IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA, *et al.*,

                    Plaintiffs,

v.

GOOGLE LLC,

                    Defendant.

Case No. 1:20-cv-03010-APM

HON. AMIT P. MEHTA

████████████████

STATE OF COLORADO, *et al.*,

                    Plaintiffs,

v.

GOOGLE LLC,

                    Defendant.

Case No. 1:20-cv-03715-APM

HON. AMIT P. MEHTA

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PLAINTIFFS' MOTION TO EXCLUDE THE EXPERT TESTIMONY OF EDWARD A. FOX AND MEMORANDUM IN SUPPORT

December 12, 2022 [Corrected December 23, 2022]

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**PLAINTIFFS' MOTION TO EXCLUDE THE EXPERT TESTIMONY
OF EDWARD A. FOX AND MEMORANDUM IN SUPPORT**

Plaintiffs respectfully submit this motion and supporting memorandum to exclude the

entire testimony of Edward A. Fox, whom defendant, Google LLC, intends to have testify

regarding the value of data for general search engines. Prof. Fox's proposed testimony is

inadmissible for three reasons. First, the testimony is wholly based on a made-for-trial

experiment that Prof. Fox did not supervise, conduct, or properly validate. Second, the

experiment at the center of Prof. Fox's opinions lacks reliability because it cannot be reproduced,

and therefore, cannot be tested. Third, Prof. Fox has not demonstrated that the experiment,

performed solely on Google's systems, has any relevance to the value of data for Google's

rivals—the relevant issue in this case. At bottom, Google seeks to have Prof. Fox vouch for an

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experiment that is solely the defendant's work product and which does not test any relevant question. The law makes clear that such testimony is not admissible.

Pursuant to Local Civil Rule 7(m), Plaintiffs conferred with Google's counsel prior to filing this motion. Google's counsel declined to withdraw Prof. Fox's expert testimony.

INTRODUCTION

Plaintiffs' Complaint explains how user data is vital to Google's monopoly maintenance: "Google's anticompetitive practices are especially pernicious because they deny *rivals scale to compete effectively.*"[1] Google, on the other hand, claims that the challenged agreements do not harm competition, and have retained Prof. Fox to bolster that position. Specifically, Google hired Prof. Fox to opine that scale is of little import to general search engine quality and, thus, by depriving its rivals of data, Google does not affect their ability to compete for users and advertisers.

As Google previously informed this Court, the "singular focus"[2] of Prof. Fox's opinions is the 2022 Data Reduction Experiment (or 2022 DRE). Prepared and executed by Google's employees for this litigation, the experiment purports to measure the effects on Google's search quality *if* Google reduced the data that a handful of its ranking components use to predict which results are most relevant. Prof. Fox then generalizes from these narrow results to reach broad conclusions about Google's rivals.

In practice, Google processes *billions* of user queries on a daily basis. Google uses these queries and corresponding user interactions to build search logs. User interactions include—for

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[1] Pls.' Amended Complaint, ¶ 8, Jan. 15, 2021, ECF No. 94 (emphasis added).

[2] Def. Google LLC's Opp'n to DOJ Pls.' Mot. to Extend the Deadline to Respond to the Report of Edward A. Fox, 2, July 14, 2022, ECF No. 369.

example—the queries entered, the links clicked on, the user's location, how long it takes a user

to return to Google, and other behavior such as "swipes" and "hovers." Google uses this data,

among other things, to teach its systems to better understand user queries and serve relevant

results.[3] Put simply, Google uses this data to improve its search quality.[4] The quantity of that

data—Google's *scale*—powers Google's search systems and is the self-identified "source of

Google's magic."[5]

Google's data streams are immense and provide the company a substantial competitive

advantage. Google constantly updates its most important search systems with fresh user data,

which is gathered and stored at tremendous cost. Indeed, some ranking components, when

serving new results, can call on ███████ of queries and corresponding user interactions—the user

data Google has retained from the prior ██ months.[6] In comparison, to gather the same amount of

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[3] *See e.g.*, Google, How Search Works, Ranking Results,
     https://www.google.com/search/howsearchworks/how-search-works/ranking-results/
     ("[Google] *use[s] aggregated and anonymized interaction data to assess whether search
     results are relevant to queries.* [Google] transform[s] that data into signals that help our
     machine-learned systems better estimate relevance.") (last visited Dec. 11, 2022) (emphasis
     added).

[4] "Search quality depends on what users see in real-time after submitting queries" Ex. A,
     Expert Report of Edward A. Fox, App. A, 6, June 3, 2022 (herein "Fox Initial Report").

[5] Ex. B, GOOG-DOJ-30591861, at -872 ("The source of Google's magic is this two-way
     dialogue with users. With every query, we give a little knowledge, and get a little back . . .
     These bits add up. After a ███████████████ times, we start lookin' pretty smart!); *see also*
     Ex. B, GOOG-DOJ-30591861, at -870 ("[M]ost of the knowledge that powers Google, that
     makes it magical, ORIGINATES ██████████████████████) (emphasis in original); *see
     also* Ex. C, GOOG-DOJ-17680293, at -297 ("███████
     ██
     ██.").

[6]*See* Ex. A, Fox Initial Report, App. A, 5–6.

data, Google's closest competitor would require more than a ███████ to accumulate enough user queries.[7]

Contrary to Google's internal documents and practices, Prof. Fox—one of Google's two scale experts[8]—seeks to opine (1) that Google's 2022 Data Reduction Experiment shows that Google would maintain a search-quality advantage over its closest competitor even if Google deployed less data in some of its systems, and therefore, (2) that scale is not a barrier to entry, and (3) that scale is of little value to Google's closest competitor. The "singular focus"[9] of Prof. Fox's opinions, however, is an unreliable, litigation-driven experiment.

The Court should exclude Prof. Fox's opinions because they are not grounded in scientific knowledge or supported by "appropriate validation." *Daubert v. Merrell Dow Pharm.*, 509 U.S. 579, 590 (1993). Specifically, Google's 2022 Data Reduction Experiment is irreparably flawed in three ways. *First*, Prof. Fox did not conduct or validate the experiment; instead, Google engineers designed and carried out the experiment and he simply accepted the results and interpretation, ignoring contradictory results. Prof. Fox's unquestioning dependence on Google engineers, however, does not constitute a scientific methodology under *Daubert* and its progeny. *Second*, Google's 2022 Data Reduction Experiment is unreproducible—a fact acknowledged by both Prof. Fox and Google—and therefore not testable as it must be under *Daubert*. Thus, it is not enough that Prof. Fox places his trust in Google's engineers; he asks the Plaintiffs and the Court to do so as well. *Third*, the results of the 2022 Data Reduction Experiment do not "fit" the

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[7] *See* Ex. D, Rebuttal Expert Report of Douglas Oard, ¶ 105, Aug. 5, 2022.

[8] Plaintiffs have not sought exclusion of Prof. Ophir Frieder, Google's other scale expert, whose opinions overlap with Prof. Fox's without reliance on an unreliable made-for-litigation experiment. Plaintiffs will address the deficiencies in Prof. Frieder's analysis in pre-trial motions and at trial.

[9] Def. Google LLC's Opp'n to DOJ Pls.' Mot. to Extend the Deadline to Respond to the Report of Edward A. Fox, 2, July 14, 2022, ECF No. 369.

relevant issue in this case which is the effects of scale on Google's search rivals. Prof. Fox

proffers opinions about Google's competitors and new entrants which extrapolate—*ipse dixit*—

beyond the experiment's *Google-specific* focus and corresponding results. This analytical gap

violates *Daubert's* requirement that an experiment's results be "scientifically" linked to any

conclusion drawn from it.

Because the 2022 Data Reduction Experiment is flawed and misdirected, Prof. Fox's

conclusions based on the Google experiment are similarly flawed and misdirected, and should be

excluded in their entirety.

FACTUAL BACKGROUND

Prof. Fox offers the opinion that scale is not a barrier to entry or growth for Google's

existing and future competitors. To reach this conclusion, Prof. Fox relies solely on the 2022

Data Reduction Experiment performed entirely on Google's proprietary systems.[10] The

experiment, created for this litigation, purports to compare (i) the quality of Google search

results generated by a version of Google as it existed in March 2022 (the "frozen version"),

against (ii) the quality of Google search results generated by a version of Google with some of its

ranking components trained on a smaller sample of data (the "test version").[11] At a high-level,

Google's ranking components are software models that allow Google to match user queries to

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[10] Def. Google LLC's Opp'n to DOJ Pls.' Mot. to Extend the Deadline to Respond to the Report
    of Edward A. Fox, 2, July 14, 2022, ECF No. 369.

[11] Google created two "test" versions. For the present motion, it is sufficient to consider them as
    a single test version.

relevant results by recognizing patterns in data.[12] Many of Google's ranking components are trained with user data—*i.e.*, user queries and interactions.[13]

For simplicity, the experiment can be described as having five primary steps. *First*, in March 2022, Google set aside a frozen version of the systems Google deploys to serve search results to real users (including its index).[14] This version is "frozen" because Google paused the normal updating process by which its systems are continuously fed new user data or otherwise updated.[15] *Second*, to develop the test version, Google selected six of its many ranking components and reduced the data used to train those components.[16] Google, not Prof. Fox, chose which ranking components to retrain.[17] After the components were chosen, Prof. Fox justified

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[12] In practice and at a high-level the ranking components' output may affect the overall score of a web result is assigned. Higher scoring web results are deemed more relevant than lower scoring results and are more likely to be shown on the Search Engine Results Page (SERP). *See* Ex. A, Fox Initial Report, App. A, 7.

[13] *See e.g.*, Google, How Search Works, Ranking Results, https://www.google.com/search/howsearchworks/how-search-works/ranking-results/ "[Google's ranking components] *use aggregated and anonymized interaction data to assess whether search results are relevant to queries.* We transform that data into signals that help our machine-learned systems better estimate relevance.") (last visited Dec. 11, 2022) (emphasis added).

[14] A search engine's index is a large database of content and information created by the search engine, which it uses to identify responses to a particular query. *See e.g.*, Google, How Search Works, Organizing Information, https://www.google.com/search/howsearchworks/how-search-works/organizing-information/ (last visited Dec. 11, 2022).

[15] The experiment did not compare the live version of Google systems (what is available to the general public) to a version trained with less data. As such, the experiment does not measure the effects of the fresh user data that Google continuously feeds into its system on the quality of Google's search results. Ex. A, Fox Initial Report, App. A, 34.

[16] Beyond this limited use of data, the 2022 DRE did not measure the effects of data Google uses in the rest of its systems. For example, the data Google uses for crawl scheduling, index selection, query entry or meaning (*e.g.*, spelling, synonyms), and much, much more. *See* Ex. E, Rebuttal Expert Report of Douglas Oard, ¶ 116–117, Aug. 19, 2022.

[17] *See* Ex. F (exhibit excerpts the cited portions of the deposition), Fox Dep., 425:10–426:1, Nov. 14–15, 2022. Prof. Fox explained that "impactful" means the effect on the final scoring of a web results. *See* Ex. A, Fox Initial Report, App. A, 8–9.

Google's decision by referring to an internal, after-the-fact Google calculation purporting to show that these six components are the most "impactful" components.[18] *Third*, Google generated results from both the frozen and test versions of Google's search engine. Google used three query sets for this purpose with a total of ▮▮▮ queries.[19] The query sets were sampled from Google's search logs, which contain Google's historical user data.[20] *Fourth*, Google hired raters to judge the quality of results generated by the frozen and test versions.[21] *Finally*, using proprietary systems, Google engineers summarized the raters' judgments (*i.e.*, the experiment's output).[22] According to Google, the 2022 Data Reduction Experiment's output are the bases for Prof. Fox's opinion, and, to the extent disclosed, Prof. Fox listed this output in Appendix A of his initial report.

There is no evidence that Prof. Fox, at any stage of this experiment—before, during, or after—applied his expertise to ensure that he was relying on a scientifically reliable experiment. As an initial matter, there is no evidence that Prof. Fox designed the experiment. For example, Google has produced no evidence that Prof. Fox developed specifications as to how the 2022 Data Reduction Experiment was to be performed. In his report, design choices of consequence

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[18] *See* Ex. F, Fox Dep., 425:10–426:1.

[19] *See* Ex. A, Fox Initial Report, App. A, 4 (explaining that Google used ▮▮ different query sets for this purpose, ▮▮ query sets with ▮▮ queries, and ▮▮ query set with ▮▮ queries).

[20] *See* Ex. A, Fox Initial Report, App. A, 4.

[21] *See* Ex. A, Fox Initial Report, 53. The human raters only evaluated mobile results, which differ from desktop results with respect to results displayed and page layout. *See id.*, App. A, 17.

[22] *See* Ex. A, Fox Initial Report, 53.

were justified by representations from Google engineers which Prof. Fox could not explain during his deposition.[23]

In terms of the experiment's implementation, Prof. Fox did not conduct or supervise the experiment that serves as the "singular focus" for his proffered trial testimony.[24] Instead, Google engineers conducted the 2022 Data Reduction Experiment on Google's internal, proprietary systems—systems to which Prof. Fox has never had access.[25] Prof. Fox was not present when the experiment was conducted, and did not know when the experiment took place.[26] He testified that he did not know which Google engineers conducted the experiment.[27]

Prof. Fox also did not validate the experiment. Nowhere in his reports does Prof. Fox detail scientifically reliable validation procedures. During his deposition, Prof. Fox confirmed this by repeatedly asserting that he had simply trusted the work done by Google engineers. For example, Prof. Fox testified that he "didn't think it was necessary" to check whether the query sets used throughout the experiment had been "cherrypicked."[28] Prof. Fox similarly testified that validation of the code written by Google engineers "was not necessary because the engineers are highly skilled people familiar with this work and have done it before."[29]

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[23] Ex. F, Fox Dep., 354:21–355:19.

[24] Def. Google LLC's Opp'n to DOJ Pls.' Mot. to Extend the Deadline to Respond to the Report of Edward A. Fox, 2, July 14, 2022, ECF No. 369.

[25] *See* Ex. F, Fox Dep., 76:9–21.

[26] *See* Ex. F, Fox Dep., 114:11–115:9 ("So I don't have a very precise timeline of what took place. I remember some dates, for example, March 11th was one date when things were frozen and that was the index that got used in the experiments. I *expect* that the sampling took place around that time and the retraining proceeded around that time." (emphasis added)).

[27] Ex. F, Fox Dep., 44:9–16, 51:3–17.

[28] Ex. F, Fox Dep., 138:7–139:2.

[29] Ex. F, Fox Dep., 109:10–18.

By design, the experiment, and accordingly its results, are Google-specific—*i.e.*, human raters are scoring the quality of responses generated from Google's proprietary systems. The comparison is between Google's system and Google's system with less data.[30] In his reports, however, Prof. Fox extrapolates beyond the results of the Google-specific experiment to opine about the value of scale for Google's current and future rivals. Specifically, Prof. Fox opines: (1) "from the standpoint of search quality, I disagree that access to click-and-query data is a significant barrier to entry;" and (2) "[t]he DRE suggests that ███ is already at a scale where the benefit to search quality of additional click-and-query volume would be small for a search provider with Google's technology."[31]

STANDARD

To be admissible, expert opinions must satisfy Federal Rule of Evidence 702, which provides:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:
>
> (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
> (b) the testimony is based on sufficient facts or data;
> (c) the testimony is the product of reliable principles and methods; and
> (d) the expert has reliably applied the principles and methods to the facts of the case.[32]

Rule 702 imposes upon the Court a special "'gatekeeping' obligation" to prevent the introduction of expert testimony that is irrelevant or unreliable. *See, e.g.*, *Kumho Tire Co. v.*

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[30] Indeed, Prof. Fox caveats his opinions as applying to "a provider with Google's technology." *See* Ex. G, Reply Expert Report of Edward A. Fox, ¶ 7, Oct. 10, 2022 (herein "Fox Reply Report").

[31] Ex. A, Fox Initial Report, 7, 62.

[32] Fed. R. Evid. 702.

Carmichael, 526 U.S. 137, 141 (1999). Specifically, the Supreme Court's decisions in *Daubert*

and *Kumho Tire*, require "judges to determine that scientific testimony," as well as "technical

and other specialized expert testimony" "offered under Federal Rule of Evidence 702 is both

relevant and reliable." *Masters v. Hesston Corp.*, 291 F.3d 985, 991 (7th Cir. 2002); *see also*

Meister v. Med. Eng'g Corp., 267 F.3d 1123, 1126–27 (D.C. Cir. 2001). Additionally, the expert

testimony proffered must meet Rule 702's "fit" requirement; that is, it must be "sufficiently tied

to the facts of the case that it will aid the [trier of fact] in resolving a factual dispute." *Daubert*,

509 U.S. at 591 (citing *United States v. Downing*, 753 F.2d 1224, 1242 (3rd Cir. 1985)).[33]

Finally, Google, as the party proposing to introduce expert opinion testimony, "has the

burden of establishing that the pertinent admissibility requirements are met by a preponderance

of the evidence." Advisory Committee Notes, 2000 Amendments, Fed. R. Evid. 702 (citing

Bourjaily v. United States, 483 U.S. 171 (1987)).[34]

ARGUMENT

I.   Prof. Fox's Opinions Are Not Based On A Reliable Methodology

The Court should exclude Prof. Fox's opinions in their entirety because they are based

solely on an experiment which Prof. Fox did not supervise, conduct, or properly validate. All

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[33] FRE 702 is slated to be amended on December 1, 2023. *See* Comm. on Rules of Prac. of Proc., Agenda Book 892–95 (June 7, 2022), *available at* https://www.uscourts.gov/sites /default/files/2022-06_standing_committee_agenda_book_final.pdf. Specifically, the "Committee unanimously approved a proposal . . . that would amend Rule 702(d) to require the court to find that 'the expert's opinion reflects a reliable application of the principles and methods to the facts of the case.'" *Id.* at 6. The prospective amendments do not affect the analysis here.

[34] The Committee has also unanimously approved a proposal that "would explicitly add the preponderance of the evidence standard to Rule 702(b)-(d)." *Id.* at 7–8. The Committee's comment notes that "incorporating the preponderance standard into the text of Rule 702 was made necessary by the decisions that have failed to apply it to the reliability requirements of Rule 702." *Id.* at 8.

opinions arising from the experiment are unreliable, and therefore, must be excluded under FRE 702 and 703.

"Rule 703 permits experts to rely upon hearsay. The guarantee of trustworthiness is that it be of the kind normally employed by experts in the field." *In re Paoli R.R. Yard Pcb Litig.*, 35 F.3d 717, 748 (3d Cir. 1994) (citations omitted); *see also* Fed. R. Evid. 703 ("If experts in the particular field would *reasonably rely* on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted.") (emphasis added). "[T]he court may not abdicate its independent responsibilities to decide if the bases meet minimum standards of reliability as a condition of admissibility." *Id.* at 747 (quoting *In re "Agent Orange" Prod. Liab. Litig.*, 611 F. Supp. 1223, 1245 (E.D.N.Y. 1985)). As such, it is not enough for an expert to aver that his testimony is based on a type of data on which experts reasonably rely; "it is the judge who makes the determination[.]" *Id.* at 747–748. "[F]or the judge to make the factual determination under Rule 104(a) that an expert is basing his or her opinion on a type of data reasonably relied upon by experts, the judge must conduct an independent evaluation into reasonableness." *Id.* at 748.

Experts may not rely on work done by others if they cannot "demonstrate any basis for concluding that another individual's opinion" is reliable. *TK-7 Corp. v. Estate of Barbouti*, 993 F.2d 722, 732 (10th Cir. 1993).[35] "[T]he standard is equivalent to Rule 702's reliability

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[35] *See also Therasense, Inc. v. Becton, Dickinson & Co.*, No. C 04-02123, 2008 U.S. Dist. LEXIS 124780, at *13 (N.D. Cal. May 22, 2008) (excluding expert opinion based on a "client-prepared litigation-driven experiment"); *Dura Auto. Sys. of Ind., Inc. v. CTS Corp.*, 285 F.3d 609, 614 (7th Cir. 2002) (affirming exclusion of testimony and explaining that "responsible science" does not allow even a "well credentialed" scientist to serve as "the mouthpiece" for work done by others); *Clark v. Takata Corp.*, 192 F.3d 750, 759 n.5 (7th Cir. 1999) ("A supremely qualified expert cannot waltz into the courtroom and render opinions unless those opinions are based upon some recognized scientific method and are reliable and relevant.").

requirement—there must be good grounds on which to find the data reliable." *In re Paoli R.R. Yard Pcb Litig.*, 35 F.3d 717, 748 (3d Cir. 1994). Under FRE 703, "the expert must form his own opinions by applying his extensive experience and a reliable methodology to the inadmissible materials." *United States v. Mejia*, 545 F.3d 179, 197 (2d Cir. 2008) (quoting *United States v. Dukagjini*, 326 F.3d 45, 58–59 (2d Cir. 2002)) (internal citations omitted). "When an expert is no longer applying his extensive experience and a reliable methodology, *Daubert* teaches that the testimony should be excluded." *Dukagjini*, 326 F.3d at 58.

Here, Google cannot meet its burden of establishing that Prof. Fox's opinions are proper expert testimony under FRE 702 and 703, and *Daubert*. Prof. Fox testified that he did not participate in, observe, supervise, or properly validate the experiment that forms the basis of his opinion. Instead of applying his expertise and "scientific knowledge," Prof. Fox simply entrusted the whole project to Google engineers whose work, judgment, and word he accepted without question.

A.   Before: The 2022 DRE Design

Other than his bald assertion, there is no evidence that Prof. Fox designed the 2022 DRE. Google has produced no evidence that Prof. Fox developed specifications as to how the 2022 DRE was to be performed. When asked at deposition whether he developed specifications for the experiment *before* it was executed, Prof. Fox refused to answer on advice of counsel. *See* Ex. F, Fox Dep., 181:11–183:17. In fact, there is no evidence that Google engineers conducted the 2022 DRE pursuant to *any* formal specifications, let alone specifications from Prof. Fox. Instead, Prof. Fox testified that Google's engineers exerted great discretion as to how to implement the 2022 DRE, and that Prof. Fox did not question these choices. *See, e.g.*, Ex. F, Fox Dep., 355:4–

19 ("I didn't think it was necessary to go into detail as far as exactly what's happening. It made sense what they explained").

Nor does Prof. Fox identify any materials he could have relied on to design or "direct" the experiment—*i.e.*, any materials that detail the mechanics of Google's search system, retraining components, or human rater experiments. If he relied on conversations with Google engineers, he does not cite them—the three interviews cited in his report all occurred *after* the experiment was conducted.[36]

Indeed, even when the experiment's design skewed the results, Prof. Fox did not question or challenge choices made by Google's engineers. For example, the experiment produced materially different results when the frozen version used as the benchmark was replaced with the "live" version of Google (the "real" version of Google used to serve users). Prof. Fox dismissed those results out of hand based solely on representations from Google engineers that the difference was an "artifact of running this type of experiment."[37] During his deposition, Prof. Fox confirmed his failure to examine the effects of this design choice:

> I had an explanation from the Google engineers of the fact that the change from production [the "live" version] to hundred percent [the "frozen" version] is a standard thing that occurs in their different methods, and there are studies that whenever they do a study of the kind of the 2022 DRE they have this same behavior. *I didn't think it was necessary to go into detail as far as exactly what's happening. It made sense what they explained.*

Ex. F, Fox Dep., 354:21–355:19 (emphasis added). That is, instead of applying his scientific knowledge to the effect of this design choice on the experimental results to determine "exactly

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[36] *See e.g.*, Ex. A, Fox Initial Report, 31 (citing a June 1, 2022 interview with Eric Lehman); Ex. G, Fox Reply Report, 27, 74–75 (citing an October 6, 2022 interview with Paul Haahr and October 7, 2022 interview with Eric Lehman).

[37] Ex. A, Fox Initial Report, App. A, 34.

what's happening," Prof. Fox ignored contradictory evidence based on nothing more than an interested party's say-so.

> **B.   During: The 2022 DRE's Implementation**

Professor Fox failed to supervise the 2022 Data Reduction Experiment. Before and during the 2022 Data Reduction Experiment, Prof. Fox was not permitted to access the Google systems upon which the 2022 DRE was run. Indeed, Prof. Fox has never had access to the systems. He explained, "I did not connect to Google's computer systems directly for this process." Ex. F, Fox Dep., 76:9–21; *see also* Ex. F, Fox Dep., 58:2–4 ("Q. Before your assignment on this case had you ever done a DRE on a Google system? A. No."). Put simply, Prof. Fox's only access to Google's search systems was as a member of the general public.[38]

Further, Prof. Fox was not present when the experiment was conducted; indeed, he did not know when it was conducted.[39] Moreover, Prof. Fox was disinterested regarding the work done on the 2022 DRE. He explained, "I don't know exactly who did which piece of this." Ex. F, Fox Dep., 44:9–46:6; *see* also Ex. F, Fox Dep. at 50:1–51:17 ("[W]ho exactly did which piece of things is not something that was shared with me in detail."); Ex. F, Fox Dep. at 83:17–85:20 ("[W]ho worked on what is not clear from the documentation that I have seen."). More generally, there is no evidence that Prof. Fox is familiar enough with Google's system that—even if he was provided access—he would have had the ability to meaningfully supervise the 2022 DRE.[40]

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[38] *See* Ex. F, Fox Dep., 76:9–14 ("Q. Did you have direct access to Google's systems at any time during the 2022 DRE? A. I do searches with the Google systems on a regular basis.").

[39] *See* Ex. F, Fox Dep., 114:11–115:9 ("So I don't have a very precise timeline of what took place. I remember some dates, for example, March 11th was one date when things were frozen and that was the index that got used in the experiments. I *expect* that the sampling took place around that time and the retraining proceeded around that time.") (emphasis added).

[40] When asked about his familiarity with Google's systems beyond his litigation work, Prof. Fox averred that he has visited Google Plex for "professional events" and that there is a former

Accordingly, this was not Prof. Fox's experiment—it was Google's experiment, created by Google for litigation, and provided to Prof. Fox for use in his expert report. Allowing a litigant full control over an expert's experiment raises significant concerns regarding the experiment's reliability. Prof. Fox, however, made no effort to ensure the 2022 DRE was performed to produce reliable results.

C.   After: Lack Of Validation

After Google's employees completed the 2022 Data Reduction Experiment, Prof. Fox failed to validate the experiment. Accordingly, his report can provide no support that the 2022 DRE was performed in a scientifically reliable manner. Nowhere in his reports does Prof. Fox detail a scientifically acceptable effort to validate the 2022 DRE. When questioned about his lack of validation, Prof. Fox explained that he had trusted Google engineers to carry out the experiment for him and/or that he didn't think validation was necessary. *See e.g.*, Ex. F, Fox Dep., 117:2–15.

For example, Prof. Fox failed to validate Google's calculation of search quality scores, which were the key output from the experiment upon which he based his opinions.[41] Prof. Fox did not even check for simple errors in search quality calculations: "Q. You didn't do a random sample [or] testing to see if Google's ▇▇▇▇▇ numbers [search quality scores] were calculated properly? A. I didn't think this was necessary and I didn't hear anything from [Plaintiffs' scale expert] that he had done anything like that either." Ex. F, Fox Dep., 195:5–10.

Virginia Tech graduate who worked with one of Prof. Fox's colleagues that now works on Google Scholar with whom he has had discussions and interactions. Ex. F, Fox Dep., 60:13–61:7.

Further, Prof. Fox did not in any way validate how the six ranking components at the center of the experiment were retrained with less data.

> Q. Okay.· You didn't have access to the system so that you could go in and actually look and see how much data was being fed to the different components; is that correct?
>
> A. Just as in many other studies that have been published with a proprietary system and proprietary datasets, there was no detail about the particular details inside the operations at Google.
>
> Q. Google did not provide you detail about the particular details inside the operations at Google -- because it was proprietary?
>
> . . .
>
> A. So Google has proprietary systems. I have access to a large set of documents about those proprietary systems. The behavior of the staff and running experiments is an internal aspect of what went on in this experiment that follows repeated other similar studies done by Google's engineers in the ordinary course of their work. I have no reason to believe that there was anything unusual with regard to this.

Ex. F, Fox Dep., 117:16–118:17 (objections omitted).

Prof. Fox's reliance on Google's experience and "repeated other similar studies", however, was apparently misplaced. There is no evidence that Google conducts similar experiments in the ordinary course. Certainly, Prof. Fox could not identify such an experiment. Moreover, Distinguished Google Engineer Eric Lehman (████████████████████ ████████████ Prof. Fox identified as working on the experiment) who has worked on Google's ranking systems for over 15 years, was completely unaware of such experiments.

> Q. Has Google – has Google ever tried to conduct an experiment where its -- limits its share or its -- its sort of use of search logs to be equivalent to the share of -- of a search competitor and see what happens to its top-line metrics?
>
> A. I'm not aware of such experiment.

Ex. J (exhibit excerpts the cited portions of the deposition), Lehman Dep, 187:7–13, Apr. 21, 2022. Similarly, when asked if he was aware of "any experiment that Google has run that decreased the amount of click and query data to ████ market share and then tests

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that effect on Google's main ranking algorithm," Google's Senior Vice President of

Search, Prabhakar Raghavan testified that he was unaware of any such experiment.[42]

Google's designated Scale 30(b)(6) witness provided similar testimony, testifying that

there have been no data reduction experiments at Google regarding ▉▉▉▉▉ (one of the

six components retrained in the 2022 DRE) beyond a limited experiment conducted in

2017,[43] upon which Prof. Fox does not rely for his opinions.[44]

        Thus, Prof. Fox's decision not to validate the results from the 2022 DRE leaves

the experiment without any support regarding the reliability of its results. Certainly,

Prof. Fox's reliance on Google's experience with data reduction experiments collides

with Prof. Fox's own testimony that it was Google's failure to conduct similar testing in

the ordinary course that necessitated the 2022 DRE in the first place.[45]

D.   Failure to Review Inputs To The Experiment

        Prof. Fox failed to review the query sets that were used as input for the 2022 DRE.

        An important step in the 2022 DRE was the selection of the query set used for the project.

As Prof. Fox acknowledged, the selection of the query set could affect the results. He explained

that "[w]hen you have a set of queries and you're running an experiment, if the query set is

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[42] Ex. I (exhibit excerpts the cited portions of the deposition), Raghavan Dep., 791:7–19, Oct. 28, 2022.

[43] Ex. H (exhibit excerpts the cited portions of the deposition), Google (Nayak) 30(b)(6) Dep., 91:8–14, Apr. 7, 2022 ("Q. And aside from the 2017 experiment looking at ▉▉ months versus ▉▉ months, have there been any other experiments that have been run on changes to the size of the memory in ▉▉▉▉▉? A. We have not been doing much there, I have to admit….").

[44] Ltr. from F. Rubinstein, Partner, Wilson Sonsini, 2, July 25, 2022, ECF No. 376-4 ("Professor Fox's opinions also do not rely upon the results of the ▉▉▉▉▉ and ▉▉▉▉▉▉▉ experiments that were conducted by Google in the ordinary course of business and cited in sections 5.1.1 and 5.1.2 of Professor Fox's report.").

[45] *See* Ex. F, Fox Dep, 281:1–7 ("I'm not aware of documents that looked at five or six components, which is why I wanted to run this experiment and find the results from it.").

slightly different, then you can get different results." Ex. F, Fox Dep., 136:5–18. Nevertheless,

when asked how he was able to verify that Google engineers had not "cherry-picked" the

experiment's query sets, Prof. Fox testified that he "didn't think it was necessary." Ex. F, Fox

Dep., 138:17–139:2. Prof. Fox sought to justify this failure by stating that "the risk to Google of

doing nefarious things to me would be not worthwhile and not necessary to play that risk." Ex. F,

Fox Dep., 138:7–139:2.

Prof. Fox's reliance on the 2022 DRE was, thus, a faith-based exercise not countenanced

by *Daubert*.

It is particularly problematic that Prof. Fox chose to rely on an experiment implemented

entirely by a litigant in this case for the sole purpose of using it in this litigation. Under Rule 703,

if the sole basis for an expert opinion is an unreliable "client-prepared litigation-driven

experiment," the expert's opinion is improper and excludable because "no professional should

reasonably rely on such a rigged and biased source of information for any materially important

fact to his or her opinion[.]" *Therasense*, 2008 U.S. Dist. LEXIS 124780 at *16. Indeed, "[o]ne

of the worst abuses in civil litigation is the attempted spoon-feeding of client-prepared and

lawyer-orchestrated 'facts' to a hired expert who then 'relies' on the information to express an

opinion." *Therasense*, 2008 U.S. Dist. LEXIS 124780 at *13.

The record is clear. Prof. Fox has not "demonstrate[d] any basis for concluding" the work

done by Google engineers is "reliable" as required by *Daubert*. Unquestioning reliance on an

interested party's potentially self-serving experiment does not constitute a "reliable

methodology" within the meaning of *Daubert* and the Federal Rules of Evidence. *See*

Therasense, 2008 U.S. Dist. LEXIS 124780 at *16 (holding that "any opinion based on such

untested and partisan foundation is not based on sufficient facts and data within the meaning of

Rule 702").

Because of Prof. Fox's arms-length approach to the 2022 DRE, the Court should exclude

the experiment and any opinions based upon it.[46]

II.   Prof. Fox's Opinions Are Based On An Unreliable Experiment Conducted On Inaccessible, Proprietary Systems That Cannot Be Reproduced, Validated, Or Tested

The Court should exclude Prof. Fox's opinions because their "singular focus"[47] is an

experiment that cannot be reproduced or tested by Plaintiffs for accuracy.

A.   *Daubert* Requires Testability

Daubert requires that testifying experts apply a "scientific methodology," which involves

"generating hypotheses and testing them to see if they can be falsified." *Daubert*, 509 U.S. at 593

(internal citations omitted). For this reason, when a party proffers an experiment at trial, *Daubert*

requires that "[s]omeone else using the same data and methods must be able to replicate the

[expert's] result." *Zenith Elecs. Corp. v. WH-TV Broad. Corp.*, 395 F.3d 416, 419 (7th Cir.

2005).[48] And because the party proffering an expert bears the burden of demonstrating reliability,

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[46] *See e.g.*, *In re Zantac (Ranitidine) Prods. Liab. Litig.*, No. 20-2924, 2022 U.S. Dist. LEXIS 220327, at *281–82 (S.D. Fla. Dec. 6, 2022) (excluding expert testimony where, among other things, "Emery Pharma's analysts designed the tests, selected and validated the testing methods, conducted the testing, and then used their professional judgment to make manual adjustments to the data to reach results that they, in their discretion, deemed acceptable. . . . [The expert] is serving as a conduit for the opinions of the laboratory's analysts, who have not been disclosed as general causation expert witnesses in this litigation").

[47] Def. Google LLC's Opp'n to DOJ Pls.' Mot. to Extend the Deadline to Respond to the Report of Edward A. Fox, 2, July 14, 2022, ECF No. 369.

[48] Prof. Fox's own writings on reproducibility reach a similar conclusion, stating that "reproducibility can be defined as *the ability for a researcher to duplicate the result of a prior study using the same materials as were used by the original investigators*." Lamia Salsabil, *et al*, *A Study of Computational Reproducibility using URLs Linking to Open Access Datasets and Software*, WWW '22: Companion Proceedings of the Web Conference 2022, 784–788

that party must preserve and produce the necessary materials for the opposing party to replicate

and test the expert's conclusions. *See Jackson v. Colgate-Palmolive Co.*, No. 15-01066, 2019

U.S. Dist. LEXIS 131298, at *19 (D.D.C. Aug. 6, 2019) (Expert's "testing results are not

reproducible and must therefore be excluded as unreliable.").[49]

     A party unable to replicate or test an opposing expert's methodologies or conclusions

suffers real prejudice. The testability requirement "assures the opponent of proffered [expert]

evidence the possibility of meaningful cross-examination (should he or someone else undertake

the testing)." *United States v. Mitchell*, 365 F.3d 215, 238 (3d Cir. 2004). Put differently, an

expert presenting an analysis that cannot be replicated deprives the factfinder of the cross-

examination necessary for a full assessment, including testimony on any potential weaknesses in

the expert's methodology or in how she implemented that methodology. *See State v. Pickett*, 466

N.J. Super. 270, 277–78, 246 A.3d 279, 283 (Super. Ct. App. Div. 2021) (Defendants' lack of

access to proprietary software renders judge "unable to reach an informed reliability

determination at the *Frye* hearing."). Courts have emphasized the importance of reproducibility

for predictive simulations like the 2022 DRE, describing the myriad factors that can affect the

reliability of such simulations. *See, e.g.*, *Lorraine v. Markel Am. Ins. Co.*, 241 F.R.D. 534, 560

(D. Md. 2007) (identifying eight testable factors informing the reliability of computer

simulations).

(Aug. 16, 2022) *available at* https://dl.acm.org/doi/10.1145/3487553.3524658 (emphasis in original).

[49] *Jackson* relied on *Hanson v. Colgate-Palmolive Co.*, 353 F. Supp. 3d 1273, 1284 (S.D. Ga. 2018) and *United States v. Hebshie*, 754 F. Supp. 2d 89, 125 (D. Mass. 2010) ("Documentation is necessary to test a hypothesis; in fact, reproducibility is the *sine qua non* of 'science.'").

Thus, reproducibility and testability are at the center of ensuring the reliability of experiments like the 2022 DRE.

B.   Google Devised An Experiment That Could Not Be Tested Or Duplicated

Plaintiffs have no way to test the validity of Google's 2022 DRE; indeed no one outside of Google could. This alone is sufficient grounds for excluding the experiment. *See United States v. Bynum*, 3 F.3d 769, 773 (4th Cir. 1993) ("An opinion that defies testing, however defensible or deeply held, is not scientific."); *Dueker v. Csrt Expedited*, No. 18-08751, 2020 U.S. Dist. LEXIS 231233, at *13 (C.D. Cal. Dec. 7, 2020) (excluding expert whose "computer code did not function when using [expert's] own database").

To perform the 2022 DRE, Google engineers used Google's proprietary systems from start to finish. *See e.g.*, Ex. A, Fox Initial Report, App. A, 4, 17. Access to Google's proprietary systems would be necessary at each step to replicate the experiment. *Daubert* entitles Plaintiffs to the materials necessary to replicate the 2022 DRE, and this Court's Case Management Order (CMO) requires production of all code or data necessary to recreate the 2022 DRE. *See* Am. Scheduling and Case Management Order, ¶ 24(e), Feb. 3, 2021, ECF No. 108-1. This includes not just the input and output data, but also access to the proprietary systems on which the experiment was run.[50]

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[50]   As Plaintiffs' scale expert Prof. Douglas Oard testified, "Google engineers created a snapshot of Google's actual system, and to replicate the experiments that the Google engineers conducted I would need access to that snapshot. Not necessarily the ability to operate it myself, but the ability to–as Professor Fox has said, to direct an experiment and that would include the ability to ask for additional details in specific cases where I wanted to do analysis myself." Ex. K (exhibit excerpts the cited portions of the deposition), Oard Dep., 293:9–295:11, Oct. 25, 2022; *see also Trubridge v. Tyrone Hosp.*, No. 18-0141-CG-C, 2020 U.S. Dist. LEXIS 104498, at *19–20 (S.D. Ala. Apr. 24, 2020) ("However, regardless of the correctness of the numbers inserted into the formula, the formula must still be reliable. . . . [T]he 'math' to which Tyrone refers is unknown. Nowhere in Thiry's report, supplemental report, or testimony does Thiry provide the formula used or any explanation as to how it was

Google's counsel confirmed Google has not and will not comply. When Google failed to produce the necessary backup materials after serving Prof. Fox's report, Plaintiffs demanded Google comply with *Daubert* and the CMO by producing them. In response, Google's counsel stated that the experiment relies on content that "constitutes ██████████████ and there is no existing tool to export it" and "it would require Google's proprietary infrastructure in order to run and so would not be usable by DOJ Plaintiffs[.]"[51] Thus, Google chose to devise an experiment that is beyond testability.

Although Google did belatedly produce some data and code purportedly on behalf of Prof. Fox, those materials are insufficient to satisfy *Daubert*. None of what Google produced allows Plaintiffs to recreate the 2022 DRE, and Google has never claimed otherwise. First, as predicted by Google's counsel, much of the code provided by Google either cannot be run outside of Google's systems or produces different results than those reported by Prof. Fox. [52] These materials are, thus, useless to Plaintiffs for purposes of testing the 2022 Data Reduction Experiment's reliability. Second, most of the data and code Google produced consists of the experiment's output (results) data. This data cannot be used to test the 2022 DRE's validity—at best, it can be used to check that the experiment's output was properly summarized in Prof. Fox's report. Thus, for example, Plaintiffs cannot test how the experiment would have performed if different query sets were selected.

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derived."); *Korsing v. United States*, No. 16-22190-CIV, 2017 U.S. Dist. LEXIS 231046, at *23–24 (S.D. Fla. Aug. 16, 2017) (excluding expert failing to "explain what the formula is and why it should be trusted").

[51] Ex. L, Email from Stuart B. Baimel, Associate, Wilson Sonsini, (June 28, 2022, 9:15 PM EST).

[52] Ex. L, Email from Stuart B. Baimel, Associate, Wilson Sonsini, (June 28, 2022, 9:15 PM EST).

Indeed, both Google and Prof. Fox acknowledge that the 2022 Data Reduction

Experiment cannot be externally reproduced or accessed by Plaintiffs. During his deposition,

Prof. Fox confirmed that, to rerun the experiment, Plaintiffs would need to have "the authority to

put someone in a position like me and have the experiment run by Google under the direction of

the Department of Justice." Ex. F, Fox Dep., 140:1–14. Prof. Fox went on to state that those

items were not provided along with his back-up materials because they constitute "a whole

ecosystem or environment. . . . You can't provide materials, you know, of computer systems and

hardware and so on." Ex. F, Fox Dep., 143:7–14.

Because neither Plaintiffs nor anyone outside of Google—including apparently Prof. Fox

himself—are able to reproduce and test Google's 2022 Data Reduction Experiment, the Court

should exclude the experiment and Prof. Fox's opinions based on it. *See, e.g.*, *In re Ondova Ltd.*,

No. 09-34784, 2012 WL 5879147, at *10 (Bankr. N.D. Tex. Nov. 21, 2012) ("After a Daubert-

objection was lodged by the Receiver's counsel, the court did not let [the expert] testify as to his

opinion on the value of the Domain Names, because he could not share the methodology he

used—it is proprietary information of Sedo, LLC."); *In re Dicamba Herbicides Litig.*, No. 2820,

2019 U.S. Dist. LEXIS 206589, at *27 (E.D. Mo. Nov. 27, 2019) (excluding expert whose

"results cannot be replicated using the R software [expert] used").

Google's design of an unreproducible experiment, moreover, was not the end of Google's

efforts to shield their work. Prof. Fox explicitly testified that the 2022 DRE lacks the rigor (both

in performance and documentation) that he applies to his professional work: "If I was publishing

an article in Nature about this study, then I probably would have done more things, but that

wasn't the context of the study." Ex. F, Fox Dep., 98:13–16; *see also Kumho Tire*, 526 U.S. at

152 (expert must employ the "same level of intellectual rigor that characterizes the practice of an

expert in the relevant field"). Prof. Fox also admitted his report failed to cite interviews[53] and

documents[54] he relied upon to support specific points concerning the 2022 DRE. Prof. Fox first

justified this failure by claiming full disclosure "wasn't feasible" and that he "didn't think it was

necessary,"[55] later testifying that his dearth of citations reflected instructions from Google's

counsel. *See e.g.*, Ex. F, Fox Dep. 359:20–360:9 ("That was not the style that I was told that the

judge would want in this report."). Notably, as with the experiment itself, Prof. Fox admitted he

failed to apply the same rigor to his report's citations as that which he applies in his professional

academic work: "When I do normal reporting I tend to be very thorough and in my proposals and

papers and so forth and I often get chastised by editors for putting too many references into

things. I was advised that that was probably not appropriate in this case." Ex. F, Fox Dep.,

356:15–357:5. Thus, Prof. Fox left out 100 additional citations of explanation he would have

normally have included.[56] This dearth of supporting citations in Prof. Fox's reports further

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[53] *E.g.*, Ex. F, Fox Dep., 357:6–18 ("Q. But you're relying on the interview from Google engineers for the proposition that it's normal for this type of change to occur between the hundred percent sample and the current production? . . . . A. I did ask and there is a discussion in the latter section of the appendix about this whole thing. . . . Q. But you don't cite an interview for any of those statements? A. I do not.").

[54] *E.g.*, Ex. F, Fox Dep., 359:1–360:9 ("THE WITNESS: The next clause of the sentence, 'Where ranking feature changes are frequently being experimented with and rolled out,' that's also common knowledge from the documents that describe Google's changes of systems and the number of changes that take place each year. So that's a general comment about something that's well documented. Q. So you said that's common knowledge from documents. You don't cite any documents here, correct? A. This report and the appendix cite lots of different documents. I don't specifically pick out a particular document that points out how many changes are being made.").

[55] *E.g.*, Ex. F, Fox Dep., 356:15–357:5 ("Q. You don't cite to those interviews in your Appendix A, correct? A: It wasn't feasible for me to go through line by line in this appendix and put down who said what. The purpose of the report was to document at a fairly careful level, and I didn't think it was necessary to have 50 more footnotes in this particular part of the document.").

[56] *E.g.*, Ex. F, Fox Dep., 359:20–360:13 ("So as I said a few minutes ago, this document could have had another hundred footnotes. That was not the style that I was told that the judge

complicated Plaintiffs' efforts at review; looking for footnotes and citations to understand how the 2022 DRE was performed and tested, the Plaintiffs found only more gamesmanship from Google.

Because the 2022 DRE was not reproducible or testable, Prof. Fox's opinions based on the experiment should be excluded in their entirety.

III.   Prof. Fox's Opinions Impermissibly Extrapolate Beyond The Experimental Results

The Court should exclude Prof. Fox's testimony regarding the effects of scale on Google's rivals because he failed to establish how he could reliably extrapolate between the results of Google's 2022 DRE and his opinions, thus failing the *Daubert's* "fit" requirement.

"Rule 702's 'helpfulness' standard requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility." *Daubert*, 509 U.S. at 591–92. "For example, in order for animal studies to be admissible to prove causation in humans, there must be good grounds to extrapolate from animals to humans, just as the methodology of the studies must constitute good grounds to reach conclusions about the animals themselves." *Paoli*, 35 F.3d at 743. "Thus, the requirement of reliability, or 'good grounds,' extends to each step in an expert's analysis all the way through the step that connects the work of the expert to the particular case." *Id.* Where an expert opinion "is connected to existing data only by the *ipse dixit*[,]" "[a] court may conclude that there is simply too great an analytical gap between the data and the opinion proffered." *GE v. Joiner*, 522 U.S. 136, 146 (1997).

Plaintiffs' Complaint explains the relevance of scale to the case: "Google's anticompetitive practices are especially pernicious because they deny *rivals* scale to compete

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would want in this report. So I did not do that level of documentation of every single phrase of every single statement. Q. Okay. And who told you that that was not what the judge would want? A. Counsel. I was told that the judge wanted to be able to read my report").

effectively." Compl., ¶ 8 (emphasis added). By design, the 2022 DRE can only yield results

specific to Google. The experiment was run using *Google's* data on *Google's* search systems

which have been designed for and trained on *Google's* data for years; the experiment purports to

assess the effects on *Google's* search results of reducing user data used to train a handful of

Google's ranking components. Put simply, the experiment was admittedly designed to measure

the effects of scale *on Google*.

     Thus, regardless of the experiment's scientific validity, its results have no bearing on the

effects of scale on Google's rivals or new entrants to the market. As Prof. Fox notes:

> [Plaintiffs' scale expert] somewhat more generally opines that an
> experiment reducing Google's data usage 'reveals nothing about what some
> other search engine with less access to user-side data would be able to do.'
> *That is, in some sense, a truism.* No two search engine companies are the
> same, in part because they employ different people with different strategic
> visions, different talents, and different priorities.

Ex. G, Fox Reply Report, ¶ 104 (emphasis added). Prof. Fox further acknowledged, during his

deposition, that "one would be remiss to believe that every architecture and every

implementation needs exactly the same amount of data." Ex. F, Fox Dep., 202:12–203:13.

     Having conceded that "no two search engine companies are the same," Ex. G, Fox Reply

Report, ¶ 104, Prof. Fox fails to establish any reliable means by which he can extrapolate beyond

the 2022 DRE's Google-specific results. None can be found in his reports. Indeed, during his

deposition, Prof. Fox admitted that he was "specifically focused on Google" and never examined

the systems of Google's rivals (including ████) or new entrants. Ex. F, Fox Dep., 78:13–79:10

("I had no access to ████ or these other systems that I could run an experiment, . . . I had no

evidence of that and I had no access."). Prof. Fox further conceded that he did not attempt to

draw a direct comparison of Google's systems to those of other general search engines. *See*

Ex. F, Fox Dep., 78:1–7 ("So a direct comparison would require some kind of measure of search quality of these other organizations. I did not have access to that data.").

As such, Prof. Fox has impermissibly relied on an experiment that purports to test the effects of scale on Google's systems to reach conclusions about the effects of scale on the systems of Google's rivals. Specifically, in his initial report, based on the 2022 DRE, Prof. Fox opines:

1) "[F]rom the standpoint of search quality, I disagree that access to click-and-query data is a significant barrier to entry;" and

2) "The DRE suggests that ███████ is already at a scale where the benefit to search quality of additional click-and-query volume would be small for a search provider with Google's technology."

Ex. A, Fox Initial Report, 7, 62.[57]

Prof. Fox's opinion about scale as a barrier to entry is particularly illustrative. Aside from the single conclusory sentence, Prof. Fox did not discuss new entrants in his initial report or explain how Google's 2022 DRE could lead to conclusions about new entrants. In his reply report and during his deposition, Prof. Fox confirmed that he was not using the 2022 DRE to support his new entrant analysis, but rather was relying on a third-party statement. Ex. F, Fox Dep., 232:9–18.

Because Prof. Fox offers no evidence that any results from the 2022 DRE "can be linked through scientifically reliable means to" his opinions about Google's rivals and new search entrants, those opinions must be excluded under *Daubert*. *Grimes v. Hoffmann-LaRoche, Inc.*,

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[57] The fact that Google's other scale expert's opinions are duplicative of Prof. Fox's is revealing of Google's overall tactics. It is not that Google cannot retain a scale expert to put forth these opinions, it is that Google attempts to pass off Prof. Fox's opinions as fact by offering them up as proven to be true by an unreliable experiment. *See Therasense*, 2008 U.S. Dist. LEXIS 124780 at *16 ("The whole point of the maneuver is to pass off client-prepared litigation-driven 'tests' as fact by having the 'expert' bless them.").

907 F. Supp. 33, 35 (D.N.H. 1995) (citing *Paoli*, 35 F.3d at 743–44). That is, Prof. Fox has not

demonstrated that the experiment, performed solely on Google's system, provides any insight

into the value of data for Google's rivals, which is the relevant issue in this case. Accordingly,

his opinions should be struck in their entirety. *Id*. ("Thus, the results of a scientifically reliable

experiment or study will fail *Daubert's* fit requirement and be excluded unless the results can be

linked through scientifically reliable means to the expert opinion it purports to support.").

CONCLUSION

Any one of the foregoing reasons—Prof. Fox's ceding of responsibility to Google for the

design and execution of the 2022 DRE, the inability to reproduce the 2022 DRE, and the lack of

fit of the 2022 DRE to this case—independently warrant excluding Prof. Fox's opinions in their

entirety.

Dated: December 23, 2022   Respectfully submitted,

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