude must be "shown a vast dataset consisting of hundreds of millions, if not billions, of pieces of content."[45] As previously described, training an LLM requires trillions of tokens—Anthropic's Claude 3.5 Sonnet model, for example, contained a training dataset of [redacted] tokens.

37. To illustrate the scale of tokens needed, consider tokens created from books. Anthropic estimates there are "75k words per book," which corresponds to roughly 97,500 tokens.[46] As a result, a [redacted] token training dataset would require more than [redacted].[47] This exceeds, [redacted] Another way to grasp this magnitude is by looking at newspapers: if we

[45] Second Kaplan Declaration, at ¶¶17-18.

[46] *See* Anthropic 000231226, Exhibit 28 to the Deposition of Tom Turvey, "Overall Market Estimates" tab (noting "75k est. words per book)."

[47] I multiply the 75,000 words per book number by 1.3, with the assumption that 1 token corresponds to approximately 0.75 words. *See* Nathaniel Lovin et al., "From Tokens to Context Windows: Simplifying AI Jargon," Technology Policy Institute, available at https://techpolicyinstitute.org/publications/artificial-intelligence/from-tokens-to-context-windows-simplifying-ai-jargon/, accessed on 18 Dec 2025 ("A good rule of thumb is that any given text will have about 30 percent more tokens than it does words, though this can vary based on the text and the specific tokenization algorithm used."). Next, I divide [redacted].

[48] Anthropic produced working estimates of the overall landscape of the global and US data sources for text like books, academic journals, and news articles and arrived at estimates of 174,864,800 books in the world. *See* Anthropic 000231226, Exhibit 28 to the Deposition of Tom Turvey.

assume that an average newspaper publishes 50,000 words per day, as Anthropic estimated,[49] then a full 100-year archive would amount to over 1.8 billion words—meaning that it would take over [redacted] archives of that size to match Claude's training dataset.

38. In addition to the sheer volume of tokens needed, the datasets used for training general-purpose LLMs must contain an extremely diverse range of information in order to be able to respond to users' queries.[50] As Dr. Kaplan stated, "any functional general-purpose LLM requires a very diverse set of training data to gain a sufficiently precise understanding of the full range of human language and human experience."[51] Without using a variety of sources for training datasets, developers find that their models degrade.[52] It follows, then, that an LLM that is trained only on either data in the public domain[53] or data licensed from a small set of copyright owners would not have a sufficiently large or diverse enough dataset to operate. Other models might be

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[49] *See* Anthropic 000231226, Exhibit 28 to the Deposition of Tom Turvey, Tab "Overall Market Estimates," cell G2.

[50] Second Kaplan Declaration, at ¶23 ("LLMs like Claude are general-purpose tools that need to be familiar with everything from how emails are drafted, how to write programs in C++, how many states are in the Union, and on and on. It follows that when texts are similar they are considered fungible for purposes of the model. For example, it does not ultimately matter what specific articles are included in the training data, so long as articles in general are included to diversify the training corpus."); *see also* Deposition of Jared Kaplan, 21 Nov 2025, 152:15-19 ("Each individual work is really of vanishing importance, diversity is important, and song lyrics are simply an example that may be useful and that one can discuss, among millions of other possibilities."); Deposition of Tom Turvey (30)(b)6), 5 Nov 2025, 19:7-15 ("Q: What kind of data does Anthropic use with its AI models? . . . A: Broadly, very, very diverse kinds of data, all kinds of data; things that you would see on the Internet, other kinds of data that I might acquire under a commercial license. It's very broad and diverse."). An internal Anthropic presentation noted that, "A bare pretrained LLM is a text completion engine (a 'glorified autocomplete') trained on gigabytes of incredibly diverse internet data." *See* Anthropic 0000347289 at Anthropic 0000347296, "How do we Train Claude? AMA with Product Research," 11 Jan 2023.

[51] Second Kaplan Declaration, at ¶23.

[52] *See, e.g.*, Shayne Longpre et al., "A Pretrainer's Guide to Training Data: Measuring the Effects of Data Age, Domain Coverage, Quality, & Toxicity," 13 Nov 2023, available at https://arxiv.org/pdf/2305.13169 ("Decisions on the composition of a corpus intended for pretraining can have substantial impacts on downstream performance. . . It is more complex and costly to assemble a corpus which contains diverse sources, writing styles, and thematic areas. Achieving this diversity might also leave models vulnerable to less careful curation or gaps in practitioner knowledge. . . . Our results suggest that practitioners should not omit any data sources if generalization to as many text-to-text tasks is the goal, and that future work should focus on collecting more diverse web and books content, which yield the largest benefits."); *see also* Yiding Sun et al., "An Integrated Data Processing Framework for Pretraining Foundation Models," 23 Apr 2024, available at https://arxiv.org/pdf/2402.16358 ("The ability of the foundation models heavily relies on large-scale, diverse, and high-quality pretraining data.").

[53] The question of whether there is enough public domain data to train a general-purpose LLM is a technical and empirical one, but I have not seen any sources that indicate that public domain data would be sufficient. Common Corpus, an open licensed pre-training dataset, contains roughly 2 trillion tokens. *See* "common_corpus/README.md," Hugging Face, available at https://huggingface.co/datasets/PleIAs/common_corpus/blob/main/README.md.

capable of training on smaller datasets, but those "do not operate on the same scale as Claude," as Dr. Kaplan has stated.[54]

b) A Developer Seeking to License the Training Data Required for a General-Purpose LLM's Training Corpus Would Incur Infeasibly High Transaction Costs

39. For the reasons explained in the prior subsection, to evaluate whether Anthropic's alleged use of lyrics to which Plaintiffs own the copyright caused relevant economic harm, I focus on the actual or potential market to assemble all of the data needed to train a general-purpose LLM. For there to be harm in such a market, it must exist. And for a market to exist, transaction costs must be low enough that buyers will still seek to purchase goods.

40. By my assessment, and as I describe in further detail below, the sheer scale and variety of the data needed to train LLMs means that the transaction costs for an LLM developer seeking to license this training data would be infeasibly high. Even if Anthropic could execute 10 deals per month, with an average of 30 billion tokens per deal,[55] it would take over [redacted] to negotiate enough deals to build a [redacted] token corpus.[56] I therefore conclude that the market for data required to train a general-purpose LLM is not likely to exist.

41. Several factors would increase the transaction costs for acquiring sufficient data to train a general-purpose LLM if it were necessary to license all non-public data used to train it.

42. First, because of the scale of training data required for general-purpose LLMs, developers would need to make deals with hundreds of millions of different rightsholders. The Library of Congress estimated in 2023 that it had more than 178 million items in its collections,[57]

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[54] Declaration of Jared Kaplan in Support of Defendant's [Proposed] Surresponse to Plaintiffs' Renewed Motion for Preliminary Injunction (Surresponse Kaplan Declaration), 7 Oct 2024, at ¶ 8 ("[I]t is still the case that vast troves of training data are required to train general-purpose generative AI models like Claude. Again, while there are AI models trained on fewer tokens, those models have fewer capabilities and do not operate on the same scale as Claude. . . . [Some models] are specifically crafted to "memorize the test" in order to provide the appearance of strong performance, but they tend to generalize poorly and are of limited utility.").

[55] For illustration, 30 billion tokens corresponds to 309,278 books, if I assume a book has 97,500 tokens on average.

[56] Average total tokens per month = 10 deals per month x 30 billion tokens per deal = 300 billion tokens per month. Thus, the number of years it would take to negotiate a sufficient number of deals = [redacted]

[57] *See* "General Information," Library of Congress, available at https://www.loc.gov/about/general-information/, accessed on 10 Dec 2025.

and Anthropic's own documents estimate that 174 million books exist in the world, 3 million academic journal articles are published each year, and 4.1 million articles are published each year from leading global newswires.[58] These estimates do not include the many millions of additional rightsholders for other sources of human-written text, including other types of content found on the internet. If a developer could only acquire training data through licenses or the public domain and thus had to negotiate with all of these additional rightsholders, the process of obtaining tokens for its dataset would be prohibitively time-intensive for its employees.

43. Second, identifying and locating each of these counterparties would be prohibitively expensive given the sheer number of rightsholders. In the context of copyright, there is a well-known problem of "orphan works"—materials whose rightsholders are extremely difficult to identify or impossible to locate.[59] This problem is even worse online, where researchers have documented a "crisis" in attribution of information.[60] Because general-purpose LLMs require a large volume of internet data,[61] poor attribution practices on the internet mean that identifying, let alone contacting and negotiating with, individual authors is rarely feasible.[62] Even for works

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[58] Anthropic produced working estimates of the overall landscape of the global and US data sources for text like books, academic journals, and news articles. Even focusing on what it called [redacted] Anthropic identified 4,292,365 books. *See* Anthropic 000231226, Exhibit 28 to the Deposition of Tom Turvey.

[59] "Report on Orphan Works," United States Copyright Office, Jan 2006, available at https://www.copyright.gov/orphan/orphan-report.pdf, accessed on 10 Dec 2025 (noting that orphan works occur for reasons "such as (1) inadequate identifying information on a copy of the work itself; (2) inadequate information about copyright ownership because of a change of ownership or a change in the circumstances of the owner; (3) limitations of existing copyright ownership information sources; and (4) difficulties researching copyright information.").

[60] Shayne Longpre et al., "The Data Provenance Initiative: A Large Scale Audit of Dataset Licensing & Attribution in AI," 4 Nov 2023, available at https://arxiv.org/pdf/2310.16787 ("Our work points to a crisis in license laundering and informed usage of popular datasets, with systemic problems in sparse, ambiguous, or incorrect license documentation.").

[61] Defendant Anthropic PBC's Amended and Supplemental Responses to Plaintiffs' Interrogatories Nos. 4, 5, 6, 9, 10, 11, 12, & 13, 20 Dec 2024 ("Anthropic trains its models on massive amounts of data, including portions of datasets sourced from the Internet (such as, without limitation, components of Common Crawl) and Anthropic does not know all the contents of those datasets.").

[62] Shayne Longpre et al, "The Data Provenance Initiative: A Large Scale Audit of Dataset Licensing & Attribution in AI," 4 Nov 2023, available at https://arxiv.org/pdf/2310.16787 ("Our work points to a crisis in license laundering and informed usage of popular datasets, with systemic problems in sparse, ambiguous, or incorrect license documentation. Notably, we find that 70%+ of licenses for popular datasets on GitHub and Hugging Face are "Unspecified", leaving a substantial information gap that is difficult to navigate in terms of legal responsibility. Second, the licenses that are attached to datasets uploaded to dataset sharing platforms are often inconsistent with the license ascribed by the original author of the dataset—our rigorous re-annotation of licenses finds that 66% of analyzed Hugging Face licenses were in a different use category, often labeled as more permissive than the author's intended license.").

for which all counterparties can be identified and contacted, the cost of identifying each rightsholder can render the process impracticable. Moreover, the U.S. Copyright Office has noted that, "[i]n the case of mass digitization, the issue is not so much a lack of information as it is a lack of efficiency in the licensing marketplace. For a digitization project involving hundreds, thousands, or millions of copyrighted works, the costs of securing ex ante permissions from every rightsholder individually often will exceed the value of the use to the user. This would be true even if every relevant copyright owner could be identified and located."[63] Although digitizing books for library patrons is a different use case than using book data for training a general-purpose LLM, the transaction costs in both cases of contacting all the rightsholders for the books are comparable and impractically high.

44. Third, even when counterparties are easily identifiable and have rights to multiple works, negotiations may be infeasible because a counterparty may possess only certain rights to a particular work. For example, publishers or other aggregators may have licensed some—but not necessarily all—the rights to a work, and existing contracts between publishers and individual artists or creators of a work may not permit the publisher to license that work for training LLMs.[64] As a result, some rightsholders may not be able to license a work for general-purpose LLM training.

45. Consider books. Book distributors are given a license to distribute books from publishers to retailers, and retailers may sell those books to the public. But neither distributors nor retailers necessarily have the rights to sublicense the content—or the copyrighted written text—that they receive.[65] Only the copyright owner, such as the book author, has the right to sublicense the text itself. Depending on their specific contracts, individual authors can retain these rights,

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[63] "Orphan Works and Mass Digitization," United States Copyright Office, Jun 2015, available at https://www.copyright.gov/orphan/reports/orphan-works2015.pdf, accessed 14 Dec 2025.

[64] Dave Hansen, "What happens when your publisher licenses your work for AI training?," Authors Alliance, 30 Jul 2024, available at https://www.authorsalliance.org/2024/07/30/what-happens-when-your-publisher-licenses-your-work-for-ai-training/, accessed on 10 Dec 2025 ("Some publisher agreements are far more limited–transferring only limited publishing and subsidiary rights. These limitations in the past have prompted litigation over whether the publisher or the author gets to control rights for new technological uses. Results have been highly dependent on the specific contract language used. There are also instances where publishers aren't even sure of what they own.").

[65] Julie Trelstad, "Subsidiary vs. Distribution Rights: What Indie Publishers Need to Know," StreetLib Blog, 27 Jun 2025, available at https://blog.streetlib.com/subsidiary-vs-distribution-rights/, accessed on 14 Dec 2025 ("Retailers and distributors, including StreetLib, make it clear that they do not gain any rights to your intellectual property.").

including the right to license material for training LLMs.[66] As one example, HarperCollins and Microsoft came to an agreement to license the publishing house's works for use by Microsoft's AI product. But presumably because HarperCollins did not hold the rights to license the works to train LLMs, the HarperCollins-Microsoft agreement required the book authors to opt in in order for Microsoft to include their works in the licensed dataset.[67] This illustrates that negotiations between a publisher and a company looking to license a dataset are only a first step; the purchasing company will still need to incur additional transaction costs in contacting rightsholders to allow them to opt in.

46. Other content sources present similar challenges. Tom Turvey, the Vice President of Product Partnerships at Anthropic,[68] identified in his deposition several examples of difficulties he encountered when negotiating with companies to acquire the rights to various datasets. For example, when [redacted] Mr. Turvey was told that [redacted] Similarly, he noted that [redacted]

[66] Dave Hansen, "What happens when your publisher licenses your work for AI training?," Authors Alliance, 30 Jul 2024, available at https://www.authorsalliance.org/2024/07/30/what-happens-when-your-publisher-licenses-your-work-for-ai-training/, accessed on 10 Dec 2025.

[67] Grace Harmon, "Microsoft and HarperCollins sign AI licensing deal," EMarketer, 25 Nov 2024, available at https://www.emarketer.com/content/microsoft-harpercollins-sign-ai-licensing-deal--author-opt-in-still-required, accessed on 10 Dec 2025 ("Authors need to opt in to the training program.").

[68] In this role, his responsibilities were "[d]ata licensing for the company and licensing for product services or features." *See* Deposition of Tom Turvey 30(b)(1), 11 Nov 2025, 29:17-18; *see also* Deposition of Tom Turvey 30(b)(1), 11 Nov 2025, 30:24-31:2 [redacted].

[69] Deposition of Tom Turvey 30(b)(1), 11 Nov 2025, 183:24-184:18 [redacted]

[70] Deposition of Tom Turvey 30(b)(1), 11 Nov 2025, 183:22-23.

[redacted][71] And when Mr. Turvey [redacted]

47. Fourth, even the largest rightsholders represent only a fraction of the data needed to train a general-purpose LLM such as Claude. For example, OpenAI and *The New York Times* were in talks for months about licensing the newspaper's content, only for the potential deal to fail.[73] One of the reasons the deal fell through, according to OpenAI, was that even a highly regarded corpus like the one belonging to *The New York Times* did not represent a large enough dataset relative to OpenAI's overall data needs.[74]

48. Fifth, even a single negotiation by an AI company can be incredibly time-consuming. Based on public reporting, the licensing agreement between OpenAI and News Corp, a media company, took almost half a year to conclude. [75] And these are both large, sophisticated

[71] Deposition of Tom Turvey 30(b)(1), 11 Nov 2025, 190:23-24; *see also* Deposition of Tom Turvey 30(b)(1), 11 Nov 2025, 62:12-14.

[72] Deposition of Tom Turvey 30(b)(1), 11 Nov 2025, 62:19-24.

[73] Michael M. Grynbaum and Ryan Mac, "The Times Sues OpenAI and Microsoft Over A.I. Use of Copyrighted Work," 27 Dec 2023, available at https://www.nytimes.com/2023/12/27/business/media/new-york-times-open-ai-microsoft-lawsuit.html, accessed on 10 Dec 2025 ("The New York Times sued OpenAI and Microsoft for copyright infringement on Wednesday, opening a new front in the increasingly intense legal battle over the unauthorized use of published work to train artificial intelligence technologies. . . . In its complaint, The Times said it approached Microsoft and OpenAI in April to raise concerns about the use of its intellectual property and explore "an amicable resolution," possibly involving a commercial agreement and "technological guardrails" around generative A.I. products. But it said the talks had not produced a resolution.").

[74] "OpenAI and Journalism," OpenAI, 8 Jan 2024, available at https://openai.com/index/openai-and-journalism/, accessed on 10 Dec 2025 ("Because models learn from the enormous aggregate of human knowledge, any one sector—including news—is a tiny slice of overall training data, and any single data source—including The New York Times—is not significant for the model's intended learning. . . . We had explained to The New York Times that, like any single source, their content didn't meaningfully contribute to the training of our existing models and also wouldn't be sufficiently impactful for future training.").

[75] According to *The New York Times,* talks between OpenAI and News Corp began around December 2023, centered on a potential content-licensing partnership. *See* Benjamin Mullin, "Inside the News Industry's Uneasy Negotiations With OpenAI," The New York Times, 29 Dec 2023, available at https://www.nytimes.com/2023/12/29/business/media/media-openai-chatgpt.html, accessed on 4 Dec 2025. News Corp and OpenAI announced a multi-year global agreement on May 22, 2024. *See* "News Corp and OpenAI Sign Landmark Multi-Year Global Partnership," News Corp, 22 May 2024, available at https://investors.newscorp.com/news-releases/news-release-details/news-corp-and-openai-sign-landmark-multi-year-global-partnership, accessed on 10 Dec 2025.

companies with legal teams and experience contracting. Scaling this effort to hundreds of millions of rightsholders, many of whom would be individuals with no relevant experience or expertise, simply will not be feasible.[76]

49. Anthropic itself has experienced significant transaction costs when attempting to negotiate agreements with data providers. I understand that Mr. Turvey, the Vice President of Data Partnerships at Anthropic, [redacted][77]

50. These significant transaction costs far exceed the value that any individual piece of training data could have. Even if a piece of data has some value and contributes to the training of a general-purpose LLM, each piece of data on its own has very little incremental value to the training corpus, which requires trillions of tokens. In other words, the additional value that a new piece of data contributes to an extremely large training corpus is minimal. And regardless of the value an LLM developer places on the training data, the significant transaction costs will still exceed the value of the data. Even though the data may have some non-zero value to a developer—or even when the data may have a relatively high value to the developer—the transaction costs of negotiating each deal to assemble a sufficiently large training corpus could be insurmountable. When this problem afflicts a majority of the data needed by the LLM developer, it will prevent the market from forming. This is particularly true in the regime that Plaintiffs endorse, where an LLM

[76] In the context of IP, one study found that nearly half of licensing negotiations failed. Reference Table 1, Summary Statistics (noting that the mean "Level of agreements reached once negotiations were started" was .563, or 56%.). *See* Ajay Agrawal et al., "Deals Not Done: Sources of Failure in the Market for Ideas," *Strategic Management Journal*, Vol. 36, 18 Apr 2014, available at https://sms.onlinelibrary.wiley.com/doi/10.1002/smj.2261.

[77] Reference rows 50, 88, 105, and 150 under [redacted] *See* Anthropic 0000441006, [redacted].

developer would only be able to acquire training data that is available from the public domain[78] and by licensing from each relevant copyright owner. Again, this stems from basic economic principles: if the transaction costs are exceedingly high and outweigh the value of the data, then the costs will not make it worthwhile for a buyer to pursue. Even in the rare event that a dataset's value exceeds the substantial transaction costs of securing it, such cases would be rare exceptions rather than the rule. Those exceptional cases would likely not be sufficiently large enough to support a training corpus for a general-purpose LLM, nor would the exceptional cases be enough to facilitate an ongoing exchange between buyers and sellers needed to sustain a marketplace.

51. In sum, all of these reasons support my conclusion that the transaction costs for acquiring all of the data needed to train a general-purpose LLM would be prohibitively high. This is because an incredibly large number of rightsholders hold the rights to the vast and diverse data required to train an LLM, and contacting all of them to identify and negotiate licenses for data to train an LLM would incur insurmountable transaction costs for LLM developers like Anthropic. I therefore conclude that no actual or potential market for data required in a general-purpose LLM's training corpus is likely to be viable in the face of these transaction costs.

3. There is No Actual or Potential Market for Lyrics Used to Train a General-Purpose LLM

52. As explained, the relevant market is for assembling of all the data needed to train a general-purpose LLM. No such market existed at the time of Anthropic's alleged conduct, nor is one likely to exist in the future. I nevertheless consider a second market for song lyrics to train a general-purpose LLM. As I have stated above, however, this is not the relevant market for developers of general-purpose LLMs like Anthropic, who need to be able to acquire a large and diverse set of training data sufficient for their training corpus. A market for only lyrics data to train a general-purpose LLM simply could not form because the developer would not be able to train its model without the massive quantities and varieties of data it needs.

53. The evidence I have reviewed demonstrates that the value of lyrics for training a general-purpose LLM is very low relative to other kinds of training data. Given this low value, I do not expect a market for lyrics to train a general-purpose LLM to form. Although transaction

[78] Even determining whether something is in the public domain presents transaction costs.

costs to acquire lyrics as training data would be comparatively lower than the transaction costs needed to assemble all of the data needed to train a general-purpose LLM in the first market I described, the transaction costs would nevertheless be substantial. The low value of lyrics as training data, paired with the substantial transaction costs of negotiating licenses, lead me to conclude that a market for lyrics training datasets did not exist in 2021 and is not likely to form in the future.

a) The Value of Lyrics in Training General-Purpose LLMs is Low

54. I first examine the importance of lyrics to a general-purpose LLM's training dataset. As stated above, general-purpose LLMs have commercial value because they can provide answers to a vast range of user inquiries. As I note in Section II.B, to respond to the vast and diverse range of user prompts, LLMs need a vast and diverse dataset. To assemble that dataset, developers must turn to a wide array of fact-rich sources like the open web, books, and academic articles.[79]

55. From the perspective of an LLM developer building a general-purpose model, lyrics are unlikely to be especially valued and would comprise just one (extremely small) subset of the overall data sought and needed to train a viable general-purpose AI model.[80] In the preparation of my report, I have spoken with Dr. Jeffrey Bilmes, an expert who was retained by counsel for Anthropic. I understand that Dr. Bilmes has analyzed the lyrics to the Works-In-Suit to calculate the number of tokens they would comprise. I understand he has concluded the lyrics to the 499 Works-In-Suit only represent an estimated 213,891 tokens. When divided by [redacted] the number of tokens used to train Claude 3, that equates to the lyrics representing only [redacted] of the total tokens used to train that model of Claude.

56. At a few hundred words per song, there are just not that many tokens available from any particular song lyrics or even entire catalogs of song lyrics—certainly when compared to the

[79] Shayne Longpre et al., "A Pretrainer's Guide to Training Data: Measuring the Effects of Data Age, Domain Coverage, Quality, & Toxicity," 13 Nov 2023, available at https://arxiv.org/pdf/2305.13169 ("Lastly, we empirically validate that the inclusion of heterogeneous data sources, like books and web, is broadly beneficial and warrants greater prioritization.").

[80] Defendant Anthropic PBC's Responses and Objections to Plaintiffs' Third Set of Interrogatories (Nos. 16-25), 9 Oct 2025, at p. 24 ("Song lyrics are not weighted more than other text in Anthropic's training corpus, and a good model relies on both a large amount of data and a wide diversity of data.").

trillions of digitized words from books, newspapers, and other written text.[81] To illustrate, consider the combined catalog of Plaintiffs Universal Music Publishing Group ("UMPG") and Concord Music Group, Inc. ("Concord"), which includes 6.3 million songs.[82] If each song has approximately 300 words,[83] there would be 1.9 billion words, or approximately 2.5 billion tokens, from the full catalog of UMPG and Concord songs. That would correspond to [redacted].[84] In fact, even if one were to acquire all one hundred million tracks that Spotify claims to have, they would still make up less than [redacted][85] These calculations signify to me that, on their own, the lyrics to the songs Plaintiffs own rights to do not significantly contribute to the volume needed for a general-purpose LLM.

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[81] Anthropic documents estimated that [redacted] *See* Anthropic 000231226, Exhibit 28 to the Deposition of Tom Turvey, "Overall Market Estimates" tab at row 6.

[82] "About," Concord, available at https://concord.com/about/, accessed on 11 Dec 2025 ("Concord's growing catalog of 1.3 million songs, compositions, sound recordings, films, plays, and musicals is one of the most impactful and culturally relevant collections of creative rights in history"); *see also* Tim Ingham, "5 Million Songs and $288M Spent on Catalogs: 8 Things We Learned From Universal Music Group's 2024 Annual Report," Music Business Worldwide, 1 Apr 2025, available at https://www.musicbusinessworldwide.com/5-million-songs-and-288m-spend-on-catalog-8-things-we-learned-from-universal-music-groups-2024-annual-report/, accessed on 11 Dec 2025 ("According to the latest UMG annual report, the company's publishing division (UMPG) now represents songwriting cuts in approximately 5 million songs.").

[83] I choose 300 as a representative estimate. Song lyrics were once quite short, but have been increasing in recent years. William Weir, "Words Words Words: Are Excessive Lyrics Ruining Pop Music?," Slate, 11 Mar 2008, available at https://slate.com/culture/2008/03/are-excessive-lyrics-ruining-pop-music.html, accessed on 11 Dec 2025. This number is also consistent with the average number of words for the Works-In-Suit. I understand from Dr. Bilmes that the 499 songs have 144,090 words in total, which averages out to 289 words per song.

[84] The number of tokens per word is approximately 1.3 tokens. *See* Nathaniel Lovin et al., "From Tokens to Context Windows: Simplifying AI Jargon," Technology Policy Institute, available at https://techpolicyinstitute.org/publications/artificial-intelligence/from-tokens-to-context-windows-simplifying-ai-jargon/, accessed on 18 Dec 2025. The number of tokens for the full catalog from UMPG and Concord is calculated as 6.3 million songs x 300 words per song x 1.3 tokens per word = 2.457 billion tokens. The percentage training data that is attributed to the full catalog of UMPG and Concord songs is calculated as 2.457 billion tokens [redacted]

[85] "About Spotify," Spotify, available at https://newsroom.spotify.com/company-info/, accessed on 11 Dec 2025 ("Today, more listeners than ever can discover, manage and enjoy over 100 million tracks, nearly 7 million podcast titles, and 350,000 audiobooks a la carte on Spotify."). The number of tokens per word is approximately 1.3 tokens. *See* Nathaniel Lovin et al., "From Tokens to Context Windows: Simplifying AI Jargon," Technology Policy Institute, available at https://techpolicyinstitute.org/publications/artificial-intelligence/from-tokens-to-context-windows-simplifying-ai-jargon/, accessed on 18 Dec 2025. The number of tokens per word is calculated as follows: 97,500 tokens / 75,000 words = 1.3 tokens per word. The number of tokens that could be attributed to Spotify's catalog is calculated as 100 million songs x 300 words per song x 1.3 tokens per word = 39 billion tokens. The percentage is calculated as 39 billion / [redacted] or written as a percent as [redacted].

57. Furthermore, song lyrics on their own do not help solve for the need to train a general-purpose LLM with highly diverse data. My opinion based on my understanding of the facts is supported by Dr. Bilmes' opinion that lyrics are themselves not a diverse dataset for the purposes of training a general-purpose LLM—they tend to be short on facts, repetitive, and limited in their vocabulary. They also tend to include a far narrower range of topics, which minimizes the diversity that they contribute. And in any case, in order for an advanced general-purpose LLM to respond to generalized questions—that is, give answers that are themselves diverse in the topics they address—it requires a highly varied dataset, and cannot rely on any one type of data for training.[86] While other LLM models on the market might be capable of training on smaller datasets, those "do not operate on the same scale as Claude," as Dr. Kaplan has stated.[87]

58. My conclusions are also supported by Dr. Bilmes's opinion that not all data is equally valuable in training general-purpose LLMs, and that lyrics are simply not considered to be a particularly valuable dataset. This is consistent with the record I have reviewed in this case. For example, Mr. Turvey, Anthropic's Vice President of Product Partnerships, testified in his deposition that [redacted]

[86] Haihong Zhao et al., "All in One and One for All: A Simple yet Effective Method towards Cross-domain Graph Pretraining," 22 Jun 2024, available at https://arxiv.org/pdf/2402.09834 ("One of the most notable advancements of LLMs is that a single model is trained on vast and diverse datasets spanning multiple domains – a paradigm we term 'All in One'. This methodology empowers LLMs with super generalization capabilities, facilitating an encompassing comprehension of varied data distributions.").

[87] Surresponse Kaplan Declaration, 7 Oct 2024, at ¶ 8 ("[I]t is still the case that vast troves of training data are required to train general-purpose generative AI models like Claude. Again, while there are AI models trained on fewer tokens, those models have fewer capabilities and do not operate on the same scale as Claude. . . . [Some models] are specifically crafted to "memorize the test" in order to provide the appearance of strong performance, but they tend to generalize poorly and are of limited utility.").

[88] According to Mr. Turvey, the purpose of the document was to [redacted] *See* Deposition of Tom Turvey 30(b)(6), 5 Nov 2025, 70:2-5.

[89] [redacted] *See* Deposition of Tom Turvey 30(b)(6), 5 Nov 2025, at 25:3-14.

[redacted].[90] The document shows that [redacted]

59. By contrast, on the same [redacted]

90 [redacted]

91 [redacted]

92 *See* Anthropic 0000228080, Exhibit 30 to the Deposition of Tom Turvey.

[redacted]

60. I also understand that song lyrics have low value for training general-purpose LLMs because there are other ways to help train LLMs to answer user prompts regarding songs and songwriting. As Anthropic President Daniela Amodei noted in her deposition, a general-purpose LLM can learn about songs from a variety of sources beyond the lyrics themselves.[94] My observations based on the record produced in this case are consistent with what I understand from Dr. Bilmes, that to the extent that it is helpful for a general-purpose LLM to understand music, lyrics, and the structure of songs, other data sources, such as books and the internet, offer this information.

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[93] *See* Anthropic_0000228080, Exhibit 30 to the Deposition of Tom Turvey. [redacted]

[94] *See, e.g.*, Deposition of Daniela Amodei, 12 Nov 2025, 180:7-11 ("It's possible that it, you know, learned that information from seeing song lyrics that were publicly available or from reading books about how people write songs or from reading other publicly available or purchased information."); *see also* Deposition of Jared Kaplan, 21 Nov 2025, 292:4-8 ("As I indicated earlier, I think it's likely that music reviews, discussions of songs, discussions of music, of poetry are likely to be more relevant to Claude's behavior than song lyrics."); Deposition of Benjamin Mann 30(b)(6), 20 Nov 2025, 114:22-115:10 ("So taking a step back, I believe that even if we didn't have the lyrics themselves, there are enough – there's enough content in all the different kinds of data that we collect that is So taking a step back, I believe that even if we didn't have the lyrics themselves, there are enough – there's enough content in all the different kinds of data that we collect that is about songs, about lyrics, about the process of creating songs, that Claude would continue to have a strong understanding of what song lyrics are, and that there are enough analogs to song lyrics, such as poems, that are completely different, many of which are public domain, that Claude would have no problem understanding what song lyrics are and how to write new ones without access to any of the lyrics indicated in this case, let alone outside of the case.").

61. Furthermore, lyric-related research is not an important use case for Claude's users. It is possible that some Claude users may have questions about music, but the record I have reviewed indicates that neither analyzing and writing songs nor requesting lyrics is a frequent or typical use case among Claude users.[95] First, as noted above, Anthropic's core business is enterprise and business clients, and I would not expect enterprise users to use Claude to search for lyrics, as this use case does not align with typical business needs.[96] Second, I also would not expect non-enterprise users to use Claude to search for lyrics. In my experience, a non-enterprise customer is interested in an LLM's abilities for general-purpose tasks like coding, document summarization, and classification rather than the retrieval of music lyrics. Instead, and consistent with Anthropic's "Clio" reports (Claude insights and observations) explaining common consumer usage, the most frequent use cases for Claude.ai include web and mobile application development assistance such as coding, content creation and communication assistance, academic research and writing assistance, education and career development assistance, and supporting advanced AI and machine learning technologies and applications.[97] The Clio Report confirms that none of the top ten use cases for Claude.ai, which account for more than 60% of use cases analyzed, involves requesting song lyrics.[98] This is consistent with my own personal usage of AI: even though I use AI models

[95] Defendant Anthropic PBC's Responses and Objections to Plaintiffs' Third Set of Interrogatories (Nos. 16-25), 9 Oct 2025, 19:13-21 ("Analysis of the data from Clio reveals that requesting song lyrics is not how Anthropic users typically use Claude. As publicly reported in the Clio Report, the data from Clio indicates that the most frequent use cases for Claude.ai are as follows: (1) web and mobile application development assistance (including coding), (2) content creation and communication assistance in a variety of disciplines, (3) academic research and writing assistance, (4) education and career development assistance, (5) supporting advanced AI and machine learning technologies and applications, (6) providing business strategy and operations assistance in various industries, (7) language translation and analytical services, (8) development operations and cloud infrastructure support, (9) digital marketing and search engine optimization assistance, and (10) data analysis."); *see also* Deposition of Deep Ganguli 30(b)(1), 6 Nov 2025, 142:7-11 ("In the context of your question 'learning about songs,' I have seen clusters related to analyzing the meaning behind songs, writing new songs, and so it's – it's a -- not a typical use case.").

[96] *See* Section II.A.

[97] *See* Anthropic 0000013383; *see also* Anthropic's Supplemental Responses and Objections to Plaintiffs' Interrogatory No. 18, 5 Nov 2025.

[98] *See* Anthropic 0000013383; *see also* Anthropic's Supplemental Responses and Objections to Plaintiffs' Interrogatory No. 18, 5 Nov 2025.

heavily in my day-to-day work, when I am looking up song lyrics, I rely on online lyrics websites retrieved through a Google search rather than through an AI model like Claude.[99]

62. My own opinions based on experience and my review of the record are also consistent with the findings of Dr. Andrew Bray. I understand Dr. Bray is an expert who was retained by counsel for Anthropic to analyze the 5 million prompts and outputs Anthropic produced as a sample of its records, and he found that for the records he reviewed, his analysis identified only 0.0059% of prompts that sought any amount or form of regurgitation of the lyrics to the Works-In-Suit. This is consistent with my understanding that Claude is not designed to regurgitate lyrics, and that requests related to lyrics or songs are not frequent use cases.

63. Consistent with the premise that song lyrics have low value for use in training general-purpose LLMs, my review of the record indicates that researchers and executives at Anthropic did not in fact prioritize lyrics when seeking training data. Mr. Turvey noted that licensing lyrics for use in a training dataset was "not on anyone's list" of desired data[100] and that "[t]ypically we had not been asked for lyric data for my team to pursue."[101] In his deposition, Chief Science Officer Dr. Kaplan similarly noted that "song lyrics aren't something that Anthropic particularly focuses on."[102] To the extent Plaintiffs' lyrics are present in Anthropic's training databases, it is because they were likely present on websites that permitted web crawling.

64. In sum, for all the reasons stated, lyrics have minimal value to training a general-purpose LLM and, even on a catalog-size scale, lyrics comprise a very small portion of a training dataset. As the record shows me, Anthropic itself agreed with this view and believed that lyrics were of minimal value for its model. Given the low priority a company like Anthropic has for such

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[99] *See also* Deposition of Benjamin Mann 30(b)(1), 21 Nov 2025, 197:2-13 ("[G]enerally, when using an AI model, we expect our users to get outputs that either have never been produced before or are derivative of existing outputs, but not the same. If they wanted the original outputs, we would expect that they would go to other tools, like Google search or the library or many other possible places where they could get that information … [E]ven in my own life, I frequently will go to Google instead of using our own services."); Deposition of Thomas Turvey 30(b)(1), 5 Nov 2025, 103:2-5 ("Q: Have you ever used Claude to look up lyrics to a song? A: That's a good question. No, not that I recall."); Deposition of Vinay Rao 30(b)(1), 7 Nov 2025, 117:22-118:2 ("Q: Have you ever asked Claude about the lyrics to a song? A: No. Q: Have you ever looked up the lyrics to a song from a non-Claude source? A: From Google, yeah.").

[100] Deposition of Tom Turvey 30(b)(1), 5 Nov 2025, 107:6-10 ("Q: Have you held any discussions with anyone at Anthropic about the possibility of licensing music lyrics for the use as AI training data? A: No, I have not. It's not on anyone's list.").

[101] Deposition of Tom Turvey 30(b)(6), 5 Nov 2025, 41:7-8.

[102] Deposition of Jared Kaplan, 21 Nov 2025, 292:15-16.

lyrics, purchasing such a training dataset would only make economic sense if the cost of doing so were extremely low. However, as I consider in the next section, there are numerous reasons to believe that transaction costs for purchasing lyrics licenses for training datasets would be prohibitively high. For that reason, I would not expect to see many such deals, either in the past or in the future.

b) Purchasing Lyric Tokens to Train a General-Purpose LLM Would Involve Sizable Transaction Costs

65. There are a number of reasons to believe that the transaction costs of securing lyric training datasets would be prohibitively expensive. As I note in the prior section, developers assemble training databases for general-purpose LLMs in part by obtaining a large corpus of text from the internet. Inevitably, this training dataset will include a variety of song lyrics as they are readily available on public websites.[103] Before even attempting to license the information included in this dataset, then, developers would need to try to determine who the rightsholders to the songs are. This is not a straightforward task.

66. First, there are over a hundred million songs[104] protected by copyright. Identifying each rightsowner would be extremely burdensome, if not impossible. Second, even accounting for the millions of songs that are collectively managed by a handful of music publishers, the industry has a "long tail" of musicians who are unaffiliated with any music publisher whatsoever. An estimated 25% of musicians and singers in the U.S. are considered "independent" and do not contract with a music publisher.[105] Large numbers of independent and amateur songwriters bypass major artist labels and put out their own material on platforms like SoundCloud, YouTube, or via

[103] Defendant Anthropic PBC's Responses and Objections to Plaintiffs' Third Set of Interrogatories (Nos. 16-25), 9 Oct 2025, 9:14-18 ("In addition, unlike full texts of copyrighted books or paywall-protected articles, song lyrics are regularly made available to end users for free. Individuals seeking song lyrics have numerous freely available tools at their disposal, including internet searches, and there is a general public expectation that song lyrics-as distinct from audio recordings-are freely available and can be shared freely.").

[104] Apple Music alone claims that it has a 100-million song catalog. *See* "Celebrating 100 million songs," Apple, 3 Oct 2022, available at https://www.apple.com/newsroom/2022/10/celebrating-100-million-songs/, accessed on 15 Dec 2025.

[105] "Musicians and Singers," Data USA, available at https://datausa.io/profile/soc/musicians-and-singers#:~:text=In%202023%2C%20there%20were%20105%2C454%20musicians%20and,*%20**Independent%20artists%2C%20writers%2C%20and%20performers**%2024.9%25, accessed on 12 Dec 2025 ("This graphic shows the share of Musicians and singers employed by various industries. Religious organizations employs the largest share of Musicians and singers at 43.7%, followed by Performing arts companies with 26.3% and Independent artists, writers, and performers with 24.9%.").

other digital distribution companies like DistroKid, CD Baby, or TuneCore.[106] Negotiating for the rights to use these song lyrics for a training database for a general-purpose LLM could require contacting tens of thousands of songwriters, if not more.[107] Given the large share of independent artists who are not affiliated with any music publisher, it would be exceedingly difficult to identify all of the relevant rightsholders within this "long tail."

67. Additionally, economists have long known that determining the economic value of information can be challenging.[108] Especially when a new technology develops, market players can find it difficult to agree on the value associated with that technology. For example, even if there are well-established frameworks to price the licensing of a song for inclusion in a movie, using the same song to train an LLM is a dramatically different use case and requires common agreement of value on both sides that can take quite some time to achieve. This would be particularly true in 2021, when Anthropic was first formed and LLMs were not very widely understood, and even to this day, when they remain a mystery to the lay person. In such situations, where value is difficult to assess, negotiations can take longer, thereby increasing transaction costs.

68. This is supported by the record in this case. My review of Plaintiffs' materials indicates that music executives at Plaintiff publishers encountered significant challenges when negotiating with AI companies for potential use of their works in LLM training. As Concord's EVP of Legal and Business Affairs Duff Berschback acknowledged in his deposition, [redacted] [109] Berschback [redacted]

[106] *See* Mark Savage, "More and more musicians are releasing their own music: Here's why," BBC, 22 Jan 2022, available at https://www.bbc.com/news/entertainment-arts-60051802, accessed on 12 Dec 2025. Generally speaking in the United States, artists own their lyric rights as part of composition copyright unless otherwise agreed on (via a publishing deal, for example). *See* "What Musicians Should Know about Copyright," United States Copyright Office, available at https://www.copyright.gov/engage/musicians/, accessed on 12 Dec 2025.

[107] Officially, according to the U.S. NAICS code 711510 category ("Independent Artists, Writers, and Performers"), there were approximately 21,000 independent musicians/singers as of 2023. These artists have listed indie music as their primary profession. *See* "Independent Artists, Writers, and Performers," Data USA, available at https://datausa.io/profile/naics/independent-artists-writers-and-performers, accessed on 12 Dec 2025.

[108] *See* Joshua Gans and Scott Stern, "Is there a market for ideas?," *Industrial and Corporate Change*, Vol. 19, No. 3 (Jun 2010), at pp. 805-837, available at https://academic.oup.com/icc/article-abstract/19/3/805/702346.

[109] Deposition of Duff Berschback, 10 Oct 2025, 168:9-13.

[redacted][110]

69. Relatedly, when a new technology emerges in the marketplace, it can be difficult to arrive at agreement on what bundle of rights come standard in a negotiation. The record in this case shows [redacted][111] UMPG was [redacted][112] [redacted].[113] [redacted].[114] Similarly, UMPG's negotiations with Udio, an AI-powered music generator, to "customize, stream, and share music responsibly"[115] show [redacted].[116] [redacted]

[110] Deposition of Duff Berschback, 10 Oct 2025, 168:12-21.

[111] Neither [redacted] offers a General-purpose LLM.

[112] *See* UMPG_0000020235, [redacted]

[113] *See* UMPG_0000020235, [redacted]

[114] *See, e.g.*, Mengjie Cheng et al., "The Value of Silence: The Effect of UMG's Licensing Dispute with TikTok on Music Demand," Harvard Business School, 23 Jun 2025, available at https://www.hbs.edu/ris/Publication%20Files/25-014_1b94f3c5-858e-4ab7-b5b6-ddc0158d31b5.pdf.

[115] "Universal Music Group and Udio Announce Udio's First Strategic Agreements for New Licensed AI Music Creation Platform," Universal Music Group, 29 Oct 2025, available at https://www.universalmusic.com/universal-music-group-and-udio-announce-udios-first-strategic-agreements-for-new-licensed-ai-music-creation-platform/, accessed on 12 Dec 2025.

[116] *See* UDIO-Anthropic Subpoena-0000016, Emails [redacted].

[redacted]

This exchange illustrates [redacted]

70. Finally, the time it takes to conclude a deal—which as I note can take longer for subject matters where parties struggle to assess value—carries additional transaction costs. For example, a royalties-sharing deal between UMPG Plaintiffs and TikTok expired on January 31, 2024. As both companies explained in press releases, they were unable to negotiate a renewal of the deal for several reasons, including an inability to align on the question of whether TikTok would allow UMPG song lyrics to be used in AI-generated videos.[117]

71. In my view, then, developers seeking to license lyrics for use in a training dataset for general-purpose LLMs are likely to encounter significant transaction costs. And as I note above, lyrics have relatively low value for training general-purpose LLMs. Given the high transaction costs, combined with the relatively low value, I would expect that developer firms would have little incentive to pursue deals, especially when those deals incurred attendant transaction costs of the kind I observe in the lyric licensing context. I therefore conclude that no market for licensing lyrics for training existed in 2021, and that one is very unlikely to emerge.

[117] "TikTok statement in response to Universal Music Group," TikTok, 30 Jan 2024, available at https://newsroom.tiktok.com/tiktok-statement-in-response-to-universal-music-group?lang=en, accessed on 12 Dec 2025.

4. Relevance of Existing Deals to License Data for Use in General-Purpose LLMs

72. In the prior two sections, I found that no actual or potential markets existed or were likely to develop for either the data required to train a general-purpose LLM or lyrics data used to train a general-purpose LLM. At the same time, economic theory suggests that companies will make deals if they value a good or service in excess of the sum of the transaction and production costs. For that reason, I would anticipate that companies that develop LLMs could enter into deals to acquire data in specific circumstances where (1) they value the data very highly—either because the inherent value is high for the purposes of training a general-purpose LLM or because the data is unique or not publicly available; (2) transaction costs are low; and (3) other incentives create the opportunity for agreements.

73. As a threshold matter, such deals can only emerge in the context of a training dataset for a general-purpose LLM once developers have *already* assembled large enough datasets for its training corpus. As I discussed in Section III.A.2 above, there is no actual market for assembling all the data needed to train a general-purpose LLM, and I do not expect one to emerge because of the insurmountable transaction costs involved in assembling all of the data. However, once a developer has amassed multiple trillions of tokens, the developer may find there are gaps in the model's training corpus with respect to certain kinds of valuable data.[118] In these cases, the assessed value of these particular "gap-filling" datasets could exceed the transaction costs of obtaining them. From my conversation with Mr. Turvey, I understand that [redacted]

74. I am aware of the existence of certain agreements to license music for training data in certain LLMs. Based on my review of the terms of these deals, the existence of these agreements does not undermine my opinions that a market for data sufficient to train a general-purpose LLM or for licensing lyrics to train a general-purpose LLM did not exist at the time of Anthropic's alleged conduct, nor my opinion that such markets are unlikely to develop. For the existence of

[118] *See* my discussion of the value of diverse data, both in general and from Anthropic's perspective, in Sections III.A.3.a) and III.A.3.b).Potentially better section to reference: II.B

such deals to affect my opinions, they would have to be commonplace and routine. As I will discuss below, these transactions are distinguishable and better explained by specific and/or unique factors rather than signifying a general trend.

75. I am aware that some companies working on general-purpose LLMs have signed contracts to license or acquire text data from book publishers, text data from news organizations, and music data from music companies. Information regarding these deals is incomplete; many of them involve proprietary information, so that the precise types of licenses that companies purchased—as well as the purchase price—remain unknown. Nevertheless, the information that is available regarding these deals confirms that they are not representative of a viable market.

76. First, many of the publicly reported deals with developers of general-purpose LLMs involve non-training use cases. For example, the deal between OpenAI and NewsCorp is apparently for the display of NewsCorp material—not for the use of NewsCorp stories in training datasets. The OpenAI press release recording the deal notes that "[t]hrough this partnership, OpenAI has permission to ***display*** content from News Corp mastheads in response to user questions and to enhance its products, with the ultimate objective of providing people the ability to make informed choices based on reliable information and news sources" (emphasis added).[119] Even where content is licensed for training, such as the deals with OpenAI and Google announced by Reddit, those licensing agreements are multifaceted deals that include advertising, display, and AI integration rights that benefit both parties.[120] These deals encompass a much larger scope of services beyond simply training general-purpose LLMs, and therefore do not support the theory that a market for data sufficient to train a general-purpose LLM could form.

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[119] *See* "A landmark multi-year global partnership with NewsCorp," OpenAI, 22 May 2024, available at https://openai.com/index/news-corp-and-openai-sign-landmark-multi-year-global-partnership/, accessed on 12 Dec 2025. Le Monde's agreement with Perplexity is another example deal where the agreement only concerns the output. *See* Jérôme Fenoglio and Louis Dreyfus, "Artificial intelligence: Le Monde signs partnership agreement with Perplexity," Le Monde, 14 May 2025, available at https://www.lemonde.fr/en/about-us/article/2025/05/14/artificial-intelligence-le-monde-signs-partnership-agreement-with-perplexity_6741262_115.html, accessed on 14 Dec 2025 ("Unlike the agreement signed with OpenAI, the multi-year agreement signed with Perplexity does not involve the use of our content to train an LLM (Large Language Model). It only concerns the use of our content to generate answers to questions (output).").

[120] *See* "OpenAI and Reddit Partnership," OpenAI, 16 May 2024, available at https://openai.com/index/openai-and-reddit-partnership/, accessed on 17 Dec 2025; *see also* "Reddit Partners With OpenAI to Bring Content to ChatGPT and AI Tools to Reddit," Time, 16 May 2024, available at https://time.com/6979197/reddit-openai-partnership-chatgpt/, accessed on 17 Dec 2025.

77. Second, many other publicly announced deals do not involve general-purpose LLMs, but rather other types of generative AI companies that offer niche, multi-media AI products. Many of the deals that Plaintiffs cite to support their theory that "[a] robust content licensing market for AI training data has developed over the last several years"[121] involve non-text data intended to train AI tools capable of generating art, images, video, or music. But unlike general-purpose LLMs, these AI tools are limited in range and specifically focused on using AI to generate a single type of creative output. By contrast, Claude is a general-purpose, text-based LLM with a much wider set of capabilities that span an array of use cases, including coding, use in healthcare, and improving one's writing.[122] The deals between single-purpose AI companies and copyright owners are therefore likely to have different deal structures or pricing compared to deals involving general-purpose LLMs like Claude.

78. While most of these non-text deals with generative AI companies are only preliminary,[123] the few closed ones that are public confirm that the use cases do not involve general-purpose LLMs.[124] For example, Musixmatch recently announced deals with Sony, UMPG, and Warner Chappell Music that involve licenses to gain access to music publishers' catalogs of over 15 million musical works to "develop new analytical and non-generative AI services," not for use in training general-purpose LLMs.[125] Similarly, other deals noted by Plaintiffs in their

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[121] Plaintiffs' Supplemental Objections and Responses to Defendant's Second Set of Interrogatories No. 14, 12 Nov 2025, 7:20-21.

[122] *See* Section II.A.

[123] David Kokakis expressed in his deposition that [redacted]

[124] UMPG's agreements [redacted]

[125] "Musixmatch Signs AI Innovation Deals with Sony Music Publishing, Universal Music Publishing Group, and Warner Chappell Music," PR Newswire, 15 Oct 2025, available at https://www.prnewswire.com/news-releases/musixmatch-signs-ai-innovation-deals-with-sony-music-publishing-universal-music-publishing-group-and-warner-chappell-music-302583762.html, accessed on 12 Dec 2025 ("Musixmatch gains access to catalogs of more than 15 million musical works to develop new analytical and non-generative AI services with the support of leading rights owners and the music publishing community.").

discovery responses provided in this case involved [redacted].[126] As another example, a publicly announced deal between Suno, an AI-powered music generator, and Warner Music is also not analogous to the needs of a general-purpose LLM. That deal reportedly involved Warner Music licensing non-textual training materials like music to Suno.[127] To train an LLM like Claude, Anthropic would likely have very little need for the non-text data Warner Music provided to Suno, so comparisons to these types of deals are not relevant to the needs of a general-purpose LLM.

79. Finally, with regard to music industry deals in particular, none of the public agreements I have reviewed involve licensing of ***lyric*** data to train general-purpose LLMs. Again, in many of the deals I described above, the data being licensed was music, not lyrics. This makes sense given that the deals are with multimedia, generative AI companies, for which music would presumably be a much more valuable input.

80. My analysis is also consistent with Anthropic's existing partnerships on record. I have reviewed relevant documents and depositions and spoken with Mr. Turvey to gain an understanding of how Anthropic decides when to seek a data deal. [redacted] This aligns with my expectations

[126] Plaintiffs' Supplemental Objections and Responses to Defendant's Second Set of Interrogatories (Nos. 9-10), 12 Nov 2025, 7:21-25.

[127] "Warner Music Group and Udio Collaborate to Build a New Licensed Music Creation Service," Warner Music Group, 19 Nov 2025, available at https://investors.wmg.com/news-events/news-releases/news-details/2025/WARNER-MUSIC-GROUP-AND-UDIO-COLLABORATE-TO-BUILD-A-NEW-LICENSED-MUSIC-CREATION-SERVICE/default.aspx, accessed on 14 Dec 2025 ("Through this collaboration, Udio will develop a next-generation music creation, listening, and discovery platform powered by generative AI models trained on licensed and authorized music. The agreement—which spans WMG's recorded music and music publishing businesses—creates new revenue streams for artists and songwriters, while ensuring their work remains protected.").

[128] *See* Anthropic 0000441006, [redacted]

that a license for certain LLM training datasets is only economically desirable if the value to the developer is sufficiently high, in this case because [redacted]. But even then, these exceptional datasets where the value may exceed the high transaction costs are not themselves sufficient to support a market of the licensed data necessary to train general-purpose LLMs because the datasets are not large or diverse enough.

81. In sum, my analysis in the above sections leads me to conclude that high transaction costs exceeding the value of the datasets make it infeasible for markets to develop for either (1) data sufficient to train a general-purpose LLM, or (2) lyrics used to train a general-purpose LLM. Consistent with those opinions, I have seen no evidence that such markets existed at the time of Anthropic's alleged conduct, nor do I expect such markets to form in the future. Therefore, Anthropic's actions could not have caused any market harm to Plaintiffs.

B. Effect on the Market for Online Display of Lyrics

82. In this section, I consider alleged harms to Plaintiffs in the existing market for online display of lyrics in the context of fair use factor 4. Plaintiffs have alleged that Claude has regurgitated or displayed partial or complete sets of lyrics to the Works-In-Suit when responding to users' prompts.[129] Plaintiffs have also alleged that because Claude sometimes displays song lyrics to users, Claude may act as a substitute for users who would otherwise have visited a website that displays lyrics online, like a lyrics aggregator website. Because Plaintiffs license the right to display lyrics to these lyrics websites, for which the websites pay a licensing fee, Plaintiffs claim that Claude's substitution has harmed or will harm their revenues.

83. To assess whether Anthropic's alleged behavior harmed Plaintiffs in the existing market for online display of lyrics, I conduct several empirical analyses focused on the period after the commercial release of Claude.ai in July 2023.[130] Based on my empirical research, I do not find impacts on the market for online display of lyrics that are consistent with Plaintiffs' theory of harm.

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[129] Amended Complaint, ¶8.

[130] "Introducing Claude," Anthropic, 14 Mar 2023, available at https://www.anthropic.com/news/introducing-claude, accessed on 8 Dec 2025.

84. First, in Section III.B.2.a), I review the financial data produced by Plaintiffs. While these data are quite limited, my initial analysis of these revenue statements does not show that Plaintiffs experienced financial harm since the introduction of Claude. Second, in Section III.B.2.b), I analyze user traffic to websites that display lyrics obtained through licenses from Plaintiffs and other rightsholders, such as AZlyrics.com or Genius.com. If Plaintiffs' theory of harm is correct, I would expect increased usage of Claude to cause a decrease in traffic to such websites. However, I do not find evidence of such an effect, instead observing no relationship between the introduction of Claude and a decrease in traffic to lyrics websites. Lastly, in Section III.B.2.c), I analyze the frequency of lyric-specific searches on Google for the songs to which Plaintiffs hold the copyright. If Plaintiffs' theory of harm is correct, I would expect increased usage of Claude to cause a decrease in lyric-specific Google searches. However, I again do not find evidence of such relation, observing no negative effect of the introduction of Claude on Google searches for lyrics of the Works-In-Suit.

1. Existing Market for Online Display of Lyrics

85. The empirical analyses I conduct examine the impact of Anthropic's alleged reproduction of lyrics in its outputs on the existing market for display of lyrics online. Before I discuss the results of my empirical research, I first address the threshold issue of whether a market for online display of lyrics exists or is likely to exist. Based on the materials I have reviewed, there is an existing market for online display of lyrics. This market is characterized by music companies, songwriters, and music publishers that sell licenses for the display of lyrics to lyric aggregators, lyrics websites, digital platforms, and other online services that allow users to access or view lyrics on the internet. Examples of entities that engage in online display of lyrics include popular lyrics websites like Azlyrics.com or Genius.com, as well as Apple Music and Spotify, whose apps allow users to view lyrics when a song is played.

86. Specifically, the record from Plaintiffs in this case supports that a market for online display of lyrics exists. Duff Berschback, Executive Vice President of Business and Legal Affairs at Concord, stated that "Concord licenses the lyrics to the Concord Works to lyric aggregators and lyrics websites (such as LyricFind.com) and certain other digital services (such as Apple Music

and Music Choice)."[131] Similarly, David Kokakis, Chief Counsel at UMPG, explained that "[a]mong other things, the UMPG Plaintiffs have licensed lyrics to lyric 'aggregators,' such as LyricFind.com and Musixmatch.com. Additionally, the UMPG Plaintiffs have also licensed directly to lyrics websites, such as Genius.com, and to various other digital services, including Amazon Music, Apple Music, Meta, Snapchat, Spotify, and YouTube, among others."[132]

87. Ex ante, economic principles lead me to believe that Claude's purported display of lyrics to Plaintiffs' songs should not have had an impact on the existing market for the online display of lyrics. There are a few different reasons underlying this belief.

88. First, in my experience, the primary function of general-purpose LLMs like Claude is to help users with everyday tasks around writing, summarizing, and problem solving. Finding lyrics to songs strikes me as a very narrow use case and will have low demand from a typical Claude user.[133] My own opinions based on experience were consistent with the findings of Dr. Bray, who I understand is submitting his own report in this matter. Based on my conversations with Dr. Bray, I understand that the incidence of such requests that he identified through his analysis was vanishingly small within the records he analyzed—to the tune of about 1029 prompts seeking any amount or form of lyric regurgitation against a total of over 2.3 million. This corresponds to less than 0.05% of all prompts within the records he reviewed. For Claude to negatively affect any lyrics website, this number would have to be substantially higher. For example, in the data that I use for my empirical analysis, the website Genius.com (a popular provider of online lyrics) receives over 750,000 website visits on any given day.

89. Second, even when individuals demand lyrics data, purpose-built lyrics websites (and indeed Google itself) offer a much better alternative, as these options offer additional functionality purpose-built for this use case. In particular, a number of websites and apps that license lyrics for display, such as Spotify and YouTube,[134] offer both the sound recordings and

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[131] Declaration of Duff Berschback in Support of Plaintiffs' Motion for Preliminary Injunction, 1 Aug 2024, (Berschback Declaration), at ¶12.

[132] Declaration of David Kokakis in Support of Plaintiffs' Motion for Preliminary Injunction, 1 Aug 2024, (Kokakis Declaration), at ¶12.

[133] This is particularly true for Claude because Anthropic's strategy is largely focused on enterprise and business users who will not find a need for such information.

[134] *See* Gabriel Zamora, "The Best Online Music Streaming Services for 2026," PC Mag, 2 Dec 2025, available at https://www.pcmag.com/picks/the-best-online-music-streaming-services, accessed on 13 Dec 2025.

lyrics displays and will often synchronize the music with the lyrics. By contrast, as a text-based general-purpose LLM, Claude does not play sound recordings of musical compositions.[135] Similarly, Genius.com provides both the lyrics and user-generated annotations to provide deeper insight into the origins of various lyrical elements in songs. For these reasons, I expect the degree of substitution between Claude.com and online lyrics aggregators to be low. However, economic theory does not rule out any negative effect; it only predicts that it is unlikely.

90. My empirical analysis therefore focuses on whether Claude's display of lyrics from songs impacts the market for online display of lyrics.

2. Empirical Analyses of Plaintiffs' Financials and Website Traffic Data Do Not Show Any Negative Impact on the Market for Online Display of Lyrics Due to Anthropic's Alleged Outputs Containing Lyrics

91. To assess whether there was harm to the market of online display of lyrics, I first conduct an analysis of Plaintiffs' revenue statements. Because of the sparse nature of the data, and because Plaintiffs only provided revenue statements that go past [redacted] three days before this report was due to be served, I have been unable to conduct a formal econometric analysis. I understand that another expert is reviewing this data from a non-econometric framework.

92. I analyze Plaintiffs' gross revenue and lyric revenue, which are available only on a quarterly or semi-annually (rather than monthly) basis. What I have seen in both sets of revenue does not conclusively show that Plaintiffs have been harmed. I reserve the right to supplement my report with further analyses in light of this new data.

93. My primary investigation looks at whether the introduction of Claude negatively impacted web traffic to other platforms and websites that display lyrics in the existing market for online display of lyrics. If Plaintiffs' theory of harm were correct, as traffic to Claude increased, I would expect to see a corresponding decrease in existing ways for users to access lyrics on the internet. To empirically test this theory, I use granular data on the usage of Claude and on two of the primary means for users to access lyrics: lyrics websites and Google search. Based on these empirical analyses, I find no evidence that either traffic to lyrics websites or lyrics-focused Google

[135] Claude has some limited multimodal uses. For example, *see* "Claude: Using images, audio, and video in practical workflows," Data Studios, 21 Aug 2025, available at https://www.datastudios.org/post/claude-using-images-audio-and-video-in-practical-workflows, accessed on 14 Dec 2025.

searches decreased as usage of Claude increased. I thus conclude that Plaintiffs' theory of harm is not empirically supported. This analysis is discussed below in further detail.

a) Plaintiffs' Revenue Data Does Not Show Any Impairment as a Result of Anthropic's Alleged Use

94. As described above, I first analyze Plaintiffs' revenue statements associated with the 499 Works-In-Suit asserted in Plaintiffs' Complaint. As I explain in further detail below, I find that the revenues reported in those financial documents show [redacted], which is inconsistent with the Plaintiffs' theory of harm.[136] However, due to the limitations in the data—including that Plaintiffs only provided revenue statements that extend beyond [redacted] three days before this report was due—I was unable to draw any meaningful conclusions about the impact of Claude on Plaintiffs' revenues.

95. For UMPG's financial information, I rely on two main datasets provided by UMPG: (1) the quarterly [redacted] document,[137] and (2) the [redacted] document,[138] which both include revenue data through [redacted]. I understand that three days prior to this report being due, UMPG provided additional revenue data through [redacted].[139]

96. For Concord's financials, I rely on two datasets: (1) the [redacted] document,[140] and (2) the [redacted] document,[141] which both include data through [redacted]. I understand that three days prior to this report being due, Concord provided additional revenue data through [redacted].[142]

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[136] [redacted]. Therefore, in my analysis, I do not account for the revenue generated by [redacted].

[137] *See* UMPG 0000000616, "[redacted]." The song "Baby Baby" was initially listed as owned by UMPG, but CCMG was listed as the owner when the First Amended Complaint was filed. Order to Revise Exhibit A to Plaintiffs' First Amended Complaint, 25 Apr 2025.

[138] *See* UMPG 0000000638, "[redacted]."

[139] *See* UMPG 0000025145.

[140] *See* CONCORD 0000000811, "[redacted]."

[141] *See* CONCORD 0000000815, "[redacted]."

[142] *See* CONCORD 0000016756.

97. For ABKCO's financial data, I use a lyric-specific revenue dataset, reported at a [redacted].[143] I understand that three days prior to this report being due, ABKCO provided updated revenue data through [redacted].[144]

98. Finally, for CCMG, I use (1) [redacted] data and (2) [redacted] data that includes information through [redacted].[145] I understand that three days prior to this report being due, CCMG provided updated revenue data through [redacted].[146]

99. Using the revenue statements provided that go through [redacted], I plot the revenues for each Plaintiff by totaling the revenues reported across all songs and categories within each year. Figure 1 shows the total gross revenue over all categories, and Figure 2 shows total lyric revenue. As I interpret these plots, they do not suggest that Plaintiffs have been harmed. I reserve the right to supplement my report with further analyses in light of this data.

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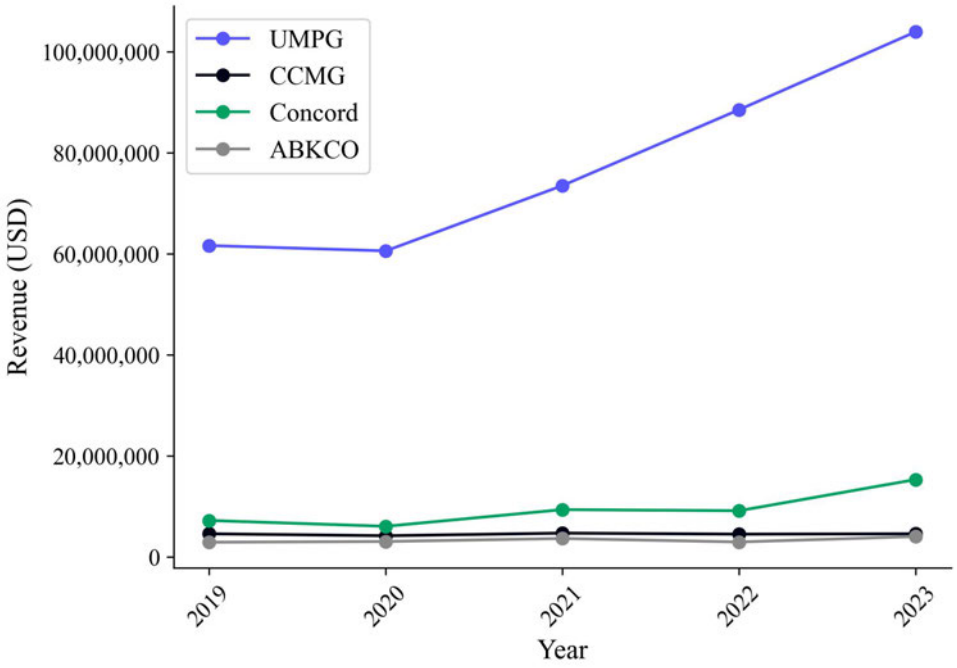
[143] *See* ABKCO_0000000611, [redacted]

[144] *See* ABKCO_0000001512.

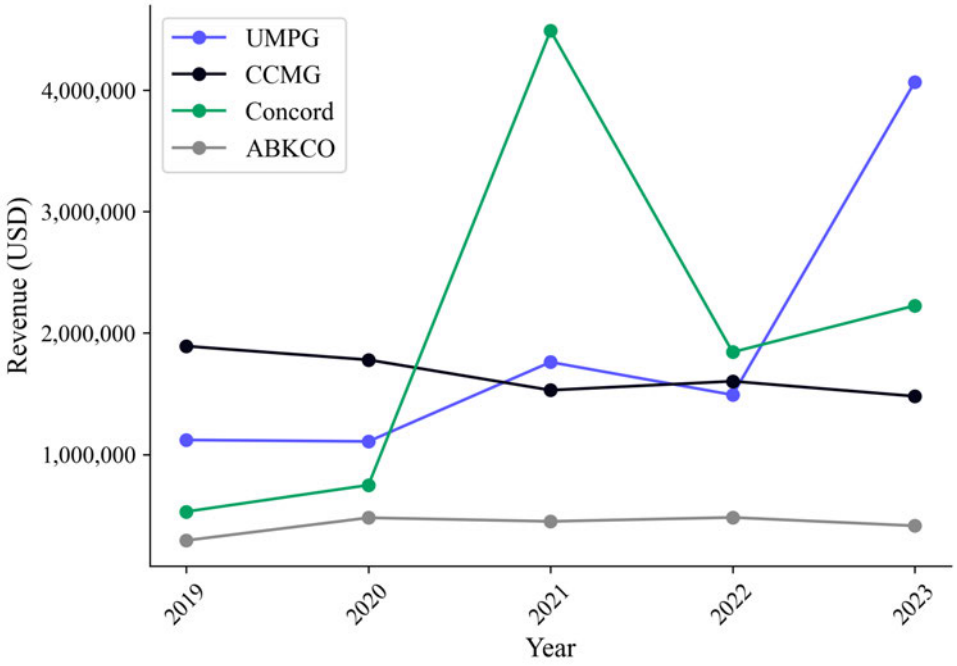
[145] *See* UMPG_0000000728–793. [redacted]. For example, UMPG_0000000728 is the [redacted] and UMPG_0000000729 is the [redacted]

[146] *See* CCMG_0000001277.

[redacted]



[redacted]



100. To summarize, from a macro-level review of the revenue data, I observe that revenue for all four Plaintiffs [redacted]. My limited conclusion is

based on the data provided through [redacted], as I have not had sufficient time to meaningfully review the updated data. Accordingly, I reserve the right to supplement my report in light of this new data.

b) My Empirical Analysis of Semrush Data on Traffic to Lyrics Websites Is Inconsistent with Plaintiffs' Theories of Harm

101. According to Plaintiffs, allowing users to obtain song lyrics directly through queries to Claude caused users to replace their existing sources of lyrics with Claude.[147] In this section, I analyze one of the primary traditional means for users to access lyrics: lyrics websites such as AZlyrics.com and Genius.com. If Plaintiffs' theory of harm is correct, then increased traffic to Claude.ai after the site's commercial launch to consumers in July 2023[148] would be associated with decreased traffic to major lyrics websites in the United States.

102. For my empirical research analyzing this hypothesis, I use daily website traffic data to the top lyrics websites in the United States that measures the number of users who visit a particular website on a given day. By using the econometric approach detailed below, I can examine the relationship between daily website traffic records for relevant lyrics websites and the traffic to Claude.ai. I include controls to account for factors such as website characteristics and the impact of exogenous events like new releases from popular artists like Beyoncé or Taylor Swift, which might be the primary driver for an increase in traffic to lyrics websites.[149] I also conduct several robustness checks for my baseline specification, and the results remain qualitatively similar. Based on my empirical study, I find no statistical evidence that increased use of Claude is

[147] Amended Complaint, ¶156 ("Anthropic's unauthorized use also undercuts the existing and potential markets for licensing song lyrics and undermines those legitimate lyrics aggregators, websites, and digital services that properly license lyrics, given that users of Anthropic's AI models do not visit the legitimate sites that compensate Publishers for the right to use their lyrics.").

[148] Claude was first launched in March 2023, but only to API users. On July 11, 2023, Anthropic released its consumer-facing product by launching Claude.ai, a public-facing website that allows consumers to directly access the Claude chatbot. *See* "Claude 2," Anthropic, 11 Jul 2023, available at https://www.anthropic.com/news/claude-2, accessed 15 Dec 2025.

[149] Specifically, to control for time-variant factors besides Claude's introduction that can impact outcome of interest, I include time-fixed effects. Similarly, to control unobserved time-invariant factors such as website traits, I also include website-fixed effects. *See* Joshua D. Angrist and Jörn-Steffan Pischke, Mostly Harmless Econometrics: An Empiricist's Companion, 2009, at Chapter 5.1.

associated with decreased use of lyrics websites. The results of my findings are therefore inconsistent with Plaintiffs' theory of harm.

(1) Identification of Lyrics Websites

103. To perform my analysis, I use a list of lyrics websites where users can access or view song lyrics. To compile that list, I consult three sources: (1) the First Amended Complaint,[150] (2) a list of the top lyrics websites from Semrush, which provides digital marketing analytics, including aggregated data on search queries, keywords, and web traffic,[151] and (3) Plaintiffs' response to Interrogatory No. 25.[152] The First Amended Complaint refers to several "popular lyrics websites" which Publishers allege Anthropic scraped from to get lyrics data. Those websites include MusixMatch.com, LyricFind.com, Genius.com, Lyrics.com, and AZLyrics.com. [153] Because these lyrics websites are also included in the data obtained from Semrush, I therefore focus only on websites from Semrush and Plaintiffs' Response to Interrogatory No. 25 that primarily provide lyrics.[154]

104. Using the information from Semrush and Plaintiffs' Response to Interrogatory No. 25, I ultimately compile a list of 26 websites that I use for my empirical study. A list of the websites is available in Table C.4 in the Appendix.

105. I narrow the final list down to 26 lyrics websites using several steps. First, using the Semrush data, I pull the top 100 websites by web traffic that appeared in Google searches mentioning "lyrics" in October 2025 for the United States. This list is provided in Table C.5. I use October 2025 data as the end date for my analysis because Semrush provides a complete dataset for a given month by the 10th of the following month, and thus this was the most recent dataset I

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[150] *See* Amended Complaint, at ¶66.

[151] *See* "About Us," Semrush, available at https://www.semrush.com/company/, accessed on 12 Dec 2025.

[152] *See* Plaintiffs' Supplemental Objections and Responses to Defendant's Interrogatory No. 25, 18 Sep 2025.

[153] Amended Complaint, at ¶66.

[154] Note that I do not include websites that primarily contained sheet music, as the market I am evaluating is the market for online display of lyrics. I also note that several of these lyrics websites do not appear to have licenses with music publishers for the display of lyrics. *See* Alex Pham, "NMPA Targets Unlicensed Lyric Sites, Rap Genius Among 50 Sent Take-Down Notices," Billboard, 11 Nov2013, available at https://www.billboard.com/music/music-news/nmpa-targets-unlicensed-lyric-sites-rap-genius-among-5785701/, accessed on 19 Dec 2025.

could assess.[155] Semrush provides two lists—one for desktop searches[156] and one for mobile device searches.[157] In the list of top 100 lyrics websites from Semrush on desktop searches, I notice a website may appear multiple times on the list if two or more pages on the website received significant traffic. For example, both "https://www.azlyrics.com/" and "https://www.azlyrics.com/f/free.html" appeared in the top 100 list, but since they are effectively the same website, I do not find it meaningful to include both for the purposes of my empirical study. Taking into account those duplicate websites, I cut down the list of 100 websites from Semrush to 65 unique websites as in Table C.6 . I then cut this list down from 65 to 24 websites by browsing each site myself to determine if the website fits the paradigm of a lyrics website. I classify a website as a lyrics website if it is a U.S. website with a primary purpose of displaying lyrics. In Table C.7 in the Appendix, I list the 41 websites I exclude from the original list of 100 sites from Semrush, and I include my reasoning of why I remove each of the 41 excluded sites. Some of the reasons for exclusion include websites that are not from the United States, websites that are primarily for music streaming and not solely for lyric display, and other websites that are simply not lyrics websites, like Berklee.edu and Wikipedia.org. I also look at the Semrush list for mobile searches. This contains only 20 entries, with youtube.com appearing three times. All websites from Semrush for mobile searches match with websites from the desktop list, with the exception of one site which is not a lyrics website. This list can be found in Table C.8.

106. Second, I also refer to Plaintiffs' list of "URL domains and software applications" that "have executed licenses with one or more Publishers to use or display the lyrics to one or more of the Asserted Works" identified in Plaintiffs' response to Interrogatory No. 25.[158] For each of the 38 entries in Plaintiffs' list, I check whether the website is a lyrics website (i.e., a U.S. site with the primary purpose of displaying lyrics) and, if so, I add it to the list of relevant sites. Based on

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[155] "Welcome to Trends API," Semrush Developer API, 2 Jul 2025, available at https://developer.semrush.com/api/v3/trends/welcome-to-trends-api/, accessed on 19 Dec 2025 ("The complete dataset for the prior month becomes available by the 10th day of the current month.").

[156] "Keyword Overview: lyrics (Desktop)," Semrush, available at https://www.semrush.com/analytics/keywordoverview/?q=lyrics&db=us&date=202510, accessed on 12 Dec 2025.

[157] "Keyword Overview: lyrics (Mobile)," Semrush, available at https://www.semrush.com/analytics/keywordoverview/?q=lyrics&db=us&date=202510&device=1, accessed on 12 Dec 2025.

[158] Plaintiffs' Supplemental Objections and Responses to Defendant's Interrogatory No. 25, 18 Sep 2025, 8:3-5.

this criteria, two unique websites are added for my review.[159] In Table C.9 in the Appendix, I list the 32 excluded sites, including the reason why each was removed for the purpose of my analysis. Some of the reasons for exclusion include websites that I cannot find, websites that are primarily for music streaming and not solely lyric display, and social media platforms like Instagram and Meta.

107. All combined, I identify a total of 26 lyrics websites that satisfy the criteria of being a U.S. website with a primary purpose of displaying lyrics: 24 come from the Semrush list, five of them are also mentioned in the Complaint[160], and 2 unique sites are added from my review of Plaintiffs' response to Interrogatory No. 25. A list of the 26 websites I ultimately rely upon for this study (hereinafter, "Lyrics Websites") are included in Appendix Table C.4.

(2) Traffic Data

108. In this analysis, I am measuring the relationship between the use of Claude.ai and the use of the 26 Lyrics Websites I identify through the above process. The main variable of interest in my analysis is web traffic to Claude.ai, while the explained variable is web traffic to the Lyrics Websites.

109. To collect web traffic, I use Semrush's API to collect historical daily total traffic to the Lyrics Websites and Claude.ai.[161] For the identified Lyrics Websites, I consider their historical daily total traffic from January 2022 to October 2025. I select this time period for my main analysis, as it includes a significant amount of time both before and after the introduction of Claude.ai in July 2023. I choose 2022 as the start of my sample to avoid any unintended effects on the data from the COVID-19 pandemic.[162]

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[159] There are six websites listed in Interrogatory No. 25 that fit the criteria of being a website that displayed lyrics online. Four of these were already accounted for in the Semrush list, so I do not include them again in my ultimate list.

[160] Amended Complaint, at ¶66.

[161] *See* "Trends API," Semrush, available at https://www.semrush.com/kb/930-trends-api, accessed on 12 Dec 2025. Semrush partners with clickstream data providers to build a panel of over 200 million real, anonymized internet users around the world. They then process this data through their Neural Network algorithm to produce accurate website traffic estimates. *See* "Data and Metrics," Semrush, available at https://www.semrush.com/kb/997-semrush-data, accessed on 18 Dec 2025.

[162] Raj Chetty et al., "The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data," *The Quarterly Journal of Economics*, Vol. 139, No. 2 (May 2024), at pp. 829–889, available at https://doi.org/10.1093/qje/qjad048. ("We evaluate the empirical value of the new data by using them to analyze the economic effects of COVID-19, focusing on the period from March 2020 to December 2021—covering both the decline in economic activity and the recovery to baseline spending levels.").

110. For Claude.ai data, I use Semrush to obtain daily web traffic to Claude.ai, which is the main website offering Claude models to the public.[163] To the best of my knowledge, before Claude.ai's launch on July 11, 2023, Claude was accessible only through (i) partnerships with Slack, Quora (Poe), Juni Learning, DuckDuckGo, Robin AI, Notion, Zoom, and AssemblyAI,[164] and (ii) through an API for developers.[165] For my empirical study, I do not evaluate these modalities for several reasons. First, developer API tools and some of the platforms with Claude integration (like Juni Learning, an online education platform) are not relevant to my analysis because their predominant use case is related to coding or other business needs, and as I stated before, it is unlikely that enterprise users are using Claude to search for lyrics. Second, to the extent there are consumer-facing API integrations, like Quora (Poe) and DuckDuckGo, where a user could conceivably request lyrics, I expect that use case to be relatively small compared to use through Claude.ai. And in any case, if users on Poe were using Claude to request lyrics, I would also expect them to use Claude.ai to request lyrics, which my study accounts for.

111. In my main specification, I consider data from the July 11, 2023 launch onward, to account for traffic to Claude.ai. As one would expect, the traffic to Claude.ai is zero before July 11, 2023.[166] This can be also seen in Figure C.5 in the Appendix. Furthermore, I set traffic to Claude.ai at zero [redacted]. This is because Anthropic bolstered their guardrails as it relates to a broad set of music lyrics on this date which, as I will explain, dramatically reduced the possibility that Claude.ai could substitute for song lyrics.

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[163] With the second version of Claude, the product Claude.ai (the public-facing version of Claude) was also launched on July 11, 2023. "Claude 2," Anthropic, 11 Jul 2023, available at https://www.anthropic.com/news/claude-2, accessed on 12 Dec 2025.

[164] *See* "Introducing Claude," Anthropic, 14 Mar 2023, available at https://www.anthropic.com/news/introducing-claude, accessed on 8 Dec 2025; *see also* "Meet Claude," Anthropic, 12 Jun 2023, available at https://web.archive.org/web/20230612193739/https://www.anthropic.com/product, accessed on 13 Dec 2025.

[165] *See* "Introducing Claude," Anthropic, 14 Mar 2023, available at https://www.anthropic.com/news/introducing-claude, accessed on 8 Dec 2025; *see also* "Meet Claude," Anthropic, 12 Jun 2023, available at https://web.archive.org/web/20230612193739/https://www.anthropic.com/product, accessed on 13 Dec 2025. For my empirical study, I do not evaluate these modalities for several reasons. First, developer API tools and some of the platforms with Claude integration (like Juni Learning, an online education platform) are not relevant to my analysis because their predominant use case is related to coding or other business needs, and as I stated before, it is unlikely that enterprise users are using Claude to search for lyrics. Second, to the extent there are consumer-facing API integrations, like Quora (Poe) and DuckDuckGo, where a user could conceivably request lyrics, I expect that use case to be relatively small compared to use through Claude.ai. And in any case, if users on Poe were using Claude to request lyrics, I would also expect them to use Claude.ai to request lyrics, which my study accounts for.

[166] There is a small amount of traffic to Claude.ai on July, 10 2023 which could be due to internal testing, which I ignore since Claude.ai was officialy launched on July 11, 2023.

112. As I understand it, Anthropic developed guardrails to prevent the generation of potentially infringing outputs prior to the first release of Claude in March 2023, and Anthropic has continued to bolster and improve those guardrails over time to evolve to respond to new and varied threats.[167] Based on the information I have reviewed, Anthropic's guardrails currently consist of: (1) Prompt Shield, which modifies a user's prompts when the system detects a user's "attempts to generate an output that would violate Anthropic's Terms of Use or Acceptable Use Policy,"[168] and (2) Content Compare System ("CCS"), a tool that blocks certain outputs from displaying that output if it detects "that the output would reproduce an amount of a work in the hash corpus above a certain threshold."[169] I understand that Prompt Shield was first implemented in its first-party API product to prevent lyric display for a large number of songs on or around [redacted].[170] This is in addition to the CCS guardrails that were bolstered on [redacted], when Anthropic [redacted].[171]

113. Anthropic's guardrails are highly effective. Based on the materials I reviewed, Anthropic had (and continues to have) multiple layers of defenses against reproducing copyrighted material.[172] In response to prompts from users, Claude returned error messages saying that it could not reproduce lyrics because of copyright concerns.[173] My review of the record is consistent with what I understand from Dr. Bilmes. Averaged across the available models at issue in this case and

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[167] Defendant Anthropic's PBC's Amended and Supplemental Responses and Objections to Plaintiffs' First Set of Interrogatories (Nos. 9, 11, 12), 12 Nov 2025, 12:1-2.

[168] Defendant Anthropic's PBC's Amended and Supplemental Responses and Objections to Plaintiffs' First Set of Interrogatories (Nos. 9, 11, 12), 12 Nov 2025, 12:24-13:1.

[169] Defendant Anthropic's PBC's Amended and Supplemental Responses and Objections to Plaintiffs' First Set of Interrogatories (Nos. 9, 11, 12), 12 Nov 2025, 13:21. I further understand that Anthropic employs many other tools in addition to its guardrails to protect against copyright infringement, including the Terms of Service and Usage Policy. I focus on the guardrails I have identified for the purposes of my empirical studies because they are directly intended to prevent lyric regurgitation in Claude's outputs.

[170] Defendant Anthropic's PBC's Amended and Supplemental Responses and Objections to Plaintiffs' First Set of Interrogatories (Nos. 9, 11, 12), 12 Nov 2025, 13:6-7.

[171] Defendant Anthropic's PBC's Amended and Supplemental Responses and Objections to Plaintiffs' First Set of Interrogatories (Nos. 9, 11, 12), 12 Nov 2025, 14:3-4.

[172] I understand Dr. Bilmes will be discussing guardrails implemented in Claude further in his report.

[173] *See* Second Kaplan Declaration, at ¶¶ 52-54. I understand from counsel that for one of the 499 Works-In-Suit, the incorrect song was added to the [redacted]. Plaintiffs asserted infringement of "Joy to the World" by Three Dog Night, but the work that was added to the [redacted] in November 2023 was the holiday song, "Joy to the World." I further understand from counsel that the correct song was added to the [redacted] December 2025. This does not meaningfully impact my analysis because the traffic analysis considers December as the event date.

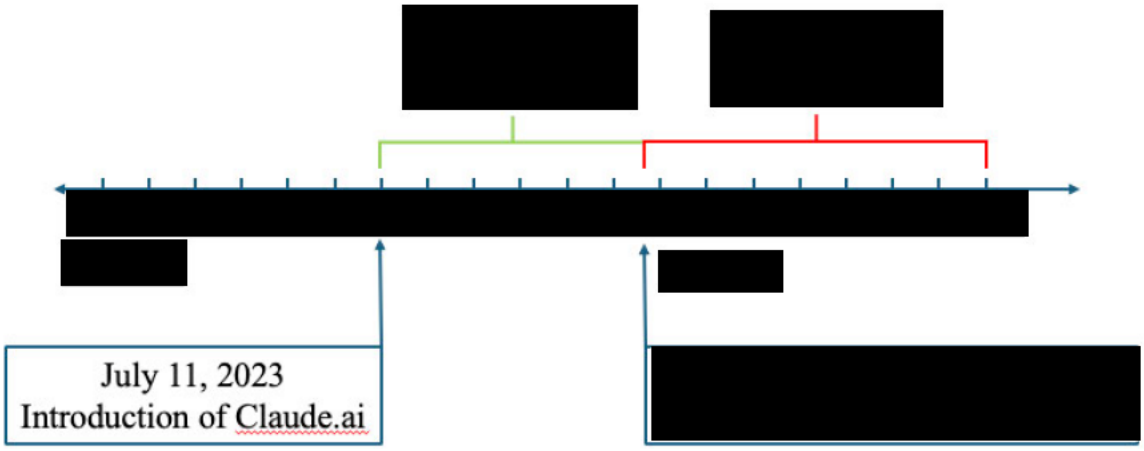
across the three prompt variations, I understand that in his study, Dr. Bilmes finds that Claude did not respond to prompts requesting lyrics with a response containing more than five consecutive words of a song in more than 94.4% of the responses. Moreover, when prompted for song lyrics, all Claude models respond less than 1% of the time with an output that matches more than 10% of the lyrics.[174] In Dr. Bilmes' study, none of the attempts showed Claude including more than 25% of a song's lyrics as a single consecutive match in response to a prompt.

114. Given the guardrails' effectiveness against reproducing full lyrics in Claude's outputs, I would expect there to be no, or very few, instances where Claude has produced partial or full sets of lyrics in outputs after the guardrails were bolstered. Dr. Bilmes has confirmed this assumption. As a result, once the guardrails were implemented and bolstered, it would have been unlikely that users could use Claude to receive the entire or even partial reproduction of lyrics in outputs. Moreover, I understand from Dr. Bray that even *prior* to the imposition of guardrails, user attempts to find lyrics were very rare. Accordingly, I assign a value of zero to traffic to Claude.ai in the post-guardrail period.

115. For purposes of this lyrics websites analysis, I use [redacted], the date Prompt Shield was first implemented, as the effective guardrail activation date. I select the date Prompt Shield was implemented, as opposed to the date when CCS was bolstered, because Prompt Shield affected all users' lyrics requests, whereas CCS only affects particular songs added to the reference corpus. And because I do not have song-by-song traffic data for lyrics websites, it makes more sense to apply the guardrail date that would affect a broader set of traffic data. Therefore, I consider that after Prompt Shield was implemented in [redacted], the Claude.ai traffic was zero. Figure 3 below illustrates the timeline and analysis period.

[174] The same number for Claude Haiku 3.5 is ~1.2%.

Figure 3: Illustration of Traffic Information Considered in the Analysis



(3) Methodology

116. The goal of my analysis is to assess the relationship between lyrics website traffic (on the one hand) and traffic to Claude.ai (on the other). Economists can use a statistical technique called a regression analysis to estimate how much impact a change in one variable (in this case, visits to Claude.ai) has on another variable (in this case, visits to lyrics websites). The simplest form of regression—and the one I use here—is a linear regression, which estimates a coefficient that tells me how much changes in the independent variable (i.e., Claude.ai traffic) alter the dependent variable (i.e., website traffic).[175] This allows me to see how traffic to Claude.ai is related to website traffic. If Plaintiffs' theory of harm is true, I should see a significant—in econometrics terms, "a statistically significant"—drop in traffic to lyrics after the introduction of Claude.ai on July 11, 2023.

117. However, in this case, it is not enough to draw an imaginary line that implies that as Claude.ai traffic goes up, traffic to lyrics websites goes down. There are factors that impact both

[175] The goal of a regression model is to explain an outcome variable, y, in terms of an explanatory variable, x. For example, one may want to explain how much of the difference in wages can be explained by education. To answer this question, economists can assume that there is a linear relationship between education (x) and wages (y), so that as education goes up, wages also increase. Consider a simple equation of $Y = b_0 + b_1X + U$, where U represents all other factors that I cannot observe. The coefficient b_1 corresponds to the slope of this equation, telling how much 1 unit of increase in education correspond to changes in wages. *See* Jeffrey M. Wooldridge, Introductory Econometrics A Modern Approach, at Chapter 2 and Chapter 3.

Claude.ai traffic and lyrics websites traffic at the same time. For example, during the winter, when people are more likely to be at home to avoid the cold, more people may surf the internet, which may result in more traffic to both Claude.ai and lyrics websites. Therefore, to net out the impact of these factors that I cannot observe in my data, but which nevertheless impact the website traffic, I put in place a number of controls called "fixed effects" that are well known in economic literature.[176]

118. One control I apply is intended to account for factors that remain constant over time, such as website popularity or other website traits. For example, trends in traffic for more popular websites may be similar to the growing popularity of AI tools for unrelated reasons. To account for these factors, I use website-fixed effects in my analysis. For example, one website-fixed effect would control the role that a website's popularity has on the website's traffic. In this study, I apply a website-fixed effect as a variable representing, for example, genius.com—observations that belong to genius.com are assigned a value of 1, and all other observations are assigned a value of 0. This control accounts for the vast variation in popularity across different websites and essentially asks whether websites experienced any drop in traffic accounting for the average level of traffic they receive on any given day.

119. Another control I use is intended to account for time-dependent factors, meaning factors that are not constant over time, such as the release of a new song from a popular artist, or the season, all of which may impact web traffic. All websites, including Claude.ai and lyrics websites, are affected by such time-dependent factors—for example, during the winter, people may spend more time online than during the summer. To control for these time-dependent factors, I use a variable I call a "month-year fixed effect" for each month-year pair available in the data. For example, one of the fixed effect variables in my study is for May 2023, meaning the month-year fixed effect takes the value of 1 for observations belonging to May 2023, and 0 for all other month-year combinations. Altogether, these time-independent and time-dependent variables

[176] *See* Joshua D. Angrist and Jörn-Steffan Pischke, Mostly Harmless Econometrics: An Empiricist's Companion, 2008, at Chapter 5.1.

account for unobserved variations across units and over time.[177] The details of my empirical approach are provided in Appendix C.

(4) Results

120. Table 1 presents the results of my regression model, which looks at the relationship between weekly traffic to lyrics websites and weekly traffic to Claude.ai and provides a coefficient for the relationship between traffic to lyrics websites and that to Claude.ai. A coefficient is a number estimated by the regression model that measures the relationship between an independent variable and the dependent variable, holding all other variables constant. In this case, the coefficient measures how Claude affected traffic to lyrics websites, all other things being equal.[178]

121. As shown in the chart below, this number for the regression I conduct (0.005) is statistically insignificant, and hence one cannot conclude that Claude.ai has an effect on traffic for lyrics websites. This means that the very small positive number I see is not statistically different from zero at any conventional levels of significance (either 5% or 1%).[179] In other words, the coefficient is not meaningfully different from zero, and I cannot statistically differentiate the effect from zero.[180] Based on these results, I do not find any economically or statistically significant effects from Claude.ai's launch in July 2023 on online lyrics consumption, as measured by traffic

[177] Month–year fixed effects are widely used in the economics literature to control for common changes over time that affect all units at once, such as seasonal patterns or broad shifts in overall activity. For example, *see* Erik Brynjolfsson, Danielle Li, Lindsey Raymond, Generative AI at Work, *The Quarterly Journal of Economics*, Vol. 140, No. 2 (May 2025), at pp. 889–942, https://doi.org/10.1093/qje/qjae044.

[178] All traffic variables are expressed in logarithms to account for the large scale and variation in volumes across websites and over time. Following standard econometric practice, traffic variables are expressed in logarithms because they are strictly positive and vary widely in scale across observations. Log transformations can narrow the range of variables with large magnitudes and reduce sensitivity to extreme values. Jeffrey M. Wooldridge, Introductory Econometrics: A Modern Approach, at Chapter 6 ("Another potential benefit of using logs is that taking the log of a variable often narrows its range. This is particularly true of variables that can be large monetary values… Narrowing the range of the dependent and independent variables can make OLS estimates less sensitive to outlying (or extreme values).").

[179] *See* Jeffrey M. Wooldridge, Introductory Econometrics: A Modern Approach, at p. 110. ("We must first decide on a **significance level** ("level" for short) or the probability of rejecting H_0 when it is in fact true. For concreteness, suppose we have decided on a 5% significance level, as this is the most popular choice. Thus, we are willing to mistakenly reject H_0 when it is true 5% of the time.").

[180] In more technical terms, this means that I cannot reject the null hypothesis that Claude has no impact on lyrics websites. *See* Jeffrey M. Wooldridge, Introductory Econometrics: A Modern Approach, at p. 115.

to popular lyrics websites.[181] More details about my methodology and additional robustness test can be found in Appendix C

Table 1: Regression Result for U.S. Lyrics Traffic on Claude Traffic

	Dependent Variable: Log Lyrics Traffic	
	[A]	[B]
[1]	Log Claude Traffic	0.005
[2]	(p-value)	0.584
[3]	Observations	5,174
[4]	R Squared	0.844

Sources: Semrush Traffic Data
Data covers weekly traffic to 26 lyrics websites and Claude.ai for full weeks contained in January 2022 to October 2025. Claude.ai traffic is set to zero [redacted] P-value is calculated using the wild cluster bootstrap method.
[B][1] Estimate of regressing log lyric traffic on log Claude.ai traffic.
[B][2] p-value calculated using wild cluster bootstrap method shows that the coefficient at [B][1] is statistically insignificant.

c) My Empirical Analysis of Google Data on Searches for Lyrics Is Inconsistent with Plaintiffs' Theories of Harm

122. Similar to Section III.B.2.b) above, in this section I empirically test the effect of Claude usage on a second traditional means for users to view lyrics: Google searches. An advantage of this analysis is that I can access song-by-song data, thereby allowing me to focus specifically on the 499 songs at issue in this case.

123. Similar to Section III.B.2.b) above, I focus on Claude.ai and its release in July 2023 to test this claim. I also treat the effective usage of Claude for lyrics text as zero after Anthropic bolstered its guardrails. However, unlike with the empirical study involving lyrics websites, my Google search analysis is able to consider specifically the songs at issue in this case. Because the Google search empirical study is a song-by-song analysis, and CCS is a guardrail that blocks certain outputs [redacted]

[181] Results in Appendix C for robustness checks are also consistent with this conclusion. In any alternative specification, I do not find any significant impact.

[redacted], the relevant date I consider for the bolstering of guardrails is therefore [redacted][182]

124. For this study, I obtain weekly data from Google Trends indicating search interest for each song in the WIS chart compiled by counsel for purposes of conducting my analysis as presented in Table C.1. I describe this process in further detail below.

125. In order to empirically test Plaintiffs' theory of harm, I need to account for two critical features of Google searches for songs:

a. First, interest in an individual song is likely affected by the overall popularity of that song, and events such as a new release by the same artist, news coverage about the artist, use of the song in a popular TV series or movie, the time since the song's release or other factors unrelated to Claude.

b. Second, not all Google searches for a song are searches for lyrics; users may also be trying to (for example) find a music video.

126. To account for these factors, I obtain Google Trends index data to measure interest for two types of Google searches. First, the "song index" consists of searches likely related to the audio of a song, which cannot be reproduced by Claude because Claude does not output audio. The second is the "lyrics index," which consists of searches likely related to the lyrics text of a song (text that Plaintiffs allege could be reproduced by Claude).[183] The indices, ranging in value from 0 to 100, are relative to each other and over time, so I can observe the evolution of search interest for "lyrics" queries relative to "song" queries. I also use the data showing weekly user visits to Claude.ai as a measure of the potential for Claude users to have substituted search on Google with use of Claude.

127. If Plaintiffs' theory of harm is correct, I expect to find that as Claude usage increases, the lyrics index decreases relative to the song index, because more people would be turning to Claude to find lyrics. Therefore, I estimate an econometric model that examines whether

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[182] Defendant Anthropic PBC's Amended and Supplemental Responses and Objections to Plaintiffs' First Set of Interrogatories (Nos. 9, 11, 12), 12 Nov 2025, 14:3-4 ("Separately, on or around [redacted], Anthropic added the lyrics to the then-500 Works-In-Suit to [redacted].").

[183] All Google Trends data are obtained from the subscription-based tool SearchAPI. *See* "Google Search API," SearchAPI, available at https://www.searchapi.io/, accessed on 12 Dec 2025. I discuss the specific terms I use to acquire the song index and lyrics index for each song below.

weeks in which more users visited Claude.ai correspond to weeks with diminished search interest for lyrics-focused searches relative to song-focused searches. Again, my goal with this analysis is to compare how traffic to Claude.ai affects the search interest for "lyrics" as compared to searches for "songs." Doing so allows me to assess whether Plaintiffs' theory of harm is correct (i.e., that internet users were turning to Claude.ai to find lyrics rather than using Google Search to do so).

128. In my main specification, I consider the timeline of January 2022 through October 2025.[184] I choose to start from 2022 to avoid any unintended effects from the COVID-19 pandemic, as I did for my previous analysis.

129. In the remainder of this section, I detail the specific search terms I use to create the lyrics index and song index for each of the 499 songs in the WIS Chart in Table C.1

(1) Construction of Lyrics Index and Song Index Using Google Trends

130. Google Trends is a product developed by Google which provides information on actual search queries.[185] For each term queried, Google Trends returns a time series index that ranges from 0 to 100, representing the relative popularity of the term over time. Figure C.1 in Appendix C provides an illustration of Google Trends data for searches for Work-In-Suit 454 "tiny dancer"[186] for the period January 2022 through October 2025 in the United States.[187] Further details on Google Trends are also provided in Appendix C.

131. In my analysis, I consider the lyrics of the 499 Works-In-Suit, and I analyze search interest specific to each song. To obtain the weekly song index and lyrics index for each of these songs, I use two main criteria for selecting my sample of queries. First, a query must identify a relevant use of the song title, i.e., it must relate to one of the 499 Works-In-Suit. Second, I need to distinguish lyrics-focused searches from non-lyrics-focused searches.

132. Given that song titles vary in how long, unique, and recognizable they are, I need a way to assess whether users were actually searching for the Works-In-Suit when they put a song

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[184] Specifically, my estimation is at the weekly level starting January 2, 2022, and ending October 25, 2025.

[185] *See* "FAQ about Google Trends Data," Trends Help, available at https://support.google.com/trends/answer/4365533?hl=en, accessed on 12 Dec 2025.

[186] I.e., searches for the song "Tiny Dancer" by Elton John, Work-In-Suit 454. For all searches, I use lowercase letters.

[187] My sample begins the week of January 2, 2022 and ends the week of October 19, 2025.

title into the search bar. When a song has a simple title, a generic search for "title" may lead a user to find unrelated subjects, and the search therefore would need to include the artist's name to retrieve more relevant results. However, such a problem would not arise for very popular and uniquely named songs whose titles are well-known. To illustrate this, consider the two songs: "Maps," Work-In-Suit 14, by Maroon 5, and "Tiny Dancer," Work-In-Suit 454, by Elton John. A search for "maps" will not only include searches relevant to the song but also include unrelated subjects in cartography or geography. Hence, the inclusion of the artist's name, e.g., "maps maroon 5," will improve the relevance of the search by requiring the artist's name to be a part of the search results. On the other hand, a search for "tiny dancer" is already likely to refer to the Work-In-Suit, and users may be less inclined to include the artist's name. Therefore, the inclusion of the artist's name is an additional search criterion that could result in undercounting actual searches for the song because the search criterion requires the artist's name to be a part of the search results.

133. To address this tradeoff empirically, I run the statistical analysis (whose details I describe in the next subsection on methodology, see Section III.B.2.c)(3) below) in three ways with different combinations of queries on Google Trends:

- First, I run the analysis by comparing search queries on Google Trends for lyrics and songs using the song title alone. That is, I compare the Google Trends search query results for "maps lyrics" and "maps song." (The results are presented in Table 2, where this group is represented by column B, "Title.")
- Second, I run the analysis again comparing Google Trends search queries for lyrics and songs using *both* the song title and the artist. That is, I compare the Google Trends search query results for "maps maroon 5 lyrics" and "maps maroon 5 song." (See Table 2 below. This group is represented by column C, "Title Artist.")
- Finally, I create a "mixed" group based on a measurement I developed of whether a song is more like "maps" (where adding the artist name in the query would likely be helpful) or more like "tiny dancer" (where adding Elton John's name is more likely to be limiting). I discuss this measurement, which I call the "Index Gap," in greater detail in Appendix C. For this mixed group, if the Index Gap determines that a song is more like "maps", I use the Google Trends indices for "maps maroon 5 lyrics" and "maps maroon 5 song" (that is, both title and artist) in my sample. If the song is more like "tiny dancer", I use the Google Trends indices for "tiny dancer lyrics" and "tiny dancer song" in my sample. Because this specification balances the trade-offs discussed above, this is my preferred specification. (See Table 2 below. This group is represented by column D, "Mixed.")

134. In Appendix C, I provide further details of how I construct the three sets of queries described above and include a discussion of queries with low or no search interest.

(2) Traffic to Claude Results

135. I next describe the data I use to measure traffic to Claude.ai for the Google search empirical analysis. To measure traffic to Claude.ai, I use the same method as in my analysis of visits to lyrics websites above (see Section III.B.2.b).[188] Because this Google search relies on a song-by-song analysis, unlike the web traffic study, this time I use [redacted], the date the CCS guardrail was bolstered [redacted]. I use this as the effective date that the guardrails were strengthened, after which Claude.ai traffic is set to zero. Because CCS is a guardrail that blocks certain outputs from being produced based on [redacted], I find that it is the more relevant guardrail when conducting a song-by-song analysis, as I am doing here. For ease of comparison, I further rescale this measure to a range of 0 to 100 to be on the same scale as the Google Trends indices between July and [redacted]. I additionally examine the robustness of my results using the [redacted] guardrails which have been previously described.[189]

136. As an alternative specification, I also consider Google Trends search interest for Claude as another measure of Claude usage. Appendix C explains the construction and details of this measure. As before, I impute zero after [redacted] to mute the relationship between Google searches for "claude ai"[190] and Google searches for lyrics. The corresponding Claude interest variable is illustrated in Figure C.5.

(3) Methodology

137. As I did in Section III.B.2.b) above, I use the statistical technique of regression analysis to estimate the effect of visits to Claude.ai on Google search interest for lyrics (for which I use the lyrics index) on Google Trends. In my regression model, I include as a benchmark the

[188] As in the previous analysis, I take July 11, 2023 as the release of Claude.ai, which is the start date of the traffic.

[189] As noted previously, I understand from Counsel that for one of the 499 Works-In-Suit, the incorrect song was added to the [redacted]. Plaintiffs asserted infringement of "Joy to the World" by Three Dog Night, but the work that was added to the [redacted] in November 2023 was the holiday song, "Joy to the World" (Work-In-Suit 273). I further understand from Counsel that the correct song was added to the [redacted] in December 2025. This does not impact my analysis as I exclude this song from my analyses except when I estimate robustness analysis with [redacted] guardrails.

[190] Since "claude" is a common name with relevance prior to the inception of Claude, I used "claude ai" instead in the primary specification. As with Claude traffic, I also rescale the "claude ai" index to 0-100 after imputing 0.

search interest for the songs themselves (for which I use the song index). If Plaintiffs' theory of harm is correct, then Claude usage should cause a reduction in the lyrics index relative to the song index.[191] This would be a consequence of people turning away from searching for lyrics on Google—they would instead be turning to Claude.ai—while continuing to turn to Google when searching for the song otherwise. Accordingly, the song index is an appropriate control to include in my model in order to account for general interest in the song.

138. Furthermore, as discussed in Section III.B.2.b) above regarding traffic to lyrics websites, I control my results for factors that may affect the Google Trends indices data, including characteristics unique to individual songs (such as its genre, style, or producer), which I will call "song-fixed effects," and patterns affecting people's musical interests over time (such as interest in holiday music between Thanksgiving and the New Year, or love songs on Valentine's Day), which I previously define as "month-year fixed effects." I include song-fixed effects in my model to account for any characteristics that are unique to individual songs,[192] and I include month-year fixed effects to account for potential trends impacting search interest for songs over time.[193] I include further details of the regression model in Appendix C.

(4) Results

139. Based on my empirical study and consistent with economic theory described above, I do not find a *statistically significant* effect of Claude usage on search interest for lyrics relative to interest in song searches in my preferred specification. This leads me to conclude that the launch of Claude.ai in July 2023 did not have any economically or statistically significant impact on online lyrics consumption measured in Google search trends, which is inconsistent with Plaintiffs' theory of harm.

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[191] Lyrics were accessible by Claude until the implementation of guardrails but song audio was not.

[192] For example, there is a variable for "7 Rings" by Ariana Grande which takes the value of 1 if the observation belongs to this song and 0 for all other songs. This variable is applied to each song and absorbs song-specific characteristics.

[193] As discussed in Section III.B.2.c)(3) above, song-level and time-fixed effects account for unobserved variations across units and over time. The model includes month-year fixed effects to flexibly control for common seasonal patterns and other unobserved time-varying factors, such as broad shifts in overall online activity, that affect all websites over time. Month–year fixed effects are widely used in the economics literature to control for common changes over time that affect all units at once, such as seasonal patterns or broad shifts in overall activity. For example, *see* Erik Brynjolfsson, Danielle Li, Lindsey Raymond, Generative AI at Work, *The Quarterly Journal of Economics*, Vol. 140, No. 2 (May 2025), at pp. 889–942, https://doi.org/10.1093/qje/qjae044.

140. Table 2 summarizes the results of my empirical analysis. As I note above, I run my regression with several alternate specifications that use combinations of the "Title" version and "Title Artist" version of the indices. As shown in Table 2, the "Title" specification in column B uses the "title lyrics" and "title song" query indices. The "Title Artist" specification in column C uses the "title artist lyrics" and "title artist song" query indices. The "Mixed" specification in column D uses either the "title" or the "title artist" query indices for songs depending on the average gap between the search indices for "title" and the "title artist," as described in Appendix C. As I state above, the title-artist index gap signifies the relative difference between search queries of song titles compared to search queries of song titles with the artist. If the gap is less than 20 or less—meaning the title alone is more likely to be unique or recognizable—then I use the "Title" query indices. If the gap is more than 20—meaning the title is more generic and unlikely to identify the correct song—I use the "Title Artist" query indices. I consider the Mixed specification to be the most robust since it relies on the title-artist index gap measurement to address the nuances of how users use Google search to query for song lyrics—sometimes users will search for just the song name if it is a recognizable song title, while other times users will search for the song plus the artist name.[194]

141. In Table 2, "Lyrics" is an "indicator variable" where I have assigned a value of zero for the song indices and one for the lyric indices.[195] Claude Traffic, as described above, is the traffic to Claude.ai. The interaction term (Lyrics x Claude Traffic) is the term of interest in my analysis, as it shows the effect of Claude usage on the lyric index relative to the song index.

142. If Plaintiffs' theory of harm were correct, I would expect the estimated coefficient of the interaction terms to be negative and statistically significant, because users would be shifting away from Google searches for lyrics (relative to their searches for songs) and relying on Claude for lyrics instead. However, across all three approaches (detailed in paragraph 140 above) that I use to compare the relative frequency of lyrics-focused searches to song-focused searches, none

[194] With an index gap of 20, 112 songs use the "Title" indices and 382 songs use the "Title Artist" indices. In Appendix C, I test the robustness of my results to an index gaps of 10, in which 65 songs use the "Title" indices and 429 songs use the "Title Artist" indices, and to an index gap of 30, in which 173 songs use the "Title" indices and 321 songs use the "Title Artist" indices.

[195] A "indicator variable" is a variable that is equal to either zero or one to distinguish two groups. Consider a variable for "student." if this variable is equal to one then the observation belongs to a student; if this variable is equal to zero, then the observation does not belong to a student.

of the estimated coefficients of the interaction term is negative and statistically significant (reading left to right across row [1]: 0.019, 0.002, and 0.003).

143. In sum, these results do not indicate that the introduction of Claude caused a meaningful impact on search interest for lyrics on Google. None of the three specifications shows a negative and statistically significant effect of Claude.ai traffic on web traffic for Google searches for lyrics. In the Mixed specification, I find an estimate that is statistically insignificant, meaning that no effect of Claude usage on the lyric index is detected that is statistically different from zero. I similarly find a positive and statistically insignificant effect in the "Title Artist" specification. The effect I find in the "Title" specification is positive and statistically significant. However, the magnitude of this estimate is too small to be interpreted as having an economically meaningful effect. Additionally, as described earlier, the title specification may include searches for unrelated topics such as geography for "Maps," making the Mixed specification our preferred model. As I do not find an effect of the introduction of Claude.ai on Google searches for lyrics, I do not see any empirical evidence supporting Plaintiffs' theory of harm.

Table 2: Baseline Model with Alternate 'Title' and 'Title Artist' Specifications

		Title	Title Artist	Mixed (20)
	[A]	[B]	[C]	[D]
[1]	Lyrics x Claude Traffic	0.019***	0.002	0.003
[2]		0.003	0.002	0.002
[3]	Lyrics	11.438***	3.092***	3.500***
[4]		0.068	0.049	0.051
[5]	Claude Traffic	-0.021***	-0.002	-0.006
[6]		0.005	0.003	0.003
[7]	Observations	198,204	198,204	198,204
[8]	R Squared	0.596	0.187	0.245

Sources: WIS Chart provided by Counsel; Google Trends data, accessed via SearchAPI.

Table results are obtained from estimates of my baseline regression model using 498 WIS provided by counsel and include song fixed effects and month-year fixed effects. "Joy to the World" (Work-In-Suit 273) is excluded from estimation because it was [redacted], as explained in text. Observations are at the week-WIS level. The sample period is full weeks contained in January 2022 – October 2025. Lyrics is an indicator that equals 1 for lyrics queries and 0 for song queries. Claude Traffic is imputed 0 after [redacted], and rescaled to a range of 0-100. Standard errors are provided in the rows below coefficient estimates. Standard errors are heteroskedasticity-robust, and significance stars are reported at the 10% (*), 5% (**) and 1% (***) level.

[B] Title specification includes indices of queries "[title name] lyrics" and "[title name] song".

[C] Title Artist specification includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song"

[D] Mixed (20) specification includes indices of queries "[title name] lyrics" and "[title name] song" if the Index Gap is 20 or less, otherwise includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song".

IV. CONCLUSION

144. To summarize, after evaluating the impact of Anthropic's alleged conduct across three potential markets, I conclude that the alleged conduct did not harm any real or potential market for data sufficient to train a general-purpose LLM, any real or potential market for lyric training data, or the existing market for online lyrics display.

145. First, a market for all of the data needed to train a general-purpose LLM did not exist at the time of the alleged use and is unlikely to emerge in the future. The scale and diversity of data required, combined with the prohibitive transaction costs of licensing from numerous rightsholders, make this market economically unviable. Recent licensing deals do not alter this conclusion; these agreements represent rare cases where the value of specific data exceeds acquisition costs, not a broader market trend.

146. Second, while I continue to believe the relevant market should be a market for data needed to train a general-purpose LLM, I also find that the market for the use of song lyrics to train a general-purpose LLM did not exist at the time of the alleged use and is unlikely to exist in the future. Lyrics provide minimal value for LLM training relative to the high costs of acquisition, making such a market economically impractical.

147. Since neither of these markets existed at the time of the alleged use and neither is likely to emerge in the future, I conclude that Plaintiffs cannot have been economically harmed in such markets.

148. Finally, I conclude that Anthropic's alleged conduct did not harm the existing market for online lyrics display. Economic principles suggest that harm is unlikely because the degree of substitution between typical LLM use cases and online lyrics services is too low to affect demand. Empirical analyses conducted after Claude's commercial release confirm no measurable impact consistent with Plaintiffs' theory of harm.

149. Combined, my conclusion is that Anthropic's conduct did not harm any existing or potential market for the data needed to train a general-purpose LLM, any existing or potential market for lyric training data, or the existing market for the display of online lyrics. Thus, Anthropic's conduct had no adverse effect on the potential market for or value of Publishers' copyrighted works.

APPENDIX A: CURRICULUM VITAE

Last Updated: 10 Dec 2025

ACADEMIC APPOINTMENTS

- Associate Professor (with tenure), University of California, Berkeley – July 2024-
  - Haas School of Business
  - Entrepreneurship and Innovation Group & Management of Organizations
- Assistant Professor, University of California, Berkeley – 2017-2024
  - Haas School of Business
- Visiting Assistant Professor, Harvard Business School – Spring 2021
  - Entrepreneurial Management Unit
- Post-doctoral Fellowship, National Bureau of Economic Research – 2016-2017
  - NBER Digitization Program

AFFILIATIONS & PROFESSIONAL SERVICE

- National Bureau of Economic Research, Research Associate – 2023-
- Management Science, Associate Editor (Entrepreneurship and Innovation) – 2022-
- Data Innovation and AI Lab (DIAL), Director – 2020-
- J-PAL Science for Progress Initiative, Faculty Affiliate – 2023-
- Berkeley Institute of Data Science, Faculty Affiliate – 2023-

EDUCATION

- MS/PhD, Massachusetts Institute of Technology, Sloan School – 2016
- MBA, Indian Institute of Management Calcutta – 2010
- B.Tech., College of Engineering, Pune (Computer Science) – 2008

PUBLISHED ARTICLES AND CHAPTERS

- 15. Identifying the Economic Implications of Artificial Intelligence for Copyright Policy. First published by the US Copyright Office (2025). (with Brent Lutes et al) UC Copyright Office (2025)
- 14. Restricted-Access Data in Economic Research: Adoption, Diffusion, and Impact (with Fernando Stipanicic and Matteo Tranchero) Harvard Data Science Review (March 2025)
- 13. Getting on the Map: The Impact of Online Listings on Business Performance (with Michael Luca and Gauri Subramani) Management Science (forthcoming)
- 12. The Importance of Confidential Microdata for Economic Research (with Fernando Stipanicic and Matteo Tranchero) Data Privacy Protection and the Conduct of Applied Research: Methods, Approaches and their Consequences, eds. Gong, Hotz and Schmutte (2024)
- 11. Geographic Inequality in Management Research (with Hongyu Yao) Research in the Sociology of Organizations (2025)
- 10. The Impact of Competition on Crowdsourced Platforms (with Henning Piezunka) Strategy Science (September, 2024)

- 9. Old Moats for New Models: Openness, Control, and Competition in Generative AI (with Pierre Azoulay, Joshua Krieger) Entrepreneurship and Innovation Policy and the Economy, volume 4, Jones and Lerner. (2024)
- 8. A Mapping Lens to Estimating Data Value, Harvard Data Science Review (April, 2024)
- 7. Digitization and the Demand for Physical Works: Evidence from the Google Books Project (with Imke Reimers) American Economic Journal: Policy (November, 2023)
- 6. The Private Impact of Public Data: Landsat Satellite Maps Increased Gold Discoveries and Encouraged Entry, Management Science (January, 2022)
- 5. Information Seeding and Knowledge Production in Online Communities: Evidence from OpenStreetMap, Management Science (August, 2021)
- 4. Social Influence in the COVID-19 Pandemic: Community Establishments' Closure Decisions Follow Those of Nearby Chain Establishments (with Mathijs de Vaan, Saqib Mumtaz and Sameer Srivastava) Management Science (July, 2021)
- 3. Improving data access democratizes and diversifies science (with Esther Shears and Mathijs de Vaan) Proceedings of the National Academy of Sciences (September, 2020)
- 2. The Economics of Maps (with Scott Stern) Journal of Economic Perspectives (February, 2020)
- 1. Does Copyright Affect Reuse? Evidence from Google Books and Wikipedia, Management Science (July, 2018)

<u>WORKING PAPERS</u>

- Theorizing with Large Language Models (with Matteo Tranchero, Cecil-Francis Brenninkmeijer and Arul Murugan (Revise-and-resubmit, Strategic Management Journal)
- How Does Data Access Shape Science? Evidence from the Impact of U.S. Census's Research Data Centers on Economics Research (with Matteo Tranchero) (Revise-and-resubmit, Review of Economics and Statistics)
- Cutting Through the (Digital) Clutter: Technological Change and Careers of Men and Women in Cultural Markets (with Aruna Ranganathan)
- The Streetlight Effect in Data-Driven Exploration (with Johannes Hoelzemann, Gustavo Manso and Matteo Tranchero)
- Cloze Encounters: The Impact of Pirated Data Access on LLM Performance (with Stella Jia)
- Stronger Together? Corporate Contributions and Volunteer Engagement in Online Communities (with Aric Cheng, Elliot Rabinovich and Eunae Yoo)
- Media Coverage and Inequality in Science (with Saqib Mumtaz and Tim Sels)
- The Economic Impact of Weather Forecasts (with Tim Sels, Vaibhav Anand and Weilong Wang)

- Beyond Prompting: Using Sparse Autoencoders to Understand and Steer LLM Agents in Social Scientific Simulation (with Arul Murugan and Gaveal Fan)

- Socioeconomic Network Heterogeneity and Pandemic Policy Response (with Mohammad Akbarpour, Cody Cook, Aude Marzuoli, Simon Mongey, Matteo Saccarola, Pietro Tebaldi, Shoshana Vasserman, and Hanbin Yang) NBER WP #27374

ONGOING PROJECTS

- The Impact of AI Assistance on Crowdsourcing (with Srikanth Prasad and Eunae Yoo)
- The Impact of VC Investment on Entrepreneurial Experimentation: Evidence from Clinical Trials (with Jennifer Kao)
- The Impact of Editorial Spotlighting on Gender Inequality (with Aruna Ranganathan and David Reiley)
- The Geography of Science (with Hongyu Yao)
- The Economics of Augmented and Virtual Reality (with Joshua Gans)
- Encouraging Open Science Practices in Minority Serving Institutions: Evidence from a Field Experiment (with Saqib Mumtaz and Eva Cheng)
- Empirical Search Landscapes (with Matteo Tranchero)

PRACTITIONER ARTICLES, CASES, AND CONFERENCE PROCEEDINGS

- Architecture as Strategy: The Hidden Driver Behind Enterprise AI Success (with Vernon Keenan, Alecia Wall, Stanley Choi and Chris Pearson) Working Paper, 2025
- Behind the Scenes of a YouTube Mega-Hit: Baby Shark, The Pinkfong Company, and What's Next (with Sukhun Kang) UC Berkeley Haas case, 2025
- What Is Apple's Vision Pro Really For? (with Joshua Gans) Harvard Business Review, June 2023
- Tomorrow.io Goes to Space (with James Barnett and Joshua Krieger) Harvard Business School Case, January 2022
- SafeGraph: Selling Data as a Service (with Allison Ciechanover and Ramana Nanda) Harvard Business School Case, May 2021
- The Economics of Geospatial Data (with Esther Shears) Solicited essay for the World Bank, 2020
- Satellogic: Creating and Capturing Value from Micro-Satellite Imagery (with Gauri Subramani) UC Berkeley-Haas Case, January 2018
- Quantifying entrepreneurship using domain name registration data: Methods and applications for Oxford and Cambridge, UK (with Sibo Wang) NESTA Working Paper, September 2016
- Leap Motion Technologies (with Scott Stern) MIT Sloan Case, April 2013
- The Dummies Guide to Building an Ecosystem, MIT Entrepreneurship Review, April 2011
- A Guide to Business PhD Applications, May 2010
- Do Wiki-pages have parents? An article-level inquiry into Wikipedia's inequalities (with P. Seetharaman, R.Roy and A. Dutta) Workshop on Information Technology Systems (WITS), 2009

GRANTS

- National Oceanic and Atmospheric Administration – The Impact of Weather Forecasts on Small Business Performance, 2024 ($683k)
- Rita Allen Foundation Civic Science Fellowship, 2023 ($89k)
- J-Pal Science of Science Policy Grant, 2023 ($75k)
- National Science Foundation to study the impact of media coverage on science, 2023 ($297k)
- Clausen Center for International Business and Policy Grant, 2023 ($2k)
- UPenn Center for Technology, Innovation & Competition Research Award, 2022 ($10k)
- Sloan Foundation Grant to study the value of administrative data access, 2022-24 ($399k)
- Berkeley-Haas Equity, Gender and Leadership (EGAL) Research Award, 2022 ($5k)
- Facebook Measuring Economic Impact in the Digital Economy grant, 2020 ($79k)
- Fisher Center for Business Analytics Research Award, 2020 ($12k)
- Fisher Center for Business Analytics Research Award, 2019 ($6k)
- Institute for Business Innovation (IBI) Research Grant, 2019 ($15k)
- Dean's Office Supplemental Research Award, 2018 ($25k)
- Fisher Center for Real Estate Grant, 2018 ($5k)
- Fisher Center for Business Analytics Research Award, 2018 ($10k)
- Institute for Business Innovation (IBI) Research Grant, 2018 ($15k)
- Fisher Center for Business Analytics Research Award, 2017 ($9k)
- MIT Initiative on the Digital Economy (IDE) Grant, 2015
- NESTA Innovation Research Grant, 2014
- Sloan Foundation Research Grant, 2014
- Center for Digital Business Summer Research Grant, 2014

HONORS

- Williamson Award, Best Conference Paper (Streetlight Effect in Data Driven Exploration) at Society for Institutional and Organizational Economics 2025
- Cheit Award for Excellence in Teaching, Haas School of Business 2023
- Best Paper Prize (Audience), Strategic Management Society Berkeley Conference, 2020
- Fellow, Strategy Research Forum, 2018–
- Best Paper Prize (Nominee), Strategic Management Society Paris Conference, 2018
- Best Emerging Scholar Paper Award (Nominee), World Open Innovation Conference, 2017
- Wiley Blackwell Outstanding Dissertation Award, Behavioral & Policy Sciences (BPS), 2017
- Technology and Innovation Management (TIM Division) Outstanding Dissertation Award, 2017
- Kauffman Prize, Best Student Paper, REER 2015
- Ewing Marion Kauffman Dissertation Fellowship, 2014
- J. Roberts Beyster Fellowship, 2014
- MIT Energy Fellowship, 2012

INVITED PRESENTATIONS AND CONFERENCES - *(scheduled)

- 2025-26 Academy of Management, Copenhagen; Indian School of Business; UC Santa Barbara*; Colloquium on Copyright Foundations and the Future of Human Authorship in the AI Age, UC Berkeley; NBER Conference on Transformative AI, Stanford, CA; American Academy of Arts & Sciences Program on Copyright and Generative AI, UC Berkeley; OpenAI Economic Research Conference on AI and the Future of the Economy; Invited Speaker, The Human Edge of Innovation, UC Berkeley; Invited Speaker, Conference on Digital Experimentation (CODE), MIT; University of Nevada, Reno*; Price College of Business Colloquium on The Peril and Promise of Artificial Intelligence (AI) for Corporations, University of Oklahoma; Carnegie Mellon University (CMU)*; Chapman University*; Duke University*; Stillman School of Business, Seton Hall University.
- 2024-25: Keynote speaker International Conference on the Science of Science (ICSSI), Washington, DC; Medici Summer School, Bologna, Italy; Academy of Management, Chicago, Haas School of Business (Faculty Lunch); Rotman School, University of Toronto; Olin School, Washington University at St. Louis; Carlson School, University of Minnesota; Cox School, Southern Methodist University; UCLA Anderson School of Business; Marshall School, University of Southern California; BITSS RT2 workshop, Berkeley; ZEW ICT Conference, Mannheim, Germany.
- 2023-24: NBER Innovation Policy & the Economy Conference, Washington DC; Academy of Management, Boston; NIH Biomedical Information Science and Technology Initiative (BISTI) Seminar; Purdue University Strategy Department; NYU Open Source Conference; Georgia Tech Sheller School of Business Strategy seminar; NBER Economics of AI Conference (discussant); NBER Asia Innovation and Entrepreneurship Association (AIEA) Seminar; Berkeley-Haas Faculty Seminar, DRUID Debate, Nice, France; BITSS RT2 workshop, Berkeley
- 2022-23: NBER Summer Institute; Berkeley Psych & Economics Seminar; University of Southern California Department Seminar; RDC Annual Research Conference, Kansas City; Workshop on Big-Data-Analysen und neue Entwicklungen in Forschungsdatenzentren, ZEW, Mannheim; Workshop on Entrepreneurial Finance and Innovation; AI and strategy consortium ISB; US Census Bureau; Columbia Business School Department Seminar; Boston University Department Seminar; University of Michigan Department Seminar; Columbia Management and Analytics (MAD); Strategy Research Forum, Seville; INSEAD 1st Annual Meeting of the Global XR Management Community, Abu Dhabi; Strategy Science Annual Conference, LMU Munich
- 2021-22: Indian Institute of Management, Bangalore; Hong Kong University of Science and Technology; Strategy Innovation and Entrepreneurship Seminar; Columbia Management Analytics and Data (MAD); Data Science in a Digital World: Methodology, Organization, and Management (MOM) Workshop, Harvard Business School
- 2020-21: Mechanism Design for Social Good Workshop 2020; Berkeley-Haas Faculty seminar; UT Austin McCombs School of Business; Georgetown University; Strategy Science Conference; Research Policy Junior Faculty conference; CDC COVID-19 Modeling: Impact of interventions seminar; Harvard Business School EM Unit; Michigan State University; MIT Sloan TIES Seminar; Berkeley BITS conference; LMU Munich, ORG Seminar; UNIL, IPI Ph.D. Seminar; SafeGraph Community Event

- 2019-20: Academy of Management 2019; École Polytechnique Fédérale de Lausanne (EPFL); European Policy for Intellectual Property (EPIP) Conference 2019; London Business School; Université du Luxembourg; Resources for the Future Value of Information Conference; Berkeley-Haas Faculty Seminar; 19th Roundtable for Engineering Entrepreneurship Research (REER), Georgia Institute of Technology, Atlanta; National Academies Committee on Advancing Commercialization from Federal Labs, Washington DC; SMS Special Conference (Berkeley); Michigan State University; Smith Entrepreneurship Research Conference (Univ. of Maryland), Strategy Research Forum
- 2018-19: 16th ZEW Conference on the Economics of Information and Communication Technologies; Academy of Management (showcase symposium); Open and User Innovation Conference (NYU); West Coast Research Symposium 2018 (UW, Seattle); 13th Meeting of the Urban Economics Association (Columbia University); Berkeley iSchool Research Exchange talk; Berkeley Psychology & Economics lunch; SMS Special Conference (Hyderabad); NBER Economics of Infrastructure (Cambridge, MA); Harvard Business School (EM Division)*; NBER Economics of Digitization (Stanford); Conference on the Economics of Innovation and Patenting (Mannheim, Germany); Western Economics Association (San Francisco, CA)
- 2017-18: Strategy Research Forum (Paris); Harvard Business School Digital Initiative Discussion & Symposium (DIDS); NBER Digitization Winter Meetings (discussant); Organization Science Winter Conference; World Open Innovation Conference 2017; Berkeley-Haas Faculty Seminar; Searle Roundtable on Economics of Mass Digitization—Northwestern University; State of the Map-US Conference; Institute for Personality and Social Research (IPSR) Berkeley; Academy of Management Conference; Korea Institute of Science and Technology (KAIST)*; Digital Infrastructure Research Meeting (Sloan Foundation); Society for Institutional & Organizational Economics Conference (Columbia)
- 2016-17: Univ. of Utah/BYU Winter Strategy Conference; Organization Science Winter Conference; NBER Digitization Winter meetings (discussant); Washington University in St. Louis Strategy Seminar*; Social Science and Technology Seminar, Stanford Institute of Economics and Policy Research (SIEPR), Stanford*; Academy of Management Conference; NBER Summer Institute (cross-listed across programs Innovation, Productivity, Development, and Entrepreneurship, IT and Digitization)
- 2015-16: 9th Economics of Entrepreneurship & Innovation (EEI9) Conference; Kauffman Emerging Scholars Conference; Organization Science Winter Conference; Strategy, Fuqua School, Duke University; Harvard Business School (TOM-EM joint seminar); Strategy, UCLA Anderson; Economic Analysis & Policy, UC Berkeley Haas; Management of Organizations, UC Berkeley Haas; Dept. of Management, Wharton School, U-Penn; Organizations & Markets, University of Chicago Booth; Dept. of Management and Organizations, NYU Stern; Dyson School, Cornell University; Dept. of Management & Technology, Bocconi University; Strategy Area, Ross School, University of Michigan; Management & Organizations, USC Marshall; Strategy Department, Harvard Business School; Logistics, Business & Public Policy, UMD Smith School; Strategy & Entrepreneurship, UCL School of Management; NBER Productivity Seminar; Strategic Management Department, Fox School, Temple University; 15th Roundtable for Engineering Entrepreneurship Research (REER); MIT Economics "Labor Lunch"; MIT

Sloan TIES Seminar; MIT Economics Summer Applied-Micro Lunch; Economic Sociology Working Group

- 2014-15 & before: Laboratory for Innovation Science and Policy Lunch; Open & User Innovation Workshop (HBS); AOM Annual Meetings; Cyberscholars Working Group (Yale); NBER Summer Workshop on Economics of IT & Digitization; Third Annual Research Roundtable on the Law & Economics of Digital Markets, Searle Center (Northwestern Law); Fourth Workshop for Junior Researchers on the Law & Economics of Intellectual Property and Competition Law (Munich); Gordon Research Conference on Science & Technology Policy; Wikimania International Conference, Washington DC; Workshop on Information Technology Systems (WITS)

TEACHING AND SERVICE

- UC Berkeley-Haas:
  - EWMBA/EMBA AI for Business Leaders (Berkeley Haas, Spring 2025, Rating 6.9/7)
  - EWMBA/EMBA Entrepreneurial Strategy (Berkeley Haas, Fall 2025, Rating TBD)
  - EWMBA/EMBA Entrepreneurial Strategy (Berkeley Haas, Fall 2024, Rating 6.7/7)
  - EWMBA/EMBA Entrepreneurial Strategy (Berkeley Haas, Fall 2023, Rating 6.7/7)
  - EWMBA/EMBA Entrepreneurial Strategy (Berkeley Haas, Fall 2022, Rating 7/7)
  - EWMBA Entrepreneurial Strategy (Berkeley Haas, Summer 2022, Rating 6.8/7)
  - EWMBA Entrepreneurial Strategy (Berkeley Haas, Summer 2021, Rating 6.8/7)
  - EWMBA/MBA Entrepreneurial Strategy (Berkeley Haas, Spring 2020, Rating 6.3/7)
  - MBA The Entrepreneur's Playbook (Harvard Business School, Spring 2021, Rating 6.0/7)
  - MBA Entrepreneurial Strategy (Berkeley Haas, Spring 2020, Rating 6.1)
  - MBA Entrepreneurial Strategy (Berkeley Haas, Spring 2019, Rating 6.4/7)
  - MBA Entrepreneurial Strategy (Berkeley Haas, Spring 2018, Rating 6.5/7)
- Seminars and Symposia:
  - Organizer, Berkeley-Haas Entrepreneurship and Innovation Seminar, 2022–
  - Co-organizer, MORS Colloquium, 2017-18
  - Co-organizer, The Implications of AR/VR for Management Research, AOM 2023
  - Co-organizer, Maps for Search: The Impact of the Data Revolution on Innovation, AOM 2023
- PhD teaching:
  - Berkeley-Haas MORS Macro PhD Field Advisor, 2023–
  - The Economics of Innovation (UC Berkeley, Fall 2020)
  - Co-instructor, Innovation PhD Seminar, Fall 2018
- Refereeing:
  - Administrative Science Quarterly, American Economic Journal: Applied Economics, American Economic Journal: Economic Policy, American Economic Review, American Economic Review: Insights, Academy of Management,

California Management Review, Experimental Economics, Ford Foundation, Information Economics and Policy, Journal of Economics and Management Strategy, Journal of Law and Economics, Journal of Economic Geography, Journal of Political Economy, Management Science, MIS Quarterly, NBER Summer Institute, National Science Foundation, Organization Science, Research Policy, Resource for the Future, Sage Open (Invited Editor), Sloan Foundation, Strategic Management Journal, Strategy Science, W. W. Norton, NIH Data Sharing Index (S-index) Challenge, Kauffman Foundation

- Professional Service:
  - Editorial Board, Strategic Entrepreneurship Journal, 2024–
  - Co-organizer, NBER Digital Economics and AI winter meetings, 2024
  - Panelist, AI & Copyright Policy Roundtable, US Copyright Office, 2024
  - Executive Committee, Technology and Innovation Management (TIM) Division, 2023–
  - AOM STR Junior Faculty Paper Development Workshop, 2023
  - Scientific Council, NASA-RFF Valuables Consortium, 2020-2022
  - AOM TIM Doctoral Research Development Workshop, 2022
  - Judging committee, MIT Sloan Doctoral Research Forum, 2021
  - Academy of Management Best Paper committee (STR division), Spring 2021
  - Academy of Management, STR Dissertation Awards Committee, 2020
  - Academy of Management, Best Student Paper Awards Committee, 2018
  - Academy of Management, TIM Doctoral Dissertation Workshop, 2018
  - Academy of Management, STR Doctoral Dissertation Workshop, 2018
- Executive Education:
  - Co-director, Chief Digital Officer (CDO) Executive Program, 2021–
  - Instructor, Chief Executive Office (CEO) Program, 2021–
  - Instructor, Nanyang Advanced Management Program, 2020–
  - LATAM General Management Program, 2019
- Consulting
  - Expert witness work on litigation matters in technology and AI
  - Advisory work in tech, AI & R&D (e.g. Astera Labs, Stryker, Salesforce, AWS etc).

<u>STUDENTS ADVISED - *(indicates primary advisor)</u>

- Postdoctoral:
  - Fernando Stipanicic*, 2022-23
  - Tim Sels*, 2024–
- Current PhD:
  - Srikanth Prasad*
  - Sahiba Chopra
- Past PhD (with first placement):
  - Hyo Kang (Berkeley PhD, Asst. Prof. USC Marshall)
  - Gauri Subramani* (Berkeley PhD, Asst. Prof. Lehigh U)

  - Oren Reshef (Berkeley PhD, Asst. Prof. Wash U)
  - Sukhun Kang (London Business School PhD, Asst. Prof. UC Santa-Barbara)
  - Weilong Wang (Purdue University PhD, Post-doc Columbia University)
  - Matteo Tranchero* (Berkeley PhD, Asst. Prof., University of Pennsylvania, Wharton school)
  - Saqib Mumtaz* (Berkeley PhD, Asst. Prof, GeorgiaTech Scheller School)
- Pre-doctoral RA Advising:
  - Hongyu Yao* (MIT Sloan Phd)
  - Eva Cheng* (London Business School PhD)
  - Cecil-Francis Brenninkmeijer* (Duke Fuqua PhD)
  - Min Min Fong*
  - Jacob Snyder*
  - Charlie Guthmann

APPENDIX B: LIST OF MATERIALS CONSIDERED

Materials Relied Upon

Academic Papers

A. Colin Cameron et al., "Bootstrap-Based Improvements for Inference with Clustered Errors," *The Review of Economics and Statistics*, Vol. 90, No. 3 (Aug 2008), at pp. 414-427, available at https://direct.mit.edu/rest/article-abstract/90/3/414/57731/Bootstrap-Based-Improvements-for-Inference-with.

Abhishek Nagaraj and Imke Reimers, "Digitization and the Market for Physical Works: Evidence from the Google Books Project," *American Economic Journal: Economic Policy*, Vol. 15, No. 4 (2023), available at https://www.aeaweb.org/articles?id=10.1257/pol.20210702.

Abhishek Nagaraj and Stella Jia, "Cloze Encounters: The Impact of Pirated Data Access on LLM Performance," *National Bureau of Economic Research* (Mar 2025), available at https://www.nber.org/papers/w33598.

Abhishek Nagaraj, "Does Copyright Affect Reuse? Evidence from Google Books and Wikipedia," *Management Science,* Vol. 64, No. 7 (Jul 2018), available at https://www.jstor.org/stable/48748181.

Abhishek Nagaraj, Esther Shears, and Mathijs de Vaan, "Improving data access democratizes and diversifies science," *Proceedings of the National Academy of Sciences,* Vol. 117, No. 38 (22 Sep 2020) available at https://www.pnas.org/doi/10.1073/pnas.2001682117.

Ajay Agrawal et al., "Deals Not Done: Sources of Failure in the Market for Ideas," *Strategic Management Journal*, Vol. 36, 18 Apr 2014, available at https://sms.onlinelibrary.wiley.com/doi/10.1002/smj.2261.

Brent Lutes, Joshua Gans, et al., "Identifying the Economic Implications of Artificial Intelligence for Copyright Policy," *US Copyright Office* (2025), available at https://www.copyright.gov/economic-research/economic-implications-of-ai/Identifying-the-Economic-Implications-of-Artificial-Intelligence-for-Copyright-Policy-FINAL.pdf.

Daye Nam, Andrew Macvean, et al., "Using an LLM to Help With Code Understanding," *Proceedings of the IEEE/ACM 46th International Conference on Software Engineering*, 12 Apr 2024, available at https://dl.acm.org/doi/10.1145/3597503.3639187.

Erik Brynjolfsson, Danielle Li, Lindsey Raymond, "Generative AI at Work," *The Quarterly Journal of Economics*, Vol. 140, No. 2 (May 2025), at pp. 889–942, https://doi.org/10.1093/qje/qjae044.

Haihong Zhao et al., "All in One and One for All: A Simple yet Effective Method towards Cross-domain Graph Pretraining," 22 Jun 2024, available at https://arxiv.org/pdf/2402.09834.

Joshua Gans and Scott Stern, "Is there a market for ideas?," *Industrial and Corporate Change*, Vol. 19, No. 3 (Jun 2010), at pp. 805-837, available at https://academic.oup.com/icc/article-abstract/19/3/805/702346.

Mengjie Cheng et al., "The Value of Silence: The Effect of UMG's Licensing Dispute with TikTok on Music Demand," Harvard Business School, 23 Jun 2025, available at https://www.hbs.edu/ris/Publication%20Files/25-014_1b94f3c5-858e-4ab7-b5b6-ddc0158d31b5.pdf.

Raj Chetty et al., "The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data," *The Quarterly Journal of Economics*, Vol. 139, No. 2 (May 2024), at pp. 829–889, available at https://doi.org/10.1093/qje/qjad048.

Shayne Longpre et al, "The Data Provenance Initiative: A Large Scale Audit of Dataset Licensing & Attribution in AI" 4 Nov 2023, available at https://arxiv.org/pdf/2310.16787.

Shayne Longpre et al., "A Pretrainer's Guide to Training Data: Measuring the Effects of Data Age, Domain Coverage, Quality, & Toxicity," 13 Nov 2023, available at https://arxiv.org/pdf/2305.13169

Shuang Zhou, Zidu Xu, et al., "Large Language Models for Disease Diagnosis: A Scoping Review," *npj Artificial Intelligence* Vol. 1, No. 9 (2025), available at https://www.nature.com/articles/s44387-025-00011-z.

Tom B. Brown et al., "Language Models are Few-Shot Learners," 22 Jul 2020, available at https://arxiv.org/pdf/2005.14165.

Wayne Xin Zhao et al., "A Survey of Large Language Models," 24 Nov 2023, available at https://www.researchgate.net/profile/Tang-Tianyi-3/publication/369740832_A_Survey_of_Large_Language_Models/links/665fd2e3637e4448a37dd281/A-Survey-of-Large-Language-Models.pdf.

Yifan Yao, Jinhao Duan, et al., "A Survey on Large Language Model (LLM) Security and Privacy: The Good, the Bad, and the Ugly," *High-Confidence Computing,* Vol. 4, No. 2 (2024), available at https://www.sciencedirect.com/science/article/pii/S266729522400014X.

Yiding Sun et al., "An Integrated Data Processing Framework for Pretraining Foundation Models," 23 Apr 2024, available at https://arxiv.org/pdf/2402.16358.

Web Sources

"A landmark multi-year global partnership with NewsCorp," OpenAI, 22 May 2024, available at https://openai.com/index/news-corp-and-openai-sign-landmark-multi-year-global-partnership/.
"About Spotify," Spotify, available at https://newsroom.spotify.com/company-info/.
"About Us," Semrush, available at https://www.semrush.com/company/.
"About," Concord, available at https://concord.com/about/.
"Always" by Kristian Stanfill," Genius, available at https://genius.com/albums/Kristian-stanfill/Mountains-move.
"And I Love You So by Perry Como," Genius, available at https://genius.com/albums/Perry-como/And-i-love-you-so.
"Anthropic raises $13B Series F at $183B post-money valuation," Anthropic, 2 Sep 2025, available at https://www.anthropic.com/news/anthropic-raises-series-f-at-usd183b-post-money-valuation
"As the Deer by Martin Nystrom," Genius, available at https://genius.com/albums/Integritys-hosanna-music/We-draw-near.
"Basics of Google Trends," Google News Initiative, available at https://newsinitiative.withgoogle.com/resources/trainings/basics-of-google-trends/
"Celebrating 100 million songs," 3 Oct 2022, available at https://www.apple.com/newsroom/2022/10/celebrating-100-million-songs/.
"Claude 2," Anthropic, 11 Jul 2023, available at https://www.anthropic.com/news/claude-2.
"Claude: Using images, audio, and video in practical workflows," Data Studios, 21 Aug 2025, available at https://www.datastudios.org/post/claude-using-images-audio-and-video-in-practical-workflows.
"Code Consultant," Claude Docs, available at https://platform.claude.com/docs/en/resources/prompt-library/code-consultant.
"common_corpus/README.md," Hugging Face, available at https://huggingface.co/datasets/PleIAs/common_corpus/blob/main/README.md.
"Company," Anthropic, available at https://www.anthropic.com/company.
"Data and Metrics," Semrush, available at https://www.semrush.com/kb/997-semrush-data.
"Economics of Transformative AI Workshop, Fall 2025," NBER, available at https://www.nber.org/conferences/economics-transformative-ai-workshop-fall-2025
"FAQ about Google Trends Data," Trends Help, available at https://support.google.com/trends/answer/4365533?hl=en.
"Find related searches," Trends Help, available at https://support.google.com/trends/answer/4355000?hl=en.
"General Information," Library of Congress, available at https://www.loc.gov/about/general-information/.
"God of Wonders by Third Day," Genius, available at https://genius.com/albums/Third-day/Offerings-ii-all-i-have-to-give.
"Google Search API," SearchAPI, available at https://www.searchapi.io/.
"Great is the Lord by Michael W. Smith," Genius, available at https://genius.com/albums/Michael-w-smith/Project.
"He is Exalted by Twila Paris," Genius, available at https://genius.com/albums/Twila-paris/Kingdom-seekers.
"Hello Again by Neil Diamond," Genius, available at https://genius.com/albums/Neil-diamond/The-jazz-singer-original-motion-picture-soundtrack.
"I Am Not Alone by Kari Jobe," Genius, available at https://genius.com/albums/Kari-jobe/Majestic-live.
"I Don't Know How to Love Him by Petula Clark," Genius, available at https://genius.com/albums/Petula-clark/Just-pet-petula-71.
"I'm a Believer by Neil Diamond," Genius, available at https://genius.com/albums/Neil-diamond/Just-for-you.
"Independent Artists, Writers, and Performers," Data USA, available at https://datausa.io/profile/naics/independent-artists-writers-and-performers.
"Introducing Claude Haiku 4.5," Anthropic, 15 Oct 2025, available at https://www.anthropic.com/news/claude-haiku-4-5.
"Introducing Claude Opus 4.5," Anthropic, 24 Nov 2025, available at https://www.anthropic.com/news/claude-opus-4-5.
"Introducing Claude Pro," Anthropic, 7 Sep 2023, available at https://www.anthropic.com/news/claude-pro.
"Introducing Claude Sonnet 4.5," Anthropic, 29 Sep 2025, available at https://www.anthropic.com/news/claude-sonnet-4-5.

"Introducing Claude," Anthropic, 14 Mar 2023, available at https://www.anthropic.com/news/introducing-claude.
"Introducing the Max Plan," Claude, 9 Apr 2025, available at https://claude.com/blog/max-plan.
"Lamb of God by Twila Paris," Genius, available at https://genius.com/albums/Twila-paris/Kingdom-seekers).
"Let's Face the Music and Dance by Fred Astaire," Genius, available at https://genius.com/albums/Various-artists/Pennies-from-heaven-original-motion-picture-soundtrack
"Meet Claude, your thinking partner," Claude, available at https://claude.com/product/overview.
"Meet Claude," Anthropic, 12 Jun 2023, available at https://web.archive.org/web/20230612193739/https://www.anthropic.com/product.
"Model Card and Evaluations for Claude Models," Anthropic, 8 Jul 2023, available at https://www-cdn.anthropic.com/5c49cc247484cecf107c699baf29250302e5da70/claude-2-model-card.pdf.
"Moonlight in Vermont by Margaret Whiting," Genius, available at https://genius.com/albums/Margaret-whiting/Capitol-collectors-series.
"Musicians and Singers," Data USA, available at https://datausa.io/profile/soc/musicians-and-singers#:~:text=In%202023%2C%20there%20were%20105%2C454%20musicians%20and,*%20**Independent%20artists%2C%20writers%2C%20and%20performers**%2024.9%25.
"Musixmatch Signs AI Innovation Deals with Sony Music Publishing, Universal Music Publishing Group, and Warner Chappell Music," PR Newswire, 15 Oct 2025, available at https://www.prnewswire.com/news-releases/musixmatch-signs-ai-innovation-deals-with-sony-music-publishing-universal-music-publishing-group-and-warner-chappell-music-302583762.html.
"NBER Digital Economics and AI Meeting, Spring 2024," NBER, available at https://www.nber.org/conferences/nber-digital-economics-and-ai-meeting-spring-2024.
"News Corp and OpenAI Sign Landmark Multi-Year Global Partnership," News Corp, 22 May 2024, available at https://investors.newscorp.com/news-releases/news-release-details/news-corp-and-openai-sign-landmark-multi-year-global-partnership.
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2024.03.22 Anthropic's 1st Set of ROGs (Nos. 1-3) 2024.03.22 Plaintiffs' First Set of Interrogatories to Anthropic 2024.04.22 Anthropic's Responses and Objections to ROG Set 1 2024.04.22 Pls.' O&R to Anthropic's 1st Set of ROGs (Nos. 1-3) 2024.12.20 Anthropic's Amended Supp Resp to ROGs Set 1 Verified 2025-11-04 Pls' Supp R&Os to Anthropic's Interrogatory (No. 21) 2025-11-07 Pls' Omnibus Verifications Supplemental ROG Responses 2025-11-12 Pls' Supp R&O to Anthropic's Interrogatories Nos. 9 and 10 2025-11-12 Pls' Supp R&O to Anthropic's Interrogatory No 6 2025-11-12 Pls' Supp R&O to Anthropic's Interrogatory No. 21 2025.03.07 Anthropic's Supplemental ROs to ROG 14 and 15 2025.06.06 Anthropic's 2nd Set of ROGs (Nos. 3-21) 2025.07.08 Pls.' R&O to Anthropic's 2nd Set of ROGs (Nos. 3-21) 2025.07.08 Pls.' Suppl. R&O to Anthropic's 2nd Set of ROGs (Nos. 9 and 10) 2025.07.11 Pls.' Verification Suppl. R&O to Anthropic's 2nd Set of ROGs (Nos. 9 &10) 2025.07.31 Pls.' Suppl. R&O to Anthropic's 1st Set of ROGs (No. 3) 2025.08.01 Anthropic's 3rd Set of ROGs (Nos. 22-25) 2025.08.12 Publishers' 3rd Set of Interrogatories to Anthropic (Nos. 16-25)	2023-11-16 [040] 2023-11-16 [041] 2023-11-16 [042] 2023-11-16 [043] 2023-11-16 [044] 2023-11-16 [045] 2023-11-16 [046 001] 2023-11-16 [046] 2023-11-16 [047 001] 2023-11-16 [047 002] 2023-11-16 [047] 2023-11-16 [048 001] 2023-11-16 [048 002] 2023-11-16 [048 003] 2023-11-16 [048 004] 2023-11-16 [048 005] 2023-11-16 [048 006] 2023-11-16 [048 007] 2023-11-16 [048 008] 2023-11-16 [048 009] 2023-11-16 [048 010] 2023-11-16 [048 011] 2023-11-16 [048 012] 2023-11-16 [048 013] 2023-11-16 [048 014] 2023-11-16 [048 015] 2023-11-16 [048 016] 2023-11-16 [048 017] 2023-11-16 [048 018] 2023-11-16 [048] 2023-11-16 [049 001] 2023-11-16 [049 002] 2023-11-16 [049 003] 2023-11-16 [049 004] 2023-11-16 [049 005] 2023-11-16 [049 006] 2023-11-16 [049 007] 2023-11-16 [049] 2023-11-16 [050 001} 2023-11-16 [050 002] 2023-11-16 [050 003] 2023-11-16 [050 004] 2023-11-16 [050 005] 2023-11-16 [050 006]	2025-11-12 Amodei, Daniela Deposition Transcript Amodei 165 Amodei 166 Amodei 167 Amodei 168 Amodei 169 Amodei 170 Amodei 171 Amodei 172 Amodei 173 Amodei 174 Amodei 175 Amodei 176 Amodei 177 Amodei 178 Amodei 179 Amodei 179 Amodei 180 Amodei 181 Amodei 182 Amodei 183 Amodei 184 2025-11-12 Drain, Dawn Deposition Transcript Drain 135 Drain 136 Drain 137 Drain 138 Drain 139 Drain 140 Drain 141 Drain 142 Drain 143 Drain 144 Drain 145 Drain 146 Drain 147 Drain 148 Drain 149

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APPENDIX C: DETAILS ON EMPIRICAL ANALYSES

1) WIS Chart

150. After reviewing Exhibits A and B to Publishers' First Amended Complaint (Dkt. 337-1 and Dkt. 337-2, respectively), I understand that there are several discrepancies between the recitation of song titles to the Works-In-Suit. I further understand that Publishers have not provided a comprehensive list of performing artists for the Works-In-Suit. To the extent Publishers clarify such discrepancies or provide the list of performing artists for the Works-In-Suit, I reserve my right to modify my analysis and supplement my opinions accordingly. For the time being, I have conducted my analysis using a chart compiled by counsel for purposes of conducting my analysis. This chart is attached to my report Table C.1, which reflects song titles derived from Exhibit A to Publishers' First Amended Complaint and performing artist names from Exhibit B to the declaration of Dan Seymour (Dkt. 49-1 – 49-4) ("Seymour Exhibits") filed in support of Publishers' motion for a preliminary injunction. In certain instances, the information provided in Exhibit A to the First Amended Complaint and the Seymour Exhibits appeared to be inconsistent with my review of Exhibit B to the Publishers' First Amended Complaint and https://genius.com/, the lyrics website in which Plaintiffs cite copies of lyrics by which Claude output is compared. For those instances where the information was inconsistent, the information in my chart is derived from copyright registration certificates and other documentation. These changes are explained in Column D of the chart. To the extent Publishers contest any information in this chart, I reserve my right to modify my analysis and supplement my opinions accordingly. I maintain numbering assigned to each of the 499 songs at issue as listed in Exhibit A to the First Amended Complaint for my analysis.[196]

151. Pursuant to Counsel's direction, there are nine song title and artist pairs with a variation in either the song title or artist. The variations are shown in Table C.2. I use these variations in a supplemental analysis for Google Trends, with results reported in Table C.19.

[196] For example, *"7 Rings"* appears first in Exhibit A to the First Amended Complaint and thus is labeled Work-In-Suit Number, i.e., WIS #, "1" with subsequent songs numbered sequentially thereafter. To account for the removal of *"Girls Just Wanna Have Fun"* in Exhibit A to the First Amended Complaint, which was previously the 200th Work-In-Suit in the original Exhibit A as filed on October 18, 2023, I use Work-In-Suit Numbers sequentially from "1" through "199". I then skipped Work-In-Suit Number "200" and resume numbering from "201" through "500".

Table C.1: Works-In-Suit (WIS), Including Variations

A	B	C	D	E
WIS #	**Song Title Based on Exhibit A to FAC*** **Deviations from Exhibit A to FAC are denoted below with an asterisk, and explained in column D*	**Artist Name Based on Seymour Decl. ISO Pls.' PI Motion*** **Deviations from Seymour Declaration are denoted below with an asterisk, and explained in Column D*	**Explanations for Deviations as Marked in Columns B and C**	**Song Registration Number**
1	7 RINGS	Ariana Grande		PA0002187265
2	CENTURIES	Fall Out Boy		PA0001961647
3	DANCING WITH A STRANGER	sam smith		PA0002185007
4	DIAMONDS	Rihanna		PA0001845153
5	DIE YOUNG	Ke$ha		PA0001850818
6	DONTTRUSTME	3OH!3		PA0001653773
7	DUSK TILL DAWN	ZAYN ft Sia		PA0002185366
8	GRENADE	Bruno Mars		PA0002182938
9	HALO	Beyonce		PA0001642019; PA0001682642
10	HIPS DON'T LIE	shakira		PA0001367687; PAu003149121
11	KICKSTART MY HEART	Motley crue		PA0000440232
12	LAST FRIDAY NIGHT (T.G.I.F.)	Katy Perry		PA0001711655; PA0001396980; PA0001753637
13	LOVE YOU LIKE A LOVE SONG	Selena Gomez & The Scene		PA0001869961
14	MAPS	Maroon 5		PA0001947799
15	MARRY ME	Thomas Rhett		PA0002120132; PA0002138910; PA0002130922
16	ME AND MY BROKEN HEART	Rixton		PA0001959686
17	MEANT TO BE	Bebe Rexha		PA0002105522
18	NOTHING BREAKS LIKE A HEART	mark ronson		PA0002182042
19	ROAR	Katy Perry		PA0001860200
20	RUMOUR HAS IT	Adele		PA0001738213
21	SOMEBODY ELSE	The 1975		PA0002015511

22	TIK TOK	Ke$ha		PA0001688442
23	TIME AFTER TIME	Cyndi Lauper		PA0000238686; PA0000299757
24	TURNING TABLES	Adele		PA0001738213
25	UNSTOPPABLE	Sia		PA0002134877
26	UPTOWN FUNK	mark ronson		PA0001938200
27	WHAT A WONDERFUL WORLD	Louis Armstrong		EU0000010029; RE0000689584; RE0000704744
28	ADORE YOU	Harry Styles		PA0002250803; PA0002265129
29	BLEEDING LOVE	Leona Lewis		PA0001613694
30	CALIFORNIA GURLS	katy perry		PA0001711654; PA0001396981; PA0001734423
31	GOLDEN	Harry Styles		PA0002250726; PA0002265133
32	HUMBLE AND KIND	Tim McGraw		PA0002032466; PA0002130282
33	MOVES LIKE JAGGER	maroon 5		PA0001801572
34	PAYPHONE	maroon 5		PA0001824573; PA0001849242
35	SIGN OF THE TIMES	Harry Styles		PA0002085488
36	STAY	the kid laroi		PA0002316799; PA0002345926; PA0002370561
37	STEREO HEARTS	Gym Class Heroes ft. Adam levine		PA0001806415
38	WANNABE	Spice Girls		PA0000823685
39	WATERMELON SUGAR	Harry Styles		PA0002250681; PA0002265071
40	WE BUILT THIS CITY	Starship		PA0000265529; PA0000264311
41	A CHANGE IS GONNA COME	Sam Cooke		EU0000816632; RE0000570151
42	ANOTHER SATURDAY NIGHT	Sam Cooke		EU0000766723; RE0000516155
43	BITTERSWEET SYMPHONY	The Verve		PAu002199365
44	BRING IT ON HOME TO ME	Sam Cooke		EU0000719893; RE0000475464; EP0000166883; RE0000475432
45	BROWN SUGAR	The Rolling Stones		EU0000235987
46	CUPID	Sam Cooke		EU0000668349; RE0000446794
47	DEAD FLOWERS	The Rolling Stones		EP0000289677
48	GIMME SHELTER	The Rolling Stones		EU0000154592

49	HONKY TONK WOMEN	The Rolling Stones		EU0000125715
50	IT'S ALL OVER NOW	The Rolling Stones		EU0000824981; RE0000570496
51	JUMPIN' JACK FLASH	The Rolling Stones		EU0000053487
52	MAMA SAID	The Shirelles		EU0000655257; RE0000446770
53	MOONLIGHT MILE	The Rolling Stones		EP0000289679
54	PLAY WITH FIRE	The Rolling Stones		EU0000874314; PAu001489708
55	SALT OF THE EARTH, THE	The Rolling Stones		EU0000084522
56	SHE'S A RAINBOW	The Rolling Stones		EU0000031919
57	SHINE A LIGHT	The Rolling Stones		EU0000326812
58	STREET FIGHTING MAN	The Rolling Stones		EU0000070720
59	SYMPATHY FOR THE DEVIL	The Rolling Stones		EU0000075421
60	TWISTIN' THE NIGHT AWAY	Sam Cooke		EU0000701315; RE0000475433
61	WILD HORSES	The Rolling Stones		EU0000180744
62	WONDERFUL WORLD	Sam Cooke		EU0000567694; RE0000361641
63	YOU CAN'T ALWAYS GET WHAT YOU WANT	The Rolling Stones		EU0000099333
64	YOU SEND ME	Sam Cooke		EU0000491316; RE0000233851
65	WE BELONG TOGETHER	Mariah Carey		PA0001162027; PA0001163150
66	(SITTIN' ON) THE DOCK OF THE BAY	Otis Redding		EU0000033492; RE0000760653; PAu002069906
67	10,000 REASONS (BLESS THE LORD)	Matt Redman		PA0001751588
68	A BEAUTIFUL LIE	30 Seconds to Mars		PA0001630062
69	A FOREST	The Cure		PA0000194922
70	A PLACE FOR MY HEAD	Linkin Park		PA0001092514
71	A THOUSAND MILES	Vanessa Carlton		PA0001102367
72	ACHY BREAKY HEART	Billy Ray Cyrus		PA0000534864
73	AIN'T NO SUNSHINE	Bill Withers		EU0000243844; RE0000827146
74	AJA	Steely Dan		EU0000811347; RE0000910216
75	ALL ALONG THE WATCHTOWER	Bob Dylan		EU0000032648; RE0000739070
76	ALL I REALLY WANT TO DO	Bob Dylan		EU0000848258; RE0000588423; EP0000195706; RE0000588403
77	ALL I WANTED	Paramore		PA0001676908
78	ALWAYS	Blink-182		PA0001243938

79	ALWAYS	Kristian Stanfill		PA0001766253
80	AMERICAN GIRL	Tom Petty and the Heartbreakers		EU0000721156; RE0000890825
81	AMERICAN PIE	Don McLean		EU0000284299; RE0000803730
82	ANACONDA	Nicki Minaj		PA0002062630
83	ANARCHY IN THE U.K.	Sex Pistols		EU0000853584; PAu001125351; RE0000932107; PA0000369943
84	AND I AM TELLING YOU I'M NOT GOING	Jennifer Holliday		PAu000365845; PAu000395732; PAu000440080
85	AND I LOVE YOU SO	Perry Como		EU0000201220; RE0000771158; EP0000311666; RE0000829100
86	ANGEL	Aerosmith		PA0000342822
87	ANGEL EYES	The Jeff Healey Band		PA0000385332
88	ANGELES	Elliott Smith		PA0000859623
89	ANGELS	The xx		PA0001816076
90	ANY MAJOR DUDE WILL TELL YOU	Steely Dan		EU0000469050; RE0000854810

91	AS THE DEER	Martin Nystrom*	**Artist Variation** = "maranatha! Singers" **Selected Variation** = "Martin Nystrom" *Artist name displayed in Column C is derived from the Seymour Declaration Claude output, as Plaintiffs' prompting for lyrics used artist variation "maranatha! Singers". The artist "Martin Nystrom" is selected because (1) review of the copyright registration returns information "Martin Nystrom", "Maranatha! Singers", and "Maranatha! Music"; and (2) searching the work with the artist variation "maranatha! Singers" does not return an exact match for the song title and artist in genius.com, whereas searching the work with "Martin Nystom" returns the artist "Marty Nystrom". Online sources confirm "Martin" is the legal name of "Marty Nystrom"; and (3) Lyrics to AS THE DEER in Exhibit B to the FAC are consistent with the work, as reflected in genius.com	PA0000315393
92	AT THE CROSS (LOVE RAN RED)	Chris Tomlin		PA0001910159
93	ATTACK	30 Seconds to Mars		PA0001630069
94	AWAKE MY SOUL	mumford and sons		PA0001932490
95	AWAY FROM THE SUN	3 Doors Down		PA0001120567
96	BABY BABY	Amy Grant		PA0000512809
97	BACK AT ONE	Brian McKnight		PA0001203871

98	BALLAD OF A THIN MAN	Bob Dylan		EU0000903127; RE0000647444
99	BALLROOM BLITZ	Sweet		PAu000066844
100	BARRACUDA	Heart		EU0000791168; RE0000910167; EU0000789263; RE0000910161
101	BEAUTIFUL THINGS	Gungor		PA0001734874
102	BECAUSE I GOT HIGH	Afroman		PA0001123416
103	BENNIE AND THE JETS	Elton John		EFO000170947; RE0000838312
104	BEST THING THAT EVER HAPPENED TO ME	Gladys Knight & The Pips		EU0000376780; RE0000823172
105	BLEED IT OUT	Linkin Park		PA0001602887; PA0001167572
106	BLEEDING OUT	Imagine Dragons		PA0001816018
107	BLESS THE BROKEN ROAD	Rascal Flatts		PA0000734451
108	BLOWIN' IN THE WIND	Bob Dylan		EU0000731107; RE0000481471
109	BODHISATTVA	Steely Dan		EU0000416548; RE0000837424
110	BONFIRE	Childish Gambino		PA0001773709
111	BOOGIE WOOGIE BUGLE BOY	The Andrews Sisters		EU0000238602; R00000425178
112	BORN TO BE WILD	Steppenwolf		EU0000035989; RE0000722455
113	BOYS DON'T CRY	The Cure		PA0000205033
114	BREAK STUFF	Limp Bizkit		PA0001021053
115	BREAKFAST IN AMERICA	Supertramp		PA0000032062
116	BREAKING THE HABIT	Linkin Park		PA0001256418
117	BREAKING UP IS HARD TO DO	Neil Sedaka		EP0000165278; RE0000501238; RE0000491450; EU0000724459; RE0000491465; RE0000501221
118	BREATHE ME	Sia		PA0001164903; PA0001338526
119	BREATHING	Yellowcard		PA0001158186
120	BRIMFUL OF ASHA	Cornershop		PA0000988476
121	BUILD MY LIFE	Pat Barrett		PA0002076039
122	BURN IT DOWN	Linkin Park		PA0001805742
123	BURNING IN THE SKIES	Linkin Park		PA0001725616
124	BY MYSELF	Linkin Park		PA0001092512
125	CALIFORNIA DREAMIN'	The Mamas and The Papas		EU0000918773; RE0000635860

126	CALIFORNIA GIRLS	The Beach Boys		EU0000890216; RE0000610581; PAu002079518; EU0000212915; RE0000775518; PAu002079809
127	CAN'T GET YOU OUT OF MY HEAD	Kylie Minogue		PA0001136727
128	CANDLE IN THE WIND	Elton John		EFO000170947; RE0000838312
129	CASTLE OF GLASS	Linkin Park		PA0001805745
130	CHASING CARS	Snow Patrol		PA0001990266
131	CHEEK TO CHEEK	Fred Astaire*	**Artist Variation** = "fred astaire/leo reisman orchestra" **Selected Variation** = "Fred Astaire" *Artist name displayed in Column C is derived from the Seymour Declaration Claude output, as Plaintiffs' prompting for lyrics used artist variation "fred astaire/leo reisman orchestra". The artist "Fred Astaire" is selected because (1) searching the work with the artist "fred astaire/leo reisman orchestra" as prompted by Plaintiffs in genius.com returns "Fred Astaire"; and (2) Lyrics to CHEEK TO CHEEK in Exhibit B to the FAC are consistent with the work, as reflected in genius.com	EU0000097144; R000000289527
132	CHILDREN'S STORY	Slick Rick		PA0000449656
133	CHRISTMAS LIGHTS	Coldplay		PA0001969616
134	CLOSER	Ne-Yo		PA0001395685
135	CLOSER TO FINE	Indigo Girls		PA0000451204
136	COLORS	Halsey		PA0002059980
137	COME AS YOU ARE	Crowder		PA0001910192
138	COME SAIL AWAY	Styx		EU0000828640; RE0000910690

139	COMING HOME	diddy-dirty money		PA0001751168
140	CONTROL	Halsey		PA0002060006
141	COPACABANA	Barry Manilow		PAu000009986
142	COSMIC LOVE	florence and the machine		PA0001892799
143	COURT OF THE CRIMSON KING	King Crimson		EU0000148405; RE0000755409
144	COWARD OF THE COUNTY	Kenny Rogers		PA0000039661
145	CRAWLING	Linkin Park		PA0001092510
146	CROCODILE ROCK	Elton John		EFO000159444; RE0000822540
147	CRUEL TO BE KIND	Nick Lowe		PA0000022753
148	DADDY SANG BASS	Johnny Cash		EU0000088125; RE0000723367; EP0000377413; RE0000750614
149	DARE YOU TO MOVE (I DARE YOU TO MOVE)	Switchfoot		PA0001044236
150	DE DO DO DO, DE DA DA DA	The Police		PA0000089745
151	DEACON BLUES	Steely Dan		EU0000811348; RE0000910217; PA0000003182
152	DEMONS	Imagine Dragons		PA0001796478
153	DESERT ROSE	sting		PA0000976583; PA0001038417; PA0001074378
154	DESOLATION ROW	Bob Dylan		EU0000905799; RE0000647455
155	DISTURBIA	Rihanna		PA0001692669
156	DO IT AGAIN	Steely Dan		EU0000353004; RE0000823108
157	DO WAH DIDDY DIDDY	Manfred Mann		EU0000796084; RE0000529632; EP0000193467; RE0000585084
158	DOG DAYS ARE OVER	florence and the machine		PA0001892802
159	DON'T CRY FOR ME ARGENTINA	Madonna		EF0000041481; RE0000891073
160	DON'T MIND	Kent Jones		PA0002047004; PA0002048732
161	DON'T STAND SO CLOSE TO ME	The Police		PA0000089740
162	DON'T STAY	Linkin Park		PA0001256411
163	DON'T STOP	Fleetwood Mac		EU0000713074; RE0000904499; EP0000373131

164	DON'T WORRY BABY	The Beach Boys		EU0000818195; RE0000604378; RE0000574344
165	DRIFT AWAY	Dobie Gray		EP0000312071; PA0000790342; EU0000331792; PAu002121140; RE0000816855
166	EASIER TO RUN	Linkin Park		PA0001256414
167	ENGLISHMAN IN NEW YORK	Sting		PA0000351652; PA0001038425
168	EVER FALLEN IN LOVE WITH SOMEONE YOU SHOULDN'T'VE	Buzzcocks		PA0000067070
169	EVERGLOW	Coldplay		PA0002031153
170	EVERY BREATH YOU TAKE	The Police		PA0000201652; PA0001038430
171	EVERY GRAIN OF SAND	Bob Dylan		PAu000237620; PA0000115557
172	EVERY LITTLE THING SHE DOES IS MAGIC	The Police		PA0000127302
173	EVERY TEARDROP IS A WATERFALL	Coldplay		PA0001766995
174	EVERYWHERE	Fleetwood Mac		PAu000853444; PA0000332445
175	EYE IN THE SKY	alan parsons project		PA0000144130
176	FACE DOWN	red jumpsuit apparatus		PA0001376457
177	FAINT	Linkin Park		PA0001256417
178	FATHER OF MINE	Everclear		PA0000873792
179	FERRY 'CROSS THE MERSEY	gerry & the pacemakers		EFO000104733; RE0000573321
180	FIELDS OF GOLD	Sting		PA0000618389; PA0001038420
181	FIREFLIES	Owl City		PA0001692976
182	FIX YOU	Coldplay		PA0001700422

183	FLAVOR OF THE WEAK*	American Hi-Fi	**Song Variation** = "Flavor of the Week" **Selected Song Variation** = "Flavor of the Weak" *Song name in Column B is derived from the copyright registration certificate, as Exhibit A to FAC used an alternative spelling: FLAVOR OF THE WEEK. The spelling "FLAVOR OF THE WEAK" was further confirmed genius.com	PA0000981396
184	FLY	nicki minaj ft. rihanna		PA0001745306
185	FOR THE FIRST TIME	The Script		PA0001746223
186	FOR THE GOOD TIMES	Kris Kristofferson		EP0000248830; RE0000718330
187	FOREVER	Chris Brown		PA0001677037
188	FORGOTTEN	Linkin Park		PA0001092515
189	FRAGILE	Sting		PA0000351655; PA0001038440
190	FREE BIRD	Lynyrd Skynyrd		EU0000450840; RE0000838872; RE0000852176
191	FRESH PRINCE OF BEL-AIR	will smith		PAu001887849
192	FRIDAY I'M IN LOVE	The Cure		PA0001073351
193	FRIENDS	Michael W. Smith		PA0000154225
194	FRIENDS IN LOW PLACES	Garth Brooks		PA0000485587
195	FROM THE BOTTOM OF MY BROKEN HEART	Britney Spears		PA0000932241
196	FROM THE INSIDE	Linkin Park		PA0001256421
197	FUN, FUN, FUN	The Beach Boys		EU0000807824; RE0000574318
198	GIMME SOME LOVIN'	spencer davis group		EF0000031746; RE0000657899
199	GIMME THREE STEPS	Lynyrd Skynyrd		EU0000448562; RE0000851733
201	GIVEN UP	Linkin Park		PA0001167570; PA0001602906
202	GOD MUST HAVE SPENT A LITTLE MORE TIME ON YOU	n sync		PA0000982175
203	GOD OF WONDERS	Third Day		PA0001305795
204	GOD ONLY KNOWS	The Beach Boys		EU0000948189; RE0000662431

205	GOD SAVE THE QUEEN (NO FUTURE)	Sex Pistols		PAu001125349
206	GOOD GOOD FATHER	Chris Tomlin		PA0002296837
207	GOOD VIBRATIONS	The Beach Boys		EU0000964030; RE0000654512
208	GOODBYE YELLOW BRICK ROAD	Elton John		EFO000170947; RE0000838312
209	GOODNESS OF GOD	Bethel Music		PA0002394586; PA0002186334
210	GOTTA SERVE SOMEBODY	Bob Dylan		PAu000110766; PAu000137092
211	GRANDMA'S HANDS	Al Jarreau		EU0000243847; RE0000827149
212	GREAT IS THE LORD	Michael W. Smith		PA0000158291
213	GREEN EYES	Coldplay		PA0001073305
214	GYPSYS, TRAMPS AND THIEVES	Cher		EU0000271991; RE0000728553
215	HALL OF FAME	the script		PA0001828622
216	HARD TO SAY I'M SORRY	Chicago		PA0000142242; PA0000150388
217	HARDER TO BREATHE	Maroon 5		PA0001073084
218	HATE THAT I LOVE YOU	rihanna		PA0001641335
219	HAVE A LITTLE FAITH IN ME	John Hiatt		PA0000343117
220	HE IS EXALTED	Twila Paris		PA0000296457
221	HE REIGNS	Newsboy*	**Artist Variation** = "Newsboys" **Selected Artist Variation** = "Newsboy" *Artist name displayed in Column C is derived from the copyright registration and is reflected according to Plaintiffs' prompting for lyrics in the Seymour Declaration, as opposed to Claude's output with artist variation "Newsboys". The artist "Newsboy" is selected because the copyright registration returns that the title of the work is "Performed by Newsboy"	PA0001226974
222	HELLO AGAIN	Neil Diamond		PAu000193778; PA0000506680

223	HELP ME RHONDA	The Beach Boys		EU0000868745; RE0000610558; PAu002079506
224	HEMORRHAGE (IN MY HANDS)	Fuel		PA0001025282; PA0001103603
225	HERE	Alessia Cara		PA0002049195
226	HERE WITHOUT YOU	3 Doors Down		PA0001120571
227	HERE'S MY HEART	Crowder		PA0001839539
228	HIGHWAY 61 REVISITED	Bob Dylan		EU0000903131; RE0000647447
229	HOLD ON LOOSELY	38 Special		PA0000106829
230	HOUSE AT POOH CORNER	Loggins and Messina		EU0000104835; RE0000749927
231	HOW GREAT IS OUR GOD	Chris Tomlin		PA0001299530
232	HOW SOON IS NOW	The Smiths		PA0000243097
233	HURRICANE	Bob Dylan		EU0000613348; EU0000633490
234	HURRICANE	30 Seconds to Mars		PA0002076980
235	I AM NOT ALONE	Kari Jobe		PA0001903579
236	I AM WOMAN	Helen Reddy		EU0000264747; RE0000799367
237	I AM...I SAID	Neil Diamond		EU0000239274; RE0000797642
238	I BELIEVE I CAN FLY	R. Kelly		PA0000848248
239	I BET MY LIFE	Imagine Dragons		PA0001938182; PA0001999963
240	I CAN LOVE YOU BETTER	dixie chicks		PA0000545908
241	I CAN'T MAKE YOU LOVE ME	Bonnie Raitt		PA0000535292
242	I CAN'T STAND THE RAIN	Eruption		EU0000420732; RE0000837101; PAu001165939
243	I DON'T KNOW HOW TO LOVE HIM	Petula Clark		EU0000219295; RE0000778056
244	I GET AROUND	The Beach Boys		EU0000821071; RE0000574324; PAu002079503
245	I HATE MYSELF FOR LOVING YOU	joan jett		PA0000391570; PA0000419420; PAu001029900
246	I LOVE THE WAY YOU LOVE ME	Boyzone		PAu001650145; PA0000713657
247	I MISS YOU	blink 182		PA0001243932
248	I NEED YOU	LeAnn Rimes		PA0000991416
249	I STAND ALONE	Godsmack		PA0001227288; PA0001212305
250	I WANT CRAZY	Hunter Hayes		PA0001856536
251	I WILL BE HERE	Steven Curtis Chapman		PA0000454569

252	I WILL RISE	Chris Tomlin		PA0001623041
253	I WILL SURVIVE	Gloria Gaynor		PAu000047934; PAu000129011; PA0000041104
254	I WILL WAIT	Mumford & Sons		PA0001818830
255	I WON'T DANCE	Frank Sinatra		EP0000046848; R00000291379; R00000291158
256	I'LL NEVER BREAK YOUR HEART	Backstreet Boys		PA0000859260; PA0000949897
257	I'LL NEVER SMILE AGAIN	The Ink Spots		EU0000202771; R00000392686
258	I'M A BELIEVER	Neil Diamond		EP0000229124; RE0000653597; EU0000968474; RE0000653692
259	I'M N LUV (WIT A STRIPPER) FEATURING MIKE JONES	T-Pain		PA0001396315
260	IF I EVER LOSE MY FAITH IN YOU	Sting		PA0000618388; PA0001038452
261	IF YOU LEAVE ME NOW	Chicago		EU0000694744; RE0000904428
262	IN MY PLACE	Coldplay		PA0001073301
263	IN THE END	Linkin Park		PA0001092513
264	INBETWEEN DAYS	The Cure		PA0000279383
265	INDESCRIBABLE	Chris Tomlin		PA0001299529
266	IRIDESCENT	Linkin Park		PA0001725626
267	IT'S ALL COMING BACK TO ME NOW	Celine Dion		PAu001953216; PA0000787517
268	IT'S ALL OVER NOW, BABY BLUE	Bob Dylan		EU0000874587; RE0000647437; EP0000202991; RE0000647469
269	IT'S ALRIGHT, MA (I'M ONLY BLEEDING)	Bob Dylan		EU0000874591; RE0000647441; EP0000202990; RE0000647468; EP0000223904; RE0000684773
270	IT'S TIME	Imagine Dragons		PA0001796482
271	JESUS MESSIAH	Chris Tomlin		PA0001623039
272	JOKERMAN	Bob Dylan		PAu000531924; PA0000191286
273	JOY TO THE WORLD	Three Dog Night		EU0000218428; RE0000775044; EP0000284915; RE0000643916
274	JUST LIKE A WOMAN	Bob Dylan		EU0000930913; RE0000684782;

				EP0000221661; RE0000684766
275	JUST LIKE HEAVEN	The Cure		PA0000344486
276	JUST LIKE TOM THUMB'S BLUES	Bob Dylan		EU0000903129; RE0000647445
277	JUST ONE LOOK	Doris Troy		EU0000761806; RE0000530731
278	KID CHARLEMAGNE	Steely Dan		EU0000679291; RE0000891480
279	KING OF PAIN	The Police		PA0000201653; PA0001038431
280	KINGS AND QUEENS	30 Seconds to Mars		PA0002076506
281	KRYPTONITE	3 Doors Down		PA0000999801
282	LAMB OF GOD	Twila Paris		PA0000296457
283	LATCH	disclosure		PA0001916095
284	LEAN ON ME	Bill Withers		EP0000304954; RE0000832582
285	LEAVE OUT ALL THE REST	Linkin Park		PA0001167571
286	LET YOU DOWN	NF		PA0002222190
287	LET'S FACE THE MUSIC AND DANCE	Fred Astaire*	**Artist Variation** = "fred astaire johnny green & his orchestr" [sic] **Selected Artist Variation** = "Fred Astaire" *Artist name displayed in Column C is derived from the Seymour Declaration Claude output, as Plaintiffs' prompting for lyrics used artist variation "fred astaire johnny green & his orchestr" [sic]. The artist "Fred Astaire" is selected because (1) searching the work with the artist "fred astaire johnny green & his orchestr" [sic] as prompted by Plaintiffs in genius.com returns "Fred Astaire"; and (2) Lyrics to LET'S FACE THE MUSIC AND DANCE in Exhibit B to the FAC are	EU0000105690; R00000301275; EP0000052756; R00000313962

			consistent with the work, as reflected in genius.com	
288	LET'S GET TOGETHER	The Youngbloods		EU0000778381; RE0000518243
289	LET'S STAY TOGETHER	Al Green		EU0000287623; RE0000799562
290	LETTERS FROM HOME	John Michael Montgomery		PA0001159374; PA0001160515; PA0001166509
291	LIFE IS A HIGHWAY	Rascal Flatts		PA0000683569
292	LIGHTNING CRASHES	Live		PA0000720664
293	LIKE A ROLLING STONE	Bob Dylan		EP0000205564; RE0000640124
294	LITTLE DEUCE COUPE	The Beach Boys		EU0000783375; RE0000575772; EU0000783375; RE0000575773; EU0000783375; RE0000525573
295	LITTLE LIES	Fleetwood Mac		PA0000332449; PA0000391430
296	LITTLE LION MAN	mumford and sons		PA0001932483
297	LONG COOL WOMAN IN A BLACK DRESS	hollies		EU0000349588; RE0000825602
298	LORD, I NEED YOU	Matt Maher		PA0001734765
299	LOVE IS ALL AROUND	The Troggs		EFO000124632; RE0000698430

300	LOVE MINUS ZERO/NO LIMIT	Bob Dylan		EU0000874590; RE0000647440; EP0000202992; RE0000647470
301	LOVESONG	The Cure		PA0001073355
302	LUCKENBACH TEXAS (BACK TO THE BASICS OF LOVE)	Waylon Jennings		EP0000367087; RE0000909980
303	LYING FROM YOU	Linkin Park		PA0001256415
304	MACARTHUR PARK	Donna Summer		EU0000049691; RE0000723251;
305	MAD	Ne-Yo		PA0001395687
306	MAGIC	Coldplay		PA0001916029
307	MAGIC CARPET RIDE	Steppenwolf		EU0000083717; RE0000730472
308	MASTERS OF WAR	Bob Dylan		EU0000765995; RE0000529553; EP0000178108; RE0000529581
309	MEANT TO LIVE	Switchfoot		PA0001227016
310	MERRY CHRISTMAS DARLING	The Carpenters		EP0000281386; RE0000774636; PA0000856789
311	MESSAGE IN A BOTTLE	The Police		PA0000069032
312	MIDNIGHT	Coldplay		PA0001916020
313	MIDNIGHT TRAIN TO GEORGIA	Gladys Knight & The Pips		EU0000287454; RE0000802289; EP0000311363; RE0000835032
314	MILKSHAKE	Kelis		PA0001158349; PA0001158583
315	MISERY	Maroon 5		PA0001726265
316	MISS INDEPENDENT	Ne-Yo		PA0001395688
317	MONA LISAS AND MAD HATTERS	Elton John		EF0000157243; RE0000822534
318	MONDAY MONDAY	The Mamas and The Papas		EU0000922884; RE0000705550; EP0000220921; RE0000705546
319	MOONLIGHT IN VERMONT	Margaret Whiting		EU0000395533; R00000515635
320	MOVE ALONG	the all American rejects		PA0001203496
321	MR. TAMBOURINE MAN	Bob Dylan		EP0000202671; RE0000647466; EU0000848210; RE0000588389
322	MY BACK PAGES	Bob Dylan		EU0000848264; RE0000588408; EP0000195713; RE0000588391

323	MY BEST FRIEND	Tim McGraw		PA0000964541
324	MY DECEMBER	Linkin Park		PA0001054030
325	MY OLD SCHOOL	Steely Dan		EU0000416546; RE0000837422
326	NEVER BE ALONE	Shawn Mendes		PA0001984359
327	NEVER BEEN TO SPAIN	Three Dog Night		EU0000218427; RE0000775043
328	NEW DIVIDE	Linkin Park		PA0001677173
329	NEXT TO ME	Imagine Dragons		PA0002396886
330	NO AIR	jordin sparks featuring chris brown		PA0001653567
331	NO DIGGITY	Blackstreet		PA0000839312
332	NO LIGHT, NO LIGHT	florence and the machine		PA0001777616
333	NO MORE SORROW	Linkin Park		PA0001602921; PA0001167576
334	NO ONE	Alicia Keys		PA0001590102
335	NOBODY'S LISTENING	Linkin Park		PA0001256420
336	NOT DARK YET	Bob Dylan		PAu002179480
337	NOTHING FROM NOTHING	Billy Preston		EU0000510833; RE0000855515; PAu002434356
338	NUMB	Linkin Park		PA0001256412
339	OCEAN AVENUE	Yellowcard		PA0001158187
340	ON TOP OF THE WORLD	Imagine Dragons		PA0001796480
341	ONE DAY I'LL FLY AWAY	Randy Crawford		PA0000081908
342	ONE STEP CLOSER	Linkin Park		PA0001092507; PA0001237305

343	ONE TIN SOLDIER	The Original Caste*	**Artist Variation** = "lotus" **Selected Artist Variation** = "The Original Caste" *Artist name displayed in Column C is derived from the Seymour Declaration Claude output, as Plaintiffs' prompting for lyrics used artist "lotus". The artist "The Original Caste" is selected because (1) review of the copyright registration returns songwriters "Dennis Lambert, Brian Potter"; (2) searching for the work with the artist "lotus" as prompted by Plaintiffs in genius.com returns "The Original Caste"; and (3) Lyrics to ONE TIN SOLDIER in Exhibit B to the FAC are consistent with the work, along with "Dennis Lambert" and "Brian Potter" credieted as writers, as reflected in genius.com	EU0000128013; RE0000755132
344	ONE TOKE OVER THE LINE	Brewer & Shipley		EU0000201193; RE0000780432
345	ONLY HOPE	Switchfoot		PA0000943389
346	OPEN YOUR EYES	Snow Patrol		PA0001990273
347	OUR DAY WILL COME	Ruby and the Romantics		EU0000751240; RE0000502027; RE0000463672
348	OUR GOD	Chris Tomlin		PA0001730879
349	OUR LIPS ARE SEALED	go-go's		PAu000299968; PA0000123694
350	PAPERCUT	Linkin Park		PA0001092506
351	PARADISE	Coldplay		PA0001766985
352	PARENTS JUST DON'T UNDERSTAND	DJ Jazzy Jeff & The Fresh Prince		PA0000381782
353	PEOPLE NEED THE LORD	Steve Green		PA0000212604

354	POINTS OF AUTHORITY	Linkin Park		PA0001092509
355	POISON	Groove Coverage		PA0000472703; PA0000445681
356	POSITIVELY 4TH STREET	Bob Dylan		EU0000903133; RE0000647449
357	POSSUM KINGDOM	the toadies		PA0000730720
358	POWERLESS	Linkin Park		PA0001805751
359	PRAISE YOU	Fatboy Slim		PA0000968847
360	PRETTY GIRL ROCK	Keri Hilson		PA0001784138
361	PUTTIN' ON THE RITZ	Harry Richman		E0000696554; R00000155144; EP0000011281; R00000183130
362	RADIOACTIVE	Imagine Dragons		PA0001796477
363	RAINY DAYS AND MONDAYS	Carpenters		EU0000222638; RE0000775443; PAu002237895; EP0000300297; PA0000864726
364	RED, RED WINE	Neil Diamond		RE0000653689
365	REDBONE	Childish Gambino		PA0002063056; PA0002082553
366	REELING IN THE YEARS	Steely Dan		EU0000353008; RE0000823112
367	REMEMBER THE NAME	Fort Minor		PA0001163444
368	REMEMBERING SUNDAY	All Time Low		PA0001675980
369	RENEGADES	X Ambassadors		PA0001995174
370	REUNITED	peaches and herb		PAu000023138; PA0000039131
371	RIDE LIKE THE WIND	Christopher Cross		PA0000071337
372	RIKKI DON'T LOSE THAT NUMBER	Steely Dan		EU0000469054; RE0000854814
373	ROCKY MOUNTAIN WAY	Joe Walsh		EU0000416549; RE0000837425
374	ROXANNE	The Police		PA0000052671
375	RUN	Snow Patrol		PA0001994133
376	RUNAWAY	Linkin Park		PA0001092511
377	RUNAWAY	The Corrs		PA0000707154
378	RUSSIAN ROULETTE	Rihanna		PA0001704500
379	SAD	Maroon 5		PA0001810801
380	SAILING	Christopher Cross		PA0000071338
381	SAN FRANCISCO BE SURE TO WEAR FLOWERS IN YOUR HAIR	Scott McKenzie		EU0000995820; RE0000687597
382	SANTERIA	Sublime		PA0000813737

383	SAY SOMETHING	A great big world		PA0001846423; PA0001397885
384	SCARS TO YOUR BEAUTIFUL	Alessia Cara		PA0002100489
385	SECRET	Maroon 5		PA0001073092
386	SHAMBALA	Three Dog Night		EU0000398898; RE0000836928
387	SHAPE OF MY HEART	Sting		PA0000618387; PA0001038451
388	SHE BELIEVES IN ME	Kenny Rogers		EP0000368480; RE0000909991; PA0000066693
389	SHE BELONGS TO ME	Bob Dylan		EU0000874585; RE0000647435; EP0000202996; RE0000647474
390	SHE WILL BE LOVED	Maroon 5		PA0001073087
391	SHELTER FROM THE STORM	Bob Dylan		EU0000530721; RE0000862517
392	SHIVER	Coldplay		PA0000981357
393	SIMPLE MAN	Lynyrd Skynyrd		EU0000448563; RE0000844239; RE0000851734
394	SIMPLE TWIST OF FATE	Bob Dylan		EU0000530720; RE0000862516
395	SMOKE GETS IN YOUR EYES	The Platters		EP0000039116; R00000265488; R0000026554
396	SO SICK	Ne-Yo		PA0001163977
397	SOLITARY MAN	Neil Diamond		PA0000042999; EP0000215760; RE0000653594
398	SOMEBODY TO LOVE	Jefferson Airplane		EU0000922524; RE0000846415; EP0000228384; RE0000654121
399	SOMETHING JUST LIKE THIS	The Chainsmokers & Coldplay		PA0002083153
400	SOMEWHERE I BELONG	Linkin Park		PA0001256410
401	SOMEWHERE ONLY WE KNOW	Keane		PA0001160739
402	SONG SUNG BLUE	Neil Diamond		EU0000322568; RE0000813919
403	SONGBIRD	Fleetwood Mac		A00000885251; EU0000772678
404	SOUL MAN	sam and dave		EU0000016237; RE0000688918
405	SOUND OF DA POLICE	krs one		PA0000711682
406	SPIRITS IN THE MATERIAL WORLD	The Police		PA0000128668

407	STEP INTO CHRISTMAS	Elton John		EP0000319570; RE0000836136; EFO000167890; RE0000838135
408	STRAWBERRY WINE	Deana Carter		PA0000840407
409	SUBTERRANEAN HOMESICK BLUES	Bob Dylan		EU0000874584; RE0000647434; EP0000201208; RE0000647465
410	SUCKER FOR PAIN	Lil Wayne, Wiz Khalifa & Imagine Dragons		PA0002076970; PA0002078398
411	SUGAR MAN	Rodriguez		EU0000133445; RE0000767053
412	SUMMER WINE	nancy sinatra		EU0000951758; RE0000640586
413	SUNDAY MORNING	Maroon 5		PA0001073091
414	SWEET CAROLINE	Neil Diamond		EU0000121797; RE0000748767; PA0000043001
415	SWEET CREATURE	Harry Styles		PA0002087493
416	SWEET HOME ALABAMA	Lynyrd Skynyrd		EU0000511375; RE0000862377; EU0000511375; RE0000857056
417	SWING, SWING	the all American rejects		PA0001203496
418	SYNCHRONICITY II	The Police		PA0000201651; PA0001038429
419	TAKE A BOW	Rihanna		PA0001692696
420	TAKE ME OUT	Franz Ferdinand		PA0001233512
421	TALK	Coldplay		PA0001700311
422	TALK	Khalid		PA0002190909
423	TANGLED UP IN BLUE	Bob Dylan		EU0000529117; RE0000862509
424	TEARDROP	Massive Attack		PA0000926996
425	TENNESSEE WHISKEY	David Allan Coe		PAu000307891; PA0000148061; PA0000211136
426	THAT SMELL	Lynyrd Skynyrd		EU0000842824; RE0000910305; PA0000111507
427	THE BAD TOUCH	the bloodhound gang		PA0001049232
428	THE BOYS ARE BACK IN TOWN	Thin Lizzy		EU0000674600; RE0000891463
429	THE CATALYST	Linkin Park		PA0001725628
430	THE CAVE	mumford and sons		PA0001932476

431	THE CHANGE	Garth Brooks		PA0000774761; PA0000776742
432	THE DEVIL WENT DOWN TO GEORGIA	Charlie Daniels Band		PAu000084340
433	THE GRAND ILLUSION	Styx		EU0000828643; RE0000910692
434	THE HARDER THEY COME	Jimmy Cliff		EU0000388670
435	THE KEEPER OF THE STARS	Tracy Byrd		PA0000692567; PA0000713749; PAu001898849
436	THE KILL	30 Seconds to Mars		PA0001630065
437	THE KING OF CARROT FLOWERS PART ONE	Neutral Milk Hotel		PA0000928784
438	THE LOGICAL SONG	Supertramp		PA0000032060
439	THE LONG BLACK VEIL	Lefty Frizzell		EU0000577749; RE0000346323
440	THE SAFETY DANCE	Men Without Hats		PA0000413304; PA0000444999
441	THE SAGA BEGINS	Weird Al Yankovic*	**Artist Variation** = "weird al" **Selected Artist Variation** = "Weird Al Yankovic" *Artist name displayed in Column C is derived from the Seymour Declaration Claude output and copyright registration, as Plaintiffs' prompting for lyrics in the Seymour Declaration use artist variation "weird al". The artist "Weird Al Yankovic" is selected because the copyright registration returns that the title of the work is "Performed by Weird Al Yankovic"	PA0000995641
442	THE SALTWATER ROOM	Owl City		PA0001649308
443	THE SCIENTIST	Coldplay		PA0001073303
444	THE TIMES THEY ARE A-CHANGIN'	Bob Dylan		EU0000798069; RE0000529575; EP0000196321; RE0000588437
445	THE TROUBLE WITH LOVE IS	Kelly Clarkson		PA0001227298

446	THE WEIGHT	The Band		EU0000049518; RE0000739082; EP0000258882; RE0000739062
447	THE WORLD'S GREATEST	R. Kelly		PA0001084039
448	THEME FROM SHAFT	Isaac Hayes		EU0000259390; RE0000796884; RE0000801338
449	THESE BOOTS ARE MADE FOR WALKIN'	Nancy Sinatra		EU0000915461; RE0000612396
450	THIRTEEN	Big Star		EU0000328421; RE0000816224
451	THIS IS WAR	30 Seconds to Mars		PA0002076510
452	THIS LOVE	Maroon 5		PA0001073085
453	THUNDER	Imagine Dragons		PA0002113702
454	TINY DANCER	Elton John*	**Artist Variation** = "marco demark featuring casey barnes" **Selected Artist Variation** = "Elton John" *Artist name displayed in Column C is derived from the Seymour Declaration Claude output, as Plaintiffs' prompting for lyrics used the cover artist "marco demark featuring casey barnes". The artist "Elton John" is selected because (1) review of the copyright registration returns songwriters "Elton John and Bernie Taupin"; (2) Lyrics to TINY DANCER in Exhibit B to the FAC are consistent with the work as originally performed by Elton John, as reflected in genius.com	EU0000283994; RE0000802431
455	TO MAKE YOU FEEL MY LOVE	Adele		PAu002178281
456	TOO CLOSE	Alex Clare		PA0001806290

457	TOP OF THE WORLD	The Carpenters		EU0000329403; RE0000817022; PAu002215502
458	TORN	Natalie Imbruglia		PA0000836968; PA0000705322
459	TRAPPED IN THE CLOSET CHAPTER 1*	R. Kelly	**Song Variation** = "Trapped in the Closet (Part 1)" **Selected Song Variation** = "Trapped in the Closet Chapter 1" *Song name displayed in Column B is derived from the copyright registration certificate, as Exhibit A to FAC used an alternative variation: "TRAPPED IN THE CLOSET (PART 1)"	PA0001395840
460	UNFAITHFUL	Rihanna		PA0001164749
461	UNINVITED	Alanis Morissette		PA0000921947
462	VANILLA TWILIGHT	Owl City		PA0001692986
463	VINCENT (STARRY, STARRY NIGHT)	Don McLean		EU0000284302; RE0000803733
464	VIOLET HILL	Coldplay		PA0001820463
465	VISIONS OF JOHANNA	Bob Dylan		EU0000930909; RE0000685898; EP0000221660; RE0000685899; EU0000928301; RE0000684775
466	VIVA LA VIDA	Coldplay		PA0001820459
467	VOODOO	Godsmack		PA0000940225
468	WALK THE DINOSAUR	Was (Not Was)		PA0000415228
469	WALKING ON THE MOON	The Police		PA0000069037
470	WANTED	Hunter Hayes		PA0001777909
471	WARRIOR	Imagine Dragons		PA0002375231
472	WE GOT THE BEAT	go-go's		PA0000123699; PA0000127864
473	WE'RE NOT GONNA TAKE IT	Twisted Sister		PA0000226789
474	WE'VE ONLY JUST BEGUN	The Carpenters		EU0000169722; RE0000775608
475	WHAT I'VE DONE	Linkin Park		PA0001167574; PA0001602911; PA0001708260

476	WHEN I'M GONE	3 Doors Down		PAu002577919; PA0001120566
477	WHITE BLANK PAGE	mumford and sons		PA0001932481
478	WHITE CHRISTMAS	Bing Crosby		EU0000238624; R00000435930; EP0000104340; R00000464105
479	WHO WE ARE	Imagine Dragons		PA0001934683
480	WHOM SHALL I FEAR (GOD OF ANGEL ARMIES)	Chris Tomlin		PA0001830592
481	WICHITA LINEMAN	Glen Campbell		EU0000073735; RE0000732681
482	WILL IT GO ROUND IN CIRCLES	Billy Preston		EU0000383670; RE0000836544
483	WINDY	The Association		EU0000989067; RE0000687658; EP0000232781; RE0000687939
484	WITH YOU	Linkin Park		PA0001092508
485	WORDS I NEVER SAID	lupe fiasco		PA0001739113
486	WOULDN'T IT BE NICE	The Beach Boys		EU0000948191; PAu002079501; RE0000662433
487	WRAPPED AROUND YOUR FINGER	The Police		PA0000201655; PA0001038433; PA0000201654; PA0001038432
488	YELLOW	Coldplay		PA0000981360
489	YESTERDAY ONCE MORE	The Carpenters		EU0000401698; RE0000872358; PAu002215503
490	YOU AIN'T GOIN' NOWHERE	The Byrds		EU0000018767; RE0000701195
491	YOU ARE NOT ALONE	Michael Jackson		PA0000789976
492	YOU ARE SO BEAUTIFUL	Joe Cocker		EU0000408125; RE0000837480
493	YOU CAN GET IT IF YOU REALLY WANT	desmond dekker and the aces		EU0000212983; RE0000778661
494	YOU LIGHT UP MY LIFE	Debby Boone		EU0000676281; RE0000891470; EP0000380330; RE0000910478
495	YOU LOOK SO GOOD IN LOVE	George Strait		PAu000502409
496	YOU MAKE LOVIN FUN	Fleetwood Mac		EU0000713071; RE0000904498; PA0001162955
497	YOU'RE MY BEST FRIEND	Don Williams		EP0000336092; RE0000875578

498	YOU'RE THE INSPIRATION	Chicago		PA0000213889; PAu000638574; PAu000598698
499	YOUR GUARDIAN ANGEL	The Red Jumpsuit Apparatus		PA0001376464
500	YOUR SONG	Elton John		EFO000142515; RE0000759790; EU0000183663; RE0000779459

Table C.2: Variations for the Works-In- Suit

[A]	[B]	[C]
WIS #	Song Title	Artist Name
91	AS THE DEER	maranatha! Singers
131	CHEEK TO CHEEK	fred astaire/leo reisman orchestra
183	FLAVOR OF THE WEEK	American Hi-Fi
221	HE REIGNS	Newsboys
287	LET'S FACE THE MUSIC AND DANCE	fred astaire johnny green & his orchestr
343	ONE TIN SOLDIER	lotus
441	THE SAGA BEGINS	weird al
454	TINY DANCER	marco demark featuring casey barnes
459	TRAPPED IN THE CLOSET (PART 1)	R. Kelly

2) Release Years for the Works-In-Suit

152. Among the tests I conduct to validate the robustness of my results in the Google Trends analysis, I estimate my baseline model with the addition of age fixed effects, which controls for potential differential impact of the age of a song on search interest for lyrics relative to songs. Accordingly, I obtain data on the release years of each WIS from Table C.1 and list these in Table C.3.

153. I rely on https://genius.com/ to retrieve release years for each Work-In-Suit. I identified 12 songs where the release date was not readily available on the Genius lyrics page. In these cases, I use the release date of the album that originally included the song, excluding release

dates of the work on any singles, compilations, greatest hits albums, anniversary collections, and the like. The twelve songs with release dates derived from their album release dates are listed below.

154. For Work-In-Suit "Always" by Kristian Stanfill, I use the release year 2011 (https://genius.com/albums/Kristian-stanfill/Mountains-move). For Work-In-Suit "And I Love You So" by Perry Como, I use the release year 1973 (https://genius.com/albums/Perry-como/And-i-love-you-so). For the Work-In-Suit "As the Deer" by Martin Nystrom, I use the release year 1996 (https://genius.com/albums/Integritys-hosanna-music/We-draw-near). For the Work-In-Suit "God of Wonders" by Third Day, I use the release year 2003 (https://genius.com/albums/Third-day/Offerings-ii-all-i-have-to-give). For the Work-In-Suit "Great is the Lord" by Michael W. Smith, I use the release year 1983 (https://genius.com/albums/Michael-w-smith/Project). For the Work-In-Suit "He is Exalted" by Twila Paris, I use the release year 1985 (https://genius.com/albums/Twila-paris/Kingdom-seekers). For the Work-In-Suit "Hello Again" by Neil Diamond, I use the release year 1980 (https://genius.com/albums/Neil-diamond/The-jazz-singer-original-motion-picture-soundtrack). For the Work-In-Suit "I Am Not Alone" by Kari Jobe, I use the release year 2014 (https://genius.com/albums/Kari-jobe/Majestic-live). For the Work-In-Suit "I Don't Know How to Love Him" by Petula Clark, I use the release year 2001 (https://genius.com/albums/Petula-clark/Just-pet-petula-71). For the Work-In-Suit "I'm a Believer" by Neil Diamond, I use the release year 1967 (https://genius.com/albums/Neil-diamond/Just-for-you). For the Work-In-Suit "Lamb of God" by Twila Paris, I use the release year 1985 (https://genius.com/albums/Twila-paris/Kingdom-seekers). For the Work-In-Suit "Let's Face the Music and Dance" by Fred Astaire, I use the release date 1981 (https://genius.com/albums/Various-artists/Pennies-from-heaven-original-motion-picture-soundtrack).

155. Further, I identified one at-issue song where the release date was not readily available on the Genius lyrics page and there was no album that originally included the song. In this instance, I use the release date of the compilation album provided by Genius. For Work-In-Suit "Moonlight in Vermont" by Margaret Whiting, I use the release year 1990 (https://genius.com/albums/Margaret-whiting/Capitol-collectors-series).

Table C.3: Release Years Used in the Analysis of Google Search Results

WIS #	Song Title	Artist Name	Release Year
1	7 RINGS	Ariana Grande	2019
2	CENTURIES	Fall Out Boy	2014
3	DANCING WITH A STRANGER	sam smith	2019
4	DIAMONDS	Rihanna	2012
5	DIE YOUNG	Ke$ha	2012
6	DONTTRUSTME	3OH!3	2008
7	DUSK TILL DAWN	ZAYN ft Sia	2017
8	GRENADE	Bruno Mars	2010
9	HALO	Beyonce	2008
10	HIPS DON'T LIE	shakira	2006
11	KICKSTART MY HEART	Motley crue	1989
12	LAST FRIDAY NIGHT (T.G.I.F.)	Katy Perry	2010
13	LOVE YOU LIKE A LOVE SONG	Selena Gomez & The Scene	2011
14	MAPS	Maroon 5	2014
15	MARRY ME	Thomas Rhett	2017
16	ME AND MY BROKEN HEART	Rixton	2015
17	MEANT TO BE	Bebe Rexha	2017
18	NOTHING BREAKS LIKE A HEART	mark ronson	2018
19	ROAR	Katy Perry	2013
20	RUMOUR HAS IT	Adele	2011
21	SOMEBODY ELSE	The 1975	2016
22	TIK TOK	Ke$ha	2010
23	TIME AFTER TIME	Cyndi Lauper	1983
24	TURNING TABLES	Adele	2011
25	UNSTOPPABLE	Sia	2016
26	UPTOWN FUNK	mark ronson	2014
27	WHAT A WONDERFUL WORLD	Louis Armstrong	1967
28	ADORE YOU	Harry Styles	2019
29	BLEEDING LOVE	Leona Lewis	2007
30	CALIFORNIA GURLS	katy perry	2010
31	GOLDEN	Harry Styles	2019
32	HUMBLE AND KIND	Tim McGraw	2015
33	MOVES LIKE JAGGER	maroon 5	2011
34	PAYPHONE	maroon 5	2012
35	SIGN OF THE TIMES	Harry Styles	2017
36	STAY	the kid laroi	2021
37	STEREO HEARTS	Gym Class Heroes ft. Adam levine	2011
38	WANNABE	Spice Girls	1996

39	WATERMELON SUGAR	Harry Styles	2019
40	WE BUILT THIS CITY	Starship	1985
41	A CHANGE IS GONNA COME	Sam Cooke	1964
42	ANOTHER SATURDAY NIGHT	Sam Cooke	1963
43	BITTERSWEET SYMPHONY	The Verve	1997
44	BRING IT ON HOME TO ME	Sam Cooke	1962
45	BROWN SUGAR	The Rolling Stones	1971
46	CUPID	Sam Cooke	1961
47	DEAD FLOWERS	The Rolling Stones	1971
48	GIMME SHELTER	The Rolling Stones	1969
49	HONKY TONK WOMEN	The Rolling Stones	1969
50	IT'S ALL OVER NOW	The Rolling Stones	1964
51	JUMPIN' JACK FLASH	The Rolling Stones	1968
52	MAMA SAID	The Shirelles	1961
53	MOONLIGHT MILE	The Rolling Stones	1971
54	PLAY WITH FIRE	The Rolling Stones	1965
55	SALT OF THE EARTH, THE	The Rolling Stones	1968
56	SHE'S A RAINBOW	The Rolling Stones	1967
57	SHINE A LIGHT	The Rolling Stones	1972
58	STREET FIGHTING MAN	The Rolling Stones	1968
59	SYMPATHY FOR THE DEVIL	The Rolling Stones	1968
60	TWISTIN' THE NIGHT AWAY	Sam Cooke	1985
61	WILD HORSES	The Rolling Stones	1971
62	WONDERFUL WORLD	Sam Cooke	1960
63	YOU CAN'T ALWAYS GET WHAT YOU WANT	The Rolling Stones	1969
64	YOU SEND ME	Sam Cooke	1957
65	WE BELONG TOGETHER	Mariah Carey	2005
66	(SITTIN' ON) THE DOCK OF THE BAY	Otis Redding	1968
67	10,000 REASONS (BLESS THE LORD)	Matt Redman	2011
68	A BEAUTIFUL LIE	30 Seconds to Mars	2005
69	A FOREST	The Cure	1980
70	A PLACE FOR MY HEAD	Linkin Park	2000
71	A THOUSAND MILES	Vanessa Carlton	2002
72	ACHY BREAKY HEART	Billy Ray Cyrus	1992
73	AIN'T NO SUNSHINE	Bill Withers	1971
74	AJA	Steely Dan	1977
75	ALL ALONG THE WATCHTOWER	Bob Dylan	1967
76	ALL I REALLY WANT TO DO	Bob Dylan	1964
77	ALL I WANTED	Paramore	2009
78	ALWAYS	Blink-182	2004
79	ALWAYS	Kristian Stanfill	2011

80	AMERICAN GIRL	Tom Petty and the Heartbreakers	1976
81	AMERICAN PIE	Don McLean	1971
82	ANACONDA	Nicki Minaj	2014
83	ANARCHY IN THE U.K.	Sex Pistols	1976
84	AND I AM TELLING YOU I'M NOT GOING	Jennifer Holliday	1982
85	AND I LOVE YOU SO	Perry Como	1973
86	ANGEL	Aerosmith	1987
87	ANGEL EYES	The Jeff Healey Band	1989
88	ANGELES	Elliott Smith	1997
89	ANGELS	The xx	2012
90	ANY MAJOR DUDE WILL TELL YOU	Steely Dan	1974
91	AS THE DEER	Martin Nystrom	1996
92	AT THE CROSS (LOVE RAN RED)	Chris Tomlin	2014
93	ATTACK	30 Seconds to Mars	2005
94	AWAKE MY SOUL	mumford and sons	2009
95	AWAY FROM THE SUN	3 Doors Down	2002
96	BABY BABY	Amy Grant	1991
97	BACK AT ONE	Brian McKnight	1999
98	BALLAD OF A THIN MAN	Bob Dylan	1965
99	BALLROOM BLITZ	Sweet	1973
100	BARRACUDA	Heart	1977
101	BEAUTIFUL THINGS	Gungor	2010
102	BECAUSE I GOT HIGH	Afroman	2000
103	BENNIE AND THE JETS	Elton John	1974
104	BEST THING THAT EVER HAPPENED TO ME	Gladys Knight & The Pips	1973
105	BLEED IT OUT	Linkin Park	2007
106	BLEEDING OUT	Imagine Dragons	2012
107	BLESS THE BROKEN ROAD	Rascal Flatts	2004
108	BLOWIN' IN THE WIND	Bob Dylan	1963
109	BODHISATTVA	Steely Dan	1973
110	BONFIRE	Childish Gambino	2011
111	BOOGIE WOOGIE BUGLE BOY	The Andrews Sisters	1941
112	BORN TO BE WILD	Steppenwolf	1968
113	BOYS DON'T CRY	The Cure	1979
114	BREAK STUFF	Limp Bizkit	1999
115	BREAKFAST IN AMERICA	Supertramp	1979
116	BREAKING THE HABIT	Linkin Park	2004
117	BREAKING UP IS HARD TO DO	Neil Sedaka	1962
118	BREATHE ME	Sia	2004
119	BREATHING	Yellowcard	2003

120	BRIMFUL OF ASHA	Cornershop	1997
121	BUILD MY LIFE	Pat Barrett	2018
122	BURN IT DOWN	Linkin Park	2012
123	BURNING IN THE SKIES	Linkin Park	2010
124	BY MYSELF	Linkin Park	2000
125	CALIFORNIA DREAMIN'	The Mamas and The Papas	1965
126	CALIFORNIA GIRLS	The Beach Boys	1965
127	CAN'T GET YOU OUT OF MY HEAD	Kylie Minogue	2001
128	CANDLE IN THE WIND	Elton John	1973
129	CASTLE OF GLASS	Linkin Park	2012
130	CHASING CARS	Snow Patrol	2006
131	CHEEK TO CHEEK	Fred Astaire	1935
132	CHILDREN'S STORY	Slick Rick	1988
133	CHRISTMAS LIGHTS	Coldplay	2010
134	CLOSER	Ne-Yo	2008
135	CLOSER TO FINE	Indigo Girls	1989
136	COLORS	Halsey	2015
137	COME AS YOU ARE	Crowder	2014
138	COME SAIL AWAY	Styx	1977
139	COMING HOME	diddy-dirty money	2010
140	CONTROL	Halsey	2015
141	COPACABANA	Barry Manilow	1978
142	COSMIC LOVE	florence and the machine	2009
143	COURT OF THE CRIMSON KING	King Crimson	1969
144	COWARD OF THE COUNTY	Kenny Rogers	1979
145	CRAWLING	Linkin Park	2001
146	CROCODILE ROCK	Elton John	1972
147	CRUEL TO BE KIND	Nick Lowe	1979
148	DADDY SANG BASS	Johnny Cash	1969
149	DARE YOU TO MOVE (I DARE YOU TO MOVE)	Switchfoot	2000
150	DE DO DO DO, DE DA DA DA	The Police	1980
151	DEACON BLUES	Steely Dan	1977
152	DEMONS	Imagine Dragons	2013
153	DESERT ROSE	sting	1999
154	DESOLATION ROW	Bob Dylan	1965
155	DISTURBIA	Rihanna	2008
156	DO IT AGAIN	Steely Dan	1972
157	DO WAH DIDDY DIDDY	Manfred Mann	1964
158	DOG DAYS ARE OVER	florence and the machine	2008
159	DON'T CRY FOR ME ARGENTINA	Madonna	1997

160	DON'T MIND	Kent Jones	2016
161	DON'T STAND SO CLOSE TO ME	The Police	1980
162	DON'T STAY	Linkin Park	2003
163	DON'T STOP	Fleetwood Mac	1977
164	DON'T WORRY BABY	The Beach Boys	1964
165	DRIFT AWAY	Dobie Gray	1973
166	EASIER TO RUN	Linkin Park	2003
167	ENGLISHMAN IN NEW YORK	Sting	1987
168	EVER FALLEN IN LOVE WITH SOMEONE YOU SHOULDN'T'VE	Buzzcocks	1978
169	EVERGLOW	Coldplay	2015
170	EVERY BREATH YOU TAKE	The Police	1983
171	EVERY GRAIN OF SAND	Bob Dylan	1981
172	EVERY LITTLE THING SHE DOES IS MAGIC	The Police	1981
173	EVERY TEARDROP IS A WATERFALL	Coldplay	2011
174	EVERYWHERE	Fleetwood Mac	1987
175	EYE IN THE SKY	alan parsons project	1982
176	FACE DOWN	red jumpsuit apparatus	2006
177	FAINT	Linkin Park	2003
178	FATHER OF MINE	Everclear	1997
179	FERRY 'CROSS THE MERSEY	gerry & the pacemakers	1964
180	FIELDS OF GOLD	Sting	1993
181	FIREFLIES	Owl City	2009
182	FIX YOU	Coldplay	2005
183	FLAVOR OF THE WEAK	American Hi-Fi	2001
184	FLY	nicki minaj ft. rihanna	2011
185	FOR THE FIRST TIME	The Script	2010
186	FOR THE GOOD TIMES	Kris Kristofferson	1970
187	FOREVER	Chris Brown	2008
188	FORGOTTEN	Linkin Park	2000
189	FRAGILE	Sting	1987
190	FREE BIRD	Lynyrd Skynyrd	1973
191	FRESH PRINCE OF BEL-AIR	will smith	1992
192	FRIDAY I'M IN LOVE	The Cure	1992
193	FRIENDS	Michael W. Smith	1992
194	FRIENDS IN LOW PLACES	Garth Brooks	1990
195	FROM THE BOTTOM OF MY BROKEN HEART	Britney Spears	1999
196	FROM THE INSIDE	Linkin Park	2004
197	FUN, FUN, FUN	The Beach Boys	1964
198	GIMME SOME LOVIN'	spencer davis group	1966

199	GIMME THREE STEPS	Lynyrd Skynyrd	1973
201	GIVEN UP	Linkin Park	2008
202	GOD MUST HAVE SPENT A LITTLE MORE TIME ON YOU	n sync	1998
203	GOD OF WONDERS	Third Day	2003
204	GOD ONLY KNOWS	The Beach Boys	1966
205	GOD SAVE THE QUEEN (NO FUTURE)	Sex Pistols	1977
206	GOOD GOOD FATHER	Chris Tomlin	2015
207	GOOD VIBRATIONS	The Beach Boys	1966
208	GOODBYE YELLOW BRICK ROAD	Elton John	1973
209	GOODNESS OF GOD	Bethel Music	2019
210	GOTTA SERVE SOMEBODY	Bob Dylan	1979
211	GRANDMA'S HANDS	Al Jarreau	1979
212	GREAT IS THE LORD	Michael W. Smith	1983
213	GREEN EYES	Coldplay	2002
214	GYPSYS, TRAMPS AND THIEVES	Cher	1971
215	HALL OF FAME	the script	2012
216	HARD TO SAY I'M SORRY	Chicago	1982
217	HARDER TO BREATHE	Maroon 5	2002
218	HATE THAT I LOVE YOU	rihanna	2007
219	HAVE A LITTLE FAITH IN ME	John Hiatt	1987
220	HE IS EXALTED	Twila Paris	1985
221	HE REIGNS	Newsboy	2003
222	HELLO AGAIN	Neil Diamond	1980
223	HELP ME RHONDA	The Beach Boys	1965
224	HEMORRHAGE (IN MY HANDS)	Fuel	2000
225	HERE	Alessia Cara	2015
226	HERE WITHOUT YOU	3 Doors Down	2002
227	HERE'S MY HEART	Crowder	2014
228	HIGHWAY 61 REVISITED	Bob Dylan	1965
229	HOLD ON LOOSELY	38 Special	1981
230	HOUSE AT POOH CORNER	Loggins and Messina	1971
231	HOW GREAT IS OUR GOD	Chris Tomlin	2004
232	HOW SOON IS NOW	The Smiths	1985
233	HURRICANE	Bob Dylan	1976
234	HURRICANE	30 Seconds to Mars	2009
235	I AM NOT ALONE	Kari Jobe	2014
236	I AM WOMAN	Helen Reddy	1972
237	I AM...I SAID	Neil Diamond	1971
238	I BELIEVE I CAN FLY	R. Kelly	1996
239	I BET MY LIFE	Imagine Dragons	2014
240	I CAN LOVE YOU BETTER	dixie chicks	1997

241	I CAN'T MAKE YOU LOVE ME	Bonnie Raitt	1991
242	I CAN'T STAND THE RAIN	Eruption	1978
243	I DON'T KNOW HOW TO LOVE HIM	Petula Clark	2001
244	I GET AROUND	The Beach Boys	1964
245	I HATE MYSELF FOR LOVING YOU	joan jett	1988
246	I LOVE THE WAY YOU LOVE ME	Boyzone	1998
247	I MISS YOU	blink 182	2003
248	I NEED YOU	LeAnn Rimes	2000
249	I STAND ALONE	Godsmack	2002
250	I WANT CRAZY	Hunter Hayes	2013
251	I WILL BE HERE	Steven Curtis Chapman	1989
252	I WILL RISE	Chris Tomlin	2008
253	I WILL SURVIVE	Gloria Gaynor	1978
254	I WILL WAIT	Mumford & Sons	2012
255	I WON'T DANCE	Frank Sinatra	1957
256	I'LL NEVER BREAK YOUR HEART	Backstreet Boys	1995
257	I'LL NEVER SMILE AGAIN	The Ink Spots	1996
258	I'M A BELIEVER	Neil Diamond	1967
259	I'M N LUV (WIT A STRIPPER) FEATURING MIKE JONES	T-Pain	2005
260	IF I EVER LOSE MY FAITH IN YOU	Sting	1993
261	IF YOU LEAVE ME NOW	Chicago	1976
262	IN MY PLACE	Coldplay	2002
263	IN THE END	Linkin Park	2000
264	INBETWEEN DAYS	The Cure	1985
265	INDESCRIBABLE	Chris Tomlin	2004
266	IRIDESCENT	Linkin Park	2010
267	IT'S ALL COMING BACK TO ME NOW	Celine Dion	1996
268	IT'S ALL OVER NOW, BABY BLUE	Bob Dylan	1965
269	IT'S ALRIGHT, MA (I'M ONLY BLEEDING)	Bob Dylan	1965
270	IT'S TIME	Imagine Dragons	2010
271	JESUS MESSIAH	Chris Tomlin	2008
272	JOKERMAN	Bob Dylan	1983
273	JOY TO THE WORLD	Three Dog Night	1970
274	JUST LIKE A WOMAN	Bob Dylan	1966
275	JUST LIKE HEAVEN	The Cure	1987
276	JUST LIKE TOM THUMB'S BLUES	Bob Dylan	1965
277	JUST ONE LOOK	Doris Troy	1963
278	KID CHARLEMAGNE	Steely Dan	1976
279	KING OF PAIN	The Police	1983
280	KINGS AND QUEENS	30 Seconds to Mars	2009
281	KRYPTONITE	3 Doors Down	2000

282	LAMB OF GOD	Twila Paris	1985
283	LATCH	disclosure	2012
284	LEAN ON ME	Bill Withers	1972
285	LEAVE OUT ALL THE REST	Linkin Park	2007
286	LET YOU DOWN	NF	2017
287	LET'S FACE THE MUSIC AND DANCE	Fred Astaire	1981
288	LET'S GET TOGETHER	The Youngbloods	1967
289	LET'S STAY TOGETHER	Al Green	1971
290	LETTERS FROM HOME	John Michael Montgomery	2004
291	LIFE IS A HIGHWAY	Rascal Flatts	2006
292	LIGHTNING CRASHES	Live	1994
293	LIKE A ROLLING STONE	Bob Dylan	1965
294	LITTLE DEUCE COUPE	The Beach Boys	1963
295	LITTLE LIES	Fleetwood Mac	1987
296	LITTLE LION MAN	mumford and sons	2009
297	LONG COOL WOMAN IN A BLACK DRESS	hollies	1972
298	LORD, I NEED YOU	Matt Maher	2013
299	LOVE IS ALL AROUND	The Troggs	1967
300	LOVE MINUS ZERO/NO LIMIT	Bob Dylan	1965
301	LOVESONG	The Cure	1998
302	LUCKENBACH TEXAS (BACK TO THE BASICS OF LOVE)	Waylon Jennings	1977
303	LYING FROM YOU	Linkin Park	2003
304	MACARTHUR PARK	Donna Summer	1978
305	MAD	Ne-Yo	2008
306	MAGIC	Coldplay	2014
307	MAGIC CARPET RIDE	Steppenwolf	1968
308	MASTERS OF WAR	Bob Dylan	1963
309	MEANT TO LIVE	Switchfoot	2003
310	MERRY CHRISTMAS DARLING	The Carpenters	1970
311	MESSAGE IN A BOTTLE	The Police	1979
312	MIDNIGHT	Coldplay	2014
313	MIDNIGHT TRAIN TO GEORGIA	Gladys Knight & The Pips	1973
314	MILKSHAKE	Kelis	2003
315	MISERY	Maroon 5	2010
316	MISS INDEPENDENT	Ne-Yo	2008
317	MONA LISAS AND MAD HATTERS	Elton John	1972
318	MONDAY MONDAY	The Mamas and The Papas	1966
319	MOONLIGHT IN VERMONT	Margaret Whiting	1990
320	MOVE ALONG	the all American rejects	2005

321	MR. TAMBOURINE MAN	Bob Dylan	1965
322	MY BACK PAGES	Bob Dylan	1964
323	MY BEST FRIEND	Tim McGraw	1999
324	MY DECEMBER	Linkin Park	2000
325	MY OLD SCHOOL	Steely Dan	1973
326	NEVER BE ALONE	Shawn Mendes	2015
327	NEVER BEEN TO SPAIN	Three Dog Night	1971
328	NEW DIVIDE	Linkin Park	2009
329	NEXT TO ME	Imagine Dragons	2018
330	NO AIR	jordin sparks featuring chris brown	2007
331	NO DIGGITY	Blackstreet	1996
332	NO LIGHT, NO LIGHT	florence and the machine	2011
333	NO MORE SORROW	Linkin Park	2007
334	NO ONE	Alicia Keys	2007
335	NOBODY'S LISTENING	Linkin Park	2003
336	NOT DARK YET	Bob Dylan	1997
337	NOTHING FROM NOTHING	Billy Preston	1974
338	NUMB	Linkin Park	2003
339	OCEAN AVENUE	Yellowcard	2004
340	ON TOP OF THE WORLD	Imagine Dragons	2012
341	ONE DAY I'LL FLY AWAY	Randy Crawford	1980
342	ONE STEP CLOSER	Linkin Park	2000
343	ONE TIN SOLDIER	The Original Caste	1969
344	ONE TOKE OVER THE LINE	Brewer & Shipley	1970
345	ONLY HOPE	Switchfoot	1999
346	OPEN YOUR EYES	Snow Patrol	2006
347	OUR DAY WILL COME	Ruby and the Romantics	1962
348	OUR GOD	Chris Tomlin	2010
349	OUR LIPS ARE SEALED	go-go's	1981
350	PAPERCUT	Linkin Park	2001
351	PARADISE	Coldplay	2011
352	PARENTS JUST DON'T UNDERSTAND	DJ Jazzy Jeff & The Fresh Prince	1988
353	PEOPLE NEED THE LORD	Steve Green	1984
354	POINTS OF AUTHORITY	Linkin Park	2000
355	POISON	Groove Coverage	2003
356	POSITIVELY 4TH STREET	Bob Dylan	1965
357	POSSUM KINGDOM	the toadies	1994
358	POWERLESS	Linkin Park	2012
359	PRAISE YOU	Fatboy Slim	1999

360	PRETTY GIRL ROCK	Keri Hilson	2010
361	PUTTIN' ON THE RITZ	Harry Richman	1930
362	RADIOACTIVE	Imagine Dragons	2012
363	RAINY DAYS AND MONDAYS	Carpenters	1971
364	RED, RED WINE	Neil Diamond	1967
365	REDBONE	Childish Gambino	2016
366	REELING IN THE YEARS	Steely Dan	1972
367	REMEMBER THE NAME	Fort Minor	2005
368	REMEMBERING SUNDAY	All Time Low	2007
369	RENEGADES	X Ambassadors	2015
370	REUNITED	peaches and herb	1979
371	RIDE LIKE THE WIND	Christopher Cross	1979
372	RIKKI DON'T LOSE THAT NUMBER	Steely Dan	1974
373	ROCKY MOUNTAIN WAY	Joe Walsh	1973
374	ROXANNE	The Police	1978
375	RUN	Snow Patrol	2004
376	RUNAWAY	Linkin Park	2000
377	RUNAWAY	The Corrs	1995
378	RUSSIAN ROULETTE	Rihanna	2009
379	SAD	Maroon 5	2012
380	SAILING	Christopher Cross	1979
381	SAN FRANCISCO BE SURE TO WEAR FLOWERS IN YOUR HAIR	Scott McKenzie	1967
382	SANTERIA	Sublime	1996
383	SAY SOMETHING	A great big world	2013
384	SCARS TO YOUR BEAUTIFUL	Alessia Cara	2015
385	SECRET	Maroon 5	2002
386	SHAMBALA	Three Dog Night	1973
387	SHAPE OF MY HEART	Sting	1993
388	SHE BELIEVES IN ME	Kenny Rogers	1979
389	SHE BELONGS TO ME	Bob Dylan	1965
390	SHE WILL BE LOVED	Maroon 5	2002
391	SHELTER FROM THE STORM	Bob Dylan	1975
392	SHIVER	Coldplay	2000
393	SIMPLE MAN	Lynyrd Skynyrd	1973
394	SIMPLE TWIST OF FATE	Bob Dylan	1975
395	SMOKE GETS IN YOUR EYES	The Platters	1958
396	SO SICK	Ne-Yo	2005
397	SOLITARY MAN	Neil Diamond	1966
398	SOMEBODY TO LOVE	Jefferson Airplane	1967
399	SOMETHING JUST LIKE THIS	The Chainsmokers & Coldplay	2017
400	SOMEWHERE I BELONG	Linkin Park	2003

401	SOMEWHERE ONLY WE KNOW	Keane	2004
402	SONG SUNG BLUE	Neil Diamond	1972
403	SONGBIRD	Fleetwood Mac	1977
404	SOUL MAN	sam and dave	1967
405	SOUND OF DA POLICE	krs one	1993
406	SPIRITS IN THE MATERIAL WORLD	The Police	1981
407	STEP INTO CHRISTMAS	Elton John	1973
408	STRAWBERRY WINE	Deana Carter	1996
409	SUBTERRANEAN HOMESICK BLUES	Bob Dylan	1965
410	SUCKER FOR PAIN	Lil Wayne, Wiz Khalifa & Imagine Dragons	2016
411	SUGAR MAN	Rodriguez	1970
412	SUMMER WINE	nancy sinatra	1966
413	SUNDAY MORNING	Maroon 5	2002
414	SWEET CAROLINE	Neil Diamond	1969
415	SWEET CREATURE	Harry Styles	2017
416	SWEET HOME ALABAMA	Lynyrd Skynyrd	1974
417	SWING, SWING	the all American rejects	2002
418	SYNCHRONICITY II	The Police	1983
419	TAKE A BOW	Rihanna	2008
420	TAKE ME OUT	Franz Ferdinand	2004
421	TALK	Coldplay	2005
422	TALK	Khalid	2019
423	TANGLED UP IN BLUE	Bob Dylan	1975
424	TEARDROP	Massive Attack	1998
425	TENNESSEE WHISKEY	David Allan Coe	1981
426	THAT SMELL	Lynyrd Skynyrd	1977
427	THE BAD TOUCH	the bloodhound gang	1999
428	THE BOYS ARE BACK IN TOWN	Thin Lizzy	1976
429	THE CATALYST	Linkin Park	2010
430	THE CAVE	mumford and sons	2010
431	THE CHANGE	Garth Brooks	1995
432	THE DEVIL WENT DOWN TO GEORGIA	Charlie Daniels Band	1979
433	THE GRAND ILLUSION	Styx	1977
434	THE HARDER THEY COME	Jimmy Cliff	1972
435	THE KEEPER OF THE STARS	Tracy Byrd	1995
436	THE KILL	30 Seconds to Mars	2005
437	THE KING OF CARROT FLOWERS PART ONE	Neutral Milk Hotel	1998
438	THE LOGICAL SONG	Supertramp	1979

439	THE LONG BLACK VEIL	Lefty Frizzell	1959
440	THE SAFETY DANCE	Men Without Hats	1982
441	THE SAGA BEGINS	Weird Al Yankovic	1999
442	THE SALTWATER ROOM	Owl City	2008
443	THE SCIENTIST	Coldplay	2002
444	THE TIMES THEY ARE A-CHANGIN'	Bob Dylan	1964
445	THE TROUBLE WITH LOVE IS	Kelly Clarkson	2003
446	THE WEIGHT	The Band	1968
447	THE WORLD'S GREATEST	R. Kelly	2003
448	THEME FROM SHAFT	Isaac Hayes	1971
449	THESE BOOTS ARE MADE FOR WALKIN'	Nancy Sinatra	1966
450	THIRTEEN	Big Star	1972
451	THIS IS WAR	30 Seconds to Mars	2009
452	THIS LOVE	Maroon 5	2002
453	THUNDER	Imagine Dragons	2017
454	TINY DANCER	Elton John	1971
455	TO MAKE YOU FEEL MY LOVE	Adele	2008
456	TOO CLOSE	Alex Clare	2011
457	TOP OF THE WORLD	The Carpenters	1972
458	TORN	Natalie Imbruglia	1997
459	TRAPPED IN THE CLOSET CHAPTER 1	R. Kelly	2005
460	UNFAITHFUL	Rihanna	2006
461	UNINVITED	Alanis Morissette	1998
462	VANILLA TWILIGHT	Owl City	2010
463	VINCENT (STARRY, STARRY NIGHT)	Don McLean	1971
464	VIOLET HILL	Coldplay	2008
465	VISIONS OF JOHANNA	Bob Dylan	1966
466	VIVA LA VIDA	Coldplay	2008
467	VOODOO	Godsmack	1997
468	WALK THE DINOSAUR	Was (Not Was)	1987
469	WALKING ON THE MOON	The Police	1979
470	WANTED	Hunter Hayes	2012
471	WARRIOR	Imagine Dragons	2014
472	WE GOT THE BEAT	go-go's	1980
473	WE'RE NOT GONNA TAKE IT	Twisted Sister	1984
474	WE'VE ONLY JUST BEGUN	The Carpenters	1970
475	WHAT I'VE DONE	Linkin Park	2007
476	WHEN I'M GONE	3 Doors Down	2002
477	WHITE BLANK PAGE	mumford and sons	2008
478	WHITE CHRISTMAS	Bing Crosby	1942
479	WHO WE ARE	Imagine Dragons	2013

480	WHOM SHALL I FEAR (GOD OF ANGEL ARMIES)	Chris Tomlin	2013
481	WICHITA LINEMAN	Glen Campbell	1968
482	WILL IT GO ROUND IN CIRCLES	Billy Preston	1972
483	WINDY	The Association	1967
484	WITH YOU	Linkin Park	2000
485	WORDS I NEVER SAID	lupe fiasco	2011
486	WOULDN'T IT BE NICE	The Beach Boys	1966
487	WRAPPED AROUND YOUR FINGER	The Police	1983
488	YELLOW	Coldplay	2000
489	YESTERDAY ONCE MORE	The Carpenters	1973
490	YOU AIN'T GOIN' NOWHERE	The Byrds	1968
491	YOU ARE NOT ALONE	Michael Jackson	1995
492	YOU ARE SO BEAUTIFUL	Joe Cocker	1974
493	YOU CAN GET IT IF YOU REALLY WANT	desmond dekker and the aces	1970
494	YOU LIGHT UP MY LIFE	Debby Boone	1977
495	YOU LOOK SO GOOD IN LOVE	George Strait	1983
496	YOU MAKE LOVIN FUN	Fleetwood Mac	1977
497	YOU'RE MY BEST FRIEND	Don Williams	1975
498	YOU'RE THE INSPIRATION	Chicago	1984
499	YOUR GUARDIAN ANGEL	The Red Jumpsuit Apparatus	2006
500	YOUR SONG	Elton John	1970

3) Details on Semrush Traffic Analysis

a) Selection of Lyrics Websites for Empirical Analysis

Table C.4: Lyrics Websites Used in the Empirical Analysis

	Lyrics websites	Source
	[A]	[B]
[1]	allthelyrics.com	Semrush
[2]	azlyrics.com	Complaint + Semrush + Interrogatory 25
[3]	bobdylan.com	Semrush
[4]	darklyrics.com	Semrush
[5]	elyrics.net	Semrush
[6]	eminem.com	Semrush
[7]	genius.com	Complaint + Semrush + Interrogatory 25
[8]	letssingit.com	Semrush
[9]	lyricfind.com	Complaint + Semrush + Interrogatory 25
[10]	lyrics.com	Complaint + Semrush
[11]	lyricsbox.com	Semrush
[12]	lyricsdepot.com	Semrush
[13]	lyricsfreak.com	Semrush
[14]	lyricsify.com	Semrush
[15]	lyricsmania.com	Semrush
[16]	lyricsmode.com	Semrush
[17]	lyricsondemand.com	Semrush
[18]	lyricstraining.com	Semrush
[19]	lyricstranslate.com	Semrush
[20]	multitracks.com	Interrogatory 25
[21]	musixmatch.com	Complaint + Semrush + Interrogatory 25
[22]	seekalyric.com	Semrush
[23]	songlyrics.com	Semrush
[24]	songmeanings.com	Semrush
[25]	woodyguthrie.org	Semrush
[26]	worshiponline.com	Interrogatory 25

Sources:
[1] Amended Complaint
[2] Semrush - Keyword Checker**:** https://www.semrush.com/analytics/keywordoverview/
[3] Plaintiffs' supplemental objections and responses to Defendant's Interrogatory No. 25.

Table C.5: Semrush Top 100 "Lyrics" Desktop U.S. Search Results

	Domain	URL
	[A]	[B]
[1]	azlyrics.com	https://www.azlyrics.com/
[2]	genius.com	https://genius.com/
[3]	youtube.com	https://www.youtube.com/watch?v=5hI7f2WCbz0
[4]	wikipedia.org	https://en.wikipedia.org/wiki/Lyrics
[5]	lyricfind.com	https://www.lyricfind.com/
[6]	youtube.com	https://www.youtube.com/watch?v=uY53yiwNC-M
[7]	google.com	https://play.google.com/store/apps/details?id=com.genius.android&hl=en_US
[8]	lingoclip.com	https://lingoclip.com/
[9]	apple.com	https://artists.apple.com/support/1111-lyrics-guidelines
[10]	distrokid.com	https://distrokid.com/lyrics/
[11]	google.com	https://play.google.com/store/apps/details?id=com.musixmatch.android.lyrify&hl=en_US
[12]	reddit.com	https://www.reddit.com/r/Undertale/comments/1n4k4tu/what_are_your_favorite_with_lyrics_ut ong_covers/
[13]	lyricsfreak.com	https://www.lyricsfreak.com/
[14]	yousician.com	https://yousician.com/blog/lyrics
[15]	lyricsborn.com	https://www.lyricsborn.com/
[16]	gaana.com	https://gaana.com/lyrics
[17]	foxnews.com	https://www.foxnews.com/entertainment/olivia-newton-john-pushed-back-against-provocative-song-spicy-lyrics-book
[18]	spotify.com	https://support.spotify.com/us/article/lyrics/
[19]	chosic.com	https://www.chosic.com/find-song-by-lyrics/
[20]	woodyguthrie.org	https://woodyguthrie.org/lyrics.htm
[21]	youtube.com	https://www.youtube.com/watch?v=2rm0gwqCR_0
[22]	youtube.com	https://www.youtube.com/watch?v=XHPOlxyKA3o
[23]	songmeanings.com	https://songmeanings.com/
[24]	youtube.com	https://www.youtube.com/playlist?list=PLRW80bBvVD3VDP0sfq30v19zh9Zv7I3RQ
[25]	merriam-webster.com	https://www.merriam-webster.com/dictionary/lyric
[26]	va.gov	https://www.va.gov/files/2025-02/Star-Spangled Banner Lyrics.pdf
[27]	lyricstraining.com	https://lyricstraining.com/app?nr
[28]	soundcloud.com	https://soundcloud.com/tags/lyrics
[29]	billboard.com	https://www.billboard.com/c/music/lyrics/
[30]	premiumlyrics.com	https://www.premiumlyrics.com/en-us/
[31]	lyrics.com	https://www.lyrics.com/
[32]	tiktok.com	https://www.tiktok.com/tag/lyrics?lang=en
[33]	instagram.com	https://www.instagram.com/reel/DOBgMFvDi5A/
[34]	youtube.com	https://www.youtube.com/watch?v=cH7u10arGg0

Sources: **Semrush**
[1] Keyword Checker: https://www.semrush.com/analytics/keywordoverview/

	Domain	URL
	[A]	[B]
[35]	musixmatch.com	https://www.musixmatch.com/
[36]	pinterest.com	https://in.pinterest.com/sruthibaiju/songs-lyrics/
[37]	bobdylan.com	https://www.bobdylan.com/songs/
[38]	lyricsondemand.com	https://lyricsondemand.com/
[39]	si.edu	https://amhistory.si.edu/starspangledbanner/pdf/ssb_lyrics.pdf
[40]	reddit.com	https://www.reddit.com/r/bobdylan/comments/1n3q4uh/historically_has_bob_mostly_sur rics_live/
[41]	tiktok.com	https://www.tiktok.com/@yanolyrics/video/7544663630776782088
[42]	lyricsmania.com	https://www.lyricsmania.com/
[43]	findmusicbylyrics.com	https://findmusicbylyrics.com/
[44]	lyricsdepot.com	http://www.lyricsdepot.com/
[45]	youtube.com	https://www.youtube.com/watch?v=mQoWUtsVFV0
[46]	reddit.com	https://www.reddit.com/r/YoutubeMusic/comments/1n3xzwl/yt_music_floating_controls ics/
[47]	elle.com	https://www.elle.com/culture/music/a65934282/sabrina-carpenter-tears-lyrics-meaning-e
[48]	darklyrics.com	http://www.darklyrics.com/
[49]	instagram.com	https://www.instagram.com/reel/DOAXrxQDLGd/
[50]	youtube.com	https://www.youtube.com/channel/UC9jbx97WHiM7aPA_A3Sl6hQ
[51]	lyricfind.com	https://www.lyricfind.com/fans
[52]	lyricsmode.com	https://www.lyricsmode.com/
[53]	berklee.edu	https://online.berklee.edu/takenote/how-to-write-song-lyrics/
[54]	facebook.com	https://www.facebook.com/groups/cozygamer/posts/1490662112183765/
[55]	instagram.com	https://www.instagram.com/p/DOAtXhuCq3_/
[56]	allthelyrics.com	https://www.allthelyrics.com/
[57]	americansongwriter.com	https://americansongwriter.com/4-hilarious-lyrics-in-classic-rock-songs-that-werent-supp be-funny/
[58]	lyricsworld.com	https://www.lyricsworld.com/
[59]	genius.com	https://genius.com/artists/Free
[60]	youtube.com	https://www.youtube.com/watch?v=mzQ8eepcJGQ
[61]	seekalyric.com	https://www.seekalyric.com/
[62]	x.com	https://x.com/lyrics
[63]	reddit.com	https://www.reddit.com/r/KendrickLamar/comments/1n3er5t/are_there_any_other_instar ot_reusing/
[64]	freesonglyrics.co.uk	https://www.freesonglyrics.co.uk/
[65]	musicgateway.com	https://www.musicgateway.com/song-lyrics
[66]	musixmatch.com	https://www.musixmatch.com/discover
[67]	google.com	https://support.google.com/youtubemusic/thread/369334149/how-to-switch-off-the-share on-lyrics-page?hl=en
[68]	eonline.com	https://www.eonline.com/news/1421852/sabrina-carpenter-lyrics-shawn-mendes-barry-k hints

Sources: **Semrush**

[1] Keyword Checker: https://www.semrush.com/analytics/keywordoverview/

	Domain	URL
	[A]	[B]
[69]	premiumlyrics.com	https://www.premiumlyrics.com/en-us/lyrics
[70]	sputnikmusic.com	https://www.sputnikmusic.com/list.php?listid=61442
[71]	facebook.com	https://www.facebook.com/groups/283741837902569/posts/755536354056446/
[72]	instagram.com	https://www.instagram.com/reel/DOBDYm4kxYw/
[73]	youtube.com	https://www.youtube.com/watch?v=KZGWfHdfWQs
[74]	pinterest.com	https://www.pinterest.com/ideas/fabolous-lyrics/944023346904/
[75]	reddit.com	https://www.reddit.com/r/todayilearned/comments/1n4njxc/til_eminem_wrote_the_lyrics_for_h verse_in/
[76]	musicbylyric.com	https://www.musicbylyric.com/
[77]	streetdirectory.com	https://www.streetdirectory.com/lyricadvisor/
[78]	instagram.com	https://www.instagram.com/p/DOA4dyKAZAK/
[79]	songlyrics.com	https://www.songlyrics.com/
[80]	tiktok.com	https://www.tiktok.com/@grayblix/video/7543981218883308817
[81]	eminem.com	https://shop.eminem.com/products/stan-lyrics-x-yeti-chug-bottle
[82]	spotify.com	https://open.spotify.com/track/4WWogojK9PF7sbMvmqXGMV?si=473f2d65f3054bd0
[83]	imdb.com	https://www.imdb.com/title/tt0758766/
[84]	youtube.com	https://www.youtube.com/watch?v=9zctVgA2ZkY
[85]	lyricsbox.com	https://www.lyricsbox.com/
[86]	dictionary.com	https://www.dictionary.com/browse/lyric
[87]	cambridge.org	https://dictionary.cambridge.org/us/dictionary/english/lyrics
[88]	wikipedia.org	https://en.wikipedia.org/wiki/Music_and_Lyrics
[89]	lyricstranslate.com	https://lyricstranslate.com/en
[90]	letssingit.com	https://www.letssingit.com/
[91]	youtube.com	https://www.youtube.com/watch?v=byxFUKxhT3s
[92]	reddit.com	https://www.reddit.com/r/japanesemusic/comments/1n4ob20/not_secured_loose_ends_post_cat rophe_color/
[93]	azlyrics.com	https://www.azlyrics.com/f/free.html
[94]	lyricsify.com	https://www.lyricsify.com/
[95]	buzzfeed.com	https://www.buzzfeed.com/sam_cleal/21-of-the-most-heartbreaking-song-lyrics-that-you-said-y
[96]	collinsdictionary.com	https://www.collinsdictionary.com/us/dictionary/english/lyrics
[97]	azlyrics.cc	https://azlyrics.cc/
[98]	youtube.com	https://www.youtube.com/watch?v=GTLdJ-CM7TQ
[99]	elyrics.net	https://www.elyrics.net/
[100]	x.com	https://x.com/lyricsmode?lang=en

Sources: Semrush
[1] Keyword Checker: https://www.semrush.com/analytics/keywordoverview/

Table C.6: Unique Domains from Semrush Top 100 Search List

	Domain		Domain
	[A]		[A]
[1]	azlyrics.com	[34]	lyricsmania.com
[2]	genius.com	[35]	findmusicbylyrics.com
[3]	youtube.com	[36]	lyricsdepot.com
[4]	wikipedia.org	[37]	elle.com
[5]	lyricfind.com	[38]	darklyrics.com
[6]	google.com	[39]	lyricsmode.com
[7]	lingoclip.com	[40]	berklee.edu
[8]	apple.com	[41]	facebook.com
[9]	distrokid.com	[42]	allthelyrics.com
[10]	reddit.com	[43]	americansongwriter.com
[11]	lyricsfreak.com	[44]	lyricsworld.com
[12]	yousician.com	[45]	seekalyric.com
[13]	lyricsborn.com	[46]	x.com
[14]	gaana.com	[47]	freesonglyrics.co.uk
[15]	foxnews.com	[48]	musicgateway.com
[16]	spotify.com	[49]	eonline.com
[17]	chosic.com	[50]	sputnikmusic.com
[18]	woodyguthrie.org	[51]	musicbylyric.com
[19]	songmeanings.com	[52]	streetdirectory.com
[20]	merriam-webster.com	[53]	songlyrics.com
[21]	va.gov	[54]	eminem.com
[22]	lyricstraining.com	[55]	imdb.com
[23]	soundcloud.com	[56]	lyricsbox.com
[24]	billboard.com	[57]	dictionary.com
[25]	premiumlyrics.com	[58]	cambridge.org
[26]	lyrics.com	[59]	lyricstranslate.com
[27]	tiktok.com	[60]	letssingit.com
[28]	instagram.com	[61]	lyricsify.com
[29]	musixmatch.com	[62]	buzzfeed.com
[30]	pinterest.com	[63]	collinsdictionary.com
[31]	bobdylan.com	[64]	azlyrics.cc
[32]	lyricsondemand.com	[65]	elyrics.net
[33]	si.edu		

Sources: Semrush

[1] Keyword Checker: https://www.semrush.com/analytics/keywordoverview/

Table C.7: Semrush Sites Not Considered for Empirical Analysis and Their Reasoning

	Lyrics websites	Reason for exclusion
	[A]	[B]
[1]	americansongwriter.com	Not a lyrics site
[2]	apple.com	Not a lyrics site
[3]	azlyrics.cc	Not a lyrics site
[4]	berklee.edu	Not a lyrics site
[5]	billboard.com	Music industry content - not primarily lyrics site
[6]	buzzfeed.com	Pop culture content - not primarily lyrics site
[7]	cambridge.org	Not a lyrics site
[8]	chosic.com	Redirects to other sites with lyrics
[9]	collinsdictionary.com	Not a lyrics site
[10]	dictionary.com	Not a lyrics site
[11]	distrokid.com	Not a lyrics site
[12]	elle.com	Beauty content - not primarily lyrics site
[13]	eonline.com	Pop culture content - not primarily lyrics site
[14]	facebook.com	Not a lyrics site
[15]	findmusicbylyrics.com	Redirects to other sites with lyrics
[16]	foxnews.com	Not a lyrics site
[17]	freesonglyrics.co.uk	Streaming - not primarily lyrics site
[18]	gaana.com	Streaming - not primarily lyrics site
[19]	google.com	Not a lyrics site
[20]	imdb.com	Not a lyrics site
[21]	instagram.com	Not a lyrics site
[22]	lingoclip.com	Redirects to lyricstraining.com, which is include
[23]	lyricsborn.com	Artist's website
[24]	lyricsworld.com	Redirects to other sites with lyrics
[25]	merriam-webster.com	Not a lyrics site
[26]	musicbylyric.com	Artist's website
[27]	musicgateway.com	Career platform for independent artists
[28]	pinterest.com	Not a lyrics site
[29]	premiumlyrics.com	Site for selling original lyrics
[30]	reddit.com	Not a lyrics site
[31]	si.edu	Not a lyrics site
[32]	soundcloud.com	Streaming - not primarily lyrics site
[33]	spotify.com	Streaming - not primarily lyrics site
[34]	sputnikmusic.com	Music ratings content - not primarily lyrics site
[35]	streetdirectory.com	Not a lyrics site
[36]	tiktok.com	Not a lyrics site
[37]	va.gov	Not a lyrics site
[38]	wikipedia.org	Not a lyrics site
[39]	x.com	Not a lyrics site
[40]	yousician.com	Instrument learning - not primarily lyrics site
[41]	youtube.com	Not a lyrics site

Sources: Semrush
[1] Keyword Checker: https://www.semrush.com/analytics/keywordoverview

Table C.8: Semrush Top 20 "Lyrics" Mobile Device Search Results

	Lyrics websites	Already in Semrush Desktop List	Include/Exclude	Reason for excluding
	[A]	[B]	[C]	[D]
[1]	apple.com	Yes	N/A	
[2]	azlyrics.com	Yes	N/A	
[3]	cambridge.org	Yes	N/A	
[4]	distrokid.com	Yes	N/A	
[5]	findmusicbylyrics.com	Yes	N/A	
[6]	genius.com	Yes	N/A	
[7]	lingoclip.com	Yes	N/A	
[8]	lyricfind.com	Yes	N/A	
[9]	lyricsfreak.com	Yes	N/A	
[10]	musixmatch.com	Yes	N/A	
[11]	premiumlyrics.com	Yes	N/A	
[12]	songmeanings.com	Yes	N/A	
[13]	spotify.com	Yes	N/A	
[14]	state.gov	No	Exclude	Not a lyrics website
[15]	wikipedia.org	Yes	N/A	
[16]	woodyguthrie.org	Yes	N/A	
[17]	yousician.com	Yes	N/A	
[18]	youtube.com	Yes	N/A	
[19]	youtube.com	Yes	N/A	
[20]	youtube.com	Yes	N/A	

Sources: Semrush
[1] Keyword Checker: https://www.semrush.com/analytics/keywordoverview

Table C.9: Sites Excluded from Interrogatory 25 List

	Lyrics websites	Reason for exclusion
	[A]	[B]
[1]	Amazon Music	Streaming - not primarily lyrics site
[2]	Apple Music	Streaming - not primarily lyrics site
[3]	ccli	Lyrics not publicly available on site
[4]	campfire	Cannot find
[5]	deezer	Streaming - not primarily lyrics site
[6]	digitrax	Music library platform for AI integration
[7]	fender play	Instrument learning - not primarily lyrics site
[8]	guitar tricks	Instrument learning - not primarily lyrics site
[9]	HD Piano	Instrument learning - not primarily lyrics site
[10]	horizon	Cannot find
[11]	instagram	Not a lyrics site
[12]	kanto.co	Karaoke app - not primarily lyrics site
[13]	messenger	Not a lyrics site
[14]	meta	Not a lyrics site
[15]	musescore	Sheet music - primarily for learning musical notation and performance
[16]	musicnotes.com	Sheet music - primarily for learning musical notation and performance
[17]	oculus	Assuming Meta's VR product - not a lyrics site
[18]	pandora.com	Streaming - not primarily lyrics site
[19]	portal	Cannot find
[20]	praisecharts	Sheet music - primarily for learning musical notation and performance
[21]	resso	Streaming - not primarily lyrics site
[22]	singa.com	Karaoke app - not primarily lyrics site
[23]	stingray	Streaming - not primarily lyrics site
[24]	snap	Not a lyrics site
[25]	spotify	Streaming - not primarily lyrics site
[26]	sybersound	Distributor of sound recordings
[27]	tiktok	Not a lyrics site
[28]	touchtunes	Streaming - not primarily lyrics site
[29]	triller	Cannot find
[30]	twitch	Not a lyrics site
[31]	yokee	Karaoke and music learning apps - not primarily lyrics site
[32]	youtube	Not a lyrics site

Sources: Plaintiffs' supplemental objections and responses to Defendant's Interrogatory No. 25.

b) Details on Empirical Analysis

156. To estimate the impact of Claude on Lyrics Websites traffic, I estimate a Fixed Effects model in which weekly lyrics visits is regressed on weekly Claude.ai visits where visits is set to zero after [redacted]. The model includes website and month-year fixed effects to control for unobserved heterogeneity across websites and over time.[197] For most of my specifications, the variables are expressed in logarithms to account for the large variation in traffic volumes across websites and over time.[198] However, I also present a robustness with the level values. The model that I estimate is as follows:

$$log_lyrics_traffic_{it} = \alpha_i + monthyear_t + q \cdot log_claude_traffic_t + \epsilon_{it}, \text{ where}$$

a) $log_lyrics_traffic_{it}$ is the logarithm of weekly visits to lyrics website *i* on week *t;*

b) $log_claude_traffic_t$ is the logarithm of weekly visits to Claude.ai on week *t*;

c) α_i and $monthyear_t$ are fixed effects for website and for month-year fixed effects, respectively;

d) ϵ_{it} is the error term capturing unobserved factors.

157. To conduct statistical inference, I use the wild cluster bootstrap method.[199] When observations are possibly correlated within units, Lyrics Websites in my analysis, valid inference requires clustering standard errors at the unit level. Cluster-robust standard errors, however, rely on the assumption that number of clusters is at least more than 30.[200]

158. In my sample, the number of clusters is limited to 26 Lyrics Websites. Following the academic literature, I therefore use the wild cluster bootstrap to provide reliable inference in this setting. Notice that the wild cluster bootstrap is a resampling-based procedure, thus estimated

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[197] The model includes month-year fixed effects to flexibly control for common seasonal patterns and other unobserved time-varying factors, such as broad shifts in overall online activity, that affect all websites over time. *See* Joshua D. Angrist and Jörn-Steffan Pischke, Mostly Harmless Econometrics: An Empiricist's Companion, 2008, Ch. 5.

[198] I use log (1+0) transformation to account for zero values.

[199] *See* A. Colin Cameron et al., "Bootstrap-Based Improvements for Inference with Clustered Errors," *The Review of Economics and Statistics*, Vol. 90, No. 3 (Aug 2008), at pp. 414-427, available at https://direct.mit.edu/rest/article-abstract/90/3/414/57731/Bootstrap-Based-Improvements-for-Inference-with.

[200] *See* A. Colin Cameron et al., "Bootstrap-Based Improvements for Inference with Clustered Errors," *The Review of Economics and Statistics*, Vol. 90, No. 3 (Aug 2008), at pp. 414-427, available at https://direct.mit.edu/rest/article-abstract/90/3/414/57731/Bootstrap-Based-Improvements-for-Inference-with

p-values may vary across bootstrap replications. To ensure stability, I use a large number of bootstrap iterations.

c) Robustness Checks

159. To complement the baseline analysis of website traffic, I present three robustness checks. First, to account for changes in overall internet interest over time, I include the logarithm of weekly visits to Google.com as a proxy for general internet activity. As shown below in the table, controlling this measure yields a statistically insignificant estimate of Claude.ai's association of traffic to Lyrics Websites.

Table C.10: Regression Result for the U.S. Lyrics Traffic on Claude Traffic Controlling for General Internet Interest

	Dependent Variable: Log Lyrics Traffic	
	[A]	[B]
[1]	Log Claude Traffic	0.004
[2]	(p-value)	0.675
[3]	Observations	5,174
[4]	R Squared	0.844

Sources: Semrush Traffic Data
Data covers weekly traffic to 26 lyrics websites and Claude.ai for full weeks contained in January 2022 to October 2025.
Claude.ai traffic is set to zero [redacted] P-value is calculated using the wild cluster bootstrap method.
[B][1] Estimate of regressing log lyric traffic on log Claude.ai traffic controlling for log visit to google.com.
[B][2] p-value calculated using wild cluster bootstrap method shows that the coefficient at [B][1] is statistically insignificant.

160. As a second robustness check of the baseline model, I include the logarithm of weekly visits to Billboard.com to control for general interest in the music industry that is not specific to lyrics consumption. As reported in the table below, I find no statistically significant impact of Claude.ai on online lyrics consumption in this specification as well.

Table C.11: Regression Result for the U.S. Lyrics Traffic on Claude Traffic Controlling for General Interest in Music Industry

	Dependent Variable: Log Lyrics Traffic	
	[A]	[B]
[1]	Log Claude Traffic	0.005
[2]	(p-value)	0.582
[3]	Observations	5,174
[4]	R Squared	0.844

Sources: Semrush Traffic Data
Data covers weekly traffic to 26 lyrics websites and Claude.ai for full weeks contained in January 2022 to October 2025. Claude.ai traffic is set to zero after Prompt Shield [redacted] P-value is calculated using the wild cluster bootstrap method.
[B][1] Estimate of regressing log lyric traffic on log Claude.ai traffic controlling for log visit to billboard.com.
[B][2] p-value calculated using wild cluster bootstrap method shows that the coefficient at [B][1] is statistically insignificant.

161. As a further robustness check, I estimate the baseline specification using levels of traffic rather than the logarithms of traffic to lyrics websites and Claude.ai. As reported in Table C.12, the estimated effect of Claude.ai on online lyrics consumption remains statistically insignificant, consistent with the results from the log specification.

Table C.12: Regression Result for the U.S. Lyrics Traffic on Claude Traffic (Levels)

	Dependent Variable: Lyrics Traffic	
	[A]	[B]
[1]	Claude Traffic	0.037
[2]	(p-value)	0.231
[3]	Observations	5,174
[4]	R Squared	0.971

Sources: Semrush Traffic Data
Data covers weekly traffic to 26 lyrics websites and Claude.ai for full weeks contained in January 2022 to October 2025. Claude traffic is set to zero after Prompt Shield [redacted]. P- value is calculated using the wild cluster bootstrap method.
[B][1] Estimate of regressing lyric traffic on Claude.ai traffic.
[B][2] p-value calculated using wild cluster bootstrap method shows that the coefficient at [B][1] is statistically insignificant.

4) Details on Google Trends Analysis

a) Details on Google Trends

162. A Google Trends query for a word or phrase over time returns a time series ranging from 0 to 100 that represents the relative popularity of search interest for that topic over time.[201] To retrieve this data, Google Trends accepts as input the query (such as "tiny dancer", for Work-In-Suit 454); a specified time range (which I set to January 2, 2022 – October 25, 2025); and a geographical area (which I set to the United States). Google Trends then samples among all searches (of any topic) made in the United States during this period and looks at the percentage of searches for "tiny dancer", as a proportion of all searches at that time and location.[202]

163. Figure C.1 provides an example of the Google Trends results for "tiny dancer" for the sample period in the United States.

[201] This count is weighted according to the volume of all queries made in the United States in each week. Google Trends then rescales the count from 0 to 100, such that 0 corresponds to a week in which there were no queries made (per the sample) and 100 corresponds to a week in which the query received the most interest in the United States (relative to the total volume of interest in that week). Thus, Google Trends produces a measure of relative search interest over time.

[202] "Basics of Google Trends," Google News Initiative, available at https://newsinitiative.withgoogle.com/resources/trainings/basics-of-google-trends/, accessed on 19 Dec 2025 ("When we look at search interest in a topic or query, we are not looking at the total number of searches. Instead, we look at the percentage of searches for that topic, as a proportion of all searches at that time and location.").

Figure C.1: Time Series of Index of the Song "tiny dancer" in Google Trends

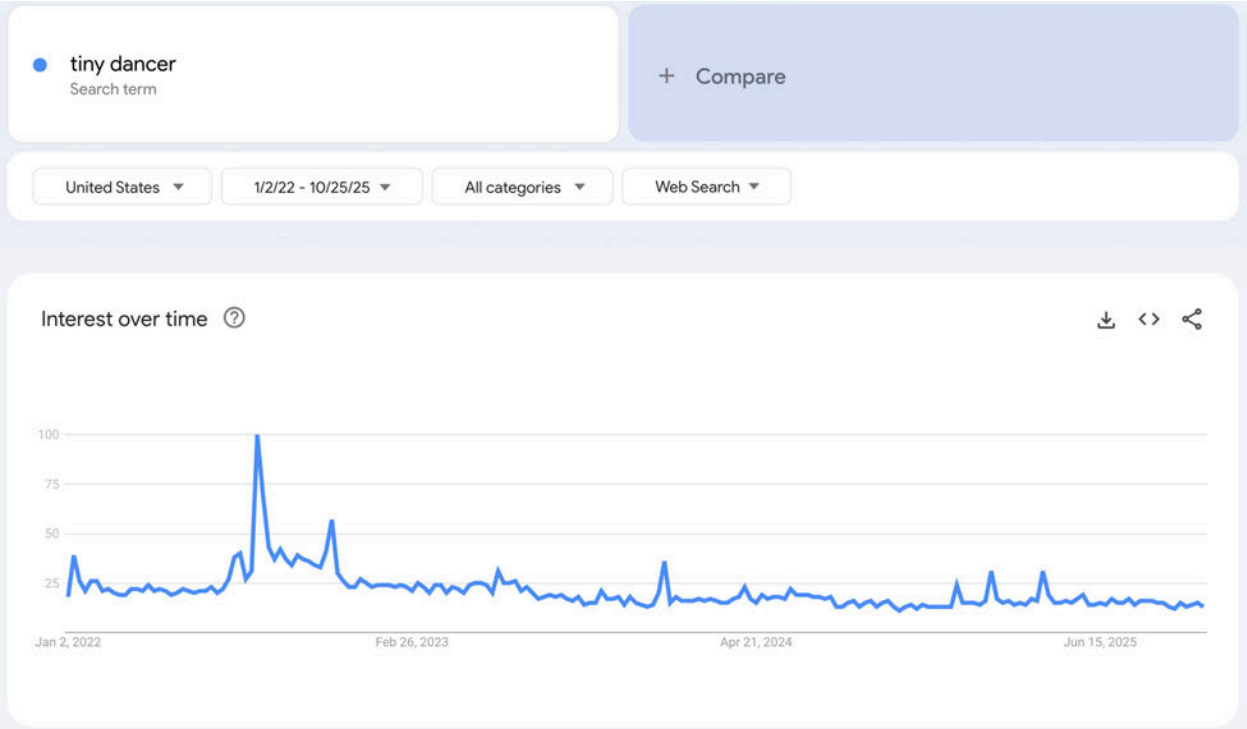
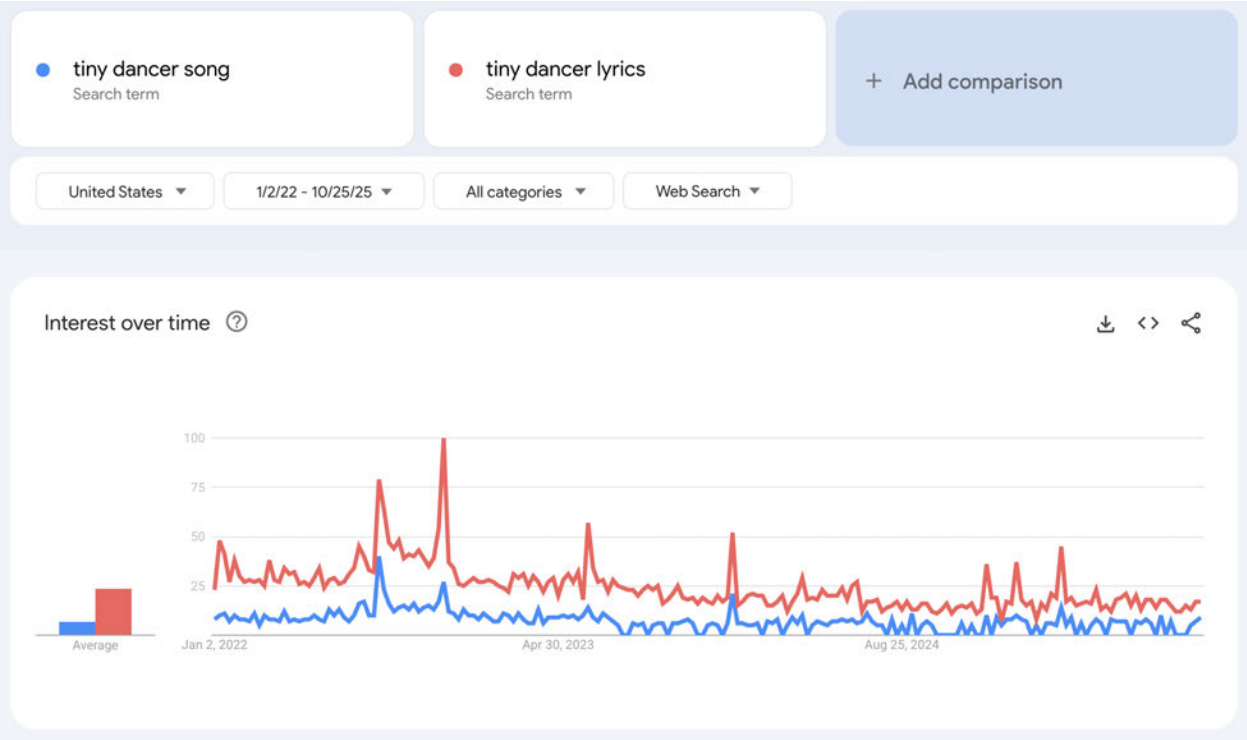


Figure C.2: Time Series of the Relative Index of the Song "tiny dancer song" and "tiny dancer lyrics" in Google Trends

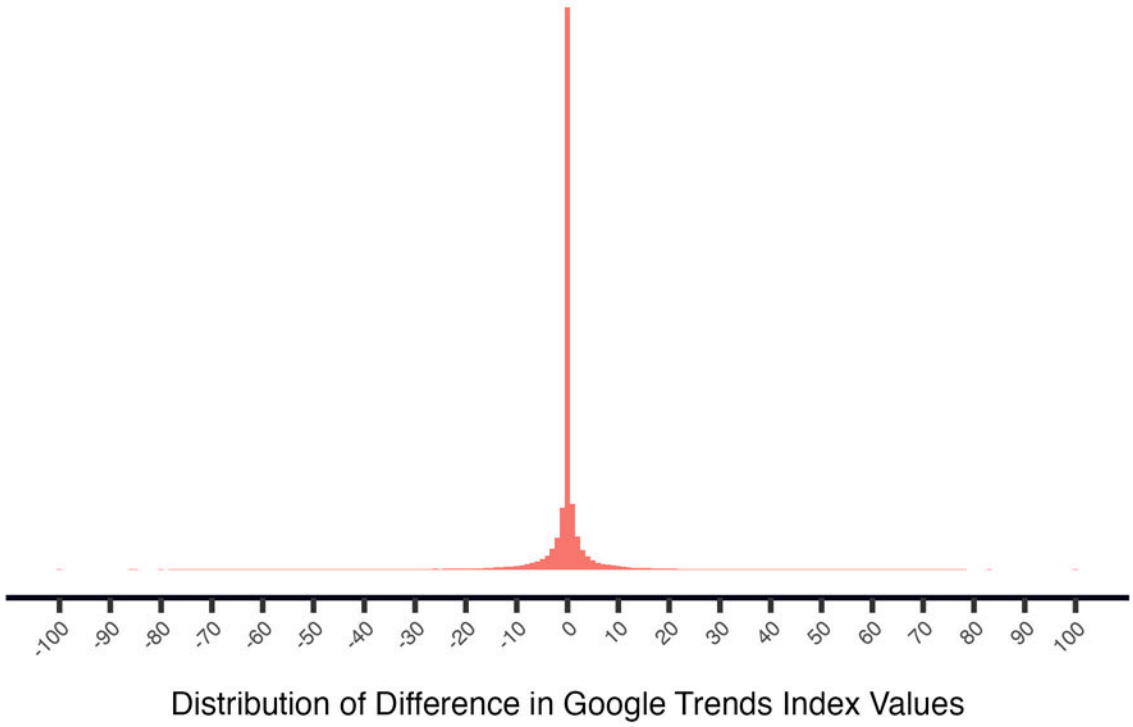


164. A useful feature of Google Trends is that two terms can be queried simultaneously, a query that returns two relative indices. For example, if one queried term receives a number of 60 in a particular week and the other queried term receives a number of 30 in that same week, these values imply that search interest for the first term is twice the search interest of the second term in that week. Figure C.2 illustrates this, comparing the search interest for "tiny dancer song" with the search for "tiny dancer lyrics".

165. Since each time series is produced from a sample among all searches, querying Google Trends is unlikely to be replicated with identical output, as each query will likely produce slightly different index values. To assess the extent of this sampling variation, I query the data for "Title" searches a second time and compare with my initial dataset used throughout my analysis. After matching each index value by query and week, I calculate the difference in value between

the two samples. I plot this difference in Figure C.3 below, which shows that index values are highly consistent across multiple query iterations. The mode is 0, meaning most index values are the same, and the vast majority are clustered between -5 and 5 index points.

Figure C.3: Sampling Variation Between Two Queries of Google Trends Data

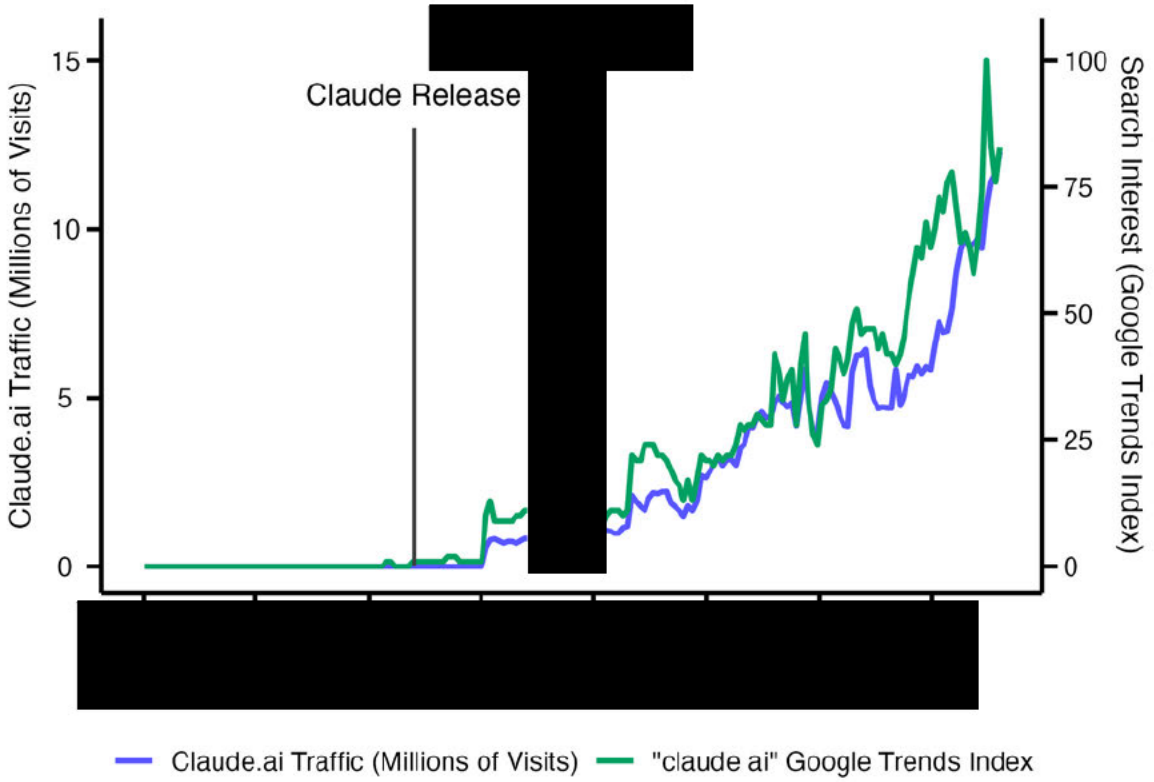


b) Claude Usage Measure via Google Trends

166. I also rely on Google Trends search interest for "claude ai" to use as my independent variable in one of my robustness checks as opposed to the traffic to Claude.ai. This allows me to estimate the relationship between search interest in "claude ai" and the search interest in lyrics over time. Figure C.4 illustrates the Google Trends numbers for "claude ai" and it follows a similar pattern to the user traffic to Claude.ai as obtained from Semrush data. For estimation, I impute 0 after the relevant guardrail dates to mute the relationship between Google searches for

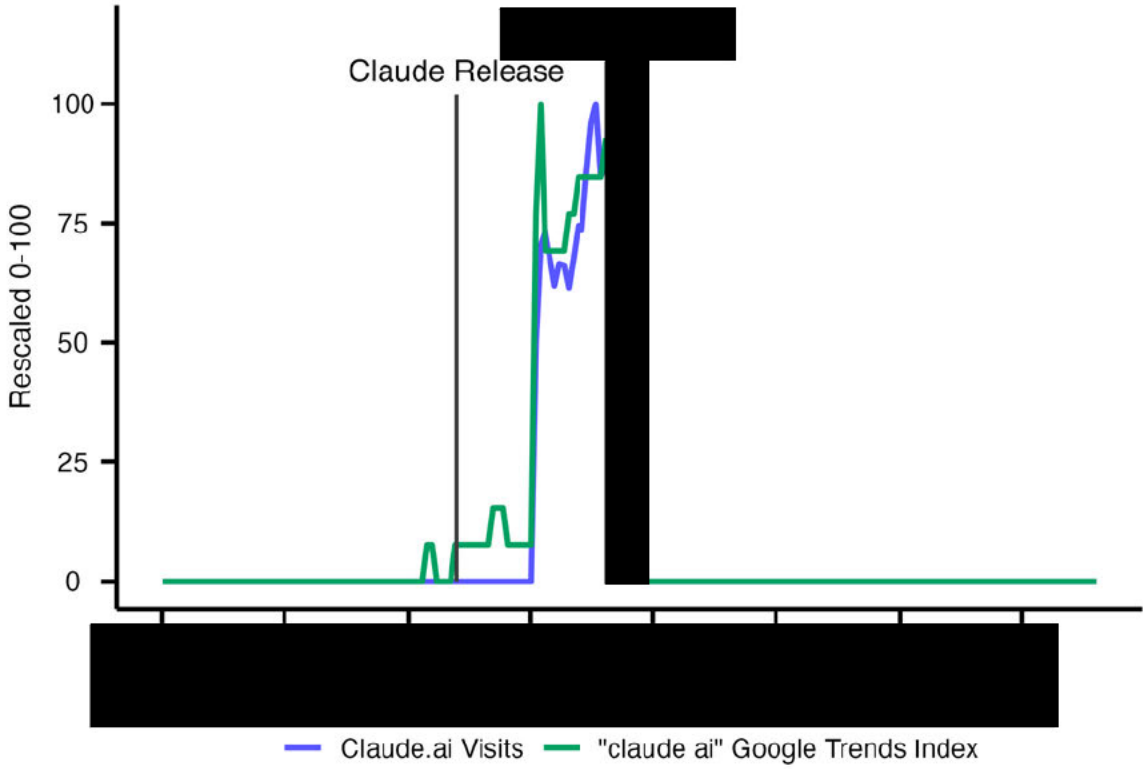
"claude ai"[203] and Google searches for lyrics. The corresponding variable is illustrated in Figure C.5.

Figure C.4: Claude.ai Traffic and "claude ai" Google Search Interest



[203] Since 'claude' is a common name with relevance prior to the inception of Anthropic's LLM named Claude, I used 'claude ai' for the robustness checks.

Figure C.5: Claude.ai Traffic and "claude ai" Google Search Interest With Imputed 0 After [redacted] (Rescaled 0-100)



c) Details on Construction of Lyrics-Focused and Song-Focused Search Parameters

167. To figure out how exactly people tend to search for lyrics versus songs in Google, I rely on the Google Trends' related searches feature, which returns a list of related searches ordered by interest.[204] I obtain this list for each "title" and "title artist" query. I then remove any words within the related query that are in the corresponding query ("title" or "title artist"), and identify which words are most commonly present in the resulting list. The most common remaining words, other than simple articles, are "lyrics" and "song", as shown in Table C.13 below.

[204] "Find related searches," Trends Help, available at https://support.google.com/trends/answer/4355000?hl=en, accessed on 12 Dec 2025 ("When you search for a term in Trends, you see searches related to your term in the related searches sections at the bottom of the page.").

168. In other words, the "related search" feature of Google Trends strongly suggests to me that when people want to search for a musical performance, they search for it based on, for example "tiny dancer song" or "tiny dancer elton john song." By contrast, the "related search" feature implies that when people want to search for lyrics to a song, they use, e.g., "tiny dancer lyrics" or "tiny dancer elton john lyrics."

Table C.13: Most Common Words Among Related Queries to "Title" and "Title Artist" Queries

	"Title" Queries Related Words	"Title Artist" Queries Related Words
	[A]	[B]
[1]	lyrics	lyrics
[2]	the	songs
[3]	to	song
[4]	song	by
[5]	is	meaning
[6]	of	chords
[7]	meaning	the
[8]	what	to
[9]	a	in
[10]	and	you

Sources: ~~List of~~ WIS Chart provided by Counsel; Google Trends data, accessed via SearchAPI

Table provides a list of the most common words present in queries related to the list of [A] "title" and [B] "title artist" queries (without "lyrics" or "song") and is provided by Google Trend's Related Queries feature. For each query, I collect the list of up to 25 related queries, I remove each word in "title" or "title artist", respectively, and tally the count of all words remaining in the list. The top 10 words in each list is presented.

169. Based on these results, I attach the term "lyrics" or the term "song" to each query of the form "title"[205] and "title artist"[206], so that in total I query four variations of queries. This allows me to directly compare the index values for "title lyrics" with "title song" and the index values for "title artist lyrics" with "title artist song".

170. As I discuss in Section III.B.2.c) above, for the "mixed" approach to Google Trends queries,[207] I construct a measure of whether a song is more generic (like "maps") or more unique

[205] The group of songs corresponding to Column B in Table 2 in Section III.B.2.c).
[206] The group of songs corresponding to Column C in Table 2 in Section III.B.2.c).
[207] The group of songs corresponding to Column D in Table 2 in Section III.B.2.c).

(like "tiny dancer"). To do so, I retrieve the Google Trends of the relative index for queries of the form "title" and "title artist"[208] (without including "lyrics" or "song"). For each song, I calculate the index average for each of the two queries across the sample period, then take the difference of this average to produce the song's "index gap".[209] Songs that have a very large index gap are more likely to be songs with generic titles, since the "title" specification will include unrelated topics. On the other hand, songs with a very small gap are more likely to be songs with uniquely recognizable titles, as the exclusion of the artist's name from the queries results in little additional search interest.

171. My goal in constructing the measure of the "index gap" is simply to decide the best approach to finding the appropriate Google Search term query for each song. If the song is more like "Maps," by Maroon 5, I group it with songs that I should handle the same way. For "Maps," I assess how many people searched for it by pulling up Google Search data for queries about "maps maroon 5." Similarly, for songs that are more like "maps," I also enter both title and artist into the Google Search term query (which I refer to as a "title artist" query). If the song is more like "tiny dancer" by Elton John, I group it with songs I handle the same way: I pull up search queries just for "tiny dancer." Similarly, for songs like this, I just enter the song title, which I refer to as a "title" query. To summarize, the result of my index gap analysis is to produce two groups of songs: (1) song titles that should be queried by only "title" and (2) song titles that should be queried by the "title artist" combination.

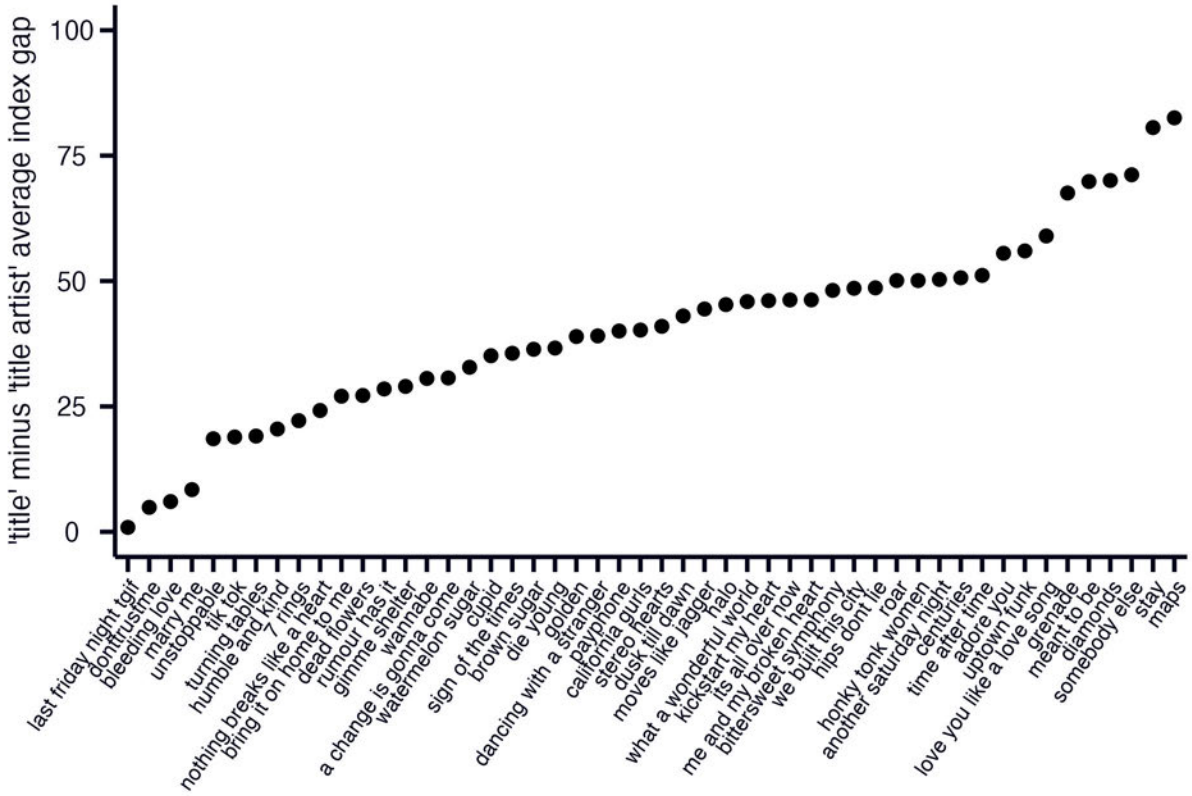
172. Figure C.6 below plots the average gap between queries of the form "title" and queries of the form "title artist" for an illustrative sample of songs[210] from those listed in the complaint, ordered by the size of the gap.

[208] The query term "title artist" corresponds to the song title followed by a space and then followed by the artist of the song. For example, "maps maroon 5."

[209] Specifically, if the relative query index for "title" has an average of 65 over the entire sample period, and the relative query index for "title artist" has an average of 35 of the entire sample period, then the title-artist gap for this song is 30.

[210] The first 50 titles from Exhibit A was chosen for illustrative purposes.

Figure C.6: Index Gap for an Illustrative Sample of Songs



d) Details on Econometric Model

173. My baseline regression model takes the following form:

$$\begin{aligned} Google\ Index_{s,q,t} = \quad & \beta \times 1(Lyrics)_q \times Claude\ Traffic_t \\ & + \alpha \times 1(Lyrics)_q \\ & + \delta \times Claude\ Traffic_t \\ & + song_s + \ monthyear_t + \varepsilon_{s,q,t} \end{aligned}$$

where:

a) $Google\ Index_{s,q,t}$ is the Google trends relative index for song s, query q, at week t.

b) $1(Lyrics)_q$ is an indicator variable that takes on the value 1 if the query q is for "lyrics" and 0 if the query is for "song". Accordingly, the "song" queries correspond to the benchmark to which the "lyrics" queries are compared.

c) $Claude\ Traffic_t$ is the indexed (0 – 100) measure of traffic to Claude in week t, with imputed value of 0 for all weeks after the implementation of guardrails, unless otherwise noted.

d) $song_s$ is a fixed effect for song s

e) $monthyear_t$ is a fixed effect for the month-year

f) $\varepsilon_{s,q,t}$ is the error term capturing all remaining variation in the Google Trend index that is not already captured by the aforementioned variables.

174. In this regression model, the indicator variable $1(Lyrics)_q$ distinguishes "lyrics" queries from "song" queries so that the parameter α represents the average difference in Google Trends index between "lyrics" queries and "song" queries. The variable δ represents the association between visits to Claude and Google Trends indices for the "song" queries. The inclusion of these two variables in my regression model implies that the parameter of interest, β, represents the effect of visits to Claude.ai on the Google Trends index for "lyrics" queries relative to "song" queries.

175. Since songs are likely to have different characteristics, such as initial popularity, producers, genre, etc. I account for such characteristics by including the song fixed effect $song_s$ which captures any time-invariant factors and use month-year fixed effect for time-varying factors.

e) Robustness of Baseline Results

176. In addition to my preferred Mixed (20) specification in Table 2, I estimate two alternate specifications that use other thresholds of the index gap to check the sensitivity of my results to this threshold. Table C.14 provides estimates using the Mixed (10) specification in Column B, where I use an index gap of 10, and the Mixed (30) specification in Column C, where I use an index gap of 30. The results do not show any meaningful difference to my baseline results.

Table C.14: Baseline Model With Alternate Thresholds for Index Gap

		Mixed (10)	Mixed (30)
	[A]	[B]	[C]
[1]	Lyrics x Claude Traffic	0.003	0.004
[2]		0.002	0.002
[3]	Lyrics	3.131***	4.435***
[4]		0.049	0.054
[5]	Claude Traffic	-0.002	-0.008**
[6]		0.003	0.004
[7]	Observations	198,204	198,204
[8]	R Squared	0.197	0.316

Sources: ~~List of~~ WIS Chart provided by Counsel; Google Trends data, accessed via SearchAPI.

Table results are obtained from estimates of my baseline regression model using 498 WIS provided by counsel and include song fixed effects and month-year fixed effects. "Joy to the World" (~~WIS~~ Work-In-Suit 273) is excluded from estimation [redacted] as explained in text. Observations are at the week-WIS level. The sample period is full weeks contained in January 2022 – October 2025. Lyrics is an indicator that equals 1 for lyrics queries and 0 for song queries. Claude Traffic is imputed 0 after [redacted], and rescaled to a range of 0-100. Standard errors are provided in the rows below coefficient estimates. Standard errors are heteroskedasticity-robust and significance stars are reported at the 10% (*), 5% (**) and 1% (***) level.
[B]: Mixed (10) specification includes indices of queries "[title name] lyrics" and "[title name] song" if the Index Gap is 10 or less, otherwise includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song".
[C]: Mixed (30) specification includes indices of queries "[title name] lyrics" and "[title name] song" if the Index Gap is 30 or less, otherwise includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song".

177. To test the robustness of my results to using the [redacted] I estimate my baseline results with imputing 0 for Claude traffic after this date. The results do not show any meaningful difference to my baseline results.

Table C.15: Baseline Model With [redacted]

		Title	Title Artist	Mixed (10)	Mixed (20)	Mixed (30)
	[A]	[B]	[C]	[D]	[E]	[F]
[1]	Lyrics x Claude Traffic	0.012***	0.000	0.002	0.001	0.000
[2]		0.003	0.002	0.002	0.002	0.002
[3]	Lyrics	11.466***	3.121***	3.150***	3.516***	4.465***
[4]		0.069	0.050	0.050	0.052	0.055
[5]	Claude Traffic	-0.009**	-0.001	0.000	0.000	-0.001
[6]		0.004	0.003	0.003	0.003	0.003
[7]	Observations	198,602	198,602	198,602	198,602	198,602
[8]	R Squared	0.595	0.186	0.197	0.244	0.315

Sources: WIS Chart provided by Counsel; Google Trends data, accessed via SearchAPI.

Table results are obtained from estimates of my baseline regression model using 499 WIS provided by counsel and include song fixed effects and month-year fixed effects. Observations are at the week-WIS level. The sample period is full weeks contained in January 2022 – October 2025. Lyrics is an indicator that equals 1 for lyrics queries and 0 for song queries. Claude Traffic is imputed 0 after [redacted] and rescaled to a range of 0-100. Standard errors are provided in the rows below coefficient estimates. Standard errors are heteroskedasticity-robust, and significance stars are reported at the 10% (*), 5% (**) and 1% (***) level.
[B] Title specification includes indices of queries "[title name] lyrics" and "[title name] song".
[C] Title Artist specification includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song"
[D],[E],[F]: Mixed (10), (20), (30) specifications include indices of queries "[title name] lyrics" and "[title name] song" if the Index Gap is 10 or less, 20 or less, 30 or less, otherwise includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song".

178. It is possible that a song's popularity dwindles over time, potentially having a differential impact on search interest for lyrics relative to songs. In the specification in Table C.16 (below) , I test whether my baseline results are robust to the inclusion of controls for the song's age since release. I estimate my baseline model with the inclusion of age fixed effects coded as years since release. The results do not show any meaningful difference to my baseline results.

Table C.16: Baseline Model With Age Fixed Effects

		Title	Title Artist	Mixed (10)	Mixed (20)	Mixed (30)
	[A]	[B]	[C]	[D]	[E]	[F]
[1]	Lyrics x Claude Traffic	0.019***	0.002	0.003	0.003	0.004
[2]		0.003	0.002	0.002	0.002	0.002
[3]	Lyrics	11.438***	3.092***	3.131***	3.500***	4.435***
[4]		0.068	0.049	0.049	0.051	0.054
[5]	Claude Traffic	-0.021***	-0.002	-0.002	-0.006	-0.008**
[6]		0.005	0.003	0.003	0.003	0.004
[7]	Observations	198,204	198,204	198,204	198,204	198,204
[8]	R Squared	0.597	0.190	0.200	0.248	0.319

Sources: ~~List of~~ WIS Chart provided by Counsel; Google Trends data, accessed via SearchAPI; Genius.com data on release years of ~~WIP~~ WIS.

Table results are obtained from estimates of my baseline regression model using 498 WIS provided by counsel, and include song fixed effects, month-year fixed effects, and age fixed effects measured in years since release year. "Joy to the World" (~~WIS~~ Work-In-Suit 273) is excluded from estimation because it was not included in [redacted], as explained in text. Observations are at the week-WIS level. The sample period is full weeks contained in January 2022 – October 2025. Lyrics is an indicator that equals 1 for lyrics queries and 0 for song queries. Claude Traffic is imputed 0 [redacted], and rescaled to a range of 0-100. Standard errors are provided in the rows below coefficient estimates. Standard errors are heteroskedasticity-robust, and significance stars are reported at the 10% (*), 5% (**) and 1% (***) level.
[B] Title specification includes indices of queries "[title name] lyrics" and "[title name] song".
[C] Title Artist specification includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song"
[D],[E],[F]: Mixed (10), (20), (30) specifications include indices of queries "[title name] lyrics" and "[title name] song" if the Index Gap is 10 or less, 20 or less, 30 or less, otherwise includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song".

179. Some of the index series for lyrics or songs either do not return any data or return a time-series with all zero values. When both the "lyrics" query and the "song" are unpopular, then the query will return no data for either of them. However, if Google still samples some search interest for at least one of them, it will produce a time series that ranges from 0 to 100 for that one while the other time series is all zeros. If Google Trends does not pick up any searches for either query, it does not return data.[211,212] Accordingly, in my baseline specifications, I have imputed 0 for all songs for which no data is returned. To test the robustness of my results to this imputation, Table C.17 (below) provides the results to my baseline model with the removal of all songs where

[211] "Troubleshooting," Trends Help, available at "https://support.google.com/trends/answer/9009229?hl=en&utm, accessed on 19 Dec 2025 ("When a search term doesn't have enough total Google Search queries, Trends can't create graphs").

[212] In querying for "title" and "title artist" (to construct the Index Gap), I retrieve data for 494 out of the 499 WIS. In querying for the "Title" specification, I obtain data for 492 out of the 499 WIS. In querying for the "Title Artist" specification, I obtain data for 455 out of the 499 WIS.

either the "lyrics" query or the "song" query is all zeros or songs which do not return any results. The results do not show any meaning difference to my baseline results.

Table C.17 : Baseline Model Dropping Songs With No Data or All 0 Index Values

		Title	Title Artist	Mixed (10)	Mixed (20)	Mixed (30)
	[A]	[B]	[C]	[D]	[E]	[F]
[1]	Lyrics x Claude Traffic	0.022***	0.002	0.005	0.004	0.005
[2]		0.003	0.003	0.003	0.003	0.003
[3]	Lyrics	12.865***	5.085***	4.977***	5.309***	6.475***
[4]		0.076	0.079	0.077	0.077	0.077
[5]	Claude Traffic	-0.024***	-0.003	-0.005	-0.010*	-0.014***
[6]		0.005	0.005	0.005	0.005	0.005
[7]	Observations	173,926	112,236	115,818	121,788	129,350
[8]	R Squared	0.581	0.206	0.215	0.259	0.324
[9]	Song Count	437	282	291	306	325

Sources: WIS Chart provided by Counsel; Google Trends data, accessed via SearchAPI.

Table results are obtained from estimates of my baseline regression model using WIS provided by counsel and include song fixed effects and month-year fixed effects. WIS for which no data is retrieved from Google Trends or for which either the lyrics index or the song index is all zero values are removed, and the remaining count of WIS included in estimation are displayed. "Joy to the World" (Work-In-Suit 273) is excluded from estimation because [redacted], as explained in text. Observations are at the week-WIS level. The sample period is full weeks contained in January 2022 – October 2025. Lyrics is an indicator that equals 1 for lyrics queries and 0 for song queries. Claude Traffic is imputed 0 after [redacted] and rescaled to a range of 0-100. Standard errors are provided in the rows below coefficient estimates. Standard errors are heteroskedasticity-robust, and significance stars are reported at the 10% (*), 5% (**) and 1% (***) level.
[B] Title specification includes indices of queries "[title name] lyrics" and "[title name] song".
[C] Title Artist specification includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song"
[D],[E],[F]: Mixed (10), (20), (30) specifications include indices of queries "[title name] lyrics" and "[title name] song" if the Index Gap is 10 or less, 20 or less, 30 or less, otherwise includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song".

180. In the specification in Table C.18 (below) , I use Google search interest for "claude ai" rather than visits to Claude.ai as the measure of Claude use and estimate my baseline model. The results do not show any meaningful difference to my baseline results.

Table C.18: Baseline Model Using Google Trends Search Interest for "claude ai"

		Title	Title Artist	Mixed (10)	Mixed (20)	Mixed (30)
	[A]	[B]	[C]	[D]	[E]	[F]
[1]	Lyrics x Claude AI Index	0.024***	0.004**	0.005***	0.005**	0.006***
[2]		0.003	0.002	0.002	0.002	0.002
[3]	Lyrics	11.367***	3.072***	3.111***	3.478***	4.408***
[4]		0.069	0.049	0.050	0.052	0.055
[5]	Claude AI Index	-0.016***	-0.002	-0.002	-0.005*	-0.008**
[6]		0.004	0.003	0.003	0.003	0.003
[7]	Observations	198,204	198,204	198,204	198,204	198,204
[8]	R Squared	0.596	0.187	0.197	0.245	0.316

Sources: WIS Chart provided by Counsel; Google Trends data, accessed via SearchAPI.

Table results are obtained from estimates of my baseline regression model using 498 WIS provided by counsel and include song fixed effects and month-year fixed effects. "Joy to the World" (Work-In-Suit 273) is excluded from estimation because [redacted] as explained in text. Observations are at the week-WIS level. The sample period is full weeks contained in January 2022 – October 2025. Lyrics is an indicator that equals 1 for lyrics queries and 0 for song queries. Claude AI Index is the Google Trends index for "claude ai", and is imputed 0 after [redacted], and rescaled to a range of 0-100. Standard errors are provided in the rows below coefficient estimates. Standard errors are heteroskedasticity-robust, and significance stars are reported at the 10% (*), 5% (**) and 1% (***) level.
[B] Title specification includes indices of queries "[title name] lyrics" and "[title name] song".
[C] Title Artist specification includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song"
[D],[E],[F]: Mixed (10), (20), (30) specifications include indices of queries "[title name] lyrics" and "[title name] song" if the Index Gap is 10 or less, 20 or less, 30 or less, otherwise includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song".

181. In the specification in Table C.19 (below) , I use the variation of the title name and artist name as reported in Table C.2. I replace the 9 songs under the baseline variation that is used throughout my analysis with the alternate variations, leaving all other 490 WIS unchanged. The results do not show any meaningful difference to my baseline results.

Table C.19: Baseline Model Using Song Title and Artist Name Variation

		Title	Title Artist	Mixed (10)	Mixed (20)	Mixed (30)
	[A]	[B]	[C]	[D]	[E]	[F]
[1]	Lyrics x Claude Traffic	0.019***	0.003	0.003	0.003	0.004
[2]		0.003	0.002	0.002	0.002	0.002
[3]	Lyrics	11.428***	3.079***	3.116***	3.466***	4.435***
[4]		0.068	0.049	0.049	0.051	0.054
[5]	Claude Traffic	-0.021***	-0.001	-0.002	-0.005	-0.008**
[6]		0.005	0.003	0.003	0.003	0.004
[7]	Observations	198,204	198,204	198,204	198,204	198,204
[8]	R Squared	0.596	0.187	0.197	0.243	0.316

Sources: WIS Chart provided by Counsel; Google Trends data, accessed via SearchAPI~~; Genius.com data on release years of WIP~~.

Table results are obtained from estimates of my baseline regression model using 498 WIS provided by counsel and include song fixed effects and month-year fixed effects. Sample replaces nine WIS Title Name and Artist Name with alternate variations of these works, keeping all other WIS unchanged in the sample. These nine WIS have WIS #'s 91, 131, 183, 221, 287, 343, 441, 454, and 459. "Joy to the World" (Work-In-Suit 273) is excluded from estimation because it was not included in [redacted] as explained in text. Observations are at the week-WIS level. The sample period is full weeks contained in January 2022 – October 2025. Lyrics is an indicator that equals 1 for lyrics queries and 0 for song queries. Claude Traffic is imputed 0 after [redacted] and rescaled to a range of 0-100. Standard errors are provided in the rows below coefficient estimates. Standard errors are heteroskedasticity-robust, and significance stars are reported at the 10% (*), 5% (**) and 1% (***) level.
[B] Title specification includes indices of queries "[title name] lyrics" and "[title name] song".
[C] Title Artist specification includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song"
[D],[E],[F]: Mixed (10), (20), (30) specifications include indices of queries "[title name] lyrics" and "[title name] song" if the Index Gap is 10 or less, 20 or less, 30 or less, otherwise includes indices of queries "[title name] [artist name] lyrics" and "[title name] [artist name] song".

f) Query Decision Points

182. To capture how users are likely to search on Google, I make minor adjustments to the text characters of the listed title and artist name in the WIS Chart in my queries on Google Trends. I implement the following steps:

i. Remove all leading/trailing/extra space characters

ii. Convert all text to lower case characters

iii. Replace any dollar sign '$' with lower case s

iv. Delete the following special characters: ( ) + & , . * ! '

v. Convert all accented characters, such as é, to regular characters, like e.

vi. [Applied only in the artist names column]: Replaced instances of ' featuring ', ' feat ', and ' ft ' with an empty space, thereby removing them.

vii. Remove all leading/trailing/extra space characters

g) Query Construction

183. I construct queries according to the following:

184. To obtain the list of most common words among related queries, I adhere to the following two query forms, made separately:

"[title name]"

"[title name] [artist name]"

185. To obtain the Google search interest for Claude, I adhere to the following query:

"claude ai"

186. To obtain the Index Gap, I adhere to the following query forms, made together, thereby providing relative indices:

"[title name]", "[title name] [artist name]"

187. To obtain the "Title" indices, I adhere to the following query forms, made together, thereby providing relative indices:

"[title name] lyrics", "[title name] song"

188. To obtain the "Title Artist" indices, I adhere to the following query forms, made together, thereby providing relative indices:

"[title name] [artist name] lyrics", "[title name] [artist name] song"