

# Optimizing for Search Engines and LLMs

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BUSINESS  
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# Research Collaborators



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# Search Engine Marketing



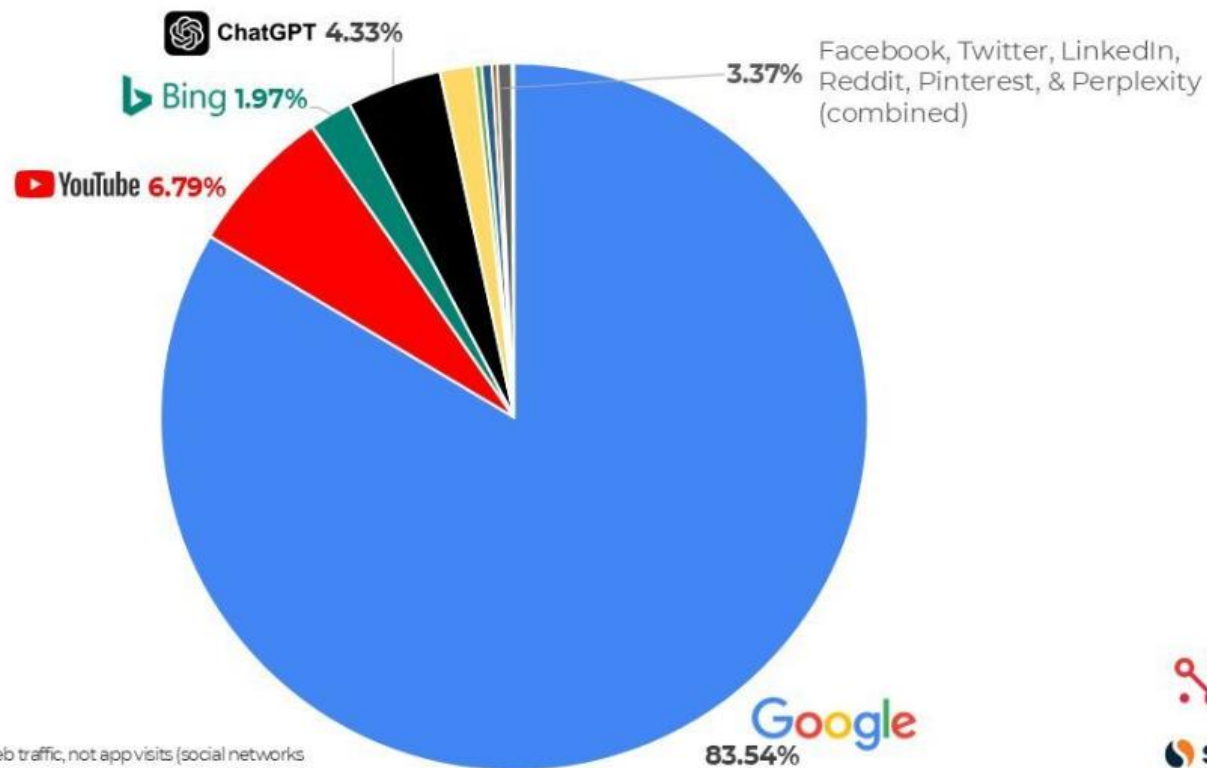
It is all about getting here

- the **#1 result** in Google's organic search results has an **average CTR of 27.6%**
- The **#1 organic result** is **10x more likely** to receive a click compared to a result in the **#10 spot**

# Simpler Times

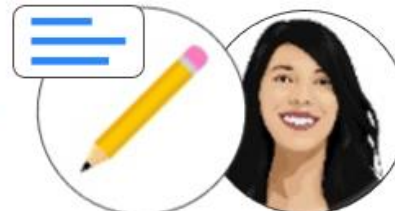
## Cross-Platform Share of Search (Oct. 2024)

using a select group of traditional, social, and LLM tools on desktop + mobile web



NOTE: Only includes desktop and mobile web traffic, not app visits (social networks are likely undercounted). Assumes all LLM requests are "searches." Uses a mix of data from both SimilarWeb (visits) and Datas (searches/visit)

# Creating Content for Google: Manually



IT service desk

All News Images Maps Books More

About 15,810,000,000 results (0.65 seconds)

<https://www.techtarget.com> > definition > service-desk

[What is an IT service desk and how does it work?](#) -

An **IT service desk** is a communications center that provides a single point of contact between a company, its customers, employees and business partners.

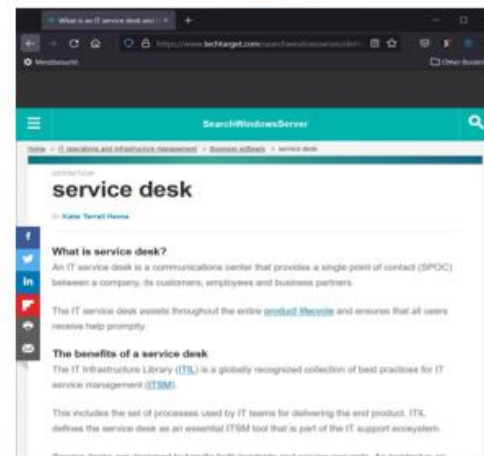
<https://www.sysaid.com> > Articles

[What is an IT Service Desk? - Key Benefits | SysAid](#)

**Service desks** facilitate communication and collaboration between IT and business, helping to resolve and even avoid preventable glitches and breakdowns.

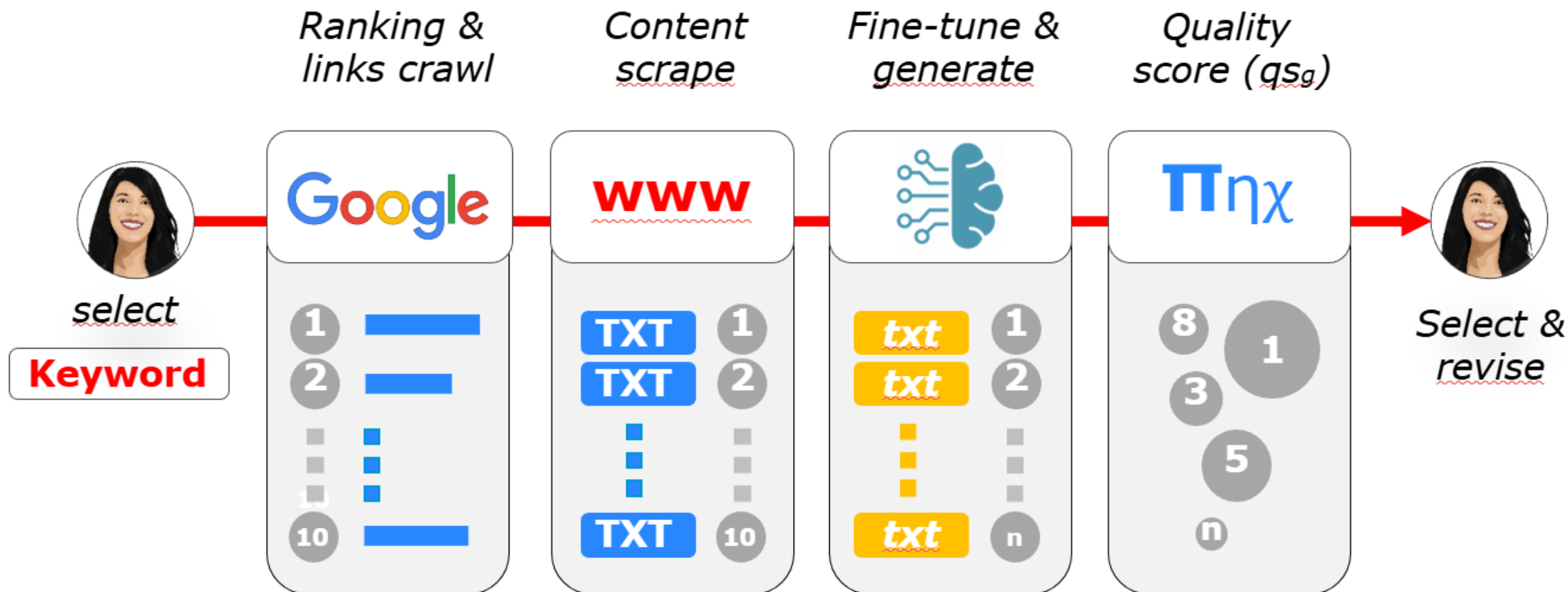
Do research on & integrate:

- Keywords
- Topics & themes
- Specific details
- Words' #
- Words' tf-idf



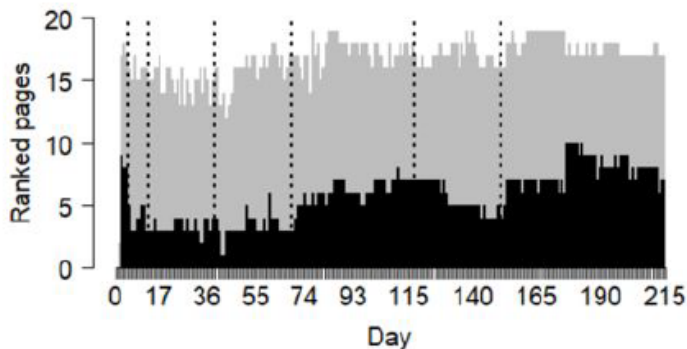
IT service desk management ...

# Creating Content for Google: With AI

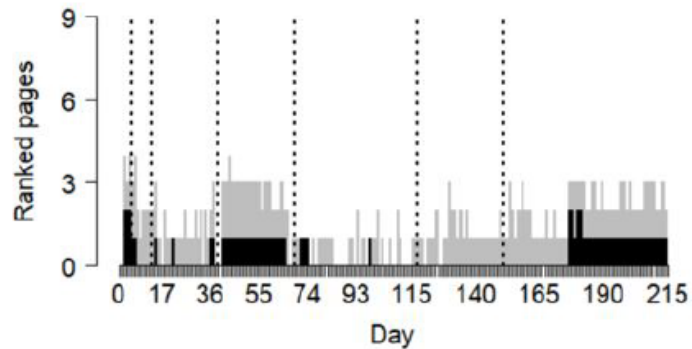


# Creating Content for Google: With AI

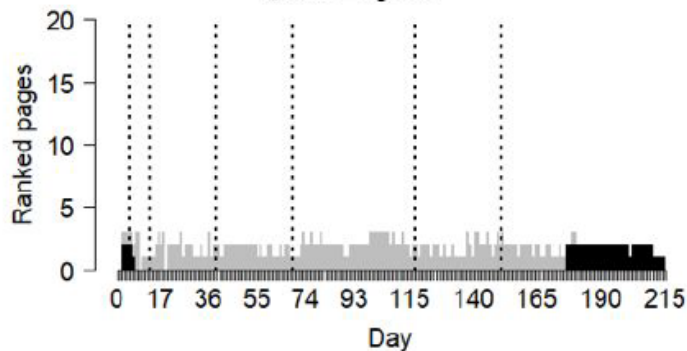
Revised Machine



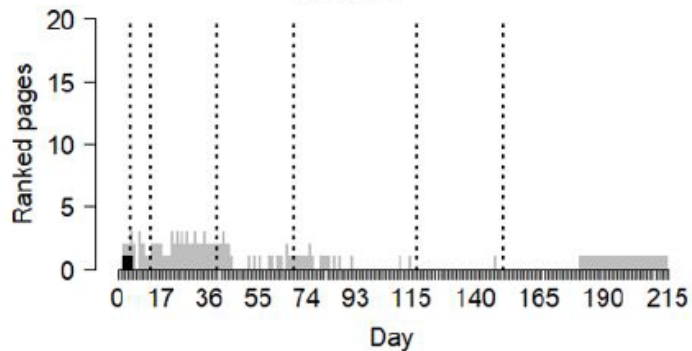
Real SEO Experts



Quasi Experts



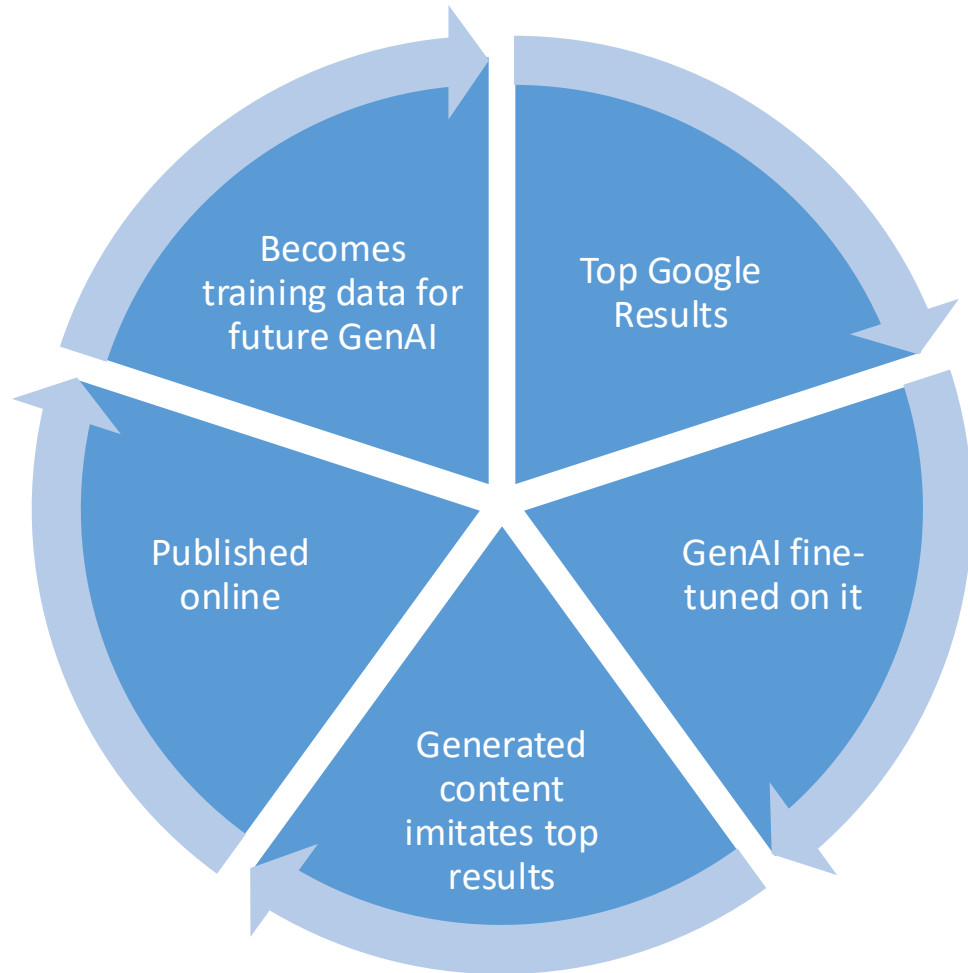
Novices



Category	Factor	Company (Real)	Revised Machine
Human labor time for content production	Median (hours)	9.50	.55
	IQR (hours)	3.69	.23
	Min (hours)	4.50	.28
	Max (hours)	21.50	1.20
Production output & cost per year <sup>1</sup>	Produced content units	164.95	<b>2,849.09</b>
	Production level (%)	100.00	<b>1,627.27</b>
	Cost per content unit (€)	272.81	<b>15.79</b>
	Cost for 164.95 units (€)	45,000	<b>2,605</b>
	Cost for 2,849.09 units (€)	777,272	<b>45,000</b>
Possible real financial impact (2015 to 2019) <sup>1</sup>	Produced content units	439	<b>439</b>
	Cost (€)	119,765	<b>6,933</b>
	Possible savings (€)		<b>112,832</b>

Reisenbichler, Reutterer, Schweidel and Dan (2022), "Frontiers: Supporting Content Marketing with Natural Language Generation," *Marketing Science*

# AI Imitates What Already Ranks



“Widespread adoption of NLG could result in **more homogeneous content**, which may increase consumer search **costs** and require that firms find ways to **differentiate** themselves.”  
-Reisenbichler et al., Marketing Science, 2022

# Potential Consequences



Top 10 is homogeneous =  
= the same content

Unique content on the website X

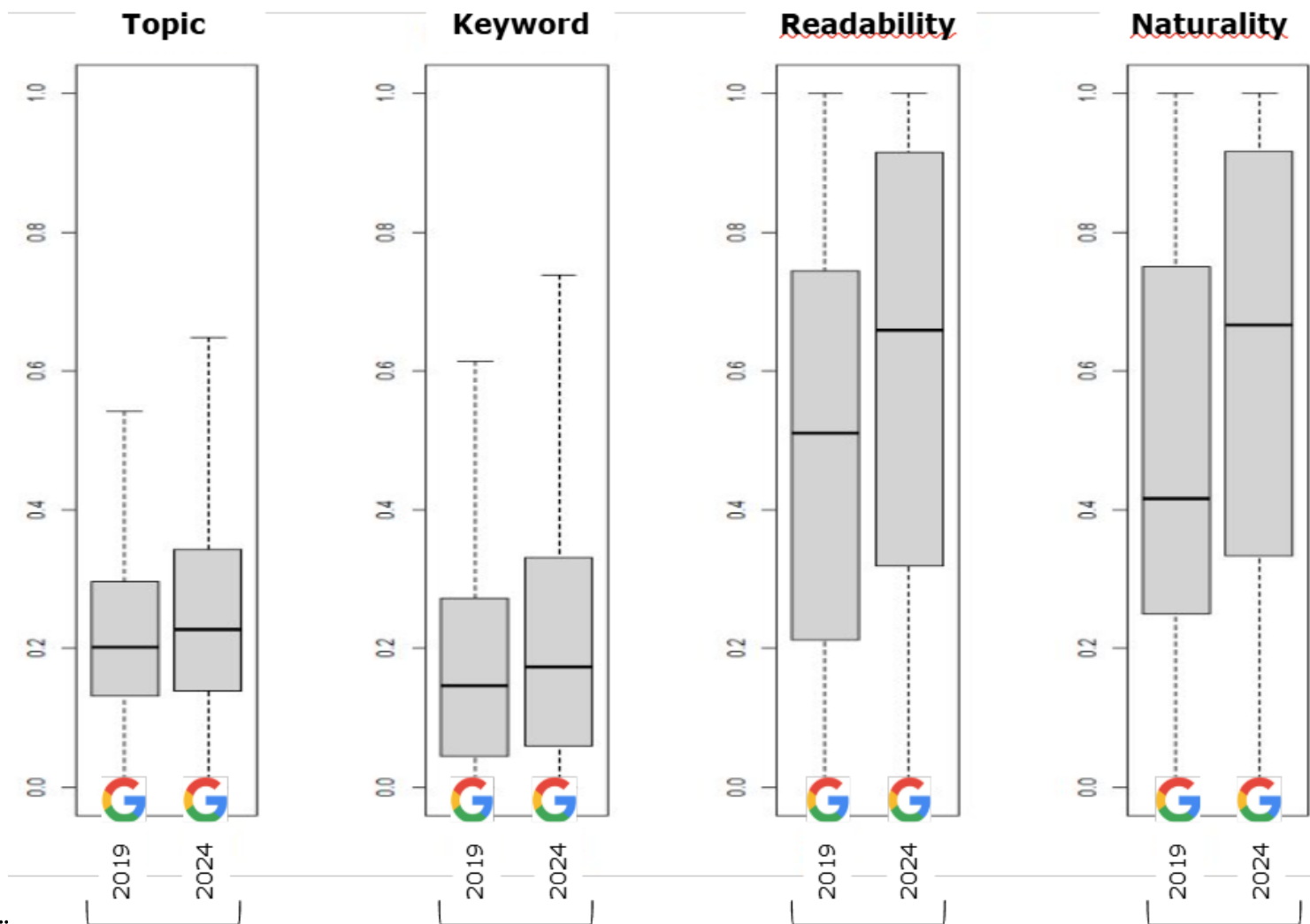


Website X differs



Website X not ranked in top 10

# Increasing Content Similarity Over Time



- **Convergence to more content similarity:**

all content optimization indicators went up, meaning **texts are more similar in 2024 than in 2019**

Industry  
sectors

Primary



Secondary



Tertiary

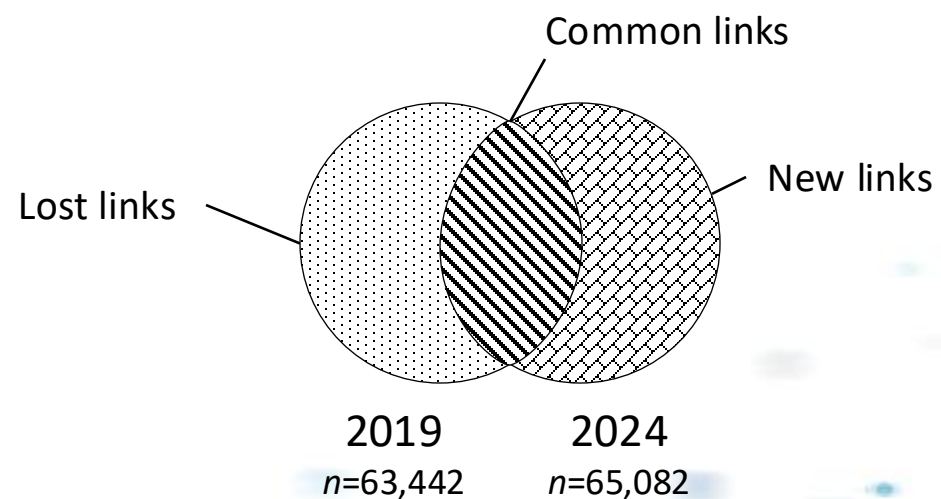


Quarternary



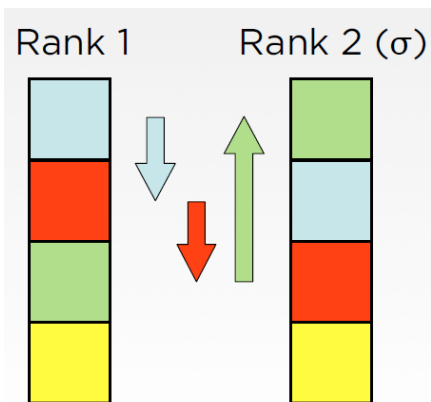
# Rankings Overlap

Industry sect.	Common links	New links	Lost links
Primary	1,953	7,531	7,202
Secondary	3,652	14,038	13,987
Tertiary	5,392	17,789	20,979
Quarternary	2,353	8,287	7,924



# Ranking Changes

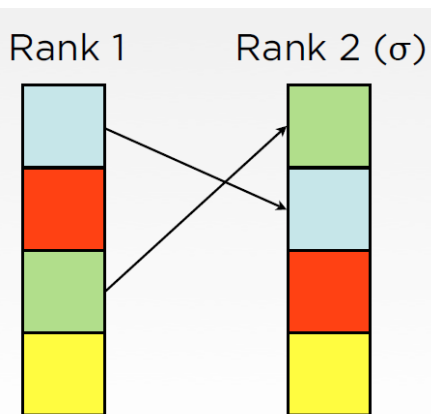
Ranking Displacement



$$F(\sigma) = \frac{\sum_i |i - \sigma(i)|}{n_{\text{keywords}}}$$

Max displ<sub>per keyword</sub>

Ranking Inversions



$$K(\sigma) = \frac{\sum_{i < j} 1_{\sigma(i) > \sigma(j)}}{n_{\text{keywords}}}$$

Industry sect.	Ranking Displacement
Primary	59 (14.5)
Secondary	64 (13.0)
Tertiary	65 (22.3)
Quarternary	61 (15.6)

ANOVA:  
F = 48.8  
p < .01

Mean Spearman's Footrule value (rel.); SD

Industry sect.	Ranking Inversions
Primary	17.93
Secondary	78.90
Tertiary	100.23
Quarternary	235.38

ANOVA:  
F =  
p < .01

Mean Kendall tau distance per keyword

# Why This Matters

- The search ecosystem is a prime foundation for the economy
  - Both firms and customers rely on it
- Companies invest billions annually for gaining keeping good visibility
- Limited guidance available to marketers

# Addressing the Need

## How Marketers Can Adapt to LLM-Powered Search

by Stefano Puntoni, Mike Ensing and Jarvis Bowers

May 24, 2024



HBR Staff/beast01/PeterPencil/Getty Images

□ Revere: Brand Luminaire

**Brand/Product/Category:** --

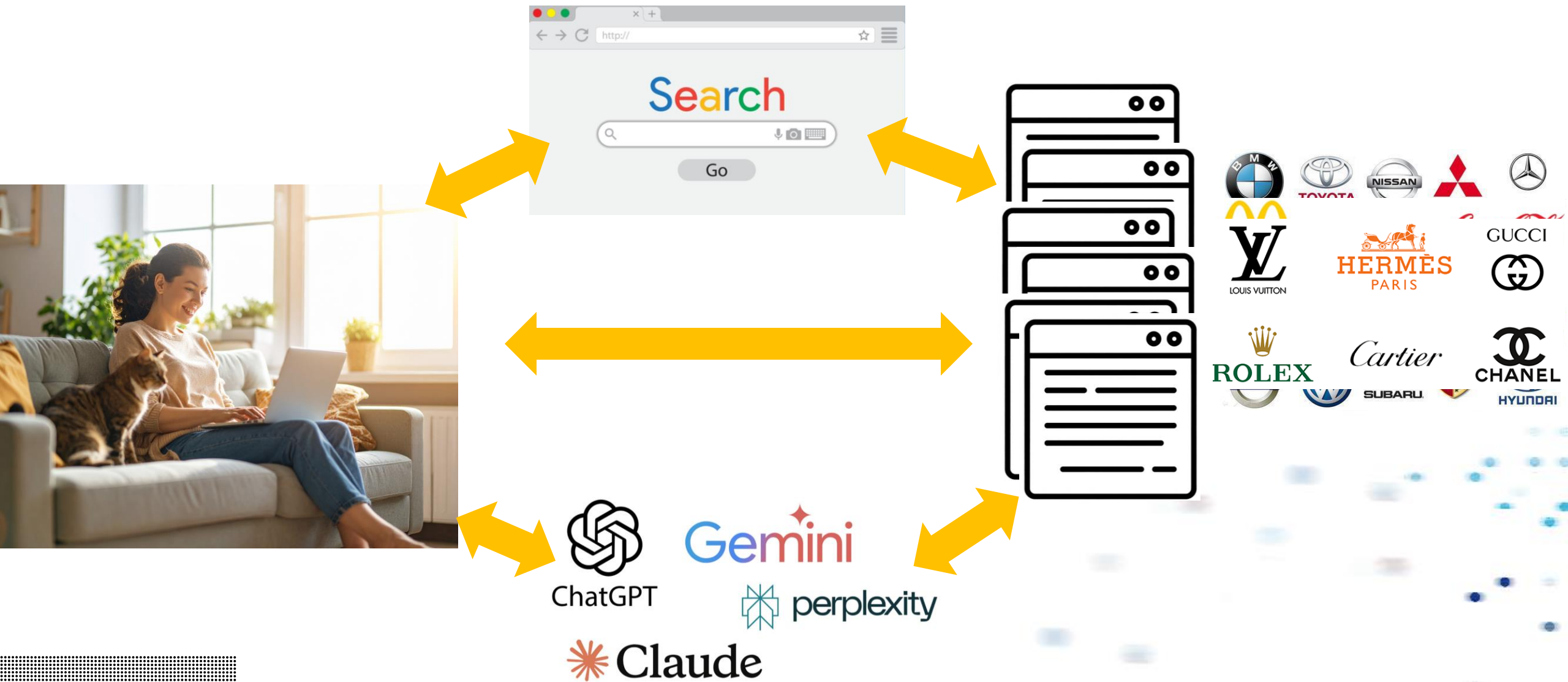
**Type:** Brand Index Score v2

**LLM:** GPT-4o

**Date:** 6/25/2024, 8:05:15 PM

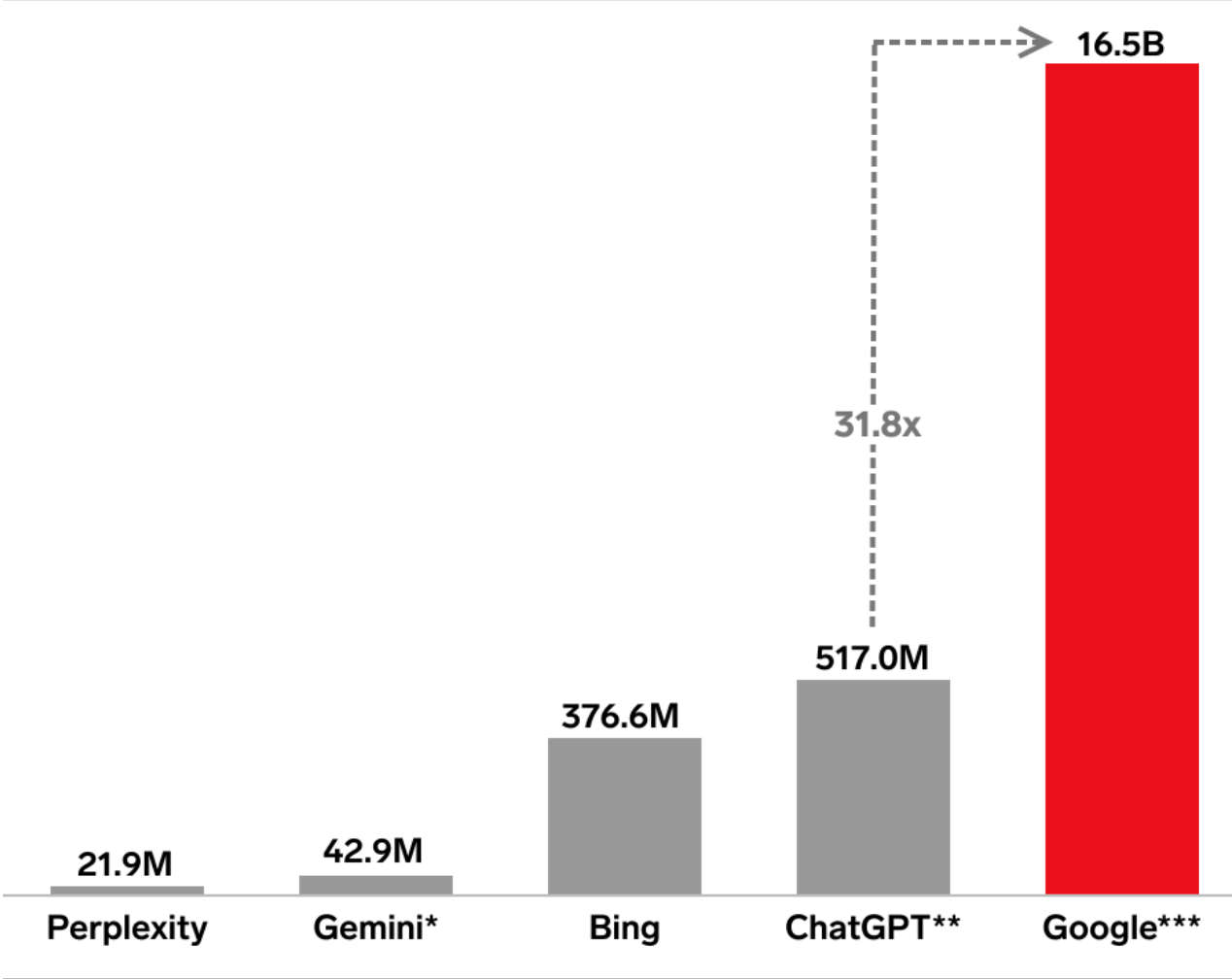
Brand/Product	Rank	Favourability	Brand Index Score
Rivian R1T	41	28	69
Ford F-150 Lightning	36	27	63
Tesla Cybertruck	47	11	58
Chevrolet Silverado EV	22	24	46
GMC Hummer EV	19	23	42
Bollinger B2	8	26	34

# Today's Quagmire



# Google Drew Over 30 Times More Visitors Than the Next Biggest GenAI Search Destination

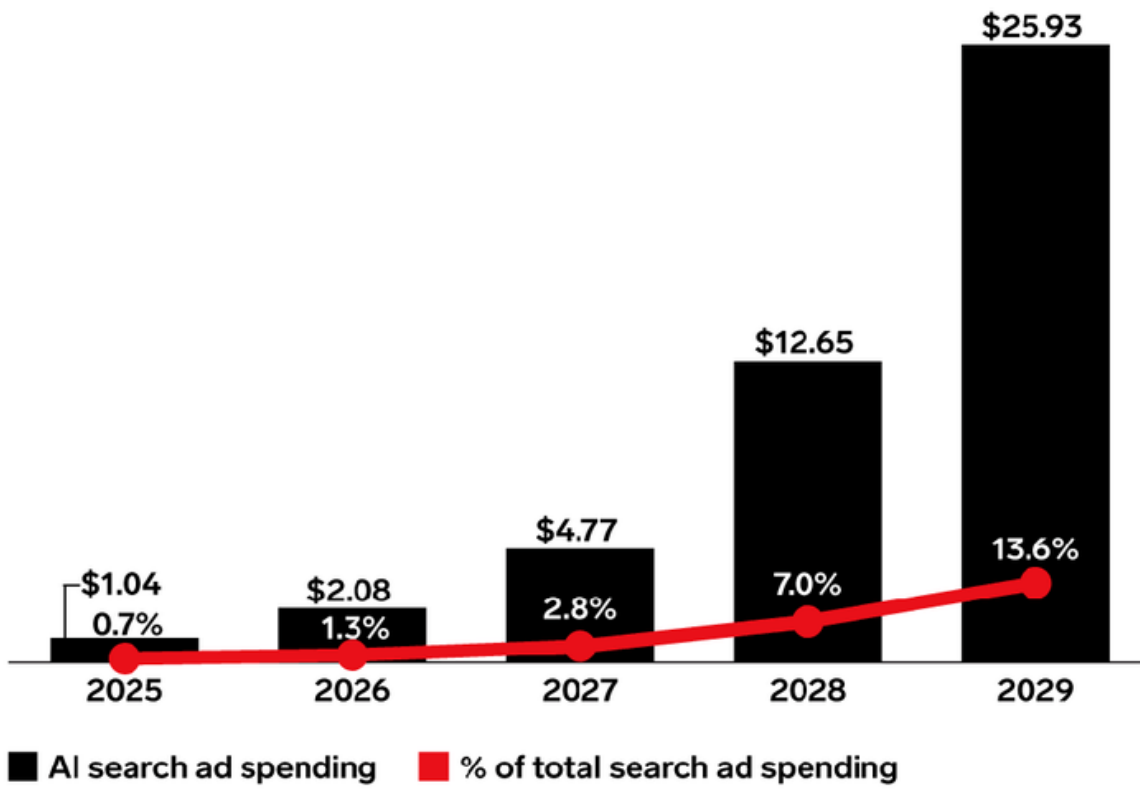
US desktop and mobile web visits, by platform, Dec 2024



Note: \*gemini.google.com; \*\*chatgpt.com, previously chat.openai.com; \*\*\*google.com  
Source: Similarweb, Jan 3, 2025

# AI Search Will Gain Share of Search Ad Budgets as Consumer Adoption Grows

billions in US AI search ad spending and % of total search ad spending, 2025-2029



Note: includes advertising that appears within generative AI platforms such as ChatGPT, Google Gemini, Microsoft Copilot, Perplexity AI, and You.com, as well as AI-powered search summaries like Google AI Overviews and Bing AI-powered summaries; includes sponsored answers, brand mentions, and affiliate links embedded in AI-generated summaries or conversational responses triggered by user queries; includes formats priced on a cost-per-click, cost-per-engagement, or impression basis tailored to generative environments; excludes traditional keyword-based search ads and standard paid listings on search engine results pages  
Source: EMARKETER Forecast, May 2025

# What Content Performs Well? Exploratory Analysis



More than an AI detector.  
Preserve **what's human.**

GPTZero researchers uncover the shortcomings of ChatGPT and major AI models to ensure every word is worth reading.

99%

Accuracy

10 million

Users

380k

Educators

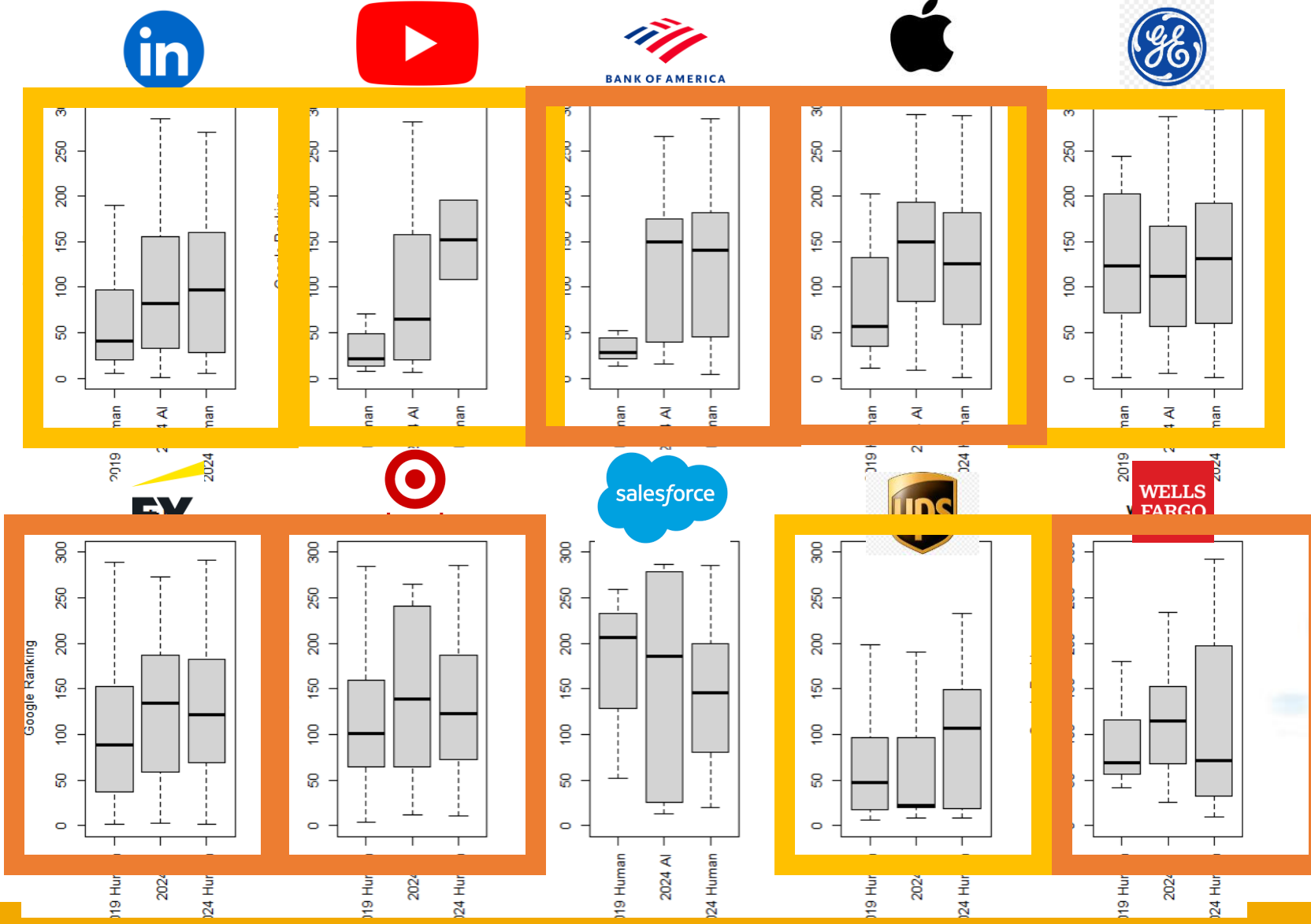
Continue as an Educator

Get started for free

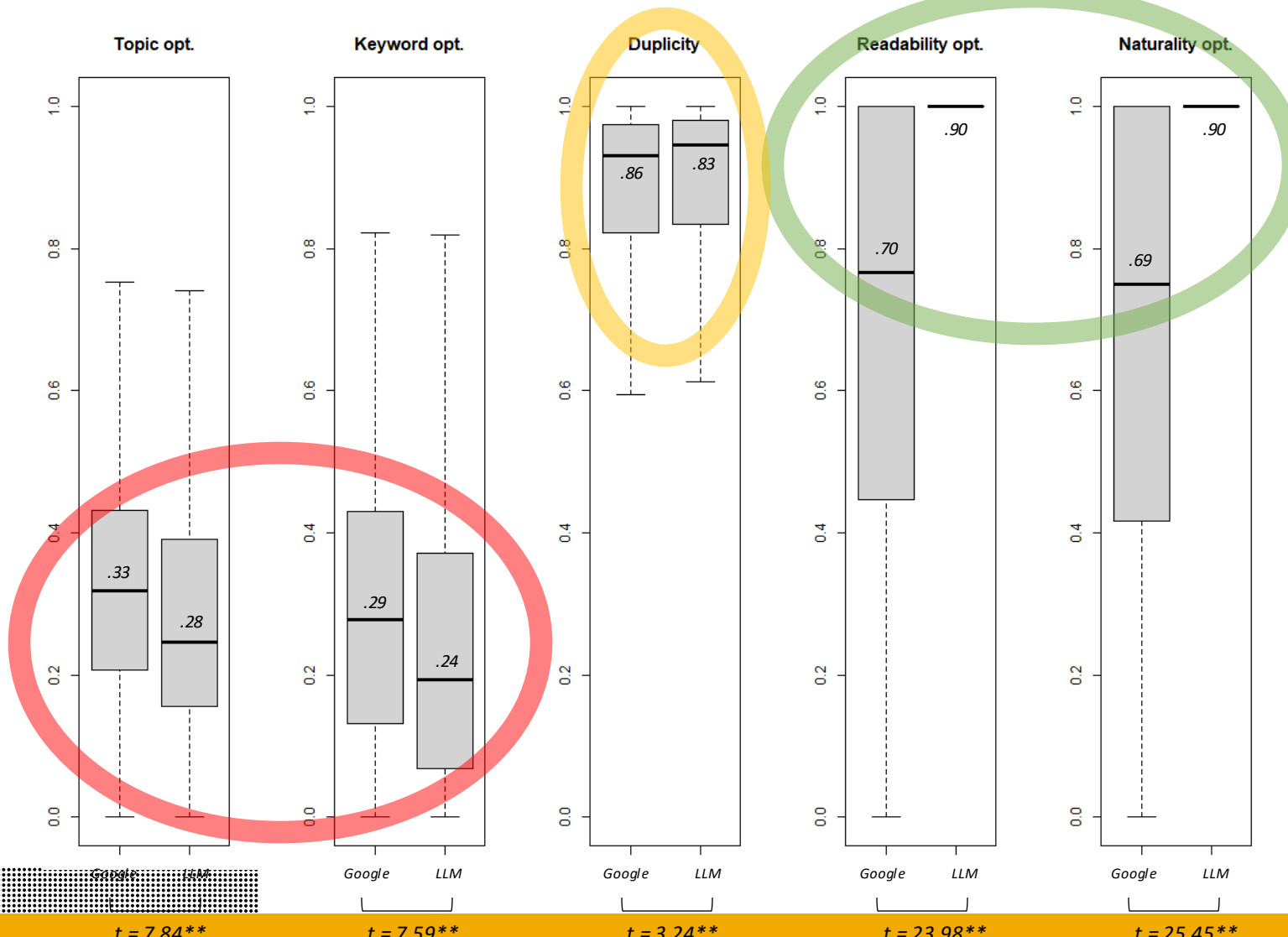
- ✓ The world's most accurate AI checker
- ✓ Smart bibliography and source check
- ✓ Replay writing in Google Docs
- ✓ Customize an educator-in-the-loop AI grader

The screenshot shows the GPTZero web interface. At the top, there are three buttons: "Scan for AI" (with a target icon), "Improve writing" (with a diamond icon), and "Check bibliography" (with a list icon). Below these is a large text input area with the placeholder "Paste your text". At the bottom of the input area, there are several buttons for examples: "ChatGPT", "Claude", "Human", "AI + Human", and "Polished by AI". Below the input area, there is a character count "0/5,000 characters" and an "Upgrade" button (with a lightning bolt icon). On the right side, there is an "Upload" button (with an upload icon) and a large "Scan" button (with a right arrow icon).

# AI vs. Human Performance



# Content Factors: Search Engines vs. LLMs



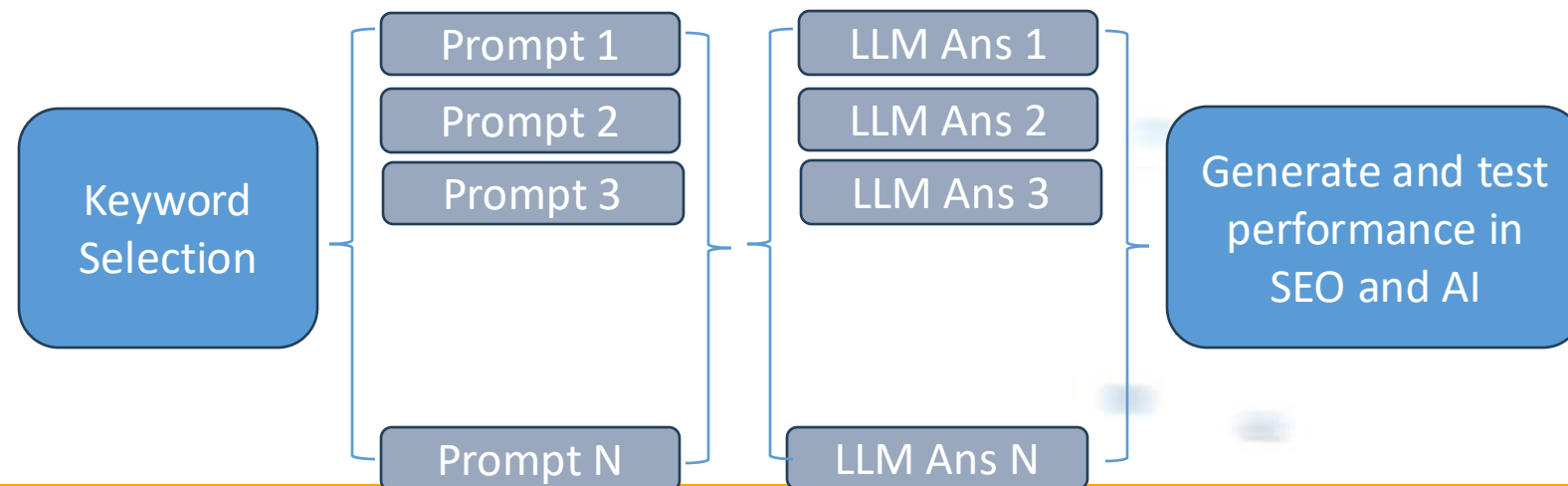
Readability is being prioritized

Uniqueness still matters

Keyword and topic density don't seem to matter as much

# Ongoing Research

- What content performs well for
  - Search engines?
  - Different LLM-based tools?
- How do we engineer content for LLMs?
- How do brands balance optimization for search engines, social media, and LLMs?



# Conclusion

- SEO has been critical for online visibility
- Spread of Gen AI appears to have contributed to increasing content homogeneity, reducing informational value to consumers
- With traffic (gradually) moving to LLMs, content optimization methods must adapt
- What works for SEO may not work for LLMs



# Thank You

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