Monthly Report on GEO Issues and Trends
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Performance Measurement

The speed of loading, rendering, and interacting with a web page (collectively, the page experience) has been a significant Google ranking factor since 2021. At the heart of Google's emphasis on speed is their observation that web site visitors value pages that load quickly. Visitors are likely to search more often if they are satisfied with the resulting pages including factors which are not directly related to page content and fit-to-need.

Across a variety of research studies, web pages that load quicker have been found to be associated with lower bounce rates, higher conversion rates, and increased perceptions of quality, trustworthiness, and professionalism. (*Why Speed Matters*)

Note: Real world vs Lab

In this report, a distinction is made between synthetic laboratory measurements —one-off or periodically sampled metrics using a testing solution such as Lighthouse — and real-world field data collected across a large sample of users in disparate locations and varied computing environments.

The best public source for real word measures is CrUX (Chrome User Experience). CrUX is compiled and published by Google based on Chrome users around the world. It is made available for web pages which receive at least 1,000 page views in 28 days. CrUX data is not available for newly published content or for web pages that are in development and not publicly accessible.

Another method for collecting real world user experience data is through Javascript-based data collection using third party tools. Real User Measurement (RUM) will be investigated in July 2026.

The data collected by CrUX is available publicly through a number of Google tools and third-party tools and is used by Google Search to inform the page experience ranking factor.

Core Web Vials

As of 2026, three key metrics, Core Web Vitals, are considered as ranking factors:

Core Web Vital	What it represents	Target Vale	Source
LCP - Largest Contentful Paint	Core loading metric	< 2.5 seconds	CrUX & Lab
INP - Interaction to Next Paint	Core responsiveness metric	< 200 ms	CrUX. (Lab is limited)
CLS - Cumulative Layout Shift	Core visual stability metric	< 0.1	CrUX & Lab

Building a high-performance web presence requires developing and maintaining an awareness of performance throughout the design and build process as well as continual monitoring of systems in production.

Measuring INP synthetically is limited because it measures the responsiveness of a page based on real human interactions on the page, such as clicking to reveal hidden text.

Supporting/Proxy Metrics

The three Core Web Vital metrics are critical but provide an incomplete view of performance and lack the granularity to begin troubleshooting performance concerns. Although there are dozens of potential metrics for measuring page performance. these additional metrics are recommended for added insight toward resolving performance issues.

Metric	Why collect it	Source
Load Factors		
TTFB - Time to First Byte	Contributor to LCP; helps separate server and CDN latency from frontend rendering	CrUX & Lab
FCP - First Contentful Paint	Indicates when initial rendering begins	CrUX & Lab
Speed Index	Useful visual-load diagnostic. GTMetrix says "How quickly the contents of your page are visibly populated. A good user experience is 1.3s or less."	Lab
Responsiveness factors		
TBT - Total blocking time	Lab proxy for main-thread blocking and likely INP problems	Lab
Total page size/weight	General complexity indicator	Lab
Number of requests	Complexity and waterfall diagnostic	Lab

Deeper Diagnostics

A next level of deeper analysis would include these metrics.

Metric	Why collect it	Source
Largest contentful element	Identifies the actual LCP target	Lab
JS transfer size / execution time	Contributor to INP/TBT	Lab
CSS blocking time / unused CSS	Contributor to LCP/render delay	Lab
Image payload and image format	Common LCP contributor	Lab
Third-party request count/weight	Indicates the complexity introduced by ads, analytics, consent management, widgets, and social embeds	Lab

Evaluating Performance Measurement Toolsets

Semetric Media is currently evaluating two commercial tools: GTMetrix and DebugBear as potential tools for an ongoing program of performance monitoring and measurement.

URL Selection Criteria

Monitoring and measuring page experience requires the selection of representative URLs which touch the full technology stack of web page delivery. A consideration of these dependencies will inform the selection:

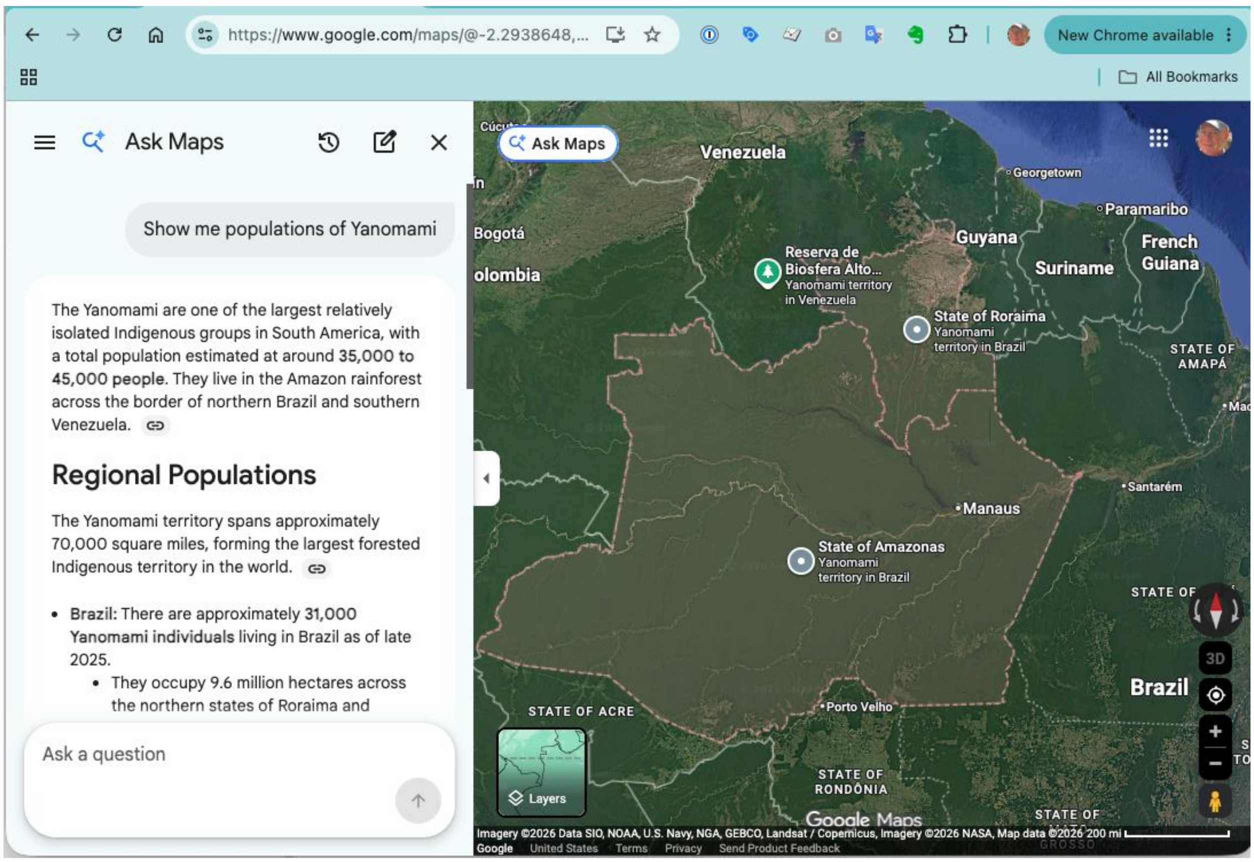
Dependency	Components
Infrastructure	DNS, content delivery networks and caching, network firewalls, and web application firewalls, compression, redirects, and server capacity.
Business and Application Logic	Access control (authentication and authorization), dynamic content, customer data and personalization, backend databases
Content	Title, abstract, full text, figures, tables, references, supplementary material
Frontend	CSS, JavaScript, fonts
Third Party	Web analytics, tag manager, cookie consent management, ads, widgets, social/sharing, Altmetrics

Additional information on recommended tools and initial performance monitoring on select JAMANetwork URLs will be provided in July 2026.

Geocoding for AI Models

Google released "Ask Maps" as a new, interactive chat feature in Google Maps in March 2026 and touted the feature at the May 2026 Google I/O Conference. While common use cases for Google Maps focus on helping people navigate the built environment, the new feature highlights some interesting opportunities for publishers to provide added geocoding to academic articles to facilitate geospatial understanding in AI models.

Adding geocoding to academic articles, news articles, or conference proceedings creates new downstream opportunities for readers to interact with research. Instead of a location just being static text (like "a remote village in Peru"), geocoding transforms that location into a geospatial data point or area. While these services are not widespread today, an archive of content with robust geocoding may be exceptionally useful in the future.



While some disciplines, such as geology, have long established geographic databases, a generalized approach of on-page harvestable data provides the most accessible solution for a wide variety of AI models and search indexes.

Academic articles contain a mix of implicit and explicit geographic information but only some of them represent the geography of the research itself.

Publisher Name (e.g., Oxford University Press)

Publication Name (e.g., New England Journal of Medicine)
Author Affiliation (e.g., Department of Physiology and Biophysics, Jacobs School of Medicine and Biomedical Sciences, State University of New York at Buffalo, Buffalo, NY, USA.)
Article Title (e.g., Heatwaves enable wildfire activity in the western United States)
Words in article text (e.g., "southern Venezuela and northern Brazil")

Frontier models are unlikely to make the crude inference that publications by Oxford University Press are related to the region of Oxfordshire, UK. The internal reasoning of the model is just one part of a retrieval pipeline where the confusion may be introduced as a byproduct of token proximity, blurred entity roles, metadata flattening, or overweighting of prominent entities.

AI-mediated discovery may intensify place-name ambiguity because it often depends on entity extraction, inferred knowledge graphs, and retrieval pipelines that collapse page text, metadata, affiliations, publisher names, and article content into a common representation. Conventional search may return a visibly mixed result set for an ambiguous place name, but an AI system may silently select one entity and present the result as resolved with no indication of the ambiguity. For publishers, the remedy is not simply to add more place names or encode every location found in the article, but to encode the substantive article geography in a well-defined and widely supported metadata format.

Implementation in HTML using Semantic Schema Markup (JSON-LD)

Schema.org's `spatialCoverage` is useful here because it is specifically intended to identify the place or places that are the focus of a `CreativeWork`, not merely any place string that appears on the page.

Publishers can express this in page-level structured data, typically JSON-LD in the HTML `<head>`, using Schema.org properties such as `spatialCoverage` with `Place`, `GeoCoordinates`, or `GeoShape`.

Example of SpatialCoverage

```
{
  "@context": "https://schema.org",
  "@type": "ScholarlyArticle",
  "headline": "Impact of Deforestation on Local Microclimates",
  "spatialCoverage": {
    "@type": "Place",
    "name": "Xingu Indigenous Park",
    "geo": {
      "@type": "GeoShape",
      "box": "-13.0 -53.5 -11.0 -51.5"
    }
  }
}
```

A ChatGpt generated image from this JSON sample appears below. This example defines a bounding box using opposite corners and does not precisely define the boundaries of the park.

While geocoding may have limited relevance for some basic laboratory sciences, it can be particularly valuable in field sciences, public health, environmental studies, archaeology, geology, ecology, epidemiology, and regional social-science research, where location is often central to the interpretation, discovery, and reuse of the work.