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 [redacted]
STATE OF COLORADO, *et al.* Plaintiffs, v. GOOGLE LLC, Defendant.	Case No. 1:20-cv-03715-APM HON. AMIT P. MEHTA [redacted]

PLAINTIFFS' POST-TRIAL BRIEF

February 9, 2024

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ABBREVIATIONS

CPC	Cost Per Click
CPM	Cost Per Mille (thousand impressions)
GSE	General Search Engine
ISA	Information Services Agreement (for Apple)
MADA	Mobile Application Distribution Agreement (for Android)
OEM	Original Equipment Manufacturer
PCOL	Proposed Conclusion Of Law
PFOF	Proposed Finding Of Fact
PLA	Product Listing Ad
ROAS	Return On Ad Spend
ROI	Return On Investment
RPM	Revenue Per Mille (thousand queries)
RSA	Revenue Share Agreement (for Android)
SERP	Search Engine Result Page
SQR	Search Query Report
SVP	Specialized Vertical Provider

INTRODUCTION

Google has exploited its monopoly power to "freeze the ecosystem" of what should otherwise be a vibrant and competitive industry. *See* Proposed Finding Of Fact (PFOF) ¶ 1120. For more than a decade, Google has dominated the markets for general search services and search advertising. This trial exposed Google's efforts to control how Americans access information on the Internet and the lengths it has taken—and continues to take—to illegally maintain its power. Rather than compete on the merits, Google has protected its monopoly power by engaging in exclusionary conduct that thwarted competition and suppressed threats to its dominance. It is clear that amassing and protecting power is important to Google because it spends more than $20 billion each year to pay for defaults and restrictive contracts, which is more than [redacted] times the [redacted] billion Google invests in research and development for search. *See* PFOF ¶ 597.

Over 10 weeks at trial, testimony and documents painted a sobering picture of how Google's conduct subverted the competitive process and harmed consumers. Google told the public that Internet search markets were open and competitive, claiming "competition is a click away." *See* PFOF ¶ 933. At the same time, Google paid billions to lock up search queries for itself, deprive rivals of scale, and thwart entry by innovative competitors. Google publicly boasted about its popularity with customers, but privately its executives made clear that they would not "wast[e] our valuable time" on privacy improvements without evidence that Google was losing users. PFOF ¶ 1146. And while Google claimed the search advertising markets were competitive, it manipulated ad auctions and openly acknowledged that it could raise prices 20% year over year without regard to its competitors.

What Google says and what the evidence shows are plainly at odds. Google is not focused on spending its money, attention, and time on improving general search and search advertising because it does not have to. Recognizing how such evidence would land with the public, regulators, and courts, Google attempted to obscure these facts. It destroyed internal communications that likely would have cast an even harsher light on its conduct. Google also—as a matter of corporate policy—stretched and manipulated the attorney-client privilege to serve its business objectives. Despite these efforts the record is clear: consumers have little choice, lose out on better products, and sacrifice their privacy—with advertisers paying higher prices—because there are no meaningful alternatives to Google.

During this litigation, Google has attempted to recast its anticompetitive conduct as protected by some imaginary de facto business judgment rule. But its cramped interpretation of the Sherman Act is contrary to a plain reading of the law. Over 100 years of Supreme Court precedents makes clear that there are some things a monopolist like Google cannot do. And this is why the United States and 52 states and territories, working on behalf of the public, were compelled to act. Americans, not Google, should have the power to choose where and how they get information and to make informed decisions about their lives. The Court's intervention is required to redress the consequences of Google's monopolies and ensure Americans regain access to vibrant, open information markets. For the reasons demonstrated below, the Court should find Google liable for its decade-long violations of Section 2 of the Sherman Act.

FACTUAL OVERVIEW

Google has recognized the power of defaults and the importance of scale for two decades—and built its business strategy accordingly. In 2003, Dr. Hal Varian sent Google's founders a memo with two recommendations that would shape the market for general search

engines and ensure Google's control of it. *First,* recognizing that early innovation had already made Google the "dominant" search engine in the United States, Dr. Varian recommended that Google protect that dominance by seeking to raise the costs of users switching to rival search engines. PFOF ¶ 1225. *Second,* Dr. Varian warned Google's executives to avoid creating written communications that could be used against the company in a future antitrust suit. *Id.*

Google took both recommendations to heart. It now pays more than $20 billion each year to be the default search engine for nearly every search access point on mobile phones sold in the United States. Google pays so much to control these defaults because they allow Google to enjoy an insurmountable advantage over its rivals. And—vital to the integrity of this litigation—as early as 2008, Google took steps to hide records of its business decisions from scrutiny.

Google Tied Up the Search Market with Distribution Agreements

Google's efforts to obtain control over key distribution points for search engines started the following year, in 2004, when Google offered Mozilla revenue share for distribution on its Firefox browser. Then, in 2005, Google volunteered to pay Apple a share of search revenues to be set as the Safari browser's default search engine.

Google's efforts accelerated in 2007. That year, a researcher working with Dr. Varian concluded that the best way for a general search engine to grow or defend market share was to be the default home page in a user's Internet browser. The research found that defaults could be "a powerful strategic weapon" against Google's then-primary rivals, Yahoo, and Microsoft, because the defaults were more important than search quality in protecting market shares. PFOF ¶ 879 (citing Tr. 170:15–24; UPX0123 at -485); PFOF ¶ 878.

Supported by Dr. Varian's efforts, the defaults analysis was shown to and adopted by Google's top executives, including then-CEO Eric Schmidt and future-CEO Sundar Pichai. The

"power of defaults" underlined the strategy that Google proceeded to follow for the next twenty years: pay to make Google the default so users face higher switching costs in choosing rival search engines. PFOF ¶¶ 799, 870–871. Google turbocharged its funding for default home pages on desktop computers. To make itself the out-of-the-box default search engine across different search access points, Google offered revenue share to all potential distributors. As new defaults on phones became available, Google applied the "power of defaults" analysis to the new and growing mobile search access points, and paid accordingly.

For Apple devices, Google's revenue share payments have ballooned to more than [redacted] billion each year. PFOF ¶¶ 12, 935. But those payments would stop if Apple ever changed Safari's preset default—as Google has made clear. In 2007, as Apple prepared to launch a version of its Safari browser for Windows, the company planned to offer users a choice screen for selecting the default search engine. In response, Google informed Apple: "[n]o default placement – no revenue share." PFOF ¶ 749 (citing UPX0072 at -216). All or nothing. So Apple withdrew the idea, taking the money instead. PFOF ¶¶ 750–751. Google similarly snuffed out the possibility that Apple might distribute versions of Safari with Yahoo on the start page, PFOF ¶¶ 752–754, and rejected Apple's request to control who had the default for each device sold with Safari, PFOF ¶ 758–760. Again, in 2012, when Apple sought flexibility for using Google as the search default, Google refused. PFOF ¶ 761.

Google took a similar approach to the Android ecosystem. In 2005, Google purchased the Android operating system, and by 2008 the first Android smartphone hit the market, along with an Android app store. By 2009, Google realized that obtaining defaults was not enough—to protect against any chance a rival could compete for searches on a device, Google needed to

ensure that it was the *only* default. From that time forward, Google demanded "default exclusivity" when negotiating revenue share on Android devices.

Over time, Android contracts morphed into two interlocking distribution and revenue share agreements. These contracts control the most important Android search access points and ensure that rival search engines are kept off Android phones. Under the Mobile Application Distribution Agreement (MADA), original equipment manufacturers (OEMs) license a bundle of Google's applications, including the Play Store, YouTube, and Google Maps. PFOF ¶¶ 235, 779. Given that the Google Play Store is a must-have for Android devices, it is not commercially feasible for an OEM to ship Android devices without the Google Play Store preinstalled. PFOF ¶¶ 240, 780. Any Android OEM that rejects the MADA loses access to the Play Store and effectively turns its phones into "brick[s]." PFOF ¶ 240 (citing Tr. 3517:6–25). Under the MADA, to preinstall any of these applications on an Android device, OEMs must (1) place the Google Search Widget on the homescreen and (2) preinstall Chrome with Google set as the default search. PFOF ¶¶ 245, 247, 248.

Through its Revenue Share Agreement (RSA), Google pays OEMs and wireless carriers to exclude Google's rivals from Android devices. PFOF ¶ 258. Between 2010 and 2020, Google used RSAs to obtain platform exclusivity for certain carriers. That is, in exchange for revenue share, every phone sold by those carriers needed to have every search access point default to Google. In 2020, with this lawsuit looming, Google retooled the RSAs to add a veneer of non-exclusive revenue tiers and device-by-device exclusivity. But the essence remained the same: to avoid losing billions from Google, carriers and OEMs had to block all of Google's rivals from their phones. PFOF ¶¶ 259–261. And Google's 2020 changes had no impact on search access

points covered by the MADA, which account for 60% of the search revenue on Android devices. PFOF ¶¶ 796, 815.

Google's Distribution Agreements Deprive Rivals of Scale

Google's distribution agreements deprive rivals of the scale necessary to compete effectively. At trial, all fact witnesses acknowledged that user-side data—data generated by user interactions with a search engine—is and always has been a vital input for general search engines. PFOF ¶¶ 159, 163–166.

Google's focus on user data goes back to when search was confined to desktop computers. Google began logging user-side data and, over time, the information logged has grown to include links the user chose *not* to click, how much time a user spent on the linked page, and user scrolling. PFOF ¶¶ 160, 1155. After search began appearing on phones, Google started logging information about user location, swipes, and other user-related movements. PFOF ¶¶ 1003–1004. This data is now vital to every aspect of search, including figuring out where and when to crawl specific websites, how to index the information retrieved from that crawl, what documents to retrieve from the index in response to a user query, and how to rank the retrieved items. Some elements of Google's search engine are trained on 13 months of data—a volume that would take Bing over 17 years to accumulate. *See* PFOF ¶ 988.

Initially, Google bragged about the advantage that scale gave the company in search. *See* PFOF ¶ 166. But in 2010, after antitrust concerns were raised about Google's size, the company took a different approach with its public statements: externally, Dr. Varian called the idea that scale mattered "bogus," while internally Google's top search engineers were adamant that "[w]e make very good use of everything we get." PFOF ¶ 203 (citing UPX0178 at –433); PFOF ¶ 205 (citing UPX0179 at -435).

Because data from mobile is especially useful in answering mobile queries, Google's enormous advantage in mobile search gives the company an insurmountable (and growing) advantage in scale and, thus, quality on mobile devices. PFOF ¶¶ 979–980. Finally, because scale has long played an important role in identifying and testing search engine improvements, Google's scale advantage remains an insurance policy against future competition.

Google's Conduct Harms Competition

By controlling search defaults, Google ensures that it has—and will always have—more scale than any other general search engine. This scale gives Google an impenetrable advantage, which, when coupled with Google's control of the relevant advertising markets, allows Google to monetize its searches in ways that rivals cannot.

Google sells advertising through auctions designed and controlled exclusively by Google—a process so devoid of competition that advertisers have no ability to negotiate pricing or switch to other platforms. Indeed, Google sets ad prices at will without considering what rivals are charging; the company's unconstrained ability to raise prices costs advertisers billions of dollars per year. This money is then funneled back into defaults.

Google's defaults, scale, and monetization turn in a self-reinforcing cycle. Google's defaults lead to scale advantages over rivals which make it harder for these rivals to compete on quality. The struggle to compete on quality makes it harder for rivals to compete on price. The absence of price competition makes it easier for Google to reap the profits associated with its monopoly, which Google then uses to pay for distribution contracts. This cycle sits as a barrier to the growth and entrance of rivals, thereby harming competition, advertisers, and consumers.

This was all to plan. In 2003, Dr. Varian wrote "Look at it this way: We are currently a dominant player in an industry, and we are trying to discourage entry by a potential competitor."

PFOF ¶ 1225 (citing UPX0151 at –162). In 2024, Google has long since achieved this goal. Rivals invest less (knowing that significant improvements will not result in higher profits); users accept lower quality (because there are no rivals to drive Google forward); and advertisers pay more for ads (because there is no close alternative).

Google Hid Evidence of Its Antitrust Violations

As early as 2003, Google's key executives recognized its strategy to insulate itself from competition would attract scrutiny. Google therefore took extraordinary measures to curate its communications. Google trained employees not to use certain words—like "market," "network effects," or "scale"—in emails and letters. PFOF ¶ 1226 (citing UPX1066 at -880). Further, Google instructed employees negotiating search distribution agreements to manufacture fake claims of privilege for every document discussing RSAs and MADAs. Any written communication about privacy—a competitive feature in search—was cloaked under the veil of privilege. Google's internal lawyers, aware of this practice, did not bother responding to requests for advice they knew to be fake. And in 2008, in an email authored by its present Chief Legal Officer Kent Walker, Google announced that it was changing the default for its company chat system to history-off, meaning chats were automatically deleted after 24 hours. PFOF ¶ 1199. Mr. Walker candidly explained that this change would ensure that internal communications could not be used by regulators, litigants, or anyone adverse to Google. *Id.* Google continued this systematic destruction of employee chats for the next 15 years. PFOF ¶ 1200.

None of this was an accident. Google understood the power of defaults and scale long before most others. It came to understand the power of search advertising and the profits it could drive. But it also understood that its strategy of locking out rivals was rife with antitrust risk. To manage this risk, Google took extraordinary—and improper—steps to control the evidentiary

record. The day of reckoning Google has long feared has arrived, and though the Court cannot see the evidence that has been hidden or destroyed, the evidence that survived and was presented at trial is overwhelming and establishes a clear Section 2 violation.

LEGAL FRAMEWORK

Plaintiffs establish a prima facie monopoly maintenance claim by demonstrating "the possession of monopoly power in the relevant market" and "the willful . . . maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident." Proposed Conclusion Of Law (PCOL) § I (citing *United States v. Grinnell Corp*., 384 U.S. 563, 570–71 (1966)). As demonstrated below and at trial, Google possesses monopoly power in the markets for general search services, search advertising, and general search text ads. Google has illegally maintained that power by signing distributors to exclusive contracts, depriving rivals of the scale necessary to compete and stopping potential rivals—including Apple—from entering the relevant markets. Considered individually or taken together, this conduct is prima facie unlawful under Section 2 of the Sherman Act. PCOL § IV.

In response, Google may establish a sufficient non-pretextual "procompetitive justification" for its conduct. PCOL §§ I, V. If Google makes that showing, Plaintiffs must demonstrate that the anticompetitive harm outweighs the procompetitive benefit. PCOL § I (citing *United States v. Microsoft Corp.*, 253 F.3d 34, 58–59 (D.C. Cir. 2001) (*en banc*)); *id.* § V. Google has not established any procompetitive justifications for its conduct. PCOL § V.A. Even if it had, any supposed benefits are outweighed by the substantial harms users and advertisers suffer from Google's conduct. PCOL § V.B.

Agreements that limit rivals' access to important distribution channels are properly analyzed under a general exclusionary standard. PCOL § IV.B. Under this standard, Google's

distribution agreements are illegal because they harm the competitive process. PCOL §§ IV.A–B. Further, exclusionary conduct that deprives rivals of scale is sufficient to establish an antitrust violation under Section 2. *Id*. Google argues its agreements should be evaluated under an exclusive-dealing framework. But even if applying an exclusive dealing framework, *see* Summ. J. Opinion, ECF No. 624 at 30–31, *Microsoft* rejects a rigid test that requires mathematical precision and instead instructs that any exclusive dealing analysis requires only a showing that the challenged agreements create a "substantial" degree of foreclosure. PCOL §§ IV.C–D (citing *Microsoft*, 253 F.3d at 68–70). Courts routinely measure foreclosure by determining the volume of distribution closed off to rivals (*i.e*., coverage), not the volume of sales they would have won if that distribution were available. PCOL §§ IV.C.2–D.1.

ARGUMENT

I. Plaintiffs Have Properly Defined The Relevant Markets

General search services, general search text ads, and search ads each constitute a relevant product market because there are no other products that are "reasonably interchangeable" with them.[1] *See* PCOL § II.A.1 (citing *United States. v. H&R Block, Inc.*, 833 F. Supp. 2d 36, 54 (D.D.C. 2011)). The relevant geographic market for all three products is the United States.

Courts apply "a pragmatic, factual approach to the definition of the relevant market and not a formalistic, legalistic one." PCOL § II; *Brown Shoe Co. v. United States*, 370 U.S. 294, 336 (1962). In *Brown Shoe*, the Supreme Court identified several practical indicia of relevant markets, including (1) peculiar characteristics and uses, (2) unique production facilities, (3) distinct prices and sensitivity to price changes, (4) distinct customers, (5) industry recognition, and (6) public recognition. *See* PCOL § II.A (citing 370 U.S. at 325).

[1] In their separate brief, Plaintiff States address the additional general search advertising market they have also alleged. Plaintiff States' Post-Trial Brief at 7–18.

A. General Search Services Is A Relevant Product Market

General search services provide one-stop shopping for user queries and, based on the *Brown Shoe* factors and evidence introduced at trial, constitute a relevant product market.

1. Peculiar Characteristics And Uses

Four significant general search engines provide general search services in the United States: Google, Bing, Yahoo, and DuckDuckGo. PFOF ¶ 73. As Google conceded at trial, Bing is its most significant competitor. PFOF ¶ 77. Only Google and Bing have the capacity to respond in volume to general searches. PFOF ¶¶ 75–76. Nearly all other GSEs syndicate some or all their search results from Google or Bing. PFOF ¶ 76. Neeva offered its own ads-free search results before shutting its doors in May 2023. PFOF ¶¶ 39–40, 78.

GSEs answer a wide range of queries (both commercial and non-commercial) by providing "ten blue links" culled from an index of the world wide web. PFOF ¶¶ 57, 61. These organic results appear on the search engine results page, or SERP, PFOF ¶ 60, along with search features (such as knowledge panels, maps, images, and videos) and sometimes advertising. PFOF ¶ 62. These organic results are fundamentally different from those proffered by specialized vertical providers (SVPs) like Amazon or Expedia. PFOF ¶ 383. About 80% of queries entered on Google are non-commercial and cannot be meaningfully answered by SVPs. PFOF ¶ 383; *see also* PFOF ¶ 90 (Google serves ads in response to only about 20% of queries).

Further, only GSEs answer all types of commercial queries. For example, if a user wants to find a plumber, a doctor, or a music teacher, Google and Bing—but not Amazon or Expedia—can provide relevant results. *See* PFOF ¶¶ 378, 383. Elizabeth Reid, Google's VP of Search, testified that GSEs "are aiming to answer any query, as is Google." PFOF ¶ 325 (citing Tr. 8266:19–25). In contrast, she explained that Expedia and Yelp "are not aiming to answer all

queries." PFOF ¶ 380 (citing Tr. 8268:6–7). Thus, GSEs share unique characteristics that make them invaluable to users.

As one-stop shops, only GSEs can serve as the out-of-the-box search default for a browser or device. PFOF § IV.A.1.c; PFOF ¶¶ 151–152. Mozilla's CEO, Mitchell Baker, testified that Firefox has never considered Amazon or Facebook as a default search engine because installing something other than a GSE would harm the user experience. PFOF ¶ 334. Similarly, for leading browsers such as Chrome and Safari, only GSEs are offered should the user seek to change defaults. PFOF ¶¶ 335–336. This recognizes that, from a user's perspective, GSEs are unique.

2. Unique Production Facilities

To provide broad-based information, GSEs must crawl much of the open internet (or syndicate results from a GSE that does). PFOF ¶¶ 65, 67, 74. GSEs then turn their copy of the web into searchable databases, or indexes. *See*, *e.g.*, PFOF ¶ 68. Crawling and indexing requires gathering and organizing links from billions of websites on the open web. PFOF ¶¶ 67–68. Then, in response to a query, the GSEs must provide the most relevant portion of that indexed information. PFOF ¶ 70–72. The technology and engineers required for GSEs to perform these tasks cost billions of dollars each year. PFOF ¶ 538.

SVPs neither make the investment in crawling and indexing the web, nor in contracting with those who maintain search indexes. Thus, SVPs possess substantially different production facilities from GSEs. PFOF § IV.A.4.b, ¶ 375.

3. Industry Recognition

Google has long recognized that GSEs are a distinct category. Over many years, Google has calculated its market share solely among GSEs, PFOF ¶¶ 341, 349, and recognized that other GSEs (such as Bing) are its closest competitors. PFOF ¶ 351. As Dr. Varian once explained: "[I]f

Google were to disappear, people would just switch to Bing." PFOF ¶ 351 (citing UPX0340 at -059). Internally, Google compares the quality of its search engine results page to general search rivals like Bing and DuckDuckGo—but not to firms like Amazon or Facebook. PFOF ¶ 355. Perhaps most tellingly, Google's distribution contracts with Android OEMs and carriers only prohibit partners from preinstalling other GSEs. PFOF § IV.A.1.e.v.–vi. Thus, Google bars its partners from preinstalling Bing or DuckDuckGo—but not Amazon or Facebook.

Apart from Google, other industry participants—such as browser companies—similarly recognize that GSEs form a distinct product, PFOF § IV.A.1.f, and that SVPs and social networks are *not* like GSEs. PFOF ¶ 384.

4. Public Recognition

Consumers likewise recognize GSEs as a distinct product. PFOF § IV.A.1.b, ¶ 328 (citing Tr. 3670:6–18) (Dr. Ramaswamy: a GSE is "what we would turn to . . . when we have like any information task generally in mind"). Users recognize that GSEs provide a source of information on any topic. PFOF ¶¶ 327–328. GSEs thus save consumers the time and mental effort otherwise required to determine the best place to conduct each search, PFOF ¶ 329—a convenience reinforced by GSEs being the default on the most popular search access points.

5. Other Evidence

Finally, although a hypothetical monopolist test (an economic tool for identifying reasonable interchangability) is not required to define a relevant product market, it can be useful. PCOL § II.A.1. The lack of reasonable interchangability between a general search engine and SVPs helps to confirm Plaintiffs' market definition. In addition, Google has in fact been able to avoid investing in quality improvements, PFOF § V.A.4.c, while also degrading quality by extracting more private user data than what it knows its users prefer, PFOF § V.A.4.a.

Based on the *Brown Shoe* factors and the evidence presented at trial, the Court should conclude that general search services is a relevant product market. Indeed, Dr. Varian acknowledged as much when he stated that without general search engines, the world would look like a "universal library, but with no card catalog." PFOF ¶ 351 (citing Tr. 196:7–196:25 and UPX0340 at -059).

B. Specialized Vertical Providers Do Not Provide General Search Services

The Court should reject Google's claim that SVPs (like Amazon and Yelp) and social networks (like Facebook and TikTok) are in the general search services market. These services are not reasonably interchangeable with GSEs.

As an initial matter, even if GSEs compete to some degree with these firms, that does not require their inclusion in the relevant product market.[2] PCOL § II.A.1; *FTC v. Sysco Corp.*, 113 F. Supp. 3d 1, 26 (D.D.C. 2015) ("[T]he mere fact that a firm may be termed a competitor in the overall marketplace does not necessarily require that it be included in the relevant product market for antitrust purposes."). Instead, the question is whether SVPs are *reasonably* interchangeable for a GSE or whether there would be enough substitution to SVPs to make it unprofitable for a GSE monopolist to exercise monopoly power. PCOL § II.A.1. The answer is no.

For example, Google's ordinary-course experiments degrading its search quality for testing purposes showed little user response to quality reductions—indicating firms outside the market (*i.e.*, specialized search sites and social networks) do not pose a strong competitive constraint on Google. PFOF § IV.A.3.a.; *see infra* Argument § II. Further, the growth of

[2] In Section 2 monopoly maintenance cases such as this, substitution may simply show that the monopolist is already exerting the power to raise price or lower quality, spurring some consumers to turn to poor substitutes (*i.e.*, the *Cellophane* fallacy). PCOL § II.A.2.

Amazon, Facebook, Instagram, and TikTok over the past decade has not dented Google Search's extraordinary revenues and profits. PFOF ¶ 373 (citing UPX7002.A) (booked revenue for Google Search increased from $46 billion in 2014 to $146 billion in 2021). Indeed, Google Search reported a higher operating profit margin in 2021 [redacted] than in 2014 [redacted]. PFOF ¶¶ 594–595 (citing UPX7002.A).

Google's ordinary-course analysis confirms that users are not leaving Google for Amazon or similar websites. Notably, Google's "Project Charlotte" showed Amazon Prime loyalty members tend to search more—not less—on Google. PFOF ¶ 385. Thus, Amazon and Google serve complementary functions. Prabhakar Raghavan, Google's Head of Search, explained: "Prime members who in any way intend to shop at Amazon might come to Google and do a lot of research before they do it." PFOF ¶ 382 (citing Tr. 7434:22–7435:14). Amazon recognizes this phenomenon—spending billions of dollars per year advertising on Google. PFOF ¶ 387. Google has conducted similar analysis, and seen similar results, with other major online retailers like eBay and Walmart. PFOF ¶ 386. Such retailers, thus, are not in the GSE market.

Similarly, users are not leaving Google for social networks. Frequent Facebook users, for example, search on Google more, not less. PFOF ¶ 377. And understandably so: social networks serve far different and narrower purposes than a GSE. Social media platforms do not provide information directly from the open web; rather, social media platforms search only their own content. TikTok, for example, provides user-generated videos—not links to other websites or search features such as maps and images. PFOF ¶ 375 (citing Tr. 7420:20–25).

C. Search Advertising Is A Relevant Product Market

Advertising exists to capture consumers' attention with the ultimate goal frequently being the sale of an advertisers' product or service.[3] PFOF ¶ 84. Advertising is delivered through channels, generally categorized as either traditional or digital. PFOF ¶¶ 86–87. Traditional advertising includes the "offline" ad channels of television, radio, print, and billboards; digital advertising includes ad channels that appear "online" such as on search engines, websites, and social media platforms. *Id.* The vast majority of digital ads are either Search Ads or display ads. PFOF ¶ 88. Search Ads (1) include, but are not limited to, general search text ads, PFOF ¶¶ 93, 102, and (2) are presented in response to a consumer's real-time search query on GSEs and on SVPs such as Amazon, travel websites, and app stores, PFOF ¶¶ 89, 91–92.

Search Ads constitute a relevant antitrust product market due to their peculiar characteristics and uses, unique production facilities, distinct prices and sensitivity to price changes, and their recognition as a distinct product by both the advertising industry and Google itself. PFOF § IV.B. Nonetheless, a product that constitutes its own relevant antitrust market can also compete in multiple and concentric relevant product markets. PCOL § II.A.1; *Sysco*, 113 F. Supp. 3d at 48 (holding that both broadline food service distribution and broadline food service distribution to national customers—entirely contained in the former—were relevant product markets); *United States v. Bertlesmann SE & Co. KGaA*, 646 F. Supp. 3d 1, 27–28 (D.D.C. 2022) ("[E]ven if alternative submarkets exist . . . , or if there are broader markets that might be

[3] Google funds its GSE through the sale of Search Ads. Revenue from Search Ads comprises over [redacted] of Alphabet's "Search+" revenue. PFOF ¶ 593 (citing Tr. 1263:18–1264:4). In 2022, Search+ generated [redacted] billion in revenue which represented over [redacted] of Alphabet's total revenue. PFOF ¶ 597 (citing UPX0489 at .002). Moreover, Search+ generated a [redacted] operating profit margin in 2022 and operating profit margins between [redacted] and [redacted] from 2014 to 2021. *Id.* (citing Search+ numbers in UPX0489 at .002 and UPX7002.A).

analyzed, the viability of such additional markets does not render the one identified by the government unusable.") (cleaned up).

1. Peculiar Uses And Characteristics

When deciding how to allocate their budgets among different advertising channels, advertisers often consider a conceptual framework for how consumers make purchase decisions. PFOF § IV.B.6. At its most basic, a consumer's journey to a purchase is visualized as a funnel generally consisting of at least three stages: (1) awareness of the product or service; (2) interest in, and desire for, the product or service; and (3) purchase of the product or service. PFOF ¶¶ 447–451. After selecting an advertising channel or combination of channels based upon its ability to achieve the desired objective—e.g., creating awareness of a product—the advertiser targets its ads at consumers whom the advertiser believes would be most interested in their product or service. PFOF ¶¶ 114, 128, 453–454. The goal, of course, is moving consumers to the funnel's next stage and ultimately to a purchase. PFOF ¶¶ 84, 448, 453–454.

Search Ads are the only channel that can be targeted to reach a consumer precisely when a consumer expresses interest in a product or service, referred to as a moment of "intent." PFOF § IV.B.1.a. When a user types "Blue blender on sale" into a search engine, there is a high likelihood that the user has actual real-time interest in buying a blue blender. PFOF ¶¶ 115–117. Thus, advertisers view Search Ads as the advertising channel best suited to effectively and efficiently driving customer acquisition, or any other desired action, also known as harvesting demand. PFOF § IV.B.1.b–c.

In contrast to Search Ads, display ads—the other main type of digital advertising, which includes banner ads and video ads that can be shown on any website including social media platforms such as Facebook, Pinterest, or TikTok—are not shown in response to a user's real-time query. PFOF ¶¶ 88, 108–112. Display ads, lacking real-time signals, are targeted more

broadly based on weaker, less accurate signals, such as demographics or the user's past online activity. PFOF ¶¶ 118–119, 121–122. Thus, advertisers view display ads as better suited for earlier funnel stages because display ads are more efficient at generating consumer awareness and interest in a product or service. PFOF ¶¶ 123–127.

Finally, because Search Ads are uniquely targeted to a query voluntarily shared with the search engine, their targeting ability is minimally affected by privacy initiatives and limitations on cookie tracking that diminish the effectiveness of other digital ads. PFOF § IV.B.1.e. In short, display ads are not reasonably interchangeable with Search Ads. PCOL § II.A.1.

2. Unique Production Facilities

Because Search Ads are served in response to a consumer's real-time search query, they can be sold only by a GSE or other large SVP. PFOF § IV.B.3. Building a GSE or SVP capable of serving relevant responses, selling advertising, and matching ads to the query requires technical and engineering expertise unique to Search Ads and inapplicable to display ads. *Id.*

3. Distinct Prices And Sensitivity To Price Changes

Search Ads are primarily sold on a cost-per-click (CPC) basis, meaning that an advertiser will only be charged if a user clicks on the Search Ad. PFOF ¶¶ 101, 443. Display ads, in contrast, are typically sold on a cost per 1,000 impressions, i.e., "cost per mille" or "CPM" basis, meaning that advertisers are charged regardless of whether anyone clicks on their ad. PFOF ¶¶ 113, 443. Finally, although both Search Ads and display ads are sold in auctions, they are separate auctions with different rules and features. PFOF § IV.B.1.d.

4. Google And Advertising Industry Recognition

Google, advertisers, and other industry participants recognize that Search Ads are fundamentally different from display ads. PFOF § IV.B.2. As discussed above, Search Ads are targeted to a query and therefore better able than other digital ads to reach the consumer at the

end of the consumer's purchase journey. PFOF §§ IV.B.1.a–b. Moreover, as the only type of advertising served in response to a consumer's real-time, self-expressed declaration of commercial intent, advertisers, Google, and other industry participants recognize that Search Ads are unique and do not view them as reasonably interchangeable with other forms of advertising. PFOF §§ III.C.2.d, IV.B.1.a–b, IV.B.2.

5. Other Evidence Search Ads Are A Relevant Market

A market for Search Ads also satisfies the hypothetical monopolist test because a hypothetical monopolist—Google—of Search Ads would find it profitable to raise price significantly above competitive levels (5%) or reduce quality significantly below competitive levels. PFOF § IV.B.5. The trial evidence demonstrated that Google can *and has* increased the prices of search advertising by 5% or more, and has remained profitable. PFOF ¶ 632. Accordingly, the Court should conclude that Search Ads are a relevant product market.

D. Text Ads Are A Relevant Product Market

Within the broader Search Ads product market, the trial record also supports a narrower market for general search text ads (Text Ads). Text Ads—which are presented in response to a real-time query entered on a GSE—are also a relevant antitrust market.[4] PCOL § II.A.1 (citing *Sysco*, 113 F. Supp. 3d at 48 (holding that both broadline food service distribution and broadline food service distribution to national customers—entirely contained in the former—were relevant product markets).

[4] Of course, because all Text Ads are Search Ads, the *Brown Shoe* factors supporting Search Ads being in a separate market from other digital ads also support Text Ads being in a separate relevant market from those same digital ads.

1. Peculiar Uses And Characteristics

As a starting point, whereas Search Ads appear in response to queries on both specialized search engines and GSEs, Text Ads only appear on a GSE's results page. PFOF ¶¶ 89, 102. Text Ads, of course, consist primarily of text, PFOF ¶¶ 103–104, and are further distinguishable from non-text Search Ads because:

- Advertisers select keywords and match types when bidding on Text Ads, which gives advertisers uniquely wide latitude in identifying the circumstances under which their Text Ads may be shown, whereas advertisers typically do not have the option to select keywords or match types when purchasing other Search Ads. PFOF § IV.C.1.a.

- Advertisers typically supply their own ad copy or its components for Text Ads, whereas with non-text Search Ads the search engine creates ad copy and content based upon advertiser information. PFOF § IV.C.1.b.

- Advertisers can use Text Ads to advertise virtually anything, whereas non-text Search Ads can only advertise tangible products or things related to the SVP's specific subject matter. PFOF § IV.C.1.c.

- Advertisers have greater flexibility over a Text Ad's focal point, whereas other Search Ads have a narrower messaging scope reflecting more rigid content restrictions. PFOF § IV.C.1.d.

2. Distinct Customers

Advertisers who buy Search Ads predominantly buy Text Ads. PFOF ¶ 480. However, many purchasers of Text Ads do not buy non-text Search Ads such as shopping ads (or PLAs). *Id.* In fact, most search advertisers on Google only buy Text Ads because they are not selling physical products and cannot buy shopping ads. PFOF ¶¶ 480–481. Conversely, there are some advertisers that buy Search Ads (perhaps from Amazon) that do not buy Text Ads because the advertiser does not have a website to which a Text Ad can link. PFOF ¶ 482.

3. Unique Production Facilities

Because Text Ads only appear on a GSE's SERP, providing Text Ads requires the same technical and engineering expertise necessary to build and maintain a GSE (as discussed above).

In addition, serving Text Ads by matching keywords to queries is more technically complex than serving other Search Ads, and therefore requires additional, different expertise. PFOF § IV.C.4.

4. **Distinct Prices And Sensitivity To Price Changes**

Text Ads and non-text Search Ads are priced in separate auctions—even by GSEs that sell both—and Text Ads are generally more expensive than other Search Ads like shopping ads. PFOF ¶¶ 140, 494. Advertisers can and do target Text Ads and non-text Search Ads for the same queries and purchase each in separate auctions with independent results. PFOF ¶¶ 140, 491, 495.

5. **Google And Advertising Industry Recognition**

As established at trial, Google recognizes that Text Ads are distinct from and complementary to other types of Search Ads because Text Ads are "a different species" and "siloed in their own world." PFOF ¶ 483 (citing UPX0440 at -590 (internal Google document describing shopping ads as "a very different product-based ad format" in comparison to Text Ads); *id.* ¶ 484 (citing Tr. 423:12–14 (Shopping ads are a "different species" from Text Ads); Tr. 1190:9–1191:22 (Internally, Google views Text Ads and shopping ads as "siloed in their own world" and not in competition with each other.)); PFOF ¶¶ 485–487.

For these same reasons, advertisers and other industry participants also view Text Ads as fundamentally different from non-text Search Ads. PFOF ¶¶ 488–489; *id.* ¶ 490 (citing UPX0915 at -063 [redacted] *id.* ¶ 491; *id.* ¶ 492 (citing Des. Tr. 133:3–24 (Raymond (Kohl's) Dep.) [redacted]

6. **Other Evidence That Text Ads Are A Relevant Product Market**

Like the Broader Search Ads market, the Text Ads market also satisfies the hypothetical monopolist test. Google can and has increased the prices of Text Ads by 5% or more and

remained profitable. PFOF ¶ 632. In addition, Joshua Lowcock, the Global Chief Media Officer of Universal McCann, a division of IPG, testified that even if the price of Google's Text Ads increased by 5%, he would not recommend that clients move advertising spend elsewhere. PFOF ¶ 498. As a result, based on the *Brown Shoe* factors and evidence presented at trial, the Court should conclude that Text Ads are a relevant product market.

E. Spend Shift Does Not Undermine Either Ad Market

Advertisers' shifting spend among ad channels to optimize their budgets does not undermine Plaintiffs' product markets. PFOF § IV.D.1.

First, both Google and advertisers find it costly and difficult to calculate ROI (return on investment) / ROAS (return on ad spend) for specific ad channels and even more so across a combination of ad channels. PFOF ¶¶ 510–513, 685. Thus, as Google recognizes, many advertisers cannot measure actual ROI, and instead rely upon other factors to measure ad spend effectiveness. PFOF ¶¶ 507, 685. Without an accurately calculated ROI, meaningful comparisons across advertising channels is not possible, PFOF ¶¶ 510, 685, and therefore substitution based upon ROI cannot justify placement of different products within the same antitrust market.

Second, even those advertisers attempting to calculate ROI set different ROI goals for different advertising channels, or otherwise recognize the different roles these channels play. PFOF ¶¶ 503–507. Thus, altering spend across ad channels does not mean ad channels are interchangeable; for example, the advertisers could be rebalancing ad spend as part of a full-funnel advertising strategy. PFOF ¶¶ 502, 508. Indeed, Google's own long-term advertising experiments prove there is little advertiser substitution in response to increases in Text Ad prices—increases that were profitable for Google. PFOF ¶ 496. Also, if an advertiser is not selling a physical product, even shopping ads are not available and substitution between the two dominant forms of Search Ads—Text Ads and shopping ads—cannot occur. PFOF ¶ 497.

F. The Relevant Geographic Market Is The United States

The relevant geographic market for general search services, Search Ads, and Text Ads is the United States given that users turn to Google's services throughout the country. PFOF §§ IV.A.5, IV.B.7, IV.C.7; PCOL § II.B. Moreover, Prof. Mike Whinston explained, search results and advertisements served to consumers in the United States are distinct from those served in other countries. PFOF § IV.A.5. Google's experts offered no challenge to this geographic market.

II. Google Possesses Monopoly Power In Each Of The Relevant Markets

Google has long exercised monopoly power. Because direct evidence of monopoly power is rarely available, the law requires only indirect evidence. PCOL § III. But for each relevant market here there is both.

A. Indirect Evidence Of Google's Monopoly Power In General Search Services

Monopoly power may be inferred "from a firm's possession of a dominant share of a relevant market that is protected by entry barriers." PCOL § III.A (citing *Microsoft*, 253 F.3d at 51). Based on this measure, the trial record demonstrates Google's monopoly power.

1. Google Dominates The General Search Services Market

As of 2020, Google's market share in general search services in the United States was 89%, greatly exceeding the 70% threshold "that courts ordinarily find sufficient to establish monopoly power." PFOF ¶ 521; PCOL § III.A.1 (citing *FTC v. Facebook, Inc.*, 581 F. Supp. 3d 34, 47–48 (D.D.C. 2022)). The durability of Google's market dominance further supports a finding of Google's monopoly power in general search services. PCOL § III.A.1. From 2009 to 2013, Google—in the ordinary course—tracked its market share compared to other GSEs and determined that its share consistently exceeded 75%. PFOF ¶ 526. Since then, Google has periodically calculated its market share, for both desktop and mobile, and has continued to find

its share exceeds 75%. PFOF ¶ 527. On mobile devices, where searches have steadily migrated in recent years, Google's market share is almost 95%. PFOF ¶ 524.

2. Barriers To Entry And Growth Protect Google's Search Monopoly

Significant entry barriers protect Google's dominant position.

First, Google's exclusive distribution contracts establish and fortify entry barriers. PCOL § III.A.2. Defaults are by far the most effective method of distribution. *See supra* at § III.C.2 (discussing the power of defaults). Both Google and its rivals have observed that other distribution methods, like marketing, simply do not generate enough return in usage. PFOF ¶¶ 879–880. Google's control of the defaults on the Chrome browser, which is the source of approximately one-fifth of all general search queries in the United States, compounds this entry barrier. PFOF ¶ 549.

Second, economies of scale are a common entry barrier. PCOL § III.A.2. This is especially true in search because scale is crucial for a GSE's viability. PFOF § III.E. As Satya Nadella, Microsoft's CEO testified, "the more queries you see, the better search quality you're going to have by definition." PFOF ¶ 163 (citing Tr. 3496:12–16). Google's conduct fortifies this entry barrier by locking up the scale necessary for rivals to achieve competitive quality.

Third, entry barriers exist where a prospective entrant must invest significant capital to bring a product or service to market. PCOL § III.A.2. The costs to build and maintain a quality GSE are truly "extraordinary." PCOL § III.A.2 (citing *Sysco*, 113. F. Supp. 3d at 80 (finding high entry barriers in an "extraordinarily . . . capital intensive" market for broadline foodservice distribution). John Giannandrea, Google's former head of search, testified that building a competitive GSE is "very expensive." PFOF ¶ 536 (citing Tr. 2267:17–2268:7). In a [redacted] PFOF ¶ 537 (citing

UPX0266 at -986). Also, Apple assumed a GSE would require [redacted]. PFOF ¶ 537. Indeed, Microsoft has invested nearly $100 billion in Bing over the past two decades. PFOF ¶ 537. What is more, trial witnesses agreed that the complexity of building a GSE—including crawling, indexing, and ranking—poses an incredible challenge, which elevates the entry barriers for general search. PFOF ¶ 533.

Fourth, the need for a license is often an entry barrier. PCOL § III.A.2. GSEs need permission to crawl websites. Mikhail Parakhin, Microsoft's CEO of Advertising and Web Services, explained that webmasters limit which GSEs may crawl their websites. PFOF ¶ 532. Because websites must pay for the bandwidth used by a GSE to crawl their pages, it is "fairly standard practice" for websites to permit crawling by only the most popular search engines. *Id*. Thus, nascent GSE rivals face an uphill battle accessing the websites necessary to build a representative index.

Fifth, brand recognition and reputation can limit rivals' ability to expand. PCOL § III.A.2. As the Court acknowledged in its summary judgment order, the Google brand has become a verb. Summ. J. Opinion, ECF No. 624 at 1. Sridhar Ramaswamy, co-founder of Neeva who led Google's search infrastructure team, testified that Google's reputation is so entrenched that when users have a negative search experience with Google, users blame themselves, affording Google a margin for error not enjoyed by new entrants. PFOF ¶ 542.

Finally, the dearth of entry into general search services confirms the difficulty of entering and challenging Google. In 2020, Bing's market share was more than 5%, and Yahoo and DuckDuckGo were even smaller, with market shares of approximately 2% each. PFOF ¶ 521. For most of the past decade, Google's two largest rivals—Bing and Yahoo—rarely exceeded 10% market share combined. PFOF ¶ 525. Despite raising a substantial amount of money,

having engineering prowess, and peaking at several million monthly active users, Neeva was unable to compete in the general search services market. PFOF ¶ 539. Dr. Ramaswamy explained "if a well-funded and exceptionally talented team like Neeva could not even be a provider on most of the browsers, I don't see that as the market working." PFOF ¶ 539 (citing Tr. 3723:22–3724:23). The combination of Google's routine reports of billion-dollar profits from search coupled with the absence of sustained, meaningful entry in the market demonstrates the depth and breadth of the moat around Google's monopoly. *FTC v. Cardinal Health, Inc.*, 12 F. Supp. 2d 34, 56 (D.D.C. 1998) ("The history of entry into the relevant market is a central factor in assessing the likelihood of entry in the future.").

Google's extraordinary market share in general search services, and the high entry barriers in that market, prove Google's monopoly power.

B. Indirect Evidence Of Google's Monopoly Power In Search Ads And Text Ads

Google also exercises monopoly power in the relevant ads markets. Google holds dominant market shares in Search Ads and Text Ads, which were at 74% and 88%, respectively, in 2020. PFOF ¶¶ 574, 601. Google's market shares in both Search Ads and Text Ads, like general search services, "comfortably exceed the levels that courts ordinarily find sufficient to establish monopoly power." PCOL § III.A.1 (citing *Facebook*, 581 F. Supp. 3d at 47–48). As with general search services, high entry barriers exist in the related advertising markets as well.

As an initial matter, the entry barriers for Text Ads includes all the entry barriers for general search services since Text Ads require an operational GSE. Most of the entry barriers for general search services (e.g., the investment needed and complexity of building search capability, brand recognition and reputation) apply to Search Ads as well. In addition, operating a Search Ads or Text Ads platform requires complex technology and engineering. PFOF ¶¶ 440, 492. And it is expensive. Google runs billions of advertising auctions each day, and some of

Google's advertisers use more than a billion keywords. PFOF ¶¶ 492, 1035. For a new entrant, managing constant ad auctions and the huge influx of data would be prohibitively expensive. And since a viable GSE must make money, building an advertising platform is itself another entry barrier for general search services. PFOF ¶ 537 [redacted]

C. Direct Evidence Of Google's Monopoly Power In All Relevant Markets

Although the D.C. Circuit has held that direct evidence of monopoly power is not necessary, PCOL § III.B, direct evidence here independently demonstrates the existence of monopoly power in these markets.

First, for direct evidence of monopolization, courts point to a firm's ability to profitably raise prices without a competitive response from a rival decreasing prices or expanding output that makes the action unprofitable. PCOL§ III.B. For years, Google has generated persistently high profits in its search and search advertising businesses, together referred to as "Search+."[5] PFOF § V.B.4.a. Indeed, Google has found that its revenues have "grown at an incredible rate over the past decade – typically in the high teens." PFOF ¶ 593. Since 2014, Google has enjoyed extraordinarily high operating profit margins of about [redacted] for its search and related advertising business (*i.e.*, Search+). PFOF ¶ 595.

Second, Google has captured significant surplus from its distribution deals. Mr. Pichai admitted that because Google has been Apple's only viable option for Safari's default search engine, Google has avoided paying Apple the higher revenue share it sought for the ISA. PFOF

[5] Search+ includes revenue generated by search advertising and the costs associated with providing both organic search results and Search Ads. PFOF ¶ 592. Although Search Ads provide more than [redacted] of Search+ revenue, a small portion of Search+ revenue may be generated by other advertising formats such as Discover or Gmail ads. PFOF ¶ 592.

¶ 569. Although sharing revenue costs Google billions of dollars annually, the ISA is nevertheless "profitable," according to Mr. Pichai, because it generates "more billions and billions in revenue." PFOF ¶ 568 (citing Tr. 7781:23–24); *see also* PFOF ¶ 732 (calculating net revenue losses in the event that Google lost the Safari default).

Third, Google has experienced little to no market response to search quality reductions and advertising price increases. In general search services, Google's quality-degradation experiments showed that users are not responsive to increases in Google's latency, an important barometer of quality. PFOF ¶ 571. And in advertising, Google employees conceded that Google has the power to raise prices and CPCs; indeed, an internal Google study concluded that the company would retain enough advertisers after a 15% increase in Text Ad prices to see profits rise. PFOF ¶¶ 495, 631–632. Also, Jerry Dischler, Google's former head of ads, testified that Google has previously increased Search Ads prices by 5% resulting in an overall increase in Google's revenue even though the number of Search Ads sold likely decreased. PFOF ¶ 631. And other Google employees testified that Google has profitably raised prices on advertising. PFOF ¶¶ 710–711. In fact, Google's Text Ad prices [redacted] from 2013 to 2021, and for the better part of the past decade, Google has increased its year-over-year search advertising revenue by 20% or more. PFOF ¶¶ 634, 710–711.

When facing financial targets, Google has manipulated its auctions to extract additional revenue from advertisers. PFOF §§ X.C.4, X.C.5.g. Advertisers accept the price increases because, as they testified, they have no alternative for replacing the volume and reach of Google's Search and Text Ads. PFOF ¶ 585. Google's power to raise prices is so entrenched, Google does not consider its rivals' prices when deciding whether to raise Search Ad or Text Ad prices. PFOF § X.C.6.

Thus, although unnecessary as a matter of law and given the substantial indirect evidence, direct evidence amply demonstrates that Google has monopoly power in all relevant markets.

III. Google's Exclusionary Conduct Has Harmed Competition In Each Relevant Market

Under *Microsoft*, the evidence establishes a prima facie case that Google's conduct has an "anticompetitive effect," meaning that it "harm[s] the competitive process." 253 F.3d at 58. Google's conduct has harmed the competitive process by (1) depriving rivals of the scale necessary to compete; (2) preventing Apple and Branch from growing their nascent technology or entering the relevant markets; and (3) foreclosing rivals through Google's use of exclusive contracts. Individually and collectively, this conduct has allowed Google to maintain its monopoly power in violation of Section 2 of the Sherman Act.

A. Google's Conduct Harms Competition By Depriving Rivals Of The Scale Necessary To Compete

Google pays billions of dollars to guarantee it is the exclusive out-of-the-box default search engine across nearly all search access points—particularly on mobile phones. Google therefore denies rivals access to the most important distribution channels for general search engines. *See infra* § III.C. Without access to those distribution channels, rivals cannot achieve the scale necessary to compete effectively with Google.

1. Scale Plays A Vital Role For General Search Engines

Search engines depend on user-side data to improve may aspects of search quality, including crawling, indexing, ranking, and ads quality and monetization. *See* PFOF ¶¶ 163–202.

a) General Search Quality Is Based On Scale

A large amount of user-side data collected by GSEs, i.e., scale, is vital for search quality and necessary to compete in the relevant markets. As one internal Google document explained:

"most of the knowledge that powers Google, that makes it magical, originates in the minds of users. Users are the founts of knowledge—not us." PFOF ¶ 166 (citing UPX0228 at -501). Accordingly, Google, collects vast amounts of user-side data and retains that data indefinitely. PFOF ¶ 162. Important uses of scale include (1) ranking, (2) responding to tail queries, and (3) answering location-based queries.

First, scale helps search engines narrow and order the results shown to a user when they enter a search query. PFOF ¶¶ 177–188. Eric Lehman, a former Google engineer, explained the importance of scale in ranking: "when thinking about [] the value of the search results for a query, relevance is the most important consideration[,]" and "[h]aving user data is useful to Google in identifying relevant results for a search query." PFOF ¶ 178 (citing Tr. 1777:15–1778:4). Thus, for example, Navboost—"one of the most powerful ranking components" at Google—memorizes all clicks for ***all queries*** received in the prior ***13 months***. PFOF ¶¶ 183–184 (citing UPX0190 at -740) (emphasis added). It would take Bing over 17 years to generate a similar amount of data. PFOF ¶ 988. Google then uses a system called Glue to help rank whole page results. PFOF ¶¶ 194–195. Glue also relies on enormous amounts of user data. PFOF ¶ 195.

Second, scale is critical for answering tail queries. PFOF ¶¶ 995–996. Dr. Lehman testified that although "extremely rare individually, [] collectively, [tail queries] make up a significant part of the query stream." PFOF ¶ 981 (citing Tr. 1811:4–25). As a result, many users judge a search engine based on its ability to answer tail queries. PFOF ¶ 997.

Third, scale is also critical for answering location-based queries, particularly for mobile users. PFOF ¶ 1004. Data gleaned from desktop queries is often not useful in answering mobile queries, particularly queries that depend on a user's fine-grained location—e.g., "restaurants near me." PFOF ¶ 1004. Also, mobile data from one city may have no value at all in answering

mobile queries from another city. Thus, a large amount of data, including mobile data from a wide variety of locations, is necessary for a general search engine to provide quality responses. PFOF ¶¶ 1000–1001, 1004.

b) Scale Is Important For Ad Quality And Monetization

Scale is also important for ad quality and relevance. *See* PFOF § VIII.A.4, ¶¶ 1030, 1034–1051, 1054–1056. Sundeep Jain, former Google VP, testified that increasing data related to commercial activity leads to better search ads. PFOF ¶ 1057. Scale enables GSEs like Google to better identify queries with commercial intent and match relevant ads to those queries, increasing revenues and profitability. PFOF ¶¶ 1030–1041, 1046–1053; PFOF ¶ 562 (Microsoft's syndication partnership with Yahoo improved Bing's monetization). Finally, scale gives Google more data to conduct simulations and live experiments to refine its advertising algorithms. PFOF ¶¶ 145, 202, 1055–1056. For example, Google "has such a high volume of users, [it] can get to statistical significance very quickly" when conducting ad experiments (also known as launches). PFOF ¶ 1055 (citing Des. Tr. 92:3–93:10 (Jain (Google))). Rival GSEs, on the other hand, need more time to run experiments and are constrained in the number they can run simultaneously, slowing improvements and—importantly—limiting their cumulative effect. PFOF ¶¶ 1054, 1057.

2. Google's Distribution Contracts Deprive Rivals Of Critical Scale

By locking up default exclusivity for more than a decade, Google has deprived rivals (and potential entrants) of the user-side data necessary to compete effectively. As a result, rivals lose out for reasons having nothing to do with competition on the merits. *See* PCOL § IV.C.2.

Google's defaults provide the company with searches it would not otherwise receive. Google's expert Prof. Kevin Murphy agreed that defaults generate additional search volumes. PFOF ¶ 876. That is why Google pays so much for defaults. Exclusivity, moreover, ensures that

Google receives searches that it would not have received in a more competitive world where rivals are present on devices or users were presented with alternative choices.[6] PFOF § VI.D.4.

At the same time, Google's distribution agreements deprived rivals of queries that would have increased their quality and put competitive pressure on Google to invest more in its own quality. *See infra* §§ III.C.2–3. The effect of this persistent deprivation of scale is powerful and cumulative, exacerbating barriers to competition and ensuring that rivals never pose a competitive threat to Google's monopoly. *See* PCOL §§ III.A.2, IV (citing *United States v. Dentsply Int'l, Inc*., 399 F.3d 181, 191 (3d Cir. 2005) (anticompetitive conduct "helps keep sales of competing teeth below the critical level necessary for any rival to pose a real threat to Dentsply's market share"). Mr. Parakhin of Microsoft put it bluntly: "[i]n search, distribution is extremely important. . . . If you don't have ability to effectively distribute, it's almost meaningless to invest in the area." PFOF ¶ 1072 (citing Tr. 2643:9–23).

Because it cannot argue that scale is unimportant, Google instead insists that there are diminishing returns from scale. But it is axiomatic that diminishing returns means that smaller rivals would derive greater benefits from additional scale than Google. PFOF ¶ 164. That makes Google's conduct worse, not better. Moreover, the user-side data Google collects continues to

[6] Google not only receives more search queries than its rivals, it also sees a larger number of unique searches. PFOF ¶ 980. For example, Prof. Whinston analyzed the unique search phrases seen on either Google or Bing during one week in February 2020, and determined what fraction of phrases were received only on Google, only on Bing, or on both search engines. For all devices, 93% of unique search phrases were seen only by Google, 4.8% were seen only by Bing, and 2.2% were seen by both. For mobile queries, 98.4% were seen only by Google, 1% were seen only by Bing, and 0.7% were seen by both. PFOF ¶ 980.

accrue positive value, even if smaller in size and importance, after the point of diminishing returns. PFOF ¶ 164.

Thus, Google's distribution agreements have harmed competition in the relevant markets.

B. Google's Conduct Has Harmed Competition By Incentivizing Apple To Not Enter The Relevant Markets And Preventing Apple And Branch From Growing Nascent Technologies

Google's contracts harm competition by discouraging—or stopping outright—Apple and Branch from entering the relevant markets.

First, Google's payments to Apple incentivize Apple to not enter the relevant markets. Apple [redacted] PFOF ¶ 1095. Apple even hired Mr. Giannandrea, Google's head of search, to strengthen Apple's search and knowledge capabilities. PFOF ¶¶ 1093, 1097. Without Google's ISA payments, Apple would have the ability and motivation to [redacted] PFOF ¶ 1096. Indeed, Eduardo Cue, Apple's lead negotiator, testified that, if Apple did not receive the massive payments it sought from Google, Apple would have developed its own search engine. PFOF ¶ 1101. Internally, Google has recognized "Apple's ability and likely plan to build web answers and a general search engine." PFOF ¶ 1093. Instead, Apple accepts billions each year in revenue-share payments from Google in exchange for Apple's agreement to route search traffic to Google. PFOF ¶¶ 1098–1101. The end result is less competition and less choice.

Second, the ISA restricts Apple's ability to grow its Suggestions product. Since 2013, Apple has offered Suggestions in Safari—an innovative feature that diverts search traffic away from Google and results in "a much better user experience." PFOF ¶¶ 1103–1106. Although Suggestions is not a general search engine, it "bleeds" queries away from Google, PFOF ¶ 1109, and one day could become a reasonable substitute for a general search engine. Google recognized that threat and responded by adding a term in the 2016 ISA requiring Safari to

continue to use Google in a way that was "substantially similar" to its use in 2016, thus thwarting the expansion of Suggestions. PFOF ¶¶ 1106–1112.

Third, Apple operates Spotlight, a "universal search" feature that is primarily suited for "on device" search but can also run web searches through Safari. PFOF ¶ 1113–1114. If Apple were to show ads in Spotlight, Apple's position in Search Ads would grow significantly.[7] However, the ISA prohibits Apple from displaying Search Ads in Spotlight without giving Google the right-of-first-refusal to show the ads under the same revenue-sharing terms as for Safari queries. PFOF ¶¶ 1116–1119. In other words, the ISA requires Apple to obtain Google's permission before using Spotlight to expand Apple's Search Ads efforts. This is significant: under the ISA, [redacted], and competition would have benefited.

Fourth, Google's distribution contracts thwarted the adoption of Branch's innovative search product for navigating and discovering app content. PFOF § VI.B.5. Google's RSAs include prohibitions on distributors' ability to preinstall "alternative search services" on their devices. Although distributors generally understand those provisions to prohibit preinstallation of services that directly compete against Google Search, like Microsoft's Bing, the provisions are drafted broadly enough that they can encompass services like Branch's app-search product, even though it is not a GSE. PFOF ¶ 1121.

Out of a concern that Google would designate Branch's app-search product an alternative search service and refuse to pay a revenue share on devices which have Branch preloaded, OEMs

[7] Today, the only Search Ads sold by Apple are in its app store. PFOF ¶ 1115.

and U.S. carriers have declined to preinstall Branch without substantially limiting its functionality. PFOF ¶¶ 835, 838, 841–849. This ensures Branch does not pose, and can never pose, a threat to Google's search monopoly. PFOF ¶¶ 835, 838, 841–849. Moreover, on at least two occasions, Google intervened to dissuade partners that were considering expanded partnerships with Branch. PFOF ¶¶ 852–855, 857–858, 860–862. As AT&T's Jeffrey Ezell explained, after hearing from Google, it became clear that the economic benefits of working with Branch were not great enough to justify the risk to AT&T's revenue-share payments from Google. PFOF ¶ 860. Google's contracts thereby foreclosed distribution of a product that could have diverted users from general search services and eroded Google's monopoly in that market.

Accordingly, Google's conduct has reduced Apple's incentive to compete against Google directly and also limited competition from nascent services by Apple and Branch.

C. Google's Conduct Has Harmed Competition By Foreclosing A Substantial Share Of Each Relevant Market

Google invites the Court to evaluate Google's conduct only through the lens of exclusive dealing. The Court should reject this invitation because exclusive dealing is simply one form of exclusionary conduct. *See* PCOL §§ IV.B, IV.C.1 n.4. Thus, although the Court need not view the conduct through this lens, it provides an additional and independent basis for a prima facie case under Section 2: Google has executed exclusive contracts with Apple, Android OEMs and carriers, and third-party browsers that foreclose a substantial share of the general search services market and related advertising markets. PCOL §§ IV.C–D; *see also* PFOF § VII.

1. Google's Contracts Are Exclusive

Under Section 2, the test for exclusivity is flexible, not literal—both de facto exclusivity and partial exclusivity satisfy the requirement. PCOL § IV.C.1. An agreement is de facto exclusive when it contains no expressly exclusive terms but has a similar practical effect.

PCOL § IV.C.1. And an agreement is partially exclusive when it requires the partner to use the defendant for a portion of its needs while allowing the partner to use competitors for the rest. PCOL § IV.C.1. Whether literally, de facto, or partially, Google's contracts are exclusive.

a) Google's Apple Contract Provides Default Exclusivity

The ISA, Google's contract with Apple, ensures Google is the exclusive out-of-the-box default search engine on iOS and macOS devices. It requires Apple to pre-set Google—and only Google—as the default search engine for "Search Queries" performed through Safari, Apple's only browser and the only browser pre-installed on Apple devices. PFOF ¶¶ 7, 223–224, 729. Safari is [redacted]. PFOF ¶ 730. In 2020, Google determined that more than [redacted] of its daily iOS users accessed Google through Safari's default. PFOF ¶ 730. Similarly, Mr. Nadella explained that although mobile devices have "multiple search access points, the one access point that matters is the search default on the browser." PFOF ¶ 922 (citing Tr. 3499:21–3500:8).

Technically, the ISA does not restrict Apple's ability to preinstall third-party browsers with different default search engines. But that opportunity is merely theoretical. Safari is the only browser pre-installed on Apple devices, and Apple refuses to pre-install any third-party applications, including browsers and search widgets. PFOF ¶¶ 7, 729. Nor will this approach change: Mr. Cue testified that he did not "see any scenario in which [Apple] would" preload third-party applications on Apple devices. PFOF ¶ 729 (citing Tr. 2456:6–10).

Moreover, under the ISA, Apple cannot (1) offer a search engine choice screen, PFOF § VI.A.2.a, ¶¶ 223, 740; (2) pre-select a different default search engine in Safari's private browsing mode, PFOF § VI.A.2.e, ¶ 223; (3) offer a different default search engine on different Apple devices (*e.g.*, different defaults on mobile versus desktop devices), PFOF ¶ 223; (4) offer

a different default search engine in the United States (or part of the United States) versus the rest of the world, PFOF ¶¶ 223–224; (5) materially expand Apple's Suggestions feature in Safari, PFOF ¶¶ 227, 1103–1111; or (6) run ads on Siri or Spotlight without giving Google the right-of-first-refusal to control those ads, PFOF ¶ 230.

Google has repeatedly insisted on exclusive default status, even when Apple sought greater flexibility. PFOF § VI.A.2. For example, in 2007, when Apple rolled out a version of Safari for the Windows operating system, Apple wanted to offer a choice screen for users to select their default search engine. PFOF ¶ 747. But Google's Executive Management Group—including Partner Advisor for Global Partnerships Joan Braddi, co-founder Sergey Brin, and future CEO Sundar Pichai—rejected Apple's request to make Google "one of the two possible choices for search provider, not the default." PFOF ¶ 749 (citing UPX0126 at -240). Google's response was swift and unequivocal: "No default placement – no revenue share on Safari/Windows." *Id.* (citing UPX0072 at -216).

Two years later, in 2009, Apple sought the "option but not the obligation" to pre-set Google as the default search engine in Safari. PFOF ¶ 758 (citing UPX0605 at -269; Tr. 4995:23–4996:2). Apple's request would have afforded the company flexibility to pre-set Google as the default search engine only in some locations, only on some devices, or only in some versions of Safari. PFOF ¶ 759. Under this approach, Apple may have succeeded years later in setting DuckDuckGo's privacy-oriented search engine as the default in Safari's private browsing mode—an option some Apple executives pursued. PFOF § VI.A.2.e. Instead, in 2009, Google rejected Apple's request, and it did not appear in the ISA's amendment. PFOF ¶¶ 760. Google rebuffed a similar proposal in 2012 when Apple sought an ISA providing "[n]o

obligation to use Google search services or to make Google the default." PFOF ¶ 761 (citing UPX0570 at -724).

Trying a different tack, in 2013 Apple began offering Suggestions in Safari—a feature that saved people time and a trip to Google by guessing their search intent and then funneling them directly to a responsive website. PFOF ¶¶ 10, 81, 1103–1105. Mr. Giannandrea explained that "every query that we provide an answer to is a query that doesn't go to Google." PFOF ¶ 1102 (citing Tr. 2230:13–19). Because Apple's Suggestions diverted traffic from Google, Google's executives reacted to quell a feared 10% revenue loss. PFOF ¶¶ 1106–1107. Google built into the ISA "a structure that prevents [Apple] from diverting queries and destroying value." PFOF ¶¶ 1107–1108.

In the 2016 ISA, Google froze Suggestions by including a term that required Safari to use Google in a way that was "substantially similar" to its use in 2016. PFOF ¶¶ 1108–1111. This term intentionally limited Suggestions' growth and functionality. PFOF ¶ 1109. A 2018 email from Ms. Braddi to a colleague revealed Google's rationale for this clause: Google saw Apple "increasingly offer[ing] the user other suggested redirections. This concerned us which is why we added into the [ISA] that they could not expand farther than what they were doing in Sept 2016 (as we did not wish for them to bleed off traffic)." *Id.* (citing UPX0309 at -823).

Through the ISA—which currently runs from 2021 to [redacted], PFOF ¶¶ 219–220—Google successfully locked down the default on all versions of Safari, on all devices, and in nearly all geographies. Regardless of whether Apple releases a new setting for private browsing, PFOF ¶ 778, or even a totally new device, like its Vision Pro headset, Google is in control. PFOF ¶¶ 223–224, 739.

b) Google's Contracts With Android OEMs And Carriers Provide Default Exclusivity

For years, Google has executed contracts both with OEMs, such as Samsung and Motorola, and with U.S. carriers, such as AT&T, Verizon, T-Mobile, and Sprint, to ensure that Google maintains exclusive default status (*i.e.*, out-of-the-box default on all search access points) for Android devices. PFOF §§ III.F.2, VI.B. Google's ordinary-course documents confirm that it seeks to make the contracts "exclusive across all Android devices[]," so that Android phones "come with Google as the only search engine out-of-the-box." PFOF ¶ 813 (citing UPX0134 at -869). Google accomplishes this goal through interrelated contracts: the MADAs and the RSAs.

(1) The MADA Is Effectively Compulsory

Exclusivity begins with the MADA, which requires OEMs that preinstall any Google app to (1) put Google's search widget on the Android device's homescreen;[8] (2) preinstall 11 Google apps, including (in a folder on the home screen) Google Chrome "set to Google" and the Google Search App; and (3) make six of those apps undeletable. PFOF ¶¶ 245–248. Since 2020, certain MADAs, including the Motorola and Samsung MADAs, have restricted partners from even instructing or encouraging users to change the default, thus making such changes more difficult and less likely. PFOF ¶ 249.

The MADA is not just exclusive; it is effectively compulsory. The MADA is the only means for an OEM to obtain the Play Store. PFOF ¶ 779. And OEMs simply cannot sell phones without the Play Store because it is the only meaningful avenue Android users have for obtaining apps. *See, e.g.,* PFOF ¶ 240 (citing UPX0312 at -154) ("OEMs want the Play store on their phone, and in return we are able to get other apps like Google search . . . on the phone as a

[8] The MADA technically permits OEMs to preinstall a rival search widget alongside Google's; however, the evidence demonstrated that OEMs do not want to preinstall two search widgets and have never done so. PFOF ¶¶ 789–791.

result."); PFOF ¶¶ 238, 241–244.[9] Even Microsoft—against its self-interest in promoting Bing—was forced to put the Google Search widget and other Google apps on the homepage of its Duo Android devices. PFOF ¶¶ 240, 789–790 (discussing Duo devices). As Mr. Nadella emphasized, without the Play Store, an Android phone is a "brick." PFOF ¶ 240 (citing Tr. 3517:6–25). Unsurprisingly, every Android smartphone sold in the United States comes with the Play Store and is therefore subject to a MADA. PFOF ¶ 779.

(2) Then The RSA Locks Up Exclusivity

Google uses a "belt and suspenders" approach by entering into RSAs with carriers as well as the OEMs that have signed MADAs. PFOF ¶¶ 818, 820. In exchange for payment, the RSAs require carriers and OEMs to preinstall search-related Google apps with prominent placement and preclude preinstallation of "alternative search services" on their Android devices. PFOF ¶¶ 260–262. In a document prepared for Google's Chief Business Officer, Phillipp Schindler, Google explained that the RSAs ensure "[d]evice exclusivity," "[d]efault [placement] on all access points," and that "Chrome [is] in the hotseat and default." PFOF ¶ 259 (citing UPX0141 at -818). Hotseat is an industry term for the bottom row of apps on a mobile device that a user can access quickly and that persist when swiping to the right or left; it is considered some of the most valuable real estate on the device. PFOF ¶¶ 150, 277.

In 2011, Chris Barton, a Google Strategic Partner Development manager, explained the role of search defaults on Android devices:

> We need to incentivize carriers to ship Google by using the same approach we at Google have used for many years. "We will pay you revenue share in return for exclusive default placement". This contract is an exchange.

[9] Although other app stores are distributed on Android phones, none, including Samsung's Galaxy Store, rival the Play Store in terms of the available apps. PFOF ¶ 240. Google does not view the Galaxy Store as a threat to the Play Store's dominance. PFOF ¶ 242.

PFOF ¶ 799 (citing UPX0134 at -865); *see also* PFOF ¶¶ 806–807 (citing UPX0134 at -865), 811–813. Mr. Barton continued, "[w]ithout the exclusivity, we are not 'getting' anything" in exchange for revenue-share payments. PFOF ¶¶ 799, 813 (citing UPX0134 at -865). Similarly, he explained that Google sought exclusivity for Android devices because if it did not, "then [Google] would have created an ecosystem [Android] that basically would just lead to a bunch of searches on competing services." PFOF ¶ 810 (citing Tr. 341:5–21). Google's strategy remains the same today. *See, e.g,* PFOF ¶¶ 283, PFOF ¶ 259 (citing Tr. 7666:11–18 (Mr. Pichai testified that Google pays for "pre-load exclusivity" because exclusive default are valuable); Des. Tr. 153:15–24, 154:3–15 (Levine (Google) Dep.) (confirming "[f]or a device to qualify for rev share . . . it had to have search exclusivity outside the box").

Like Apple, Google's Android partners have pushed back on Google's preinstallation, placement, default, and search exclusivity requirements. For example, Brian Higgins, Verizon's Chief Customer Experience Officer, testified that, during the negotiations for its most recent RSA, Verizon sought a limited carve-out to permit preinstallation of Yahoo Search on Android devices. PFOF ¶¶ 822, 824, 828 (citing Tr. 1065:2–13). Google rejected this effort to offer users choice: Google told Verizon that the company's revenue share would drop to [redacted] if Verizon preinstalled Yahoo Search—a reduction Verizon viewed as "punitive." PFOF ¶¶ 824–825, 828 (citing Tr. 1064:2–1065:13). Verizon estimated [redacted] if it preloaded Yahoo (or any other Google rival). PFOF ¶ 827.[10] So, Verizon never did. PFOF ¶ 830.

[10] Verizon's final 2021 RSA permitted Verizon to preload the Yahoo Mobile App with web search functionality (as distinct from the Yahoo Search app) on Verizon's devices, without a reduction in revenue share, but only while Verizon owned Yahoo. A pyrrhic victory; the RSA was signed *after* Verizon sold Yahoo, and the term was meaningless. PFOF ¶ 830.

c) Google's Contracts With Third-Party Browsers Provide It With Default Exclusivity

As with Apple and Android, Google has exclusive default contracts with third-party browsers such as Mozilla and Opera (and even with little-known players such as Puffin and Aloha). *See* PFOF § III.F.3. Under these contracts, Google must be set as the default search engine when the consumer downloads and installs the browser. PFOF ¶¶ 310, 316–317. For example, Google's contract with Mozilla—which owns Firefox, the largest third-party browser—requires Mozilla to preset Google as the default search engine for all search access points. PFOF ¶ 310. A choice screen is not permitted. *Id.*

2. Defaults Are The Most Important And Efficient Method Of Distributing General Search Services

Today, new computers and mobile devices typically come out-of-the-box with default settings chosen by the distributor. PFOF ¶¶ 146, 151, 868. The same is true when a user downloads a new browser, as browsers typically have a search bar set to a default GSE. PFOF ¶¶ 146, 151. These default settings are the most important and efficient means of distributing a GSE, particularly on mobile devices. *See*, *e.g.*, PFOF § VI.D.2; PFOF ¶ 922.

a) The Enormous Number Of Default Searches Shows The Power Of Defaults

The defaults secured by the challenged agreements account for roughly 50% of all general search queries in the United States. PFOF ¶ 954. Even a large portion of the remaining general-search queries are attributable to defaults. Most notably, on user-downloaded versions of Chrome (which are most popular on Windows and MacOS devices), the Google default accounts for another 20% of all U.S. general search queries. PFOF ¶ 968.

Thus, roughly 70% of all U.S. general search queries are conducted on Google through its position as the default search engine on one access point or another. These numbers underscore the enormous importance that defaults hold in general search distribution.

b) Trial Testimony Shows The Power Of Defaults

Witnesses at trial—whether testifying on behalf of Google or third parties—repeatedly confirmed the importance of defaults. For example, Mr. Nadella explained:

> The entire notion that users have choice and they go from one website to one website or one search into one search and it's complete bogus. There's defaults. The only thing that matter in terms of changing search behavior.

PFOF ¶ 882 (citing Tr. 3497:13–3498:19). Also, Mr. Pichai admitted that defaults are very valuable to Google. PFOF ¶ 932 (citing Tr. 7684:18–20). Other key Google witnesses, such as Jim Kolotouros, Google VP of Android Platform Partnerships, and Ms. Braddi, confirmed this. PFOF ¶ 932.

Dr. Ramaswamy[11] testified that "being the default on the browser is the most efficient way to get into the hands of your users" because of the "convenience of easy accessibility" and "tapping into . . . engrained default behaviors are deciding factors when it comes to whether a search engine gets lots of usage." PFOF ¶ 877 (citing Tr. 3689:15–24). He further explained that "whoever controls that search box gets a lot of usage independent of the merits of the search engine. And so you get enormous usage simply by the power of the default." PFOF ¶ 882 (citing Tr. 3710:7–3712:20).

[11] Dr. Ramaswamy was uniquely positioned to testify on the power of defaults given that he has seen their impact as an engineer and executive at Google and then as the CEO of Neeva, a search start-up launched in 2017. PFOF ¶ 39.

The power of defaults is particularly pronounced on mobile because defaults are stickier on mobile devices, PFOF ¶¶ 919–922, and more queries pass through these devices, PFOF ¶ 923. For example, one Microsoft executive observed that "[o]n a mobile platform more than anywhere else, even more than on the PC, default is the only thing that matters." PFOF ¶ 928 (citing Des. Tr. 143:7–23 (van der Kooi (Microsoft)). Google has estimated that losing the mobile Safari default could be [redacted] as losing the Safari desktop default. PFOF ¶¶ 917–919. Similarly, Microsoft assumed that it could capture significantly greater query share on mobile iPhones [redacted] than desktop Macs [redacted] because of [redacted] on desktops. PFOF ¶ 928.

c) Ordinary-Course Documents And Historical Events Show The Power Of Defaults

Google has long recognized the power of defaults. In 2005, Microsoft announced a plan to set a search default in Internet Explorer to Microsoft's own search engine. In a letter from its general counsel, Google accused Microsoft of "put[ting] its own interests above those of end users." PFOF ¶ 872 (citing UPX0172 at -731). Google emphasized that Microsoft "know[s] most end users do not change defaults" and further accused Microsoft of trying to "gain a large number of search users for reasons having nothing to do with the merits of Microsoft's search offering." PFOF ¶¶ 350, 872 (citing UPX0172 at -731). Discussing the letter at trial, Mr. Pichai testified that because users do not change defaults, Google was "deeply concerned" that Microsoft's actions could harm the competitive process. PFOF ¶ 872 (citing Tr. 7683:5–8). Two years later, an important Google study confirmed the power of defaults for search distribution. When considering the factors that might influence a user's choice of search engines—such as results quality, search features, user experience, and brand strength—"one

factor surprisingly trumps them all: the default home page setting." PFOF ¶ 878 (citing UPX0093 at -904).

Over time, Google—and Microsoft—continued to recognize the power of defaults. For example, in 2016, Google and Microsoft each negotiated potential multi-billion-dollar deals with Apple for control of the Safari default. PFOF ¶¶ 914, 1063–1064, 1264–1272; *see also* PFOF ¶¶ 927–929, 1065–1066, 1273–1278 (Apple and Microsoft discussions in 2018). To inform these negotiations, all three tech corporations estimated the likely effect of Safari's default switching from Google to Bing. All three companies predicted similar, enormous effects. PFOF § VI.D.5. Microsoft was willing to invest billions of dollars in reliance on the power of defaults. PFOF ¶ 943. And Google projected that it might lose ***over [redacted] billion in 2020 alone*** if Apple switched defaults. PFOF ¶ 941. Thus, Google viewed the risk of Apple switching the Safari default as a "Code Red" scenario. PFOF ¶¶ 732, 915 (citing Tr. 1616:20–1618:15).

These estimates were based in part on a 2012 event where Apple replaced iPhones' default maps from Google Maps to Apple Maps. PFOF ¶¶ 906, 916, 918, 925, 929. That switch generated an immediate, sizeable, and lasting increase in Apple Maps' usage even though it was admittedly inferior to Google Maps. PFOF ¶¶ 906–907. Mr. Nadella testified that the Apple Maps switch demonstrated "the power of defaults" and instilled confidence at Microsoft that winning the Apple search default would be a "big game-changer" in search competition. PFOF ¶ 907 (citing Tr. 3500:9–3502:2).

Google projected large losses from changes to the default on Android devices, too. For example, Google estimated it would lose from [redacted] to [redacted] of its Android search revenue if Samsung switched the default search engine for its S Browser. PFOF ¶ 926 (citing UPX0323 at -540, UPX0146 at -412).

Google also recognizes the importance of app preinstallation, noting it is the "highest value way to acquire users." PFOF ¶ 881 (citing UPX0122 at -960). "Without MADA," one Google document explained, "we would not be able to incentivize placement of the Widget, which drives ~50% of search revenue on a device and secures other 1P apps like Chrome and Assistant." PFOF ¶ 796 (citing UPX0316 at -906). Similarly, Anna Kartasheva, Director of Production Operations and Strategy at Google, noted that the MADAs and RSAs work together to "protect[] the [Google] widget on the device" and ensure that "Chrome is in the hotseat/set as default browser"—leaving "in the pretty generous case, only about 10% of the search revenue of [an Android] device to any rival who wants to buy [Google] out."[12] PFOF ¶¶ 814–815 (citing UPX0150 at -900).

Finally, two changes to the default search engine on the Firefox browser confirms the importance of those defaults. PFOF ¶ 908. In 2014, Mozilla changed Firefox's default search engine from Google to Yahoo, but switched back in 2017. *Id.* Firefox usage occurs almost exclusively on desktop, and Firefox's users are more technologically savvy on average; both factors, all else equal, should reduce the effectiveness of defaults. PFOF ¶ 909. Nonetheless, both switches resulted in "sharp and immediate" changes in search market shares. PFOF ¶ 908. Mike Roszak, Google VP of Finance, confirmed that Mozilla's default switch cost Google [redacted] million in 2015, along with a 30% drop in default search engine traffic. *Id.*

[12] At trial, Ms. Kartasheva sought to walk back her 2020 analysis. However, she acknowledged that similar figures appeared in other contemporaneous Google documents and admitted that she believed her analysis to be accurate when she sent it to her boss. PFOF ¶ 817 (citing UPX0131; Tr. 2865:15–23, 2874:14–17, 2875:5–2876:17).

d) Google's Enormous Payments Show The Power Of Defaults

Google pays billions of dollars each year for defaults because they have significant value. PFOF ¶ 933. In fact, Google spends more money securing exclusive defaults than on all other search-related expenses combined. PFOF ¶ 867. For Apple, Google makes enormous payments to keep the Safari defaults and safeguard Google's dominant share of queries. Currently, Google shares [redacted]% of the net search ad revenue derived from queries on Apple devices. PFOF ¶ 225. Google's monthly payments to Apple under the ISA illustrate both the magnitude and the consistent growth trend of Google's cash infusion to Apple: between January 2017 and August 2021, Google's outlays to Apple increased by more than [redacted]%—from $[redacted] million to $[redacted] billion. PFOF ¶¶ 12, 935. Between 2014 and 2022, Google's total annual ISA payments to Apple grew from $[redacted] billion to approximately $[redacted] billion per year. PFOF ¶¶ 12, 935.[13] Although Apple is one of the world's largest companies, Google's payments to Apple constituted [redacted]% of Apple's 2020 operating income. PFOF ¶¶ 12, 935.

Similarly, through the RSAs, Google pays carriers and OEMs for setting Google as the default on all Android search access points. *See* PFOF § III.F.2.b. In 2020 alone, Googe paid carriers and OEMs more than $1.5 billion for U.S. searches. PFOF ¶ 936. One Google document described it bluntly: "Rev shares protect [the] Golden Goose (Google.com on Android.)." PFOF ¶ 811 (citing UPX0541 at .005). Finally, in exchange for third-party browser defaults, Google pays millions of dollars each year. PFOF ¶¶ 311, 317–318, 937–938.

Mr. Pichai confirmed that Google would not pay billions of dollars every year for search defaults if they were not worthwhile. PFOF ¶ 940. Even Prof. Murphy agreed that having a

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13 [redacted] *See* PFOF § VI.A.1, ¶¶ 730, 935.

default generates "additional search volumes." PFOF ¶ 876 (citing Tr. 9941:9–11). As Prof. Whinston explained, a rational actor would not pay Apple, for example, a [redacted]% revenue share if it were not getting additional traffic worth at least that much in return. *See* PFOF ¶ 939; *see also* PFOF ¶ 940. Google's payments demonstrate the power of defaults.

e) Behavioral Economics Explains The Power Of Defaults

Behavioral economics reveals why being the preset default is such an important distribution channel for general search engines. PFOF § VI.D.3; *see also* PFOF ¶¶ 870–871, 878–879, 887, 898–901 (discussing Google's use of defaults in its business). As Prof. Antonio Rangel testified, defaults influence consumer behavior across a wide range of domains, from coffee-shop tipping to 401(k) retirement savings to organ donation. PFOF ¶ 869. Even defaults that are easy to change can still strongly influence choices. PFOF ¶¶ 871, 875. Google knows this well, as Prof. Rangel showed in his testimony: Google deploys defaults in its own business, including by introducing a simple yet "powerful" default that nudged advertisers to substantially increase their daily budgets. PFOF ¶ 871.

Prof. Rangel also described that "habit"—making decisions automatically based on prior outcomes rather than an explicit choice—explains why defaults affect consumer behavior. PFOF ¶¶ 885, 890. And Google's own in-house Behavioral Economics Team has stressed that "[s]eemingly small friction points in user experiences can have a dramatically disproportionate effect" on consumers' decisions. PFOF ¶ 892 (citing UPX0103 at -214). Google's distribution contracts are valuable because they reduce the friction for users to access Google Search. PFOF ¶ 897. At the same time, switching defaults is a high-friction exercise, PFOF ¶¶ 893–897, and Google has used its Android contracts to increase the friction for users to switch to a rival search engine. PFOF ¶¶ 899–901.

In sum, the testimony and documents presented at trial established that defaults are uniquely powerful and the most efficient form of search distribution.

3. Google Contracts Have Foreclosed A Substantial Portion Of The General Search And Search Advertising Markets

Google's default distribution contracts substantially foreclose competition in each relevant market.

Foreclosure is the share of each market covered (or tied up) by the defendant's exclusive contracts. PCOL §§ IV.C.2, IV.D. In this case, Google's agreements cover and thus foreclose 50% of U.S. general search queries—with 28% attributable to the Apple ISA, 19.4% attributable to the Android MADAs and RSAs, and 2.3% attributable to third-party browser distribution agreements. PFOF ¶¶ 954, 728, 804, 864; *see also* PCOL § IV.D.3 (under *Microsoft*, foreclosure is measured by analyzing the foreclosure in the aggregate). Any rival hoping to win these queries from Google would need to overcome not only Google's quality advantage but also the substantial power of defaults. Similarly, Google's agreements cover and thus foreclose 45% of U.S. Text Ad revenues and 36% of U.S. search ads revenues. PFOF ¶¶ 965–966. Each of these foreclosure numbers is substantial on its own—and even more so when considered together and along with the additional 20% of the market covered by the Google default in user-downloaded Chrome. PFOF §VII.C, ¶ 968; PCOL §§ IV.C.2, IV.D.2.

Indeed, although these shares are sufficient to establish the substantiality of foreclosure, *see* PCOL § IV.C.2, additional evidence bolsters that conclusion:

First, direct evidence demonstrates that the foreclosure created by Google's agreements has harmed the competitive process, and ultimately users and advertisers. *See supra* § III.B–C. This evidence demonstrating the limits on Apple, the exclusion of a nascent competitor Branch, and other conduct confirms the substantiality of the contracts' foreclosure.

Other direct evidence demonstrates the substantial effect of Google's agreements. Google itself estimated that [redacted] of searches originating from the Safari mobile default would go to Bing if Microsoft secured that default. *See* PFOF ¶¶ 918.

As Prof. Whinston explained, these ordinary-course estimates and his own econometric analyses of historical events show that, *regardless of any conceivable improvement in rivals' qualities relative to Google's*, Google would retain at least 33% of U.S. general search service queries, 30% of U.S. Text Ad revenues, and 24% of U.S. Search Ad revenues, solely because of the defaults secured by the challenged contracts. PFOF ¶¶ 956–961, 967. Even Prof. Murphy testified that some people simply will not change their search defaults. PFOF ¶ 964. This shows that even if one of Google's rivals becomes substantially more attractive to consumers than Google, the defaults Google pays for ensure that Google retains substantial market share and enormous scale. PFOF ¶¶ 955–961.

Google wrongly urges the Court to measure foreclosure as Google's market share today minus the share it would have held in some but-for world where Google never engaged in the conduct challenged here. Setting aside legal deficiencies, *see* PCOL §§ IV.D.1.a–b, Google's methodology is neither practicable nor sensible, which is why its own expert rejected it at trial. PCOL § IV.D.1.c. It is impracticable—indeed, plainly impossible—to calculate foreclosure based on market shares in the but-for world, which would require answering more than a decade's worth of unknowable questions about how Google would have chosen to compete and how distributors, rivals, potential entrants, users, and (if any litigation ensued) courts would have responded. *Microsoft*, 253 F.3d at 79 ("To require that § 2 liability turn on a plaintiff's ability or inability to reconstruct the hypothetical marketplace absent a defendant's anticompetitive conduct would only encourage monopolists to take more and earlier anticompetitive action.").

Nor is Google's approach sensible. The record evidence shows that Google responds to competitive pressure once rivals have an ***opportunity to compete***, not once rivals win. For example, around 2020, European antitrust authorities required Google to implement a search choice screen on European Android devices. PFOF ¶ 1088. Google recognized this choice screen presented a threat to its business. PFOF ¶¶ 1088, 1089. To mitigate that risk, Google implemented a search quality-improvement initiative called Go Big In Europe that included new investments in features and employees. PFOF ¶¶ 1089, 1090. When the choice screen appeared, Google's Go Big efforts limited the company's market share losses. *Id*. Thus, rivals' mere opportunity to gain users forced Google to compete by increasing the quality of its product. This demonstrates that measuring foreclosure only by market share movements in a but-for world would miss out on ways consumers could benefit from competition.

IV. Google's Maintenance of Its Monopolies Harms Users

Google controls the onramp to the internet, allowing it to dictate what information is available to users, the privacy (or lack thereof) that those users enjoy, and the amount that companies, starting with Google, invest in improving search.

A. Google's Conduct Has Reduced Its Incentive To Innovate, Invest, And Improve

By insulating itself from competition, Google faces less pressure to improve search quality and innovate more generally. PFOF ¶¶ 1079, 1083. Instead, Google settles for "good enough" at the expense of users who would benefit from more choice and innovation in a competitive market.

Overall, Google's R&D investments are small compared to other firms. PFOF ¶ 1082. Tellingly, Google spends more securing exclusive defaults than on all other search-related

expenses combined—including spending [redacted] ***times*** more on traffic acquisition costs ($26 billion in 2021) than on R&D ([redacted] billion in 2021). PFOF ¶ 867.

When Google invests less in search quality, it means that users receive slower and less accurate results than they would in a competitive market. For example, from 2011 through 2020, Google's average latency—how long it takes to load search results—increased by some 500 milliseconds. PFOF ¶ 1084 (UPX0223 at -122). Google did not take corrective action until years after its results had grown substantially slower than Bing's. PFOF ¶ 354. In a similar vein, Google has under-invested in crawling and indexing the Internet, the key technology for providing comprehensive and accurate search results. PFOF ¶ 1083 (UPX0249 at -547 ("Since 2014, index size down [redacted] . . . crawl rate down [redacted], and processing down [redacted]."). Thus, even people who prefer Google are harmed by Google's conduct.

Where Google *has* faced a competitive threat, it has responded by increasing quality. In 2009, when Microsoft Bing started gaining a foothold in the U.S. market and then formed its partnership with Yahoo, Google responded with a "Code Orange" to improve search quality. PFOF § VIII.C.1., ¶ 1132 (citing Tr. 5842:4–22 (Whinston (Pls. Expert)) ("[W]hen Bing was introduced, Google sat up and took notice."). Google not only acted but did so with urgency: in a 2010 email, a Search Sr. VP warned his team to "drop everything you are doing starting today" and address the "serious competitive threat from Bing in ranking. We need to act fast and act decisively." PFOF ¶ 1132 (citing UPX0974 at -474). The drop-everything-you-are-doing Google has been missing for years, at least in the United States. Ben Gomes, former Search Sr. VP, testified that, when Europe required a choice screen for Android devices, Google launched its "Go Big in Europe" plan to create and improve search features. PFOF ¶¶ 1087, 1089. Google's improvements in Europe included (a) best-in-class or exclusive experiences such as enhanced

sports highlights, and (b) features showcasing local content. PFOF ¶ 1090. Those improvements were not introduced in the United States.

B. Google's Conduct Has Reduced Google's Incentive To Protect Users' Privacy

Because Google is insulated from competition, Google has less incentive to protect user privacy. PFOF § VIII.C.2. As a result, Google does far less to protect users than rivals such as DuckDuckGo. PFOF ¶¶ 1144, 1148, 1150, 1151.

Google collects detailed data from its users, including: (1) user queries; (2) the corresponding data generated from users' interactions with the results from those queries (e.g., queries, clicks, hovers, time spent on a result); and (3) information, such as a user's location and device type. *See* PFOF ¶¶ 159, 165, 195, 978.[14] Google then uses this personal data to serve advertisements—even when users are not using a general search engine.[15] PFOF ¶ 1159. For example, if a user searches for a plumber on google.com, Google continues to track the user across the Internet and might later show the user ads for plumbers when they are checking Gmail or watching YouTube videos with their family. *Id.*

There is no way for a parent or any user to stop Google from logging queries *forever* or using this data to market products to children. *See* PFOF ¶¶ 1154–1156. The privacy controls Google does offer are cumbersome and difficult to navigate. PFOF ¶¶ 1158–1159. As Prof. Rangel explained, changing Google's privacy defaults involve "considerable choice friction"—

[14] The amount of data Google collects is vastly greater than its rivals. Google receives nine times more queries in a day than all its rivals combined; on mobile, Google receives 19 times more queries. PFOF ¶ 979.

[15] By contrast, Google rarely uses personalized search history to serve organic results. PFOF ¶ 1159.

for example, it can take ten or more clicks for users to shorten the default 18-month search history retention.[16] PFOF ¶¶ 566, 1152, 1158.

Because Google's senior executives did not see a risk that Google would lose users to privacy-focused rivals, they have resisted providing users better privacy protection or more control over their personal information. PFOF ¶¶ 1143, 765, 35. For example, in 2021, Google executives ignored privacy proposals from the company's Chief Marketing Officer, including (1) enhancing Incognito mode, (2) simplifying and strengthening Google's privacy controls, and (3) asking users for permission before using personal search histories on non-search properties. PFOF ¶ 1150–1151. Indeed, Google's flagship privacy product, Incognito mode for the Chrome browser, is not available for Google Search, PFOF ¶ 1150, and Google does not offer a private search mode on many prominent search access points, such as google.com and the Search Widget on Android phones, *Id.*

At trial, Dr. Raghavan admitted that privacy proposals could cost Google billions in advertising revenues. PFOF ¶ 1149. He also admitted that without competition (and the possible loss of users queries to rivals) to force its hand, Google ignores its users' strong preference for better, simpler privacy protection for their data. PFOF ¶¶ 1141–1147. Google's own "research show[s] that search engine users do care about privacy" and consider privacy when choosing a search engine. PFOF ¶¶ 1138, 1141–1142 (citing Tr. 7451:20–7452:21). Other industry participants agree. For example, DuckDuckGo's user surveys show "a large percentage of Americans would like to avoid [the] harms" of data tracking by general search engines such as

[16] The shortest auto-delete interval that Google offers users is three months—even though Google's user surveys show that half of users would prefer Google to keep their search history for one month or less. PFOF ¶ 1153.

Google. PFOF ¶ 1139 (citing Tr. 1943:3–1944:25). American consumers suffer these harms every day, however, because of Google's anticompetitive conduct.

C. Google's Conduct Limits Investment In Search

As both fact and expert witnesses explained at trial, a significant percent of queries is default dependent—they are fixed to the default. *See infra* § III.C.2–3. By ensuring that these default-dependent queries are not available for rivals, regardless of their quality, Google systematically reduces the incentives for rivals to invest in search. PFOF ¶¶ 1072, 1093, 1099–1100.

A company will not make an investment if there is no hope of receiving a return. *See* PFOF ¶ 1072–1077. Because Google's contracts limit the possibility of sufficient return, existing search participants will limit their improvements and potential entrants will walk away. As Dr. Ramaswamy testified, if he, an experienced and well-funded entrant, could not get distribution, what hope did any other innovator have? PFOF ¶¶ 540, 1124. Thus, Google's conduct "freeze[s]" general search to Google's continued advantage. PFOF ¶ 1120.

Google, moreover, has demanded exclusionary contract terms that further block entry. For example, when Apple began bleeding off Google's default queries with Suggestions in Safari, Google revised the ISA to limit Apple's growth in search. PFOF ¶¶ 1093, 1109. Given Suggestions' innovative features and possible ability to someday serve as a reasonable substitute to a GSE, this restriction reduced consumer choice. *See* PFOF ¶¶ 1105–1107. On Android, by adopting broad, ambiguous terms regarding what counterparties are allowed to do and placing RSA payments at risk for missteps, Google ensures that partners will avoid deals with potential entrants, such as Branch. Thus, on the mere possibility that such a partnership would put Google's payments at risk, AT&T and Samsung rejected the opportunity to work with Branch. PFOF § VI.B.5. As Prof. Whinston explained, Branch's technology could have eroded Google's

search monopoly by providing an alternative to web search. PFOF ¶ 1125. Google's conduct deprived consumers of not only a tool to better navigate and discover app content, but also the benefit of additional competition. *Id.*

V. Google's Maintenance Of Its Monopolies Harms Advertisers

Google's exclusive default contracts give Google the ability to raise prices for Search and Text Ads unconstrained by competition or fear of losing customers. This both shows Google's monopoly power, PFOF § V.C.5, ¶ 589, and demonstrates harm to advertisers. PFOF ¶ 1162.

A. Google Uses Its Market Power To Raise Prices To Advertisers

Google can and does raise ad prices. PFOF ¶ 633 (citing Tr: 4110:1–12). Google engages in what it calls "'intentional' pricing," where it "directly affect[s] pricing through tunings of [its] auction mechanisms, in general through the three levers that are format pricing, squashing, or reserves." PFOF ¶ 631 (referencing UPX0509 at -869 & Tr. 4102:18–25) (Google VP, Adam Juda, admitted that Google can directly impact pricing by changing how the auction works). Google has inserted "pricing mechanisms with pricing knobs" into its auction to "extract value more directly" through price increases. PFOF ¶¶ 633, 648. Internally, Google employees describe using launches to raise revenue in order to meet Wall Street expectations as "shaking the cushions." PFOF ¶ 706 (citing Tr. 1215:10–1216:23 (referencing UPX0522 at -193)).

At trial, the Court heard testimony that Google raised CPCs by manipulating the ad auction through three pricing knobs: (1) format pricing, which increased the additional cost paid by advertisers using Text Ad extensions, PFOF §§ V.C.5.d.i, V.C.5.f.ii., (2) squashing, which increased the runner up's Ad Ranks to raise average CPCs, PFOF §§ V.C.5.d.ii, and (3) rGSP, which raised CPCs by inflating the runner up's Ad Rank and sometimes randomly replaced the winner with the runner up. PFOF §§ V.C.5.d.iii. Google adjusted these knobs in multiple,

colorfully named launches (e.g. Momiji, PFOF §§ V.C.5.f.ii, Butternut, PFOF ¶ 659, and Polyjuice, PFOF ¶ 666.). This harmed advertisers. PFOF ¶ 1162.

Google also employs other tactics to increase prices. For instance, "thicker" auctions—*i.e.*, auctions with more participants—lead to higher prices. PFOF ¶ 622. Google artificially thickened Text Ad auctions by loosening keyword matching standards so that advertisers' keywords matched more search queries; Google then denied advertisers the option of opting out of the expansions. PFOF ¶ 623. Google also reduced advertisers' ability to manage their ad spend and control the circumstances when their ad would be displayed. PFOF § V.C.4.a.

Google's lack of transparency with advertisers includes reducing the granularity of the Search Query Report (SQR), a keyword performance report, PFOF ¶ VIII.D.2 and silently adjusting the auction. PFOF § V.C.5.i.iii. Indeed, Google operates its Text Ad auction, the foundation of its search advertising business, as a "black box." PFOF § V.C.5.i.iii, ¶ 719. Thus, Google does not inform advertisers how the quality of their ad is calculated or how their ad is ranked in the Text Ad auction, nor does Google provide advertisers with actionable information that would allow advertisers to improve the ad's quality score. PFOF ¶¶ 721–724. As a result, if an advertiser wants to improve their chances of winning the next Text Ad auction, the only viable option is to increase its bid. PFOF ¶ 718.

At trial, Mr. Dischler testified that Google does not typically inform search advertisers of price changes, PFOF ¶ 714 (citing Tr. 1226:13–17), and auction-algorithm price increases may go unnoticed by advertisers. PFOF ¶ 699 (citing UPX1054 at -060–61).

B. Advertisers Have No Alternatives

When Google raises ad prices, it does so without considering what advertising rivals are charging and without fearing that price increases could reduce revenue. PFOF §§ IV.B.5, ¶ 496 Instead, Google designed its auction to price Text Ads at the maximum amount an advertiser is

willing to pay or "one penny less than the breaking point." PFOF ¶¶ 677 (referencing UPX0036 at -067).

Google can charge supracompetitive prices because no other GSE receives the query volume required to accommodate a significant shift in business away from Google. PFOF § V.C.2. Mr. Lowcock explained:

> The primary purpose of advertising is to reach audiences and to reach people at scale . . . and "scale" means large audience sizes. And so the more scale a search engine has the more important it is to buy advertising on that platform. . . . [B]ased on market share, there's a limit to the amount of keywords we could buy on Bing.

PFOF ¶ 606 (quoting Tr. 3834:8–3834:11, 3834:22–3835:01). Advertising and ad agency witnesses—Tracy-Ann Lim, Managing Director and Chief Media Officer of JP Morgan Chase; Arjan Dijk, Senior Vice-President and Chief Media Officer at Booking.com; Jeffrey Hurst, Chief Operating Officer, Expedia Group; and Ryan Booth, Senior Manager of Paid Media at The Home Depot—testified that no other GSE possessed the query volume required to accommodate a meaningful shift of their search advertising budget away from Google. PFOF § V.C.2, ¶ 606.

The Court should conclude that Google's monopolies in the relevant markets allow the company to raise advertising prices—and ad revenue—above competitive levels. PFOF § V(C)(6), ¶ 1162 (citing Tr. 6159:9–16).

VI. Google's Purported Procompetitive Justifications Fail

Google bears the burden to "specif[y] and substantiate . . . [its] claims" that its conduct has actual and cognizable procompetitive benefits. PCOL § V.A.2 (citing *Microsoft*, 253 F.3d at 66); *see also id.* (citing *Dentsply*, 399 F.3d at 196–97 ("[T]he burden shifts to [the defendant] to show that [its exclusionary contractual provision] promotes a sufficiently procompetitive objective."). Google has not met this burden. As a threshold matter, Section 2 precludes Google from justifying its search monopolies by claiming benefits in entirely different markets,

PCOL § V.A.1, yet Google does exactly that. Regardless, Google's made-for-litigation justifications are unsupported and should be rejected outright.

A. Out-Of-Market Effects Do Not Excuse Monopolization Of A Relevant Market

The Sherman Act protects from monopolization each of the relevant markets here—general search services, Seach Ads, and Text Ads. Because harm to competition in relevant markets cannot be excused by purported benefits elsewhere, Google must prove specific and concrete benefits within those markets.

Section 2's focus on protecting competition in any relevant market derives directly from its text, which prohibits monopolization of "*any part* of the trade or commerce among the several States, or with foreign nations." 15 U.S.C. § 2 (emphasis added). Once the Court identifies that a product or service "makes up a relevant market[,] . . . domination or control of it makes out a monopoly of a 'part' of trade or commerce within the meaning of § 2 of the Sherman Act." *Grinnell*, 384 U.S. at 572. The legislative history underscores the language's importance: Senator Sherman himself said that "[i]f we will not endure a king as a political power, we should not endure a king over the production, transportation and sale of *any* of the necessaries of life." 21 Cong. Rec. 3:2456–62 (daily ed. Mar. 21, 1890) (emphasis added).

This plain meaning of the statutory text is confirmed by the Supreme Court's interpretation of Section 7 of the Clayton Act, which has analogous statutory text prohibiting mergers that may harm competition "in any line of commerce" *See Grinnell*, 384 U.S. at 573 ("We see no reason to differentiate between 'line' of commerce in the context of the Clayton Act and 'part' of commerce for purposes of the Sherman Act."). In interpreting Section 7, the Court held that anticompetitive effects in one market cannot be "justified by procompetitive consequences in another." *United States v. Phila. Nat'l Bank,* 374 U.S. 321, 370 (1963).

Similarly, Section 2's plain meaning is confirmed by the elements of the monopolization offense, which, when weighing procompetitive benefits, focus a court's inquiry on the markets allegedly monopolized. The offense has two elements, and procompetitive benefits are relevant to the second: (1) "the possession of *monopoly power in the relevant market*" and (2) "the willful acquisition or maintenance of *that power* through exclusionary conduct." ECF No. 624, at 20 (emphasis added and quotation marks omitted). The focus is on "that power" that Google enjoys in the relevant markets—not the state of competition in other markets.

That point is underscored by the definition of exclusionary conduct, which case law distinguish from "growth or development as a consequence of a superior product, business acumen, or historic accident." *Id.* (quoting *Microsoft*, 253 F.3d at 50, 58). Any purported benefits of the conduct that remain outside of the relevant market do not improve the superiority of the product at issue or the business acumen with which it is sold. Accordingly, such benefits cannot resolve the distinction between exclusionary and permissible conduct.

Although Section 1 of the Sherman Act does not have text analogous to the "any part" or "any line of commerce" language in Section 2 and the Clayton Act, the Supreme Court has cautioned against entertaining out-of-market benefits there as well. *See United States v. Topco Assocs., Inc.*, 405 U.S. 596, 610 (1972) ("[T]he freedom to compete . . . cannot be foreclosed with respect to one sector of the economy because certain private citizens or groups believe that such foreclosure might promote greater competition in a more important sector of the economy"). Although some courts have noted uncertainty as to the treatment of the issue under

Section 1, no court has suggested that the Supreme Court has rejected *Topco* and none interpreted Section 2.[17]

Focusing on protecting competition in relevant markets also reserves for Congress "value judgments . . . whether competition in the collateral market is more important than competition in the defined market," *In re NCAA Grant-in-Aid Cap Antitrust Litig.*, 958 F.3d 1239, 1270 (9th Cir. 2020) (Smith., J., concurring), and spares courts balancing in-market harms and out-of-market benefits that often are not comparable, *Smith v. Pro Football, Inc.*, 593 F.2d 1173, 1186 (D.C. Cir. 1978). Put simply, "[i]f a decision is to be made to sacrifice competition in one portion of the economy for greater competition in another portion, this . . . is a decision that must be made by Congress and not by private forces or by the courts." *Topco*, 405 U.S. at 611. *See Phila. Nat'l Bank*, 374 U.S. at 371 ("A value choice of such magnitude is beyond the ordinary limits of judicial competence, and in any event has been made for us already, by Congress"). Even were it administrable, permitting cross-market balancing would multiply the burdens and complexity of litigation. Laura Alexander & Steven C. Salop, *Antitrust Worker Protections: The Rule-of-Reason Does Not Allow Counting of Out-of-Market Benefits*, 90 U. Chi. L. Rev. 273, 295 (2023).

Contrary to Google's argument, the Supreme Court did not authorize consideration of out-of-market benefits in *Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451 (1992). Def. Google LLC's Opp'n to Pls.' Mot. In Limine to Exclude Evid. Of Benefits Outside Relevant Markets, ECF No. 645 (Def.'s MIL Opp'n) at 6 (Aug. 15, 2023). Google's proffered justifications—maintaining the quality of its service; reducing inventory costs; and preventing

[17] The Supreme Court recently declined to consider whether a Section 1 defendant "may permissibly seek to justify its restraints in [one] market by pointing to procompetitive effects they produce in [another] market" because "the parties before us do not pursue this line." *NCAA v. Alston*, 141 S. Ct. 2141, 2155 (2021).

free riding on investments—all self-evidently impacted competition *in the relevant market* for service and parts, and the Court did not address the specific issue of whether out-of-market benefits are cognizable. *Eastman Kodak*, 504 U.S. at 482–86.

Google also misreads *Microsoft* as authorizing cross-market balancing under Section 2. ECF No. 645 (Def.'s MIL Opp'n) at 7. *Microsoft* directed the district court to consider on remand (of the Section 1 claim) whether "the anticompetitive effect in the *browser* market is greater than the[] benefits" from whatever justifications Microsoft "may offer" for the tie. *Microsoft*, 253 F.3d at 96. The Court referenced justifications Microsoft had offered in response to the Section 2 claim that potentially affected competition in *both* the browser and the OS markets. *Id.* at 67. At that point in the proceedings, it was not apparent whether there would be a cross-market issue, so the *Microsoft* court's silence on how it would address a question that might have followed proceedings on remand says little.

Finally, there is nothing to read into the Supreme Court's silence on the issue in resolving a Section 1 claim in *NCAA v. Bd. of Regents of the Univ. of Okla.*, 468 U.S. 85 (1984). ECF No. 645 (Def.'s MIL Opp'n) at 7. There, it was enough that the justification in question failed for lack of evidence and the "more fundamental reason" that it was "inconsistent with the basic policy of the Sherman Act." *Bd. Of Regents*, 468 U.S. at 116–17. And in *Epic Games, Inc. v. Apple, Inc.*, 67 F.4th 946, 989 (9th Cir. 2023), the court merely stated in the Section 1 context that "[t]he Supreme Court's precedent on this issue is not clear." But even if ambiguity exists under Section 1, the statutory text of Section 2 resolves the issue for the reasons stated above.

B. Google's Procompetitive Justifications Lack Legal And Factual Support

Google identifies several purported procompetitive justifications for its conduct. First, that existing competition between search rivals for search defaults (i.e., "competition for the contract") justifies any harms to consumers within the relevant markets; second, that Google's

conduct benefits consumers through lower smartphone prices or more innovative browsers; and third, that Google's RSAs and MADAs lead to a more robust Android ecosystem. Each argument fails on both the facts and law; none absolve Google's misconduct.

1. "Competition For The Contract" Is No Defense To Monopolizing General Search Services And Related Advertising Markets

Google argues that its exclusive default agreements are justified because they result from competition between Google and its search rivals for exclusive distribution of their products. *See* PFOF ¶ 1231 (referencing Tr. 9768:23–9774:3) (Prof. Murphy describing Google's competition for the contract argument). That argument is inconsistent with Section 2 of the Sherman Act and should be rejected outright, but even if it were a valid procompetitive justification, it is inconsistent with trial evidence showing—again and again—that there is no meaningful competition between Google and its search rivals for exclusive defaults.

a) "Competition For The Contract" Is Not A Valid Procompetitive Justification

As a matter of law, "competition for the contract" cannot justify downstream harm to consumers in the relevant markets. Even if Google's exclusive default agreements were secured through a competitive process (and they are not), Google's defense fails because it leaves search consumers and search advertisers unprotected from the harms of Google's monopoly power.

The fact that a distributor finds a contract profitable does not answer whether the contract is unlawful under Section 2. *Topco*, 405 U.S. at 610 (the Sherman Act guarantees "the preservation of economic freedom" for all in the United States). Even where a monopolist faces some competition, contracts between a monopolist and distributors may harm competition. *See* PCOL §§ III, IV.C.2 (exclusive dealing can be illegal by monopolist with less than 100% market share or market coverage); *Dentsply*, 399 F.3d at 187 ("[E]xclusive dealing arrangements can be an improper means of maintaining a monopoly.").

Crediting Google's argument would gut Section 2 enforcement whenever a monopolist uses contracts to insulate itself from competition. A monopolist could deploy exclusive distribution contracts injurious to competition so long as at least one rival hung on to bid for those contracts. Under this view, the monopolist would not face Section 2 liability until it wiped out every trace of competition. The Sherman Act provides no such safe harbor, as "monopoly power may be restrained before its full wrath is felt." *Phila. World Hockey Club, Inc. v. Phila. Hockey Club, Inc.*, 351 F. Supp. 462, 510 (E.D. Pa. 1972).[18]

b) "Competition For The Contract" Would Not Prevent Competitive Harms Even If It Existed

The evidence at trial demonstrated that competition for the defaults would not cure the anticompetitive harms stemming from Google's exclusive default agreements because (1) distributors and dominant firms, like Google, would still find it worthwhile to enter into contracts that harm competition; (2) dominant firms are able to use some or all of their monopoly profits when bidding for exclusive contracts; and (3) the nature of competing for exclusive distribution makes competition less intense. Because Google would be all but assured to retain exclusive search defaults, illusory upfront competition for those deals would provide no meaningful check on Google's monopoly power.

First, neither distributors nor Google are proper stewards of the competitive process and the public interest. *See Microsoft*, 253 F.3d at 58–59 (harm to the "competitive *process*" equals "harm [to] consumers.") (emphasis in original); *Paramount Famous Lasky Corp. v. United States*, 282 U.S. 30, 44 (1930) ("The interest of the public in the preservation of competition is

[18] In their brief opposing Google's motion for summary judgment, Plaintiffs addressed cases and other authorities cited by Google in support of its competition-for-the-contract defense. All of the cases cited by Google are in inapposite for the reasons provided in that brief. *See* Pls.' Mem. in Opp'n to Def. Google's Mot. for Summ. J., ECF No. 476, at 27–30.

the primary consideration."). Distributors may agree to terms that maximize their revenue-share payments at the expense of competition within the industry. PFOF ¶¶ 1232–1241. Because dominant firms like Google have little interest in maintaining competition, there is room for Google and distributors to reach a mutually beneficial deal that is not in consumers' (or distributors') long-term interests. PFOF ¶¶ 1234–1237.

Apple, for example, acknowledged that a significant factor weighing in favor of renewing its ISA was the revenue share money it received. PFOF ¶ 1238. Although it may also account for what was in the interests of its customers, Apple does not consider what is best for Android users or seek to promote search competition generally, PFOF ¶ 1238, and, indeed, Apple has a track record or prioritizing its corporate interests even when it costs its customers higher prices. PFOF ¶ 1239; *see also United States v. Apple Inc.*, 952 F. Supp. 2d 638 (S.D.N.Y. 2013), *aff'd*, 791 F.3d 290 (2d Cir. 2015).

Second, competition for exclusive contracts in a monopolized market will always favor the monopolist. A monopolist has a structural incentive to use its monopoly profits—which competitors do not earn—to outbid its rivals to prevent the emergence of competitive conditions. PFOF ¶¶ 1242–1244. Indeed, as Mr. Nadella observed, "[r]ight now there is basically [a] status quo," with Google, "the dominant player in search . . . paying a lot of money to maintain [its] share position." PFOF ¶ 1244.

Third, the winner-take-all nature of bidding for exclusive defaults weakens competition across the board as smaller and specialized rivals have less incentive to compete when their only option is competing for every query. PFOF ¶¶ 1245–1248. For example, currently DuckDuckGo must compete to be the exclusive default search engine for every user and every query on Apple devices. If DuckDuckGo was able to compete to be the default within private browsing mode,

it would have a greater chance of success and an increased incentive to compete. Winning the default for private browsing mode would enable DuckDuckGo to access scale needed to improve its product and compete better against Google across the board. PFOF ¶¶ 1246–1247.

c) In A Monopolized Market, "Competition For The Contract" Is Illusory

Google's "competition for the contract" defense is also undermined by the overwhelming evidence that there is minimal actual competition between Google and its rivals for search defaults. PFOF ¶¶ 1249–1250. Distributors do not view small search engines like DuckDuckGo as alternatives to Google, and because of conditions created by Google's dominance, even Bing cannot meaningfully compete for exclusive default contracts. PFOF ¶¶ 1251–1252. Trial evidence showed that Bing offered Apple a 100% (or more) revenue share and still came up short against Google in a competition for the contract. PFOF ¶¶ 1263–1272. Indeed, Google's "Alice in Wonderland" analysis—so named to suggest the outcome was a dream sequence—showed that Bing would need to offer Apple a [redacted] revenue share just to match Google's [redacted] revenue share payments. PFOF ¶ 1266. That analysis is consistent with one Ms. Kartasheva prepared for Android. PFOF ¶¶ 814–817.

Unsurprisingly, the trial record revealed no instances in nearly a decade where a rival search engine won a "competition" against Google for default distribution on any browser or smartphone in the United States. PFOF ¶ 1262. The most recent example came in 2014, when Yahoo outbid Google to be the Mozilla Firefox default. But that episode illustrates why rivals have failed to secure defaults since. PFOF ¶ 1257. To outbid Google, Yahoo had to guarantee Mozilla at least [redacted] per year, PFOF ¶ 1259, despite Firefox's sharply declining, desktop-focused customer base, ¶ 1260. To meet this guarantee, Yahoo loaded its search pages with ads, resulting in a poor user experience and Mozilla's return to Google. PFOF ¶ 1261.

2. Google Has Not Shown That Its Exclusionary Conduct Creates Benefits in the Smartphone and Browser Markets, Let Alone That Such Benefits Redound To The Relevant Markets

The Court should also reject Google's arguments that its exclusionary distribution agreements benefit consumers in the smartphone and browser markets because Google has not shown that payments to smartphone distributors or third-party browser companies are passed through to consumers, result in lower phone prices and better browsers, or benefit consumers in a relevant market. Instead, the evidence establishes that Google's arguments are largely pretextual.

a) Google Has Not Shown That Payments Result In Lower Device Prices Or How Any Such Reductions Affect Search

Google argues that its payments to smartphone distributors result in lower phone prices, but that purported justification is factually unsupported and legally misguided.

First, even if there were evidence of passthrough, consumer welfare would *increase* if Google lost its monopoly over general search services in the United States. PFOF ¶ 1298. Google's revenue-share payments to Android partners in Europe increased after the introduction of the choice screen as Google took steps to stave off the threat that newly emboldened rivals might otherwise "secure full search exclusivity" on Android phones. PFOF ¶ 1299. This makes economic sense. Competition in the general search services market benefits distributors by improving their negotiating leverage and increasing the revenue-share payments they extract for defaults. PFOF ¶ 1299. Hence, even assuming Google's unproven premise that revenue-share payments are passed through to consumers, more competition among GSEs in the United States should result in greater pass-through and lower phone prices in a competitive market.

Second, Google's pass-through claim fails for lack of evidence. *See generally FTC v. Arch Coal, Inc.*, 329 F. Supp. 2d 109, 116–17 (D.D.C. 2004) ("antitrust theory and speculation cannot trump facts"). Google's defense rests purely on economic theory, not on documents,

testimony, or empirical analysis. PFOF ¶ 1288. Nothing in Google's distribution contracts require Google's partners to use the revenue-share payments to reduce phone prices, and there is no testimony that any company that distributes devices in the United States does so. PFOF ¶¶ 1282–1284. Indeed, executives at Apple and T-Mobile both testified that Google's revenue-share payments do not directly factor into phone prices. PFOF ¶¶ 1282–1283.

Third, even if Google's payments do lower phone prices by some unspecified amount, Google has not proven any link between smartphone prices and competition in search. To establish lower phone prices as procompetitive, Google has to make what its counsel referred to as a "bank shot"—showing that effects in the (nonrelevant) phone market affect the (relevant) search services market. *See* Hr'g Tr. (Sept. 8, 2022), at 238:25–239:18. Google's shot failed to bank. Neither Google nor its experts even attempted to isolate or quantify the alleged effects of Google's payments to phone distributors on the general search market. PFOF ¶¶ 1285–1286, 1293. Although Google's Prof. Murphy noted increased output in the search market over the years, which he interprets as evidence that Google's contracts have made searching on mobile phones and browsers easier, he acknowledged that he could not tie that output increase to phone prices. PFOF ¶ 1301. Many external factors may have caused the increase in search, including the growth of the Internet, the adoption and now ubiquity of smartphones, expanded access to broadband, and improvements in mobile telecommunications technology. PFOF ¶ 1302.

Moreover, there exist several less restrictive means by which Google could lower smartphone prices. PFOF § X.B.2.c. Among other things, Google could untether its revenue-share payments from restrictive search agreement terms, as it has done with its Mobile Service Incentive Agreements. PFOF ¶ 1308. Google has not and cannot explain why this as well as other less restrictive alternatives would be ineffective.

Finally, Google's pass-through defenses are pretextual, made-for-litigation excuses with no basis in the company's ordinary-course documents. PCOL § V.A.4; *Microsoft*, 253 F.3d at 59 (procompetitive justification must be "nonpretextual"). Outside of trial, there is no evidence that Google executives ever consider how revenue-share payments will affect smartphone prices, including when Google plans cuts to partners' revenue share payments. PFOF ¶ 1286. Trial testimony and contemporaneous documents indicate that Google negotiates distribution agreements for a single purpose: search exclusivity. *See, e.g.,* PFOF ¶¶ 798–802, 813, 823.

b) Google Has Not Shown Benefits In The Browser Market Or How Any Such Benefits Affect Search

Google further argued that its exclusive default agreements promote competition in the browser market, but that argument lacks factual support. It is also pretextual and premature.

As an initial matter, Google has not shown that its revenue-share payments to third-party browser developers result in more innovation or better products, and Google has not identified any specific features or product innovations that were introduced because of Google's revenue-share payments. PFOF ¶ 1294. There is also no evidence that, for example, the Firefox browser would see a decline in traffic if it offered users a choice screen, and as noted above, greater competition among search engines is likely to *increase* the revenue earned by distributors like Mozilla. *See supra* § VI.B.2.a. Google's economist argued that revenue-share payments comprise the majority of Mozilla's annual revenue, but that datapoint is not dispositive alone when Mozilla uses that revenue for a variety of purposes, including the development of products and initiatives unrelated to the Firefox browser. PFOF ¶¶ 1295–1296.

Further, even assuming browser companies use Google's payments to improve their products, Prof. Murphy made no attempt to determine what portion of Google's revenue-share payments to those companies were used for product improvements and innovations as opposed,

for instance, to executives compensation packages. *See* PFOF ¶¶ 1293–1296. Nor has Google cited a single qualitative or quantitative analysis linking browser design to benefits in the search market, other than Prof. Murphy's flawed observation that search output has increased over the years. PFOF ¶¶ 1301–1302. Moreover, Google's browser arguments again require the Court to engage in cross-market balancing, and Google has not explained why less restrictive options, including block grants to Mozilla and other third-party browsers, are not available.

Google's argument is also pretextual. Google introduced no internal documents where its employees contemplate Mozilla's destruction without the exclusive default agreement or justify the revenue-share payment on the basis that it would increase search output. Indeed, Google did not identify *any* documents where it concluded that consumers were better off with Mozilla in the browser market. And for good reason. As the maker of Chrome, Google competes with, and presumably tries to replace, Mozilla installations. Google pays for exclusive default distribution because doing so is profitable—not to support rival browsers. PFOF ¶ 933. Certainly, if Google wants to support Firefox, it can do so without exclusivity.

Finally, Google's plea for Firefox presupposes a remedy that the Court could impose. Browser companies can still receive substantial revenue-share payments even without an exclusive default deal with Google, and many do. For instance, both Apple and Mozilla receive revenue-share payments from other search engines—including Bing and DuckDuckGo—for non-exclusive default traffic (at higher rates than the browsers get from Google). PFOF ¶¶ 38, 1307, 1321. And in Russia, the leading search engine, Yandex, pays a [redacted]% revenue share to appear on the Android choice screen—again [redacted] in the United States. PFOF ¶ 1321.

3. Google Has Not Shown That Its Conduct Benefitted Android Users

Google argues that its Android distribution agreements are procompetitive in that they enhance competition with Apple's iOS by sustaining Google's business model for the Android ecosystem, incentivizing Android partners to make security updates, and promoting consistency across brands of Android devices. The Court should reject these as unproven, unlikely to benefit consumers in relevant markets, and not the least restrictive means of achieving their proffered ends. Moreover, the Court should reject each as pretextual.

a) Google Failed To Prove That, Without Exclusive Search Distribution, It Would Lack Incentives To Support Android

Google argues that without the search exclusivity provisions in the MADA and RSA, Google would have little incentive to invest in Android, undermining competition in the smartphone market. But like Google's other justifications, this argument is contradicted by the evidence and lacks a persuasive link to competition in the relevant search markets.

To begin, Google proved neither (1) that Google would lack incentives to support the Android operating system if it could no longer exclude general search rivals from Android phones nor (2) that Android's competitiveness against the iPhone would suffer as a result. PFOF ¶ 1316. Just the opposite is true: Google continues to invest in Android in Europe and Russia (where Android users have a choice screen) and Android's market share has fallen less than in the United States (and in Russia's case, actually improved). *Id.*

Separate from search exclusivity, Google has substantial financial incentives to invest in Android. Google makes billions in fees every year from the Google Play Store. In 2020, Google projected that over four years it would earn [redacted] billion in Play Store revenue from Samsung devices alone. PFOF ¶ 1313. Google, moreover, uses the Android platform to distribute and monetize other flagship applications, including YouTube, Google Maps, Gmail, and Google

Drive. PFOF ¶ 1312. Google also makes and sells Pixel smartphones, which rely on Android. PFOF ¶ 1315. Thus, even if a rival captured all search access points on Android, Google would continue to have enormous financial incentives to grow the Android platform.

Google also has not explained how Google's purportedly diminished incentives to invest in Android would affect competition in the general search services market. Indeed, Google's expert testified that removing exclusivity from Android distribution would have had only minor effects on search. PFOF ¶ 975 (citing Tr. 10013:14–10014:3). Nor has Google explained why default exclusivity is necessary to facilitate competition between Google and Apple in the smartphone market (even assuming that competition could justify harms to consumers in the search market). There exist several less restrictive means by which Google could support the Android ecosystem, as it already purports to do through its Mobile Service Incentive Agreements without restrictive search exclusivity terms. PFOF ¶¶ 1308, 1342.

b) Google Has Not Shown that its Android Agreements Are Procompetitive Because They Standardize the User Experience

Similarly, the Court should reject Google's argument that its Android contracts benefit consumers by creating a consistent user interface across Android.

There is no evidence that Google's exclusive search requirements promote competition against Apple by standardizing the user experience across Android devices. On the contrary, evidence showed that both Android OEMs and Android users dislike the flagship search feature required by Google's contracts: the Google Search Widget. According to Hiroshi Lockheimer, Google's Sr. VP of Android, "Users generally are tired (visually) of our widget. It's in the middle of the screen, obscures your family picture, etc.," while "OEMS are VERY tired (visually) of our widget." PFOF ¶ 1324 (citing UPX0128 at -547). It hardly promotes competition against Apple to mandate an unpopular feature simply because it generates search

queries for Google. If the Search Widget was well-liked by consumers, Google would not need to compel Samsung and the major phone carriers to install it. PFOF ¶ 1328 (citing Tr. 10539:21–10540:10).[19]

Even if consistency among Android brands promotes competition against Apple to some degree, it hampers the competition among Android makers. Android OEMs—including Samsung, Google (Pixel), and Motorola—compete against each other by differentiating their devices. Jamie Rosenberg, a former Google VP, testified that intra-brand competition produces actual consumer benefits, including innovations such as the foldable phones now offered by Samsung, Google, and Motorola. PFOF ¶ 1325.

Regardless, even assuming Google's professed need to create consistency among different Android brands, it is not a valid procompetitive justification for additional reasons. First, Google has offered no evidence that a consistent Android interface improves competition in the relevant search markets. The Android-consistency argument therefore hinges on improper cross-market balancing. Second, there are obvious, less-restrictive means of achieving phone consistency. For example, Google could offer a consistent choice screen on all Android phones—as it once insisted Microsoft do and as Google currently does in Russia and Europe. PFOF ¶¶ 742, 910–911, 1087, 1305, 1342. Third, Google has offered no basis to conclude that any incremental benefit from increased consistency across Android phones outweighs the harm to competition from excluding GSE rivals from those devices. Fourth, Google's proffered interest in using the challenged provisions in the MADAs and RSAs to compete against Apple

[19] With respect to browsers, Android phones do not provide a consistent user experience in any event. Samsung phones come with two browsers preinstalled—the Samsung S Browser and Chrome—whereas other Android brands (such as Google Pixel) come with only Chrome. PFOF ¶¶ 42, 781.

finds little contemporaneous support. To the contrary, communications between Google executives over the years have consistently suggested that search exclusivity was Google's primary goal in negotiating search distribution agreements with Android partners. PFOF ¶ 283 (citing UPX2093 at -398), 798 (citing Tr. 332:12–334:1), 813 (citing UPX0134).

c) Google Has Not Shown That Its Android Agreements Are Necessary For Pushing Security Upgrades

Google has argued that its Android contracts are procompetitive because they encourage Android OEMs and carriers to push out security upgrades. But that argument fails for at least three reasons. *First*, to ensure that users have a high-quality experience with their phones, Android distributors such as Samsung have independent incentives to push out security updates,. PFOF ¶ 1343. Even if Google did not require security updates, Android partners would have every reason to make them—just as Apple does (without any apparent third-party oversight).

Second, Google need not tie security updates to search *exclusivity*. PFOF ¶¶ 1343–1344. As Mr. Pichai admitted, Google could provide separate financial incentives to Android OEMs and carriers to provide security updates. PFOF ¶ 1344 (citing Tr. 7718:16–7719:1). Accordingly, there is an obvious, less-restrictive alternative to achieve the competitive benefits of prompt security updates. PCOL § V.A.5 (less-restrictive alternatives).

Third, even crediting Google's security update justification, the harm resulting from the loss of competition in general search far outweighs any benefit from additional security updates—particularly given Android distributors' (and users') incentives to make those updates.

d) Google's Arguments That The MADAs And RSAs Help Android Compete Against Apple Are Pretextual

Finally, Google's argument that its MADAs and RSAs are procompetitive because they help Android compete against iOS is fatally undermined by Google's conduct with respect to Apple. Google's revenue-share payments under the ISA hand Apple billions every year to

compete against Android. PFOF ¶¶ 935, 1318–1319. No Google witnesses or trial exhibit suggested the company should curtail those payments to shore up Google's competitive position vis-a-vis Apple in the smartphone market. And every time an Android user switches to the iPhone, Google still earns substantial revenue as the default search engine on Apple devices. PFOF ¶¶ 1319–1320. Google's argument should be rejected as pretextual.

VII. In The Event Google Demonstrates A Non-Pretextual Procompetitive Justification For Its Conduct, The Harm Outweighs Any Procompetitive Benefit

Should the Court determine that Google has offered a non-pretextual procompetitive justification for its conduct, which it did not, the harm to competition outweighs any procompetitive benefit. PCOL § V.B (citing *Microsoft*, 253 F.3d at 58–59).

Notably, as demonstrated in Plaintiffs' brief and supporting proposed findings of fact, the voluminous trial record confirms that Google's longstanding use of contracts to weaponize defaults has harmed competition in a number of critical ways, such as depriving rivals of the scale necessary to improve; reducing the incentive for Google, its rivals, and potential rivals to compete; and restricting Apple and Branch from growing their nascent technologies. *See supra* § III. Google's contracts with Apple, Android partners, and third-party browsers are exclusive and substantially foreclose competition in each relevant market. *See supra* § IV. Google has not, and cannot, point to any purported benefits that outweigh these significant harms.

VIII. Google's Destruction And Concealment Of Evidence Show Its Anticompetitive Intent And Warrants Sanctions

In addition to determining that Plaintiffs have demonstrated a monopoly maintenance claim, the Court should sanction Google for its systemic destruction of documents and flagrant misuse of the attorney-client privilege, both strong indicators that Google knows its conduct is unlawful. Given the prejudice to Plaintiffs and Google's intent to deprive Plaintiffs of relevant and responsive documents, PFOF § IX.A, the following sanctions are warranted: a presumption

that deleted chats were unfavorable to Google regarding the intent behind and effect of Google's contracts; a presumption that Google's proffered justifications are pretextual; a presumption that Google intended to maintain its monopoly; a prohibition on argument by Google that the absence of evidence is evidence of its absence; and any other relief the Court finds proper.

Google's efforts to curate its documentary record dates to at least 2003. That year, Dr. Varian warned Google's founders that its role as the "dominant player" in search could eventually raise antitrust concerns and cautioned them to limit what they put in writing "in both public and private" to avoid creating evidence for a possible antitrust case. PFOF ¶ 1225 (citing UPX0151). Google's subsequent efforts at destroying chats and creating fake privilege claims implemented Dr. Varian's advice and demonstrate anticompetitive intent.

A. Google Used "History Off" Chats To Destroy Substantive Communications

Google adopted and maintained a chat-destruction policy to hide communications from litigants and regulators, including the Department of Justice's Antitrust Division.

In 2008, Google enacted an internal policy setting its chat default to "history off." In announcing the policy, Mr. Walker explained that the Antitrust Division's investigations of the company's practices—at that time, a scheme to reduce competition between itself and Yahoo—motivated the change. In particular, Mr. Walker explained that the history-off approach was being adopted to "streamline and simplify" the process of reviewing and "producing documents in regulatory and litigation matters" and "help avoid inadvertent retention of instant messages." PFOF ¶ 1199 (citing UPX1101 at -619–20). Avoiding "inadvertent retention" is, by definition and logic, intentional destruction.

Until February 2023, Google's policy ensured that all chat messages would be permanently deleted after 24 hours unless an individual user affirmatively preserved them by activating the "history on" function. PFOF ¶ 1213. Google maintained this policy through

countless litigations and Government investigations. And it did so while recognizing that Google employees discussed substantive issues in "history off" chats—including MADAs and RSAs. PFOF ¶¶ 1193, 1202–1203, 1216. For example, Mr. Rosenberg and Mr. Kolotouros each testified that, in a "history off" chat, they discussed including revenue from the Play Store in Samsung's 2020 RSA. PFOF ¶ 1203 (citing Tr. 971:8–11, Tr. 9557:4–10, Tr. 9557:20–9558:4).

Although Google employees could affirmatively change their default chat settings from "history off" to "history on," trial witnesses—starting at the top with Mr. Pichai—confirmed that they generally do not make this change. PFOF ¶ 1216. Remarkably, Mr. Pichai testified that he both knew (1) he had an obligation to preserve his chat messages and (2) that those messages were not being preserved. PFOF ¶ 1211. Worse, trial witnesses testified that they have specifically asked other employees to turn a chat to "history off." For example, Google VP of Search Pandu Nayak "certainly" asked people to turn their chats to "history off" and did so because "at the time there was a policy at Google to have history off." PFOF ¶ 1214 (citing Tr. 6468:4–9). As he explained, "I just wanted to be compliant with that policy." *Id.* Other Google employees confirmed turning chats to "history off" for substantive issues in the case, such as SA360. PFOF ¶ 1209. Google's history-off policy sits in contrast to its practice regarding user search activity data, which Google maintains for 18 months by default. PFOF ¶¶ 1152, 1154–1156.

As a matter of course, Google could easily preserve chat messages if it wanted to. PFOF ¶ 1212. Instead, Google left chat preservation to individual employees, even when those individuals were under a litigation hold. But abdicating that responsibility to individuals created the obvious risk that employees would not (and, indeed, in documented instances, did not) preserve responsive documents. For example, Ryan Krueger, Product Manager for Google

Search Ads 360 Smart Bidding, Performance, and Planning, interpreted his legal hold in this case not to cover chats because they were "informal" conversations that were "free form" rather than "well thought out and reviewed." PFOF ¶ 1215 (citing Tr. 4338:25–4341:1). Notably, Mr. Krueger discussed SA360 over chat. PFOF ¶ 1209. For his part, Mr. Kolotouros discussed Samsung Wear Play over chat while on a litigation hold even though wearable technology was part of the DOJ Plaintiffs' Amended Complaint. PFOF ¶ 1214.

Google's conduct was intentional. Google recognized that its efforts to maintain its search monopoly would likely draw antitrust scrutiny and hoped to prevent or postpone a day of reckoning for its unlawful conduct. Google engineered its policy of evidence curation in response to and in anticipation of regulatory scrutiny. And years' worth of chats—likely full of relevant information—were destroyed in accordance with Google's history-off "policy." There is no way to know what relevant evidence was destroyed. But Google's successful destruction of employee chats shows that Google knew its practices were likely in violation of the antitrust laws and wanted to make proving that impossible. Such misconduct demands heavy sanction.

B. Google Trained Its Employees To Misuse Attorney-Client Privilege When Discussing The MADA Or RSA

Google encouraged employees to shield communications from litigation by copying attorneys on non-privileged communications as part of its "Communicate With Care" efforts.

The trial record reveals a calculated practice aimed at circumventing Google's document production obligations. Specifically, Google trains its employees to include attorneys on "any written communication regarding RevShare and MADA." despite taking the opposite approach for in-person meetings on those same issues. PFOF ¶ 1222 (citing UPX0320 at -605). Employees were instructed to ask a question and—to complete the fake-privilege package—assert privilege in the document. Google employees complied with this training. PFOF ¶ 1223. Mr. Kolotouros

copied attorneys on ***all*** written communications regarding the RSA and MADA and whenever discussing contractual terms. PFOF ¶ 1223 (citing Tr. 958:16–959:6, 961:10–19, 963:14–19). Similarly, Ms. Kartasheva marked as attorney-client privileged an email she sent to her second-level supervisor, Mr. Rosenberg, because the email "discuss[ed] a revenue share proposal." PFOF ¶ 1223 (citing Tr. 2866:9–2867:1).

At trial, Google's senior executives admitted that they marked non-privileged documents as privileged to maintain their confidentiality. Most notably, Mr. Pichai admitted that he has used "attorney-client privilege" markings on emails where he was not seeking any legal advice but wanted to indicate it was confidential. PFOF ¶ 1224 (citing Tr. 7726:3–16). Ms. Braddi asked counsel to mark an email and attached slide decks monitoring revenue-share payments to Apple as privileged even though she did not seek legal advice. PFOF ¶ 1223 (citing Tr. 4937:10–4938:14). For his part, Mr. Rosenberg added a lawyer to an email before using "some trigger words" when discussing AT&T's RSA negotiation. PFOF ¶ 1227 (citing UPX0997 at -065).

Google's fake-privilege project worked. Google's outside counsel relied on the improper privilege requests to withhold documents from production in this case. Even after multiple rounds of re-review, Google still abandoned privilege on 12% (26 of 210 documents) of the random sample the Court requested for review in chambers, demonstrating that Google closely reviewed documents marked as "privileged" only when it was clear Google would finally be held accountable. PFOF ¶ 1229.

Google's conduct—including express instructions for employees to use privilege to hide discussions of the MADAs and RSAs at the heart of this case—demonstrates that Google intended to harm competition through its contracting practices and its supposed procompetitive justifications were simply pretext.

CONCLUSION

As Plaintiffs demonstrated at trial, Google's illegal conduct has allowed it to maintain durable monopolies in general search, search ads and general search text ads that harm competition. The Court should hold that Google has violated Section 2 of the Sherman Act.

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