Direct Testimony of Prof. Michael D. Whinston

U.S., et al. v. Google LLC
United States District Court for the District of Columbia

October 5, 2023
Determine whether general search services, general search text advertising, and search advertising in the United States are relevant antitrust markets for the purpose of evaluating Google’s market power in this case.

Assess whether in recent years Google has possessed market power in those markets and, if so, assess the extent of Google’s market power.
1. General search services, general search text advertising, and search advertising in the United States are relevant markets

2. Google possesses substantial market power protected by barriers to entry in each of the relevant markets
Opinion 1

General search services, general search text advertising, and search advertising in the United States are relevant markets
Relevant Market

General Search Services

General Search Text Advertising

Search Advertising
Q. And users, when they put something in the URL bar of Safari, they have an expectation that it's going to go to a general search engine?
A. Yes.

John Giannandrea, Senior VP of Machine Learning and AI Strategy

Q. During your time in device marketing, has Verizon ever set a vertical search provider as the default search engine on a device?
A. . . . I am not aware of that happening.

Brian Higgins, Chief Customer Experience Officer

Q. And who does DuckDuckGo consider to be its search engine competitors?
A. Really most of our users switch from Google. So like far and away, we consider Google just our competitor. Other search engines that compete with us are Bing, Yahoo!, Ecosia, and Brave are probably the main ones in the U.S.

Q. Does DuckDuckGo consider vertical search engines such as Amazon to be competitors that users are likely to switch to or from?
A. No, not really.

Jon Tinter, Corporate VP of Business Development

Q. And thinking about the market today, who are Bing's search competitors?
A. . . . Candidly, when we talk about competition, it's one company, it's Google.

Testimony of Brian Higgins (Verizon), Sept. 18, 2023, 1932:1–9; Testimony of Gabriel Weinberg (DDG), Sept. 21, 2023, 1942:11–21; Testimony of Jon Tinter (Microsoft), Sept. 28, 2023, 3098:6–3099:3; Testimony of John Giannandrea (Apple), Sept. 21, 2023, 2171:10–13.
General search engines provide the ability to “one-stop shop”

- Single location for all queries
- Avoids the time and energy needed to recall or identify the right specialized site
- Provides results with depth and breadth unmatched by any single specialized site
- Caters to habit formation
- Convenient search bars on browsers and devices

“Google should be like a Swiss Army knife: clean, simple, the tool you want to take everywhere.”

Marissa Mayer, Former Product Manager

Q. Google answers noncommercial queries because it hopes, at some point, the user will also type in a commercial query and Google can make money off of it?

A. Something of that sort, yes.

Q. Well, exactly, right?

A. Yeah. Okay.
Other ways specialized search services differ from general search services

- Searches often must be done in pre-defined ways (drop-down menus, etc.)
- Results pages on specialized search engines are often very different from results pages on general search engines for the same query
- Many specialized search services limit results to info on site (not entire web)
The results pages of general search engines and specialized search engines have significant differences.
General search services differ significantly from social media

- Search function typically limited to the social media platform
- There are likely significant differences in the reliability of the information available on social media vs. general search engines
- Internal Google assessments of possible competition between Google and Facebook found no evidence that increased use of Facebook led to reduced use of Google
Google recognizes general search services as a relevant market

• Internal Google documents

• Android RSA terms

• Chrome defaults

• EU Choice Screen
Google recognizes general search services as a relevant market

- Internal Google documents: Google’s internal documents focused on general search services rivals and market shares

- Android RSA terms

- Chrome defaults

- EU Choice Screen

REDACTED FOR PUBLIC FILING
Google tracks market shares for general search engines

### DEC 2013 INTERNAL US SEARCH SHARE METRICS (pct pts delta from NOV 2013)

<table>
<thead>
<tr>
<th>Metric</th>
<th>December 2013</th>
<th>November 2013</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Online Panel Search Session Share</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(home-only, desktops, incl Mac OS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Google</td>
<td>76.3% (+0.3 pt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bing</td>
<td>13.3% (+0.2 pt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yahoo</td>
<td>8.7% (no change)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prior to ’0K expansion sample size. Observed -0.4 pt pt for AOL and -0.1 pt pt for Ask

<table>
<thead>
<tr>
<th>Metric</th>
<th>December 2013</th>
<th>November 2013</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adsense U.S. Click Share</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Google</td>
<td>76.8% (-0.5 pt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bing</td>
<td>11.9% (+0.7 pt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yahoo</td>
<td>7.1% (no change)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Analytics US. Click Share [NEW in Dec]

<table>
<thead>
<tr>
<th>Metric</th>
<th>December 2013</th>
<th>November 2013</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google</td>
<td>80.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bing</td>
<td>10.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yahoo</td>
<td>6.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(for comparison)

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<tr>
<th>Metric</th>
<th>December 2013</th>
<th>November 2013</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comscore U.S. Explicit Search Share</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Google</td>
<td>67.3% (+0.6 pt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bing</td>
<td>18.2% (+0.2 pt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yahoo</td>
<td>10.8% (-0.4 pt)</td>
<td></td>
<td>[all-time low]</td>
</tr>
</tbody>
</table>

### Q4 2013 INTERNAL US SEARCH SHARE METRICS (pct pts delta from Q3 2013)

<table>
<thead>
<tr>
<th>Metric</th>
<th>December 2013</th>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Google</td>
<td>79.0% (+1.1 pt)</td>
<td></td>
<td></td>
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<tr>
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<td></td>
</tr>
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</table>

Google collects competitive data on general search engines

1. Companies
   Google
   Bing
   Duckduckgo
   Qwant
   Ecosia
Google recognizes general search services as a relevant market

- Internal Google documents
- Android RSA Terms: Android RSAs prevent preinstallation of “alternative search services” which has meant alternative general search engines
- Chrome defaults
- EU Choice Screen
Google recognizes general search services as a relevant market

- Internal Google documents
- Android RSA terms
- Chrome defaults: Chrome Browser only lists general search engines in the settings option to change the search default
- EU Choice Screen

REDACTED FOR PUBLIC FILING
Google recognizes general search services as a relevant market

- Internal Google documents
- Android RSA terms
- Chrome defaults
- EU Choice Screen only lists general search engines and does so to “ensure a good user experience”
Only general search services are eligible for the EU choice screen

“About the choice screen”

Eligibility criteria for participating in the choice screen

To ensure a good user experience, search providers that wish to participate in the choice screen must satisfy the following requirements.

- **General search provider:** The search provider must operate a "general search service". For purposes of the choice screen, a general search service is one that allows users to search for information across the entire Internet. "General search service" means a search service that returns results from more than one source, or that includes information from more than one subject, or that is not exclusive in terms of the type of content it includes.

- **Specialized or "vertical" search providers:** Those that only index content from a particular subject -- are not eligible to participate in the choice screen. Search providers that are owned by or affiliated with the same company are eligible to appear on the choice screen only once. Search providers that syndicate search results from another provider are eligible to participate.

---

UPX8091, at -505 (Sept. 1, 2022) (emphasis added).
Google’s Chief Economist recognizes general search services as a relevant market

"WRT the value of our product, specifically search, if Google were to disappear, people would just switch to Bing. If all search engines were to disappear we look like Borge’s universal library, but with no card catalog."

Hal Varian, Chief Economist

Relevant Market

General Search Services

General Search Text Advertising

Search Advertising
General search text ads are differentiated from other search ads

**General Search Text Ads**

![Google search results](image)

**Other Types of Search Ads**

- **Product Listing Ads (PLAs)**
  - ![Product Listing Ads](image)

- **Other Search Ads**
  - ![Other Search Ads](image)

---

REDACTED FOR PUBLIC FILING
Search ads are differentiated from other digital ads

**Search Ads**

- **General Search Text Ads**
- **Product Listing Ads (PLAs)**
- **Other Search Ads**

**Display/Social Ads**

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Factors affecting the substitutability of ad products

- Their role in consumers’ purchase journeys
- The characteristics of their audiences and the degree to which they overlap
- The degree to which ads can be effectively targeted
- The form and level of their pricing
- The size of their audiences
- Advertisers' awareness of the products effectiveness and prices
- Advertisers’ participation on their ad purchasing platforms

REDACTED FOR PUBLIC FILING
Relevant Market

General Search Services

General Search Text Advertising

Search Advertising
Search ads are differentiated from other digital ads

**Search Ads**
- General Search Text Ads
- Product Listing Ads (PLAs)
- Other Search Ads

**Display/Social Ads**

REDACTED FOR PUBLIC FILING
Search ads are differentiated from display ads in important ways

- Display ads do not have an expressed signal of a consumer’s intent at a given moment
- Display ads are typically used to build awareness or improve brand image rather than “conversion”
- Advertisers pay much higher prices for text ads than for display ads, consistent with their differentiation
Advertisers pay much higher prices for text ads than for display ads, consistent with their differentiation.

<table>
<thead>
<tr>
<th>Average Price Per Thousand Ad Impressions (CPM) for General Search Text Ads and Display Ads, 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Display ads</strong></td>
</tr>
<tr>
<td>Redacted</td>
</tr>
</tbody>
</table>

Google QueryNav data (DOJ RFP 2.70); Google display ads data (DOJ RFP 2.71); Microsoft data (DOJ RFP 1.39). (Whinston Reply Report, Fig. 61, at C-3)
Google’s Chief Economist recognizes that search ads are significantly differentiated from display ads. We generally think that the revenue from the contextual display ads does not cannibalize search ad revenue.
Intent captured by retargeting ads is not as strong as intent captured by search ads

“And what matters much more than having a long and detailed history is having a solid indication of what the user is doing now, because recency is everything.”

* * *

“So reminder ads are a form of intent. It’s not as strong as the intent when you are searching something, but it says, well, you’re probably interested in this product because you visited a website and examined that product.”

Hal Varian, Chief Economist

REDACTED FOR PUBLIC FILING
Google explains to advertisers how search ads differ from display ads

Why choose Search campaigns

- **Sales and leads:**
  - Boost your online sales and signups.
  - Consider using leads if you have a longer sales cycle.
- **Easy setup:**
  - Write text ads and pick keywords.
  - Skip special files or assets—these aren’t needed.
  - Try Smart campaigns for an even easier setup.
- **Highly specific targeting:** Reach people actively searching for what you offer.

Why choose Display campaigns

- **Sales and leads:** Use visually engaging call-to-actions to drive sales and signups.
- **Awareness and consideration:** Create memorable ads to make people aware of your brand or consider your product.
- **Reach:** Target people beyond search results while they’re browsing websites and apps.
- **Your data segments:** Follow up with people who’ve already viewed your ads or visited your site.
Search ads are differentiated from social media ads in important ways

- Social media ads are targeted based largely on expressed or inferred interests rather than expressed intent at a given moment.

- Social media ads are typically aimed at goals like awareness and branding.

- Apple’s recent privacy initiatives have further reduced the targeting capabilities of social media ads.
Google launched discovery ads to compete with social media ads

Discovery ads provides a familiar pitch to social buyers

- Display Buyer: Drive performance across publisher sites
- Search Buyer: Capture a person’s declared intent
- Social Buyer: Create intent, find new customers

- Beyond Search and Display buyers, Google can now access social budgets and creatives
- Discovery’s lift and shift strategy brings social campaigns for feed surfaces and drives higher marginal ROI for social buyers using Search Intent
General search text ads are differentiated from other search ads

**General Search Text Ads**

Search results for "balance bikes for toddlers" with various ads:
- **Ad**
  - Aspect: Retrospec® Kid's Bikes - Best Balance Bikes with Pedals
  - Description: Youth bikes for kids of every age, stage, and skill level. They’ll be rolling in no time.
  - Summer Blowout Sale
  - Electric Bikes on Sale!
  - Beach Cruisers

- **Ad**
  - Aspect: Strider 14” Balance Bike - 14” Toddler & Kid Bikes
  - Description: The 14" is a Balance Bike with perfectly placed performance footrest that helps kids ride. The Strider 14" Sport starts off as a Balance Bike. But adjusts to being a Precu Bike. Learn to Ride Guide - FAQ - Learn to Ride Guide - The Strider Community - Assembly - Blog

**Other Types of Search Ads**

Product Listing Ads (PLAs):
- **Ad**
  - Aspect: Retrospec Cricket Baby Balance Bike
  - Price: $49.99

- **Ad**
  - Aspect: JOYSTAR Balance Bike
  - Price: $55.00

- **Ad**
  - Aspect: 12" Air Tires Balance Bike
  - Price: $169.99

**Other Search Ads**

- **Booking.com**
  - Aspect: Hotel in Cartesville, GA

**REDACTED FOR PUBLIC FILING**
Google documents recognize the differences between PLAs and text ads

### Differences wrt Search Ads

<table>
<thead>
<tr>
<th></th>
<th>Shopping</th>
<th>Search Ads</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What does it look like?</strong></td>
<td>[screenshot]</td>
<td>[screenshot]</td>
</tr>
<tr>
<td><strong>Creatives</strong></td>
<td>Relatively Structured (eg: every n-pack offer has image + price + merchant)</td>
<td>Unstructured (mostly free text)</td>
</tr>
<tr>
<td><strong>Formats</strong></td>
<td>Slate Level Primarily (eg: npack, showcase)</td>
<td>Ad Level Primarily (eg: click-to-call, site-links)</td>
</tr>
<tr>
<td><strong>Ad Targeting</strong></td>
<td>Keywordless (product groups)</td>
<td>Keywords</td>
</tr>
<tr>
<td><strong>Multiple ads from same advertiser allowed</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Pricing Algorithms</strong></td>
<td>GSP, IGA (GGSP)</td>
<td>FIA++, MIA</td>
</tr>
<tr>
<td><strong>New Ads Growth Direction</strong></td>
<td>Horizontal (carousel)</td>
<td>Vertical (consumes VCAP)</td>
</tr>
<tr>
<td><strong>LTV Score (Normalize by VCAP height)</strong></td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Lastly, user intent and advertiser value is different across the units, and as a result advertisers are not bidding on the same thing on Shopping and Text ads, so query-level CPC equalization could lead to problems with one unit being too expensive.
A majority of Google’s search ad revenue comes from advertisers who buy only text ads.

2021 Share of Google Search Ad Revenue From Advertisers Who:

- Purchase Text Ads But Not PLAs
- Purchase both Text Ads and PLAs
- Purchase PLAs But Not Text Ads

Redacted
Google recognizes the differences between PLAs and text ads

**2017 Google Email Thread**

Shopping [PLAs] and Text Ads are different products with different goals. . . .

Today these two formats [PLAs and text ads] are siloed in their own world and don’t compete, it will be worth looking at pricing from that point of view.

**2023 Trial Testimony**

Q. PLAs are a different species than text ads; is that right?

A. Yes.

Hal Varian, Chief Economist

REDACTED FOR PUBLIC FILING
Text ad prices are higher and have increased over time relative to PLA prices, consistent with their differentiation.

Average Annual Cost Per Click (CPC) for US Queries, 2016–2021

Redacted
Search ads on specialized search engines are differentiated from text ads

- For many ads on specialized search engines, the consumer is taken to another page on the platform.

- Advertisers may view specialized search engines as rivals and therefore do not want to advertise on them.

- Specialized search engines—some of the biggest advertisers—are not likely to advertise on their rivals.
Relevant Market

General Search Services

General Search Text Advertising

Search Advertising

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Google views search ads as distinct from other digital ads

Global Ads Financials Fact Pack | Q3 2019

Revenue by Product

Search
- Revenue Fixed ($m)
- YoY

Display
- Revenue Fixed ($m)
- YoY

Video
- Revenue Fixed ($m)
- YoY

Total
- Revenue Fixed ($m)
- YoY

Global

Americas

US
CA
BR
SPLatam

Redacted

2019

REDACTED FOR PUBLIC FILING
Opinion 2

Google possesses substantial market power protected by barriers to entry in each of the relevant markets
Monopoly Power

General Search Services

General Search Text Advertising

Search Advertising
Economic evidence that Google has monopoly power in general search services

- Google’s market shares
- High barriers to entry and expansion
- Google’s significant advantages over its general search rivals
- Low consumer responsiveness to quality reductions
- The substantial profits Google earns from its distribution contracts
Economic evidence that Google has monopoly power in general search services

• Google’s market shares

• High barriers to entry and expansion

• Google’s significant advantages over its general search rivals

• Low consumer responsiveness to quality reductions

• The substantial profits Google earns from its distribution contracts

REDACTED FOR PUBLIC FILING
Google has close to 90% of the US general search services market.
Google has had a dominant and increasing share since at least 2009.
On mobile phones Google’s share is even higher
Economic evidence that Google has monopoly power in general search services

• Google’s market shares

• High barriers to entry and expansion

• Google’s significant advantages over its general search rivals

• Low consumer responsiveness to quality reductions

• The substantial profits Google earns from its distribution contracts
The general search services market has significant barriers to entry

- Large fixed and sunk capital costs
- Google’s strong brand recognition and loyalty
- Scale
- Google’s ownership of Chrome web browser
- Google’s control of search access point defaults through its exclusionary contracts
Entering general search services is expensive

• Annual costs to Google for search services: Redacted

• Additional annual costs to Google for search advertising: Redacted

• In 2020, Bing earned only Redacted in search advertising revenue
The general search services market has significant barriers to entry

- Large fixed and sunk capital costs
- Google’s strong brand recognition and loyalty
- Scale
- Google’s ownership of Chrome web browser
- Google’s control of search access point defaults through its exclusionary contracts
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- Google’s market shares
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- The substantial profits Google earns from its distribution contracts
Google has significant advantages over its general search rivals

- **Search services quality advantages**
  - Between 2015 and 2021, the difference in the US between Google's and Bing's IS scores ranged from [Redacted].

- **Brand image and reputation advantages**

- **Monetization advantages, especially in mobile**
Google’s RPM advantage over Microsoft is driven by its much higher RPM on mobile phones.

Google QueryNav data (DOJ RFP 2.70); Microsoft aggregate search statistics data (DOJ RFP 1.39 and CID data). (Whinston Reply Report, Fig. 75, at C-16)
Economic evidence that Google has monopoly power in general search services

• Google’s market shares
• High barriers to entry and expansion
• Google’s significant advantages over its general search rivals
• Low consumer responsiveness to quality reductions
• The substantial profits Google earns from its distribution contracts

REDACTED FOR PUBLIC FILING
Google’s experiments show low consumer responsiveness to quality improvements.

Ablation experiments (2016) for large ranking components (e.g., Navboost, Synonyms, etc.) show that reducing the threshold for different settings (global effect, not enough data for per-country effect) in the ablation experiment in 2019-2020 showed roughly consistent results. The study was based on 2-3 month ablations, and the analysis suggests that the usage loss continues but at a declining rate.

Results

- Study based on 2-3 month ablations; external analysis suggests the usage loss continues but at a declining rate.
- Suggest to convert 

In other words, the effect of Search revenue ex-TAC (Traffic Acquisition Cost) is Redacted.

Redacted FOR PUBLIC FILING
Economic evidence that Google has monopoly power in general search services

- Google’s market shares
- High barriers to entry and expansion
- Google’s significant advantages over its general search rivals
- Low consumer responsiveness to quality reductions
- The substantial profits Google earns from its distribution contracts
Monopoly Power

General Search Services

General Search Text Advertising

Search Advertising

REDACTED FOR PUBLIC FILING
Economic evidence that Google has monopoly power in the relevant ad markets

- Google’s high market shares
- Barriers to entry
- Google’s significant advantages over its search ad rivals
- Low advertiser responsiveness allowed Google to raise its text ad prices significantly

REDACTED FOR PUBLIC FILING
Google’s US market share in general search text ads was 88% in 2020.

Google QueryNav data (DOJ RFP 2.70); Microsoft aggregate search statistics data (DOJ RFP 1.39 and CID 7); StatCounter Global Stats. (Whinston Reply Report, Fig. 72, at C-13)
Google’s US market share in search ads was 74% in 2020

Google QueryNav data (DOJ RFP 2.70); Microsoft aggregate search statistics data (DOJ RFP 1.39 and CID data); eMarketer, Google Industry Metrics data (DOJ RFP 8.7); Google Search vertical data (DOJ RFP 2.73); Google Play data (DOJ RFP 8.8). (Whinston Reply Report, Fig. 70, at C-11)
Economic evidence that Google has monopoly power in the relevant ad markets

- Google’s high market shares
- Barriers to entry
- Google’s significant advantages over its search ad rivals
- Low advertiser responsiveness allowed Google to raise its text ad prices significantly
Google’s text ad prices rose over 65% from 2013 to 2021.

Google’s Search Ads Price Index, PCs and Mobile Phones (US)

Redacted for public filing.
Google has launched price increases of 5% on search ads and it resulted in an increase in revenue to Google

Q. And when Google launched price increases of 5 percent on search ads, it resulted in an increase in revenue to Google; correct?

A. Typically, it would result in an increase in revenue.
Google adjusted the rules of the auction to raise text ad prices

* * *

We need a way to extract value more directly . . . We need *pricing mechanisms* with *pricing knobs*
Google aimed to set prices

- Agenda:
  - Do we want to raise prices?
  - Is it ok to raise prices?
  - How would we roll out?
Google expected to make “billions” from Project Momiji

A) Momiji Opportunity

Likely billions in format pricing + squashing

- ~10% RPM from Format Pricing
- ~5% RPM from Squashing
- Work well together (i.e. ~15% total)
- More opportunity on Mobile than Desktop