

ERWIN HOFMAN GOOGLE LIGHTHOUSE VS CRUX & GSC

The CrUX of Lighthouse lies: Core Web Vitals & GSC

- 1. Who are you
- 2. SEO & sitespeed
- 3. Metric overview
- 4. PSI, Lighthouse, CWV & GSC
- 5. Metric nuances
- 6. Failing CWV
- 7. User Experience (UX)
- 8. SPA & APIs
- 9. Third parties
- 10. Validate with user data

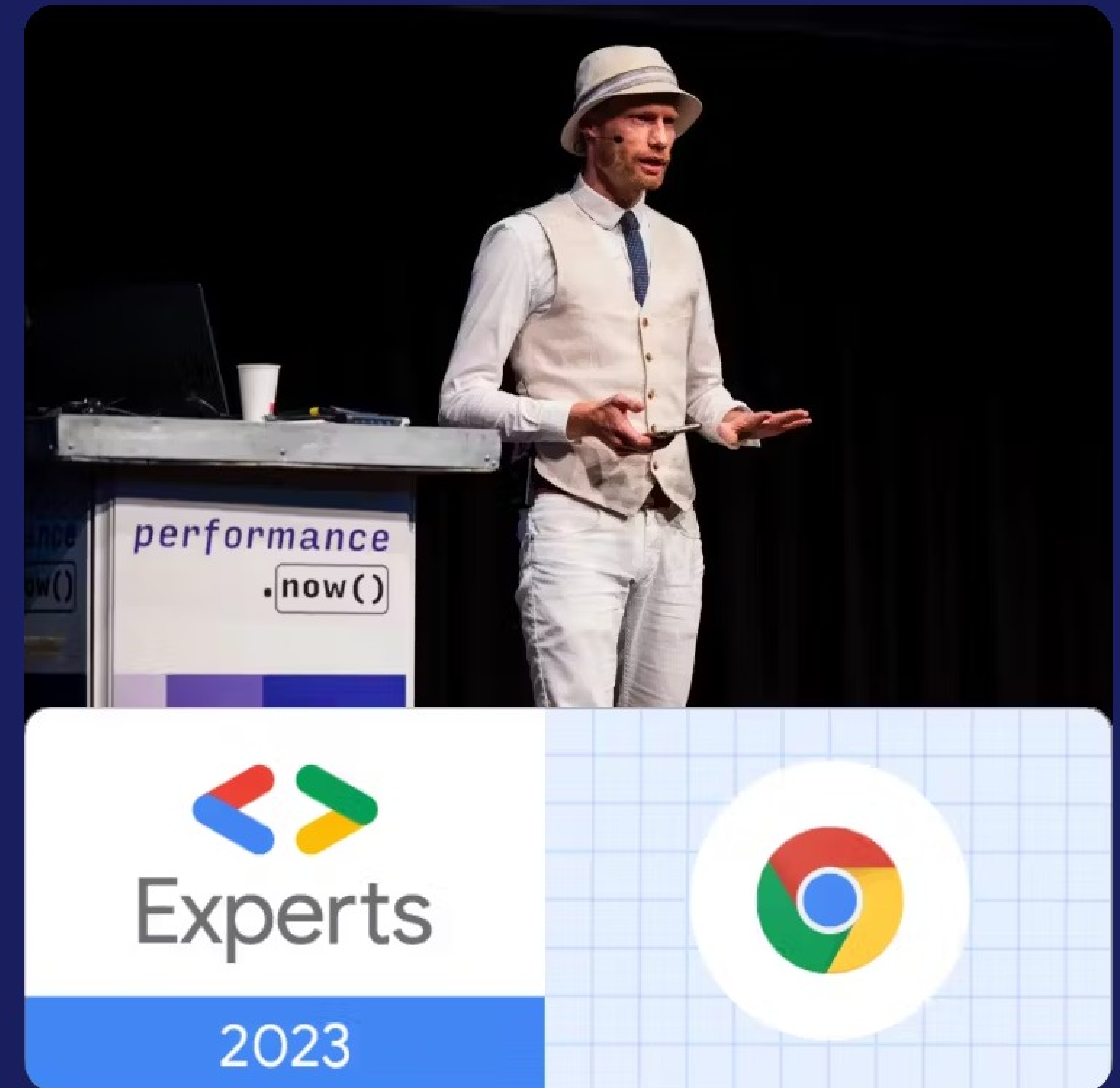
Core



erwinhofman.com/erwin-hofman/

Who am I?

- Erwin Hofman
- developer (2001) + consultant (2015)
- audits, training, talks
- co-founder + CTO RUMvision
- Google Developer Expert + APIs





blue2blond.nl/nieuws/uitspraak-in-de-zaak-tegen-de-uitgeversgroep.html

fun fact:

I was once called a
Google genius
in court



2. SEO & sitespeed





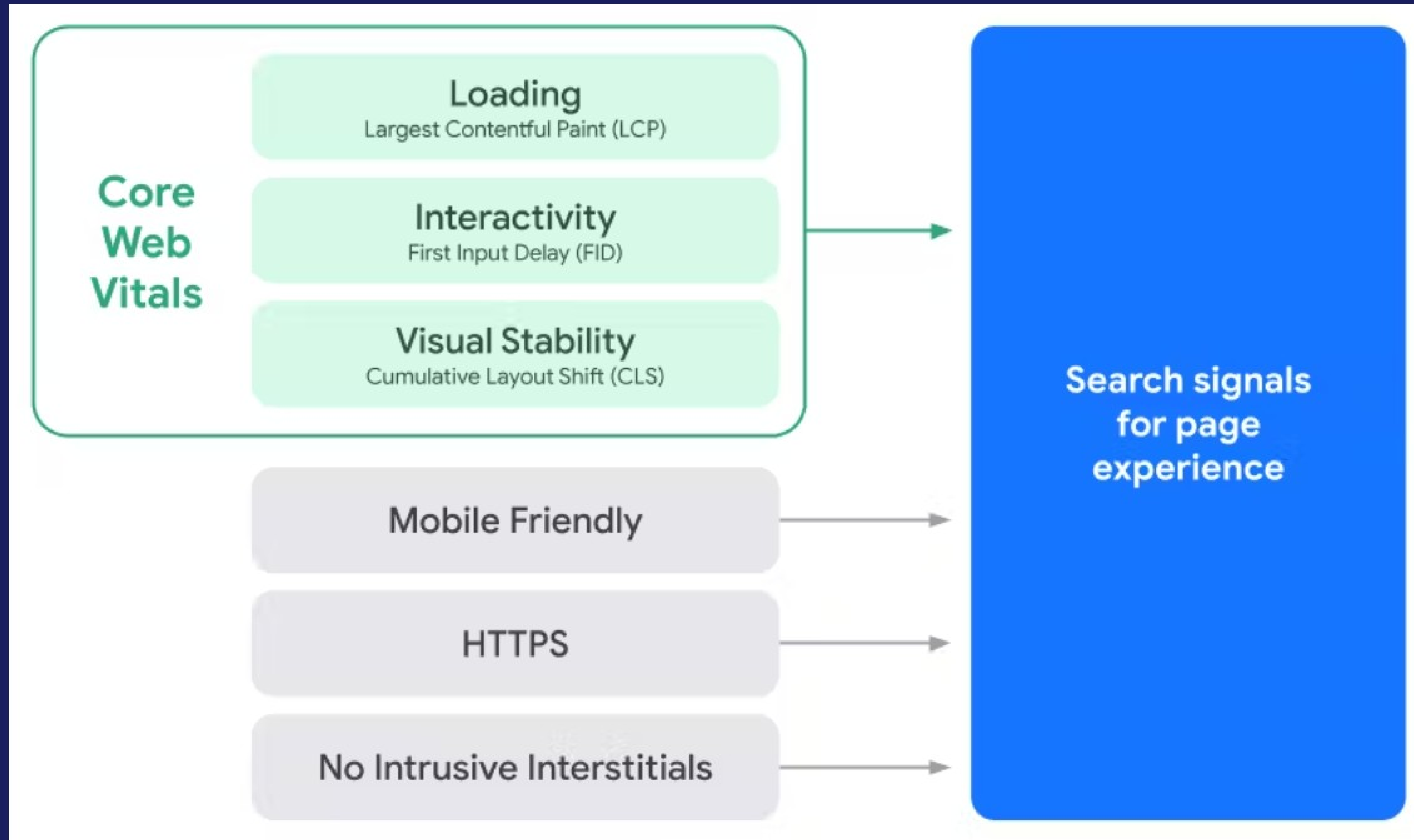
AMP

erwinhofman.com/blog/google-fast-amp-framework-and-core-web-vitals/

AMP & sitespeed

- Limited & predefined HTML + JS
- Max 50kb of (inlined) CSS
- Prerendering from SERP
- Google AMP Cache





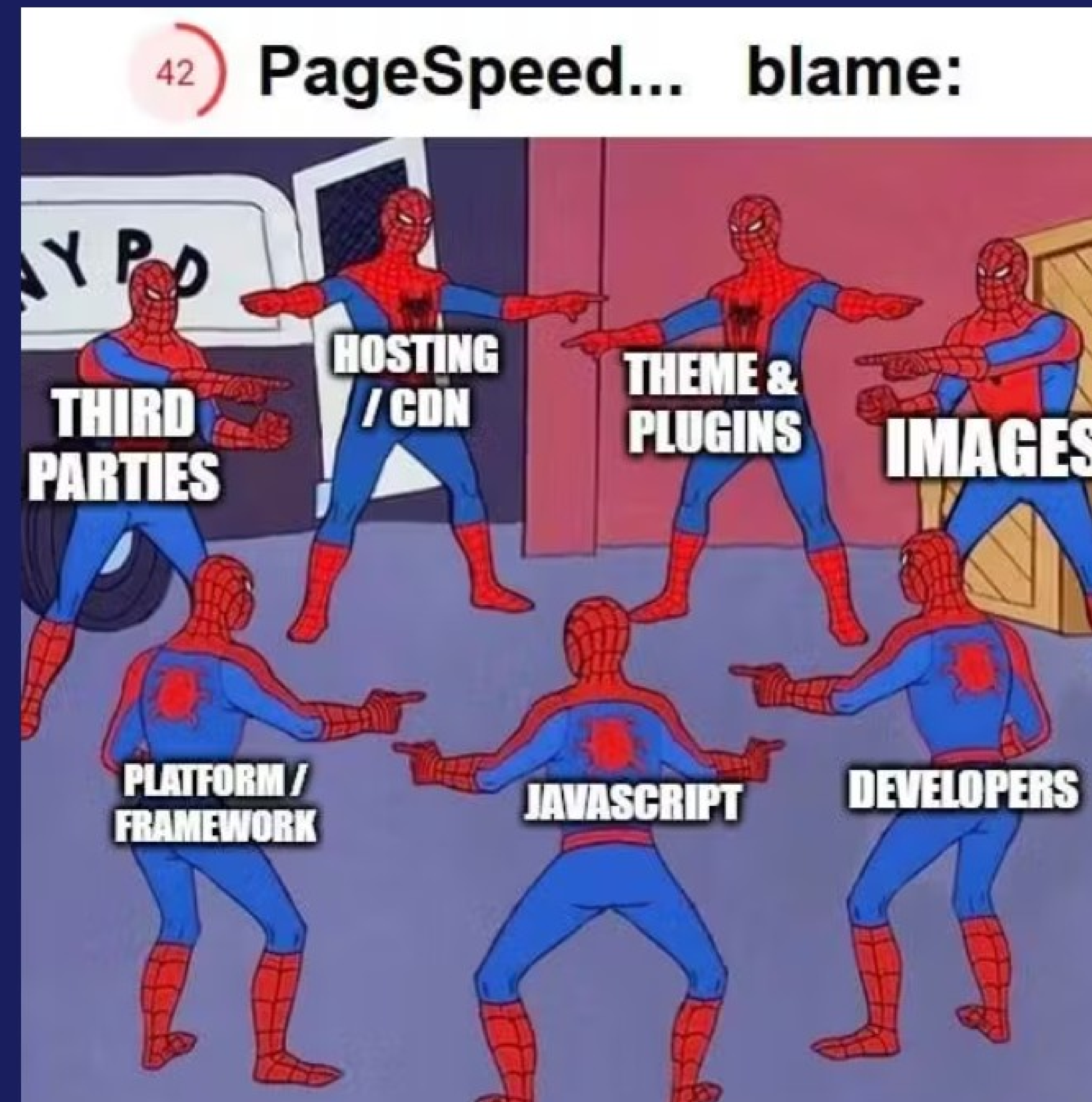
rumvision.com/help-center/glossary/other/page-experience-ranking-signal/

Page experience ranking signal

addyosmani.com/blog/core-web-vitals/

Search outreach folks like **John Mueller**, **Martin Splitt**, and **Danny Sullivan** also played a role in communicating these changes to the SEO community, ensuring widespread awareness.





[linkedin.com/feed/update/urn:li:activity:6899662873329496064/](https://www.linkedin.com/feed/update/urn:li:activity:6899662873329496064/)

Who do you blame?



3. Metric overview



UX + SEA quality score

- looking at a long white screen = FCP
- long loading product image = LCP
- add-to-cart or menu click taking long to respond = INP
- recommended products, top banners or video-ads sliding down = CLS





Largest Contentful Paint (LCP)

The time it takes until the **largest element** (usually the hero) is **rendered**.



First Input Delay (FID)

The delay between very first user interaction and **next browser work**.



Cumulative Layout Shift (CLS)

The biggest (5 seconds) sum of **unexpected shifts**, usually by banners and video ads.



First Contentful Paint (FCP)

The moment a users sees the **white screen disappear** and first user engagement happens.



Interaction to Next Paint (INP)

The biggest delay between user interaction and **visual feedback** during the whole page life cycle.



Time to First Byte (TTFB)

Time between a page request and the browser **receiving the first HTML** (DNS lookup & redirects included).





(Loading)

LCP

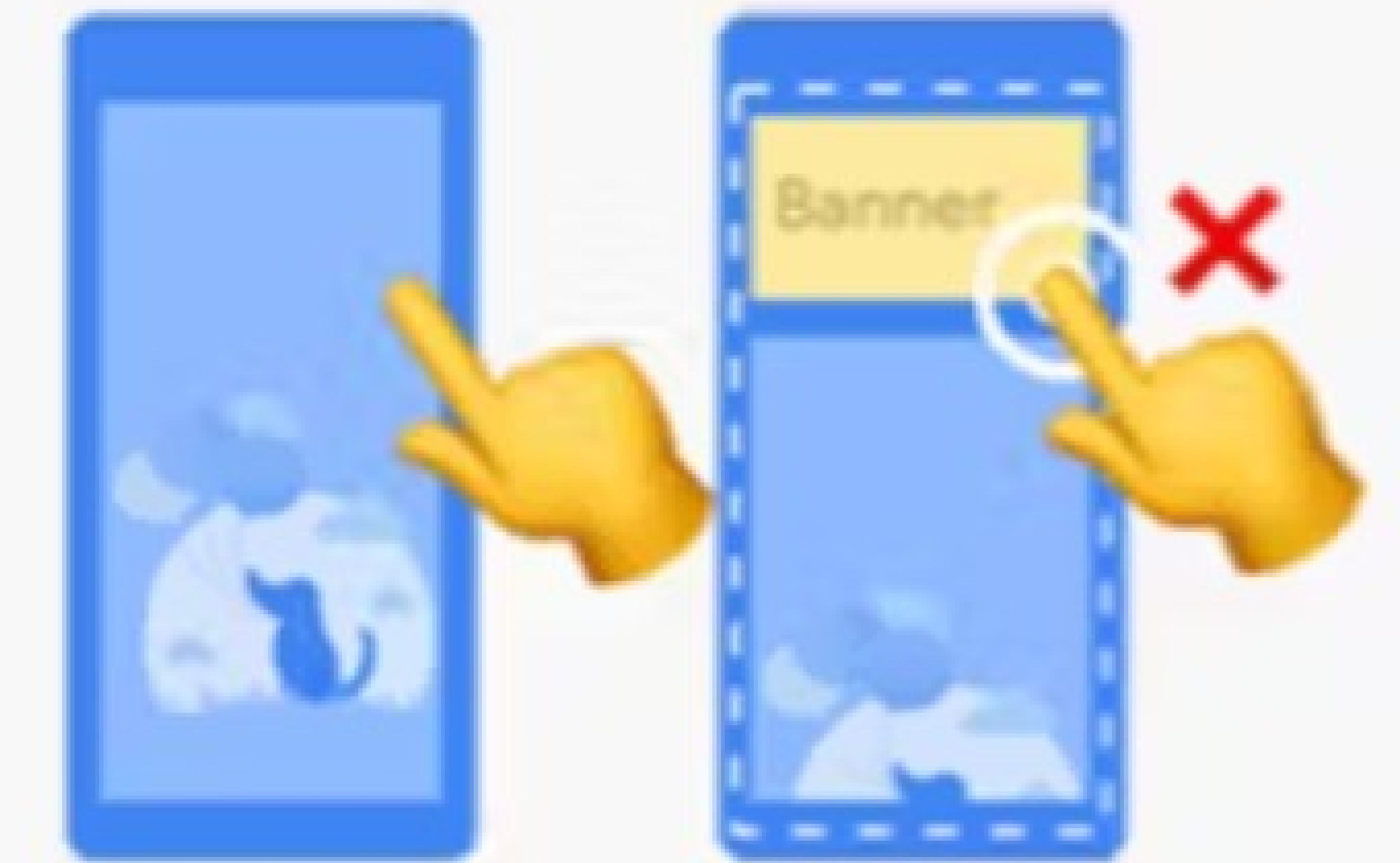
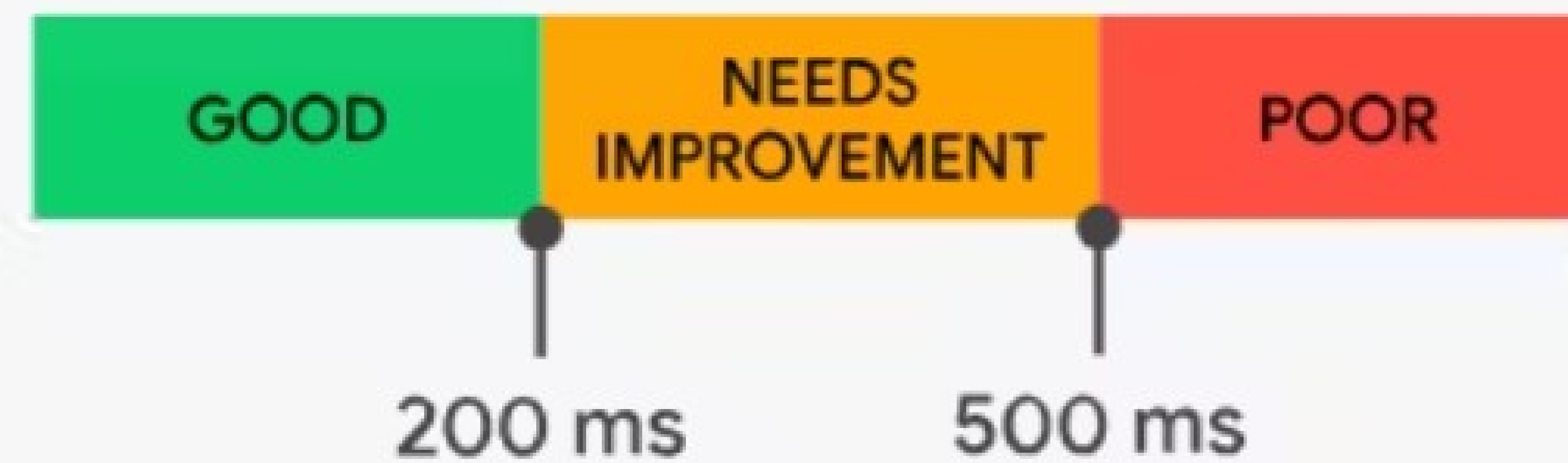
Largest Contentful Paint



(Interactivity)

INP

Interaction to Next Paint



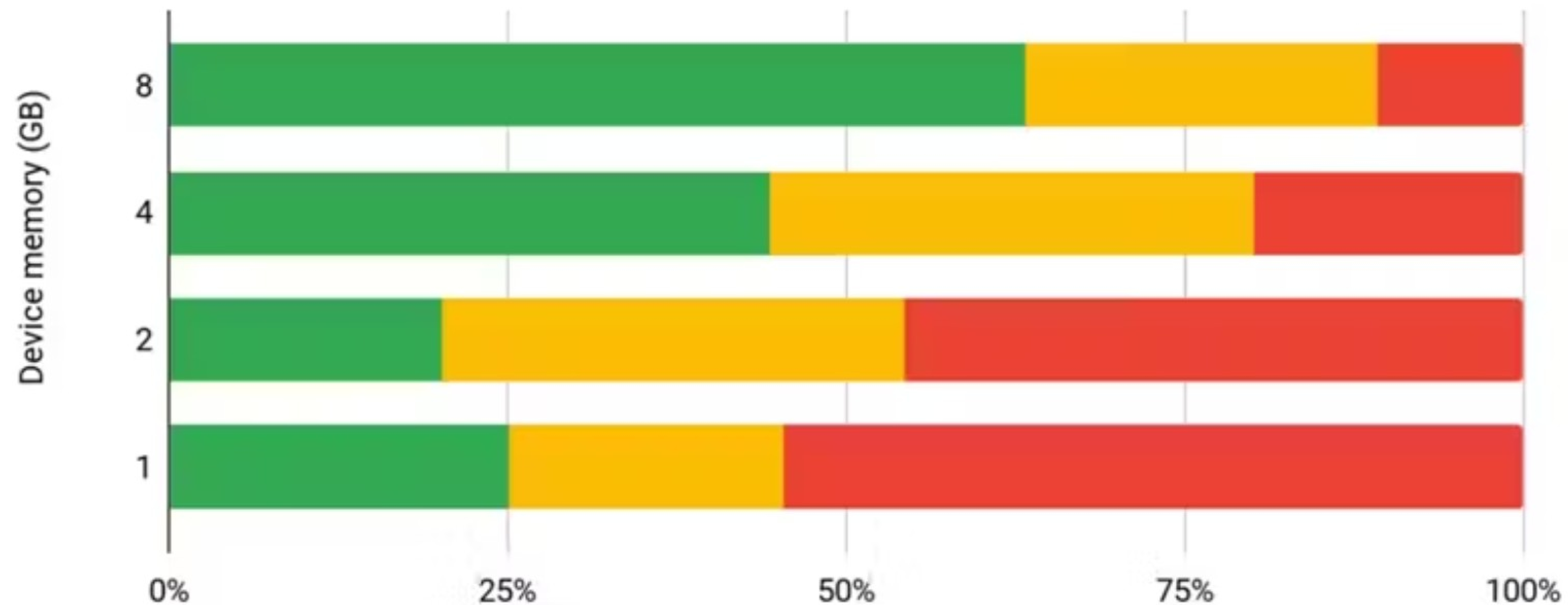
(Visual Stability)

CLS

Cumulative Layout Shift



web.dev/articles/defining-core-web-vitals-thresholds

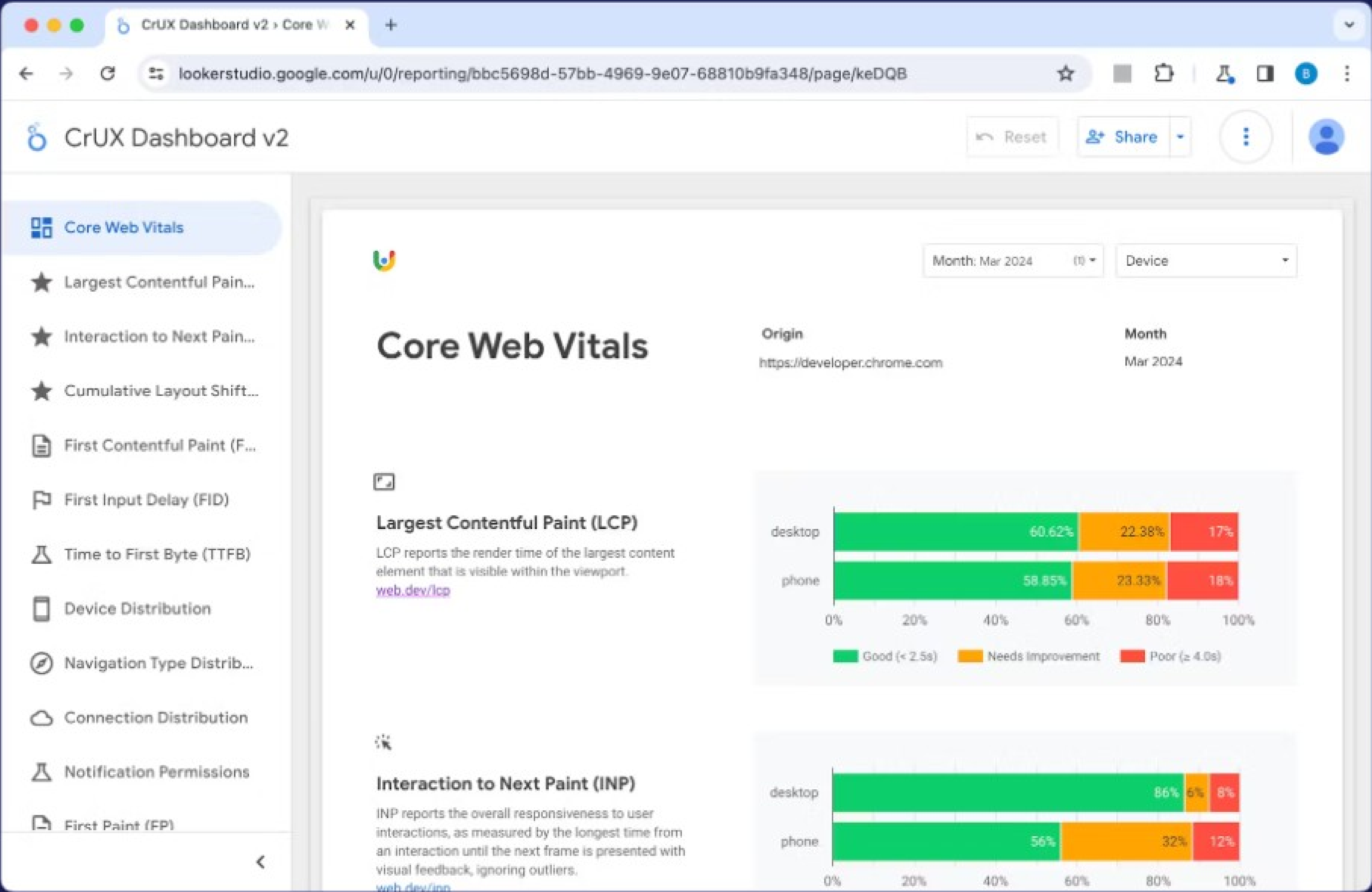


calendar.perfplanet.com/2023/inp-performance-analysis-runvision-data/

Google + run VISION

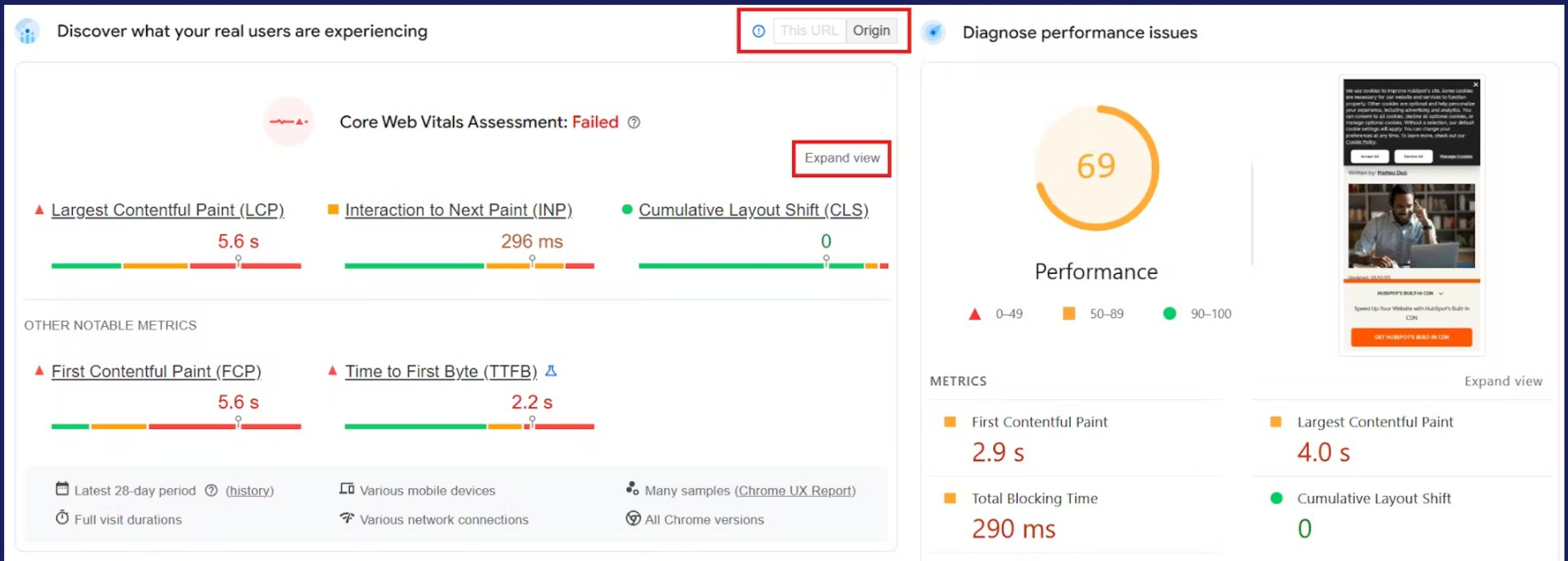
4. PSI, Lighthouse, CWV & GSC





[linkedin.com/posts/erwinhofman_crux-bigquery-activity-73711601251908](https://www.linkedin.com/posts/erwinhofman_crux-bigquery-activity-73711601251908)

CrUX Dashboard will shut down (end of Nov 2025)



rumvision.com/help-center/glossary/monitoring/lighthouse/

Lighthouse

- No interaction (scroll nor click)
- Stops after 5 second inactivity
- Always fixed conditions
- Google "Lighthouse variability"



DIAGNOSTICS

■

Reduce unused CSS — Est savings of **13 KiB**

^

Reduce unused rules from stylesheets and defer CSS not used for above-the-fold content to decrease bytes consumed by network activity. [Learn how to reduce unused CSS.](#) LCP FCP

URL	Transfer Size	Est Savings
erwinhofman.com 1st Party	15.6 KiB	12.8 KiB
...min/d1537d1....css (www.erwinhofman.com)	15.6 KiB	12.8 KiB

linkedin.com/feed/update/urn:li:activity:7371451551015649280/

Lighthouse be like..

Lighthouse feels like buienradar 🤪



linkedin.com/feed/update/urn:li:activity:7269293969497378816/

lazyloading JS

When *not* to use Lighthouse

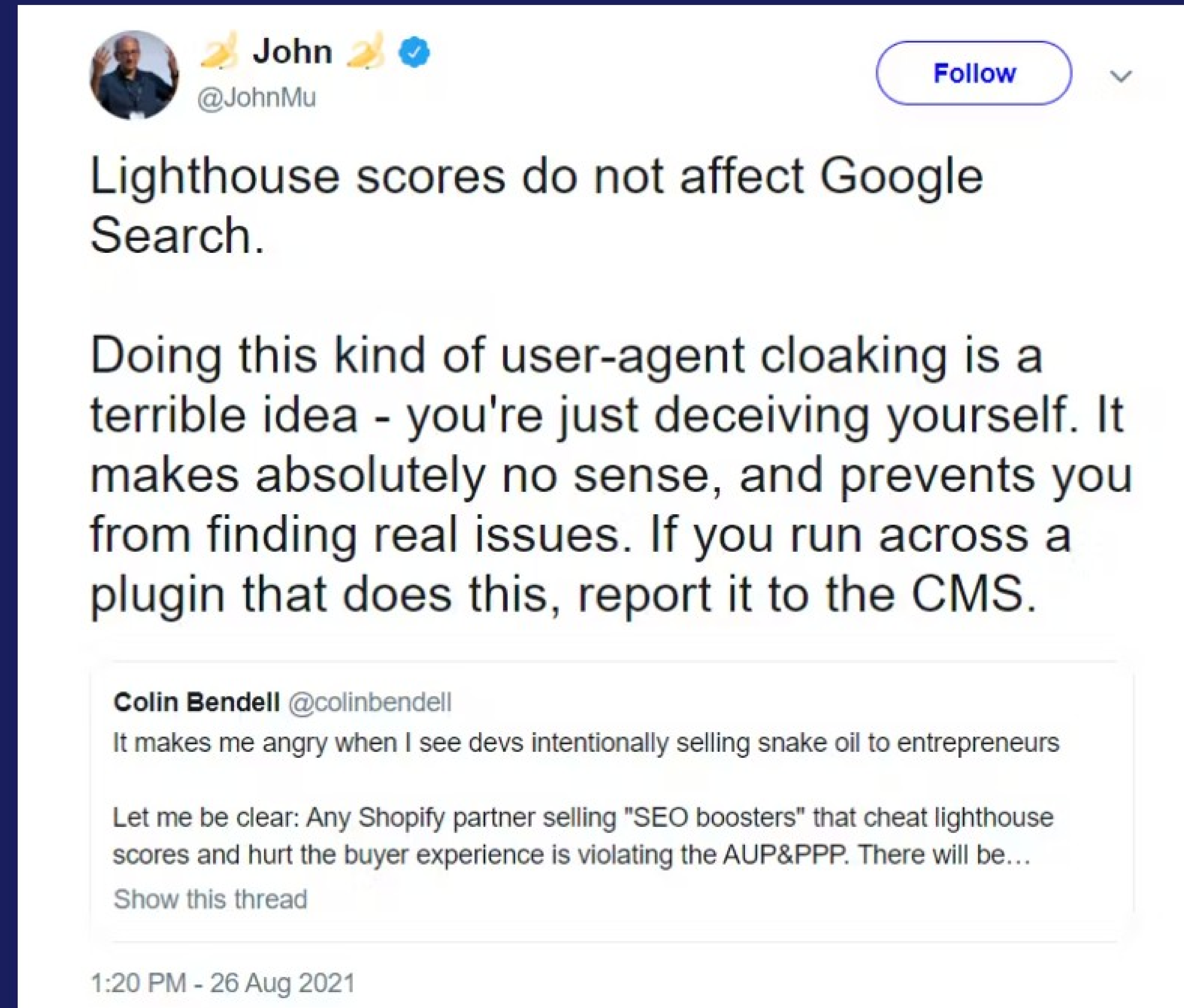
Lighthouse (or Lighthouse CI) **is *not* a substitute for field data**. Lighthouse is primarily a diagnostic tool listing potential issues and best practices from a predefined page load. The recommendations it surfaces may not always match the performance experienced by your users.

💡 **Always concentrate on field Core Web Vitals over Lighthouse metrics and scores.** In particular, the Performance Score of Lighthouse is a broad measure of that lab test and often does not correlate with field Core Web Vitals.

[linkedin.com/feed/update/urn:li:activity:7308793954026545153/](https://www.linkedin.com/feed/update/urn:li:activity:7308793954026545153/)

Lighthouse is *not* a substitute and often does not correlate





twitter.com/JohnMu/status/1430988540763049992

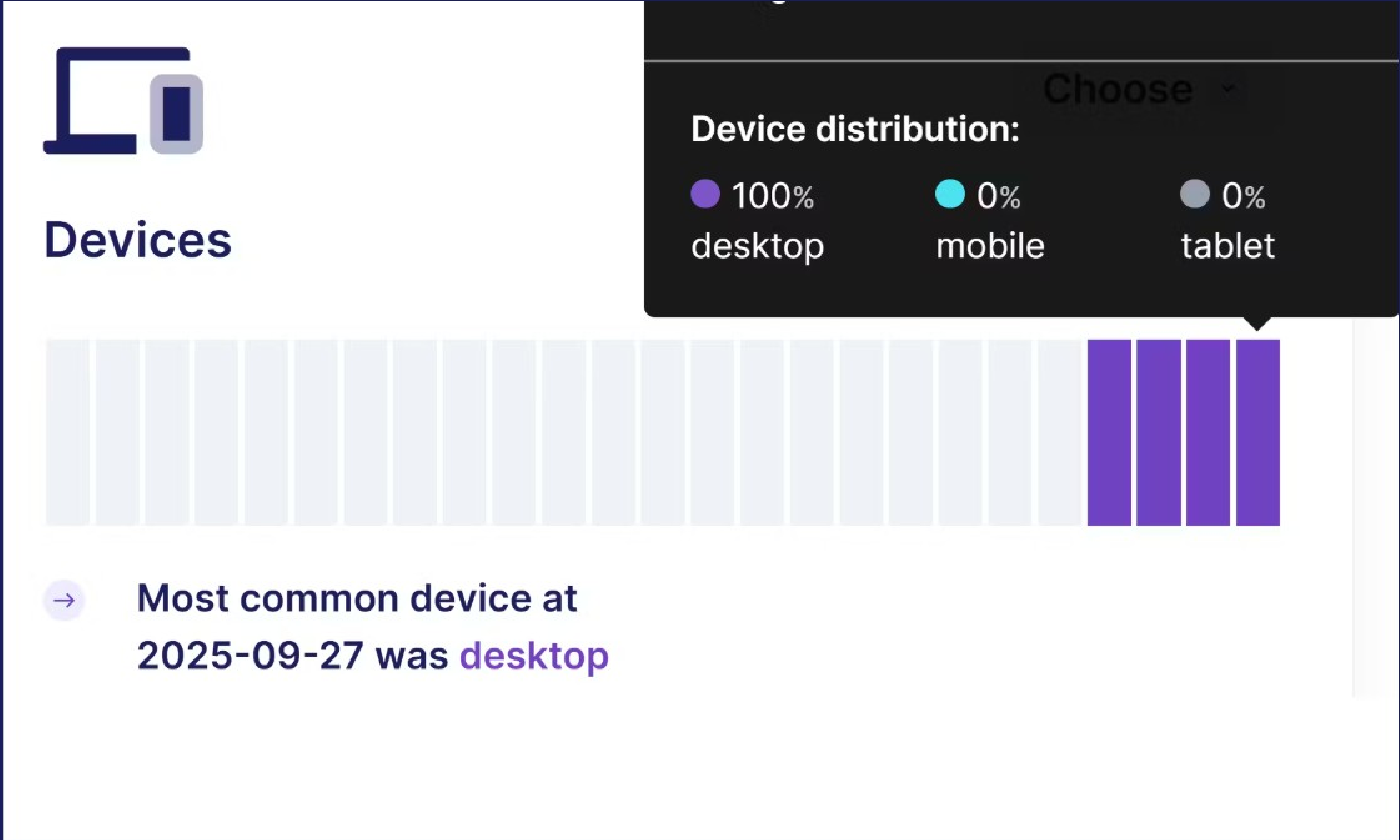
Lighthouse scores do not affect Google Search

rumvision.com/help-center/glossary/monitoring/crux-api/

CrUX

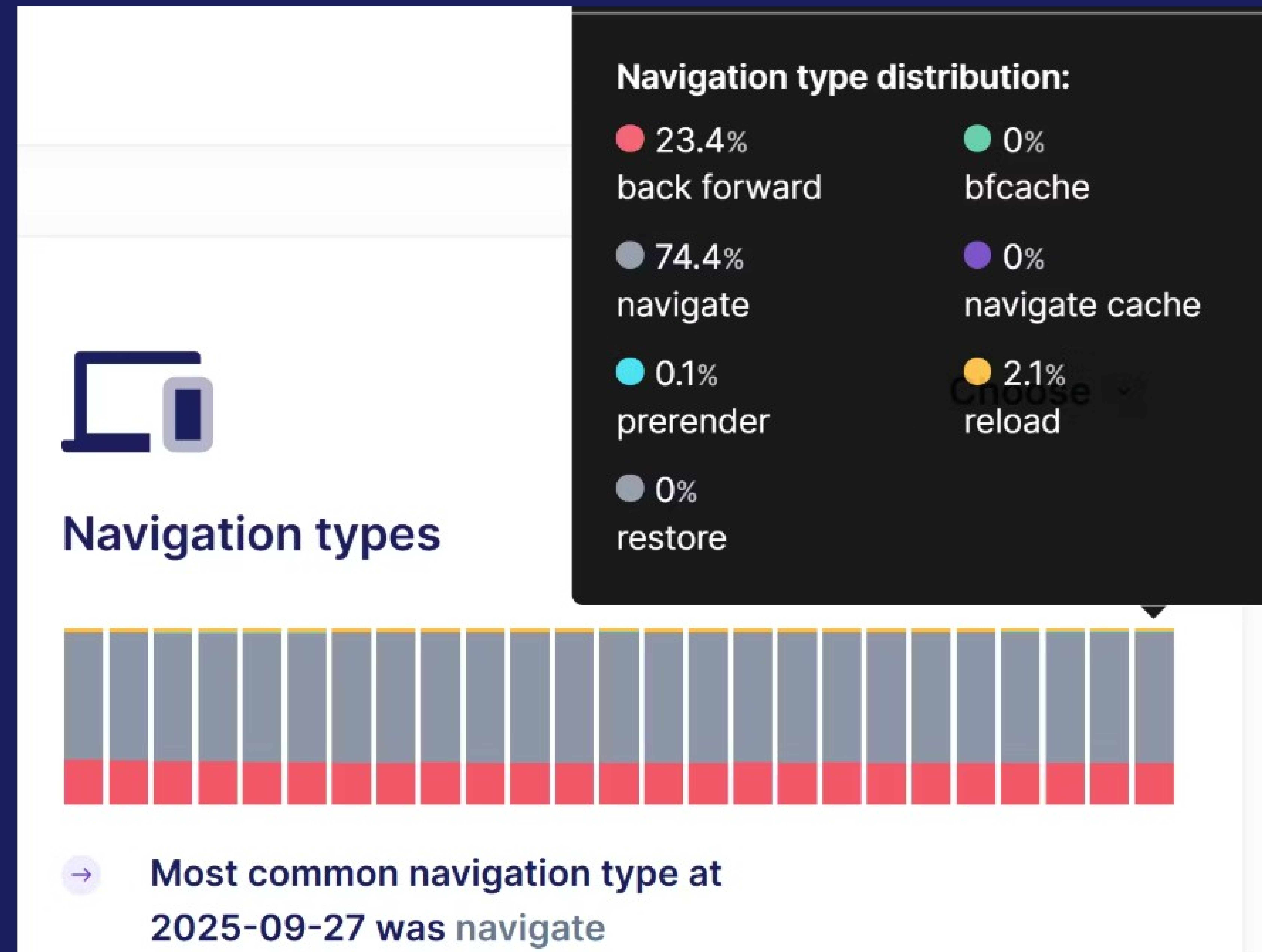
- Chrome user experience report
- Public data, owned by Google
- Real logged-in + opted-in Google Chrome pageviews
- And used by GSC, PSI, CWV/SEO & CrUX APIs





rumvision.com/tools/core-web-vitals-history/seobenelux.com/

100% desktop on seobenelux.com?



rumvision.com/tools/core-web-vitals-history/www.easytoys.nl/

Passing CWV, but still work to do

rumvision.com/help-center/glossary/monitoring/core-web-vitals/

Core Web Vitals

- Minimum amount of pageviews needed per url
- or else falls back to (grouped in GSC or) origin level
- 75th percentile of all pageviews
- 28 day rolling period

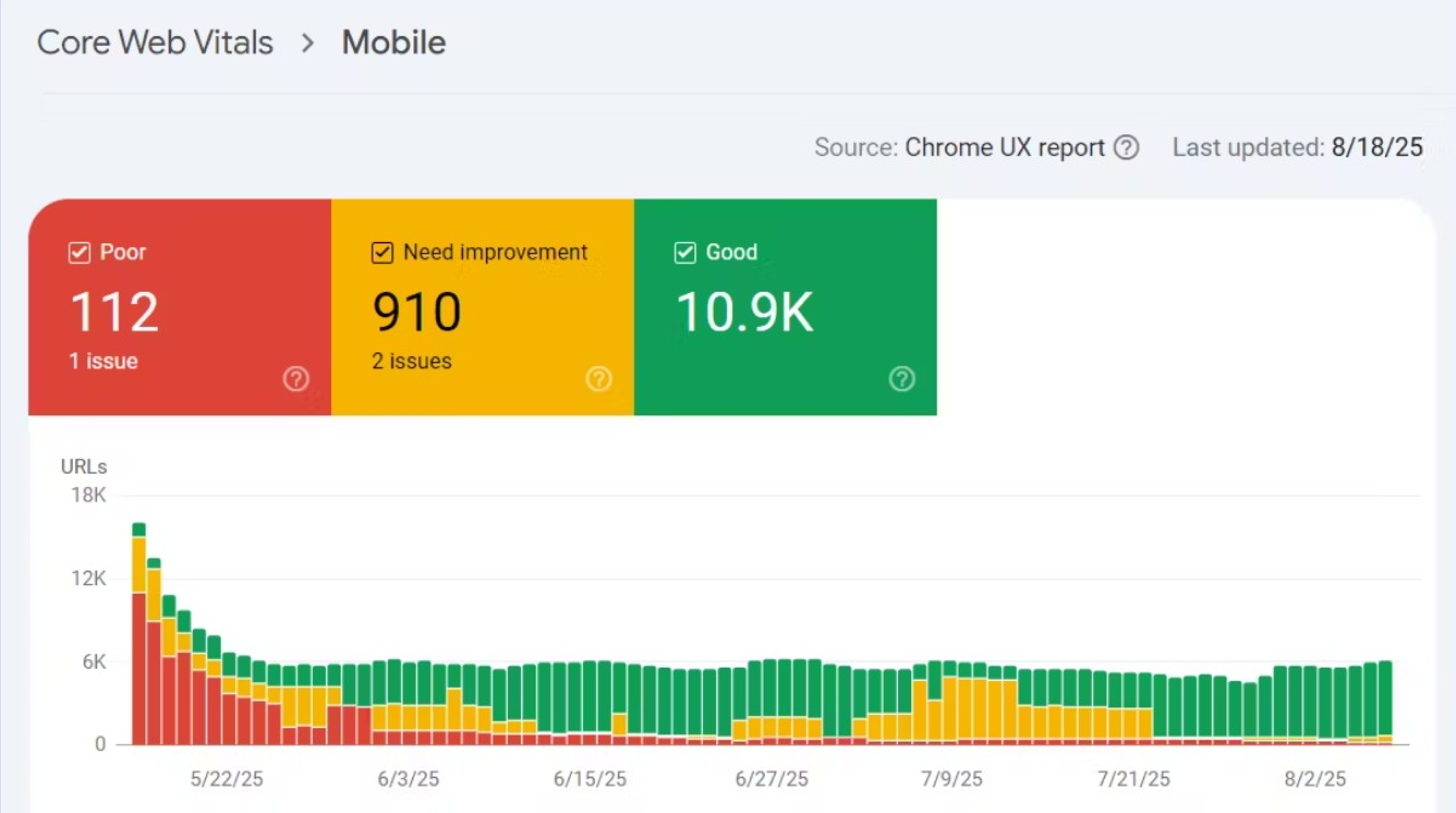


support.google.com/webmasters/answer/9205520#extra_info

CWV in GSC

- Comes from CrUX
- Per URL (or grouped) reporting
- Only Core Web Vitals metrics
- Incorrect INP + CLS attribution for SPAs





[linkedin.com/feed/update/urn:li:activity:7363864253516107776/](https://www.linkedin.com/feed/update/urn:li:activity:7363864253516107776/)

Blind spots & guess work in GSC

5. Metric nuances



rumvision.com/help-center/glossary/metrics/largest-contentful-paint/

LCP nuances

- LCP stops at user interaction (in CrUX)
- Placeholder (aka low entropy) images are ignored
- Full viewport images are ignored
- Causes: bad TTFB, hidden content, large images

rumvision.com/help-center/glossary/metrics/cumulative-layout-shift/

CLS nuances

- 5 second window and 500ms interaction threshold
- CLS above the fold vs full page life cycle
- Only highest value is collected (like INP)
- Causes: CSR, ads, font swapping, missing width + height



6. Failing CWV

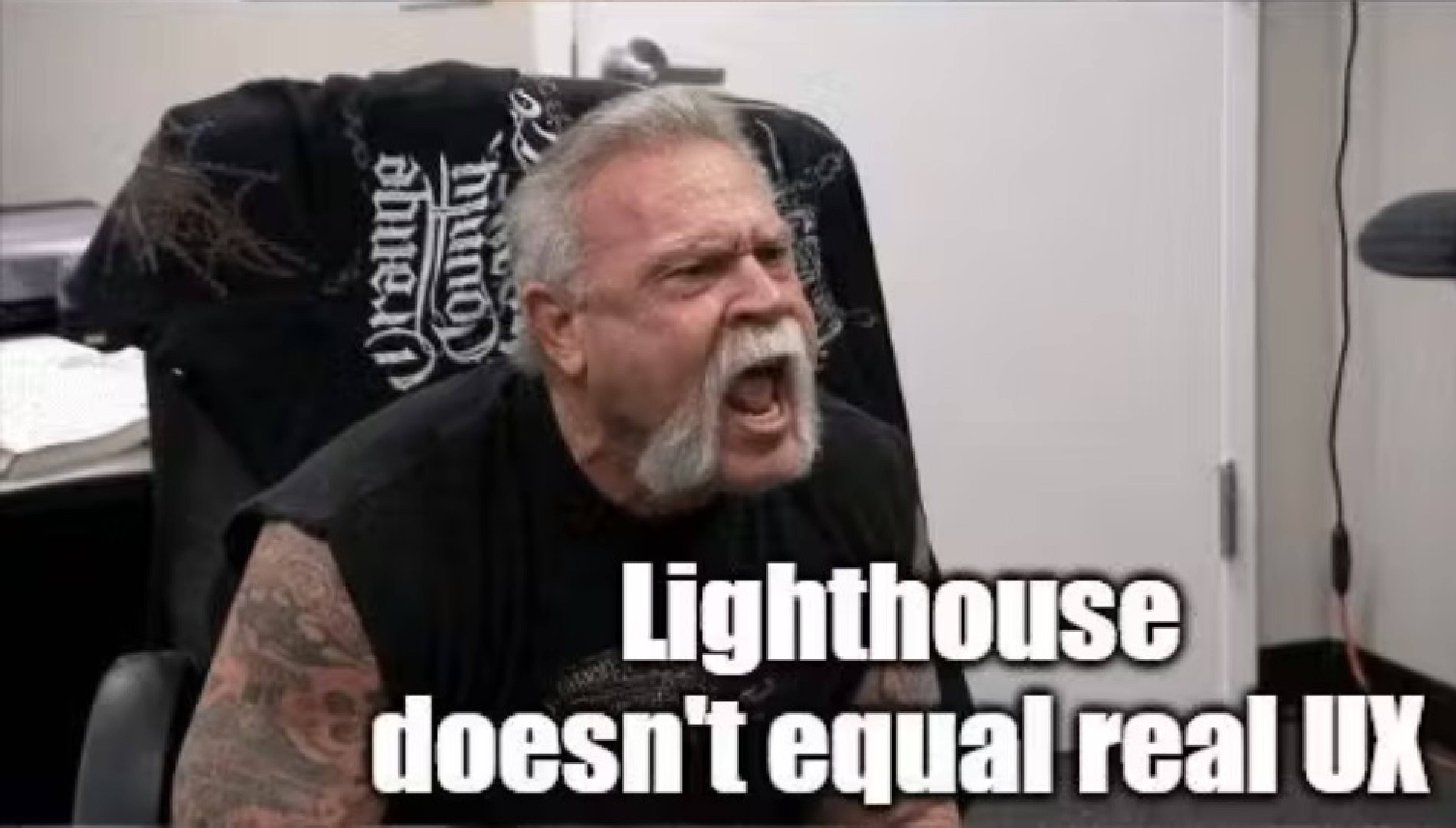




**why do we fail
Core Web Vitals**



**Lighthouse showed
green when we launched**



**Lighthouse
doesn't equal real UX**



**nobody
told me that**



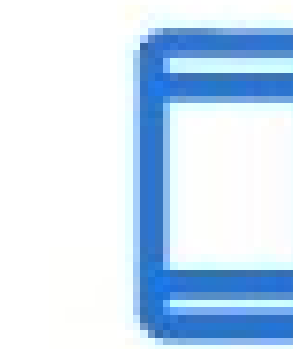
rumvision.com/blog/core-web-vitals-assessment-failed/

Reasons for good Lighthouse but failing Core Web Vitals

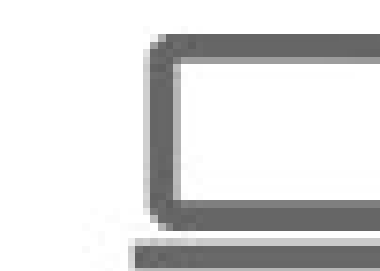
- structurally bad response times
- high paid traffic volume (cache miss)
- third parties behind cookie notice
- lazyloading JS
- CSR / SPA



PageSpeed Insights



Mobile



Desktop



Discover what your real users are experiencing



Core Web Vitals Assessment: **Failed** ⓘ

Computed from the Core Web Vitals metrics over the latest 28-day collection period. [Learn more](#)



Leaderboard: November 2024

Sort by Fast ▼

Host	Client	Websites	Fast (p75 < 800ms)	Average	Slow (p75 >= 1800ms)
Shopify	mobile	357.400	90%	10%	
GitHub Pages	mobile	11.781	82%	18%	
GoDaddy Website Builder	mobile	14.229	78%	21%	
Squarespace	mobile	86.706	74%	24%	
WP Engine	mobile	96.493	31%	53%	16%
Hostinger	mobile	224.451	30%	50%	20%
Kinsta	mobile	26.833	24%	59%	17%
SiteGround	mobile	68.851	20%	54%	26%
Flywheel	mobile	16.451	13%	44%	42%

Slowest hosts

[linkedin.com/feed/update/urn:li:activity:7288134832381931520/](https://www.linkedin.com/feed/update/urn:li:activity:7288134832381931520/)

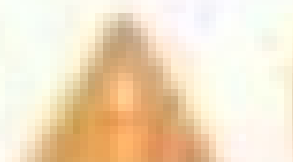
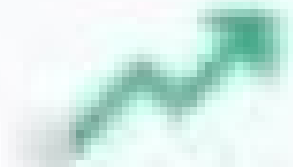
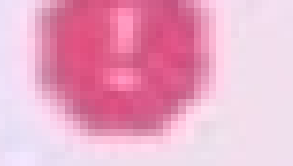
Bad TTFB = bad hosting?



Should you then not use these hosts?

it depends



GET PARAMETERS	P75	TREND	EVENTS
all	 669 ms	→ baseline	3.2M
none	 302 ms	 54.9%	41% of all
page	 387 ms	 42.2%	21% of all
srsltid	 1417 ms	 111.8%	10% of all

linkedin.com/feed/update/urn:li:activity:7245374876671250433/

cache miss → must-fix before BFCM

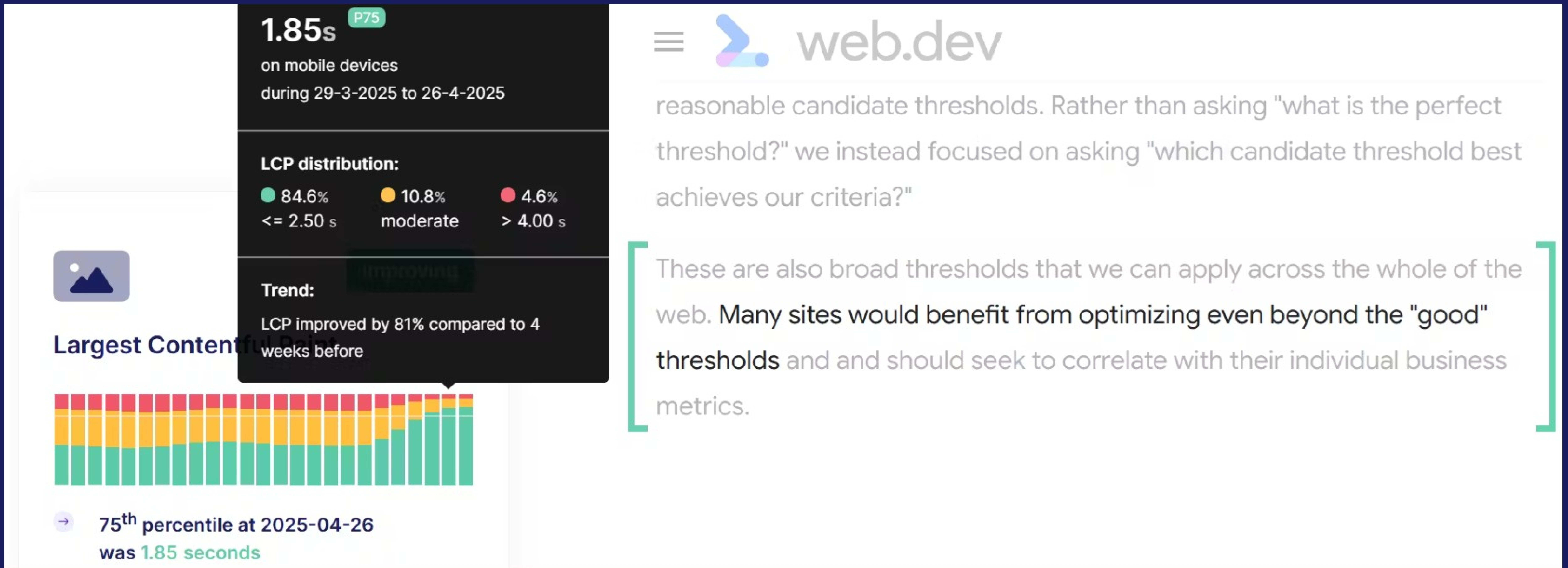
7. User Experience (UX)



Ok. So, if I pass Core Web Vitals, am I done?

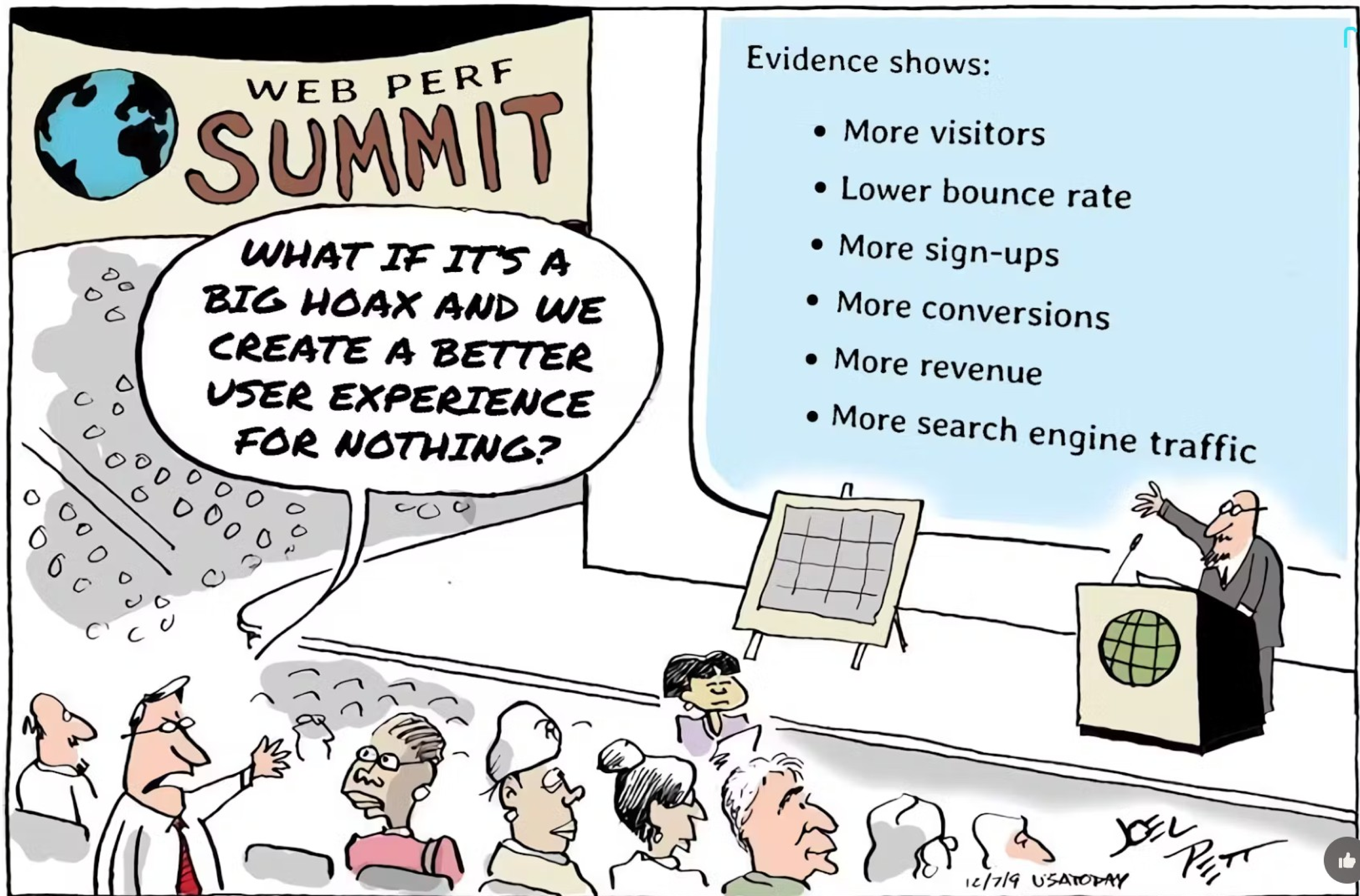
it depends





[linkedin.com/feed/update/urn:li:activity:7328046091734577154/](https://www.linkedin.com/feed/update/urn:li:activity:7328046091734577154/)

Optimizing beyond Core Web Vitals



google amp
 CSS CWV fcp web
 UX cls inp seo ttfb cro
 core psi gsc lcp vitals
 html serp js
 lighthouse

8. SPA & APIs

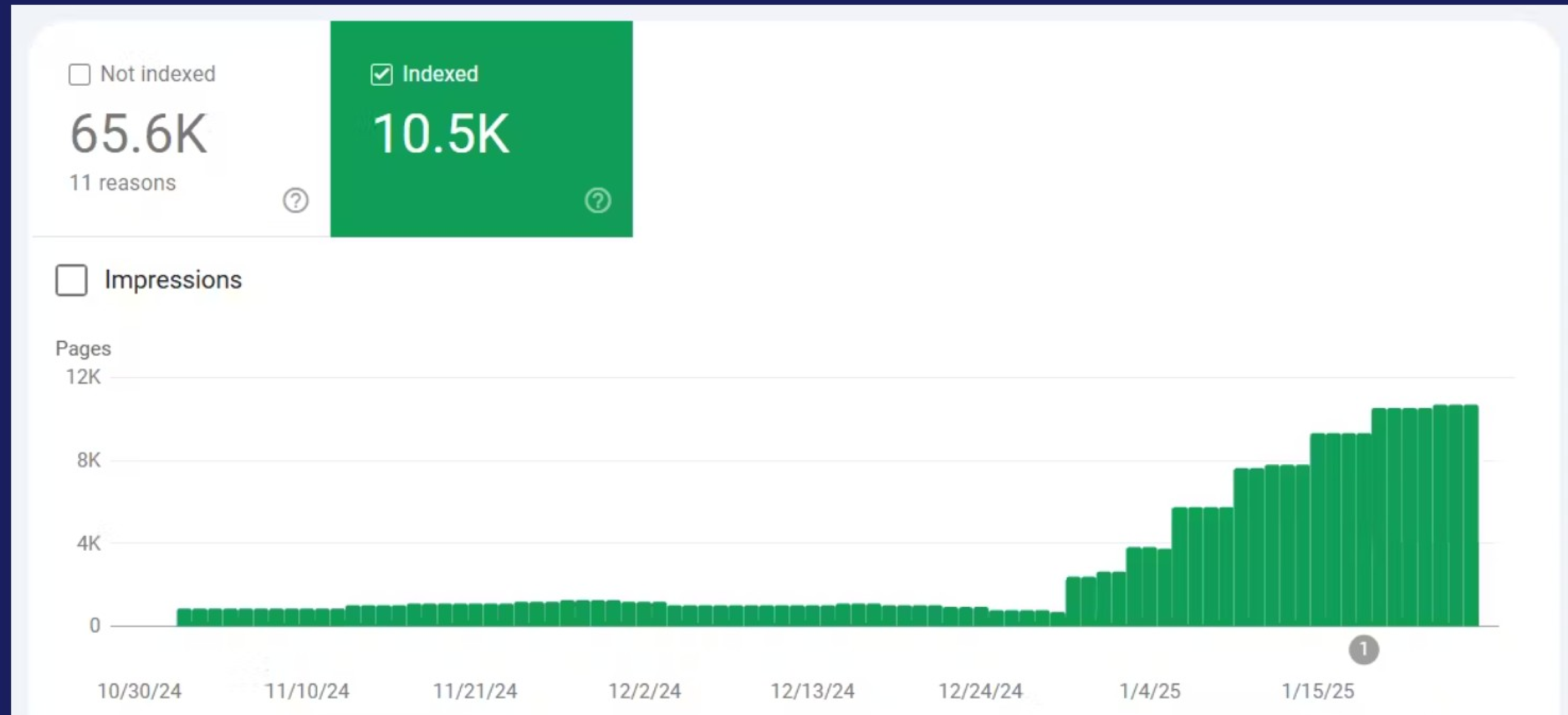


rumvision.com/help-center/glossary/other/single-page-application/

Single Page Applications

- uses soft navs via Client Side Rendering (CSP)
- with prerender services (bots) or SSR (user's first pagehit) + hydration
- Incorrect INP + CLS attribution in GSC (only hard navigations)
- Google Chrome team is working on a soft-nav API (in origin trial)





[linkedin.com/feed/update/urn:li:activity:7289940000345923584/](https://www.linkedin.com/feed/update/urn:li:activity:7289940000345923584/)

What happened with this SPA?



```
<link rel="preload" href="/fonts/custom.woff2"  
      as="font" type="font/woff2" crossorigin>
```

[linkedin.com/feed/update/urn:li:activity:7366748540611518465/](https://www.linkedin.com/feed/update/urn:li:activity:7366748540611518465/)

Preloading can regress FCP (in Chromium)



Should you then not preload your fonts?

it depends





```

```

[linkedin.com/feed/update/urn:li:activity:7316027736118943744/](https://www.linkedin.com/feed/update/urn:li:activity:7316027736118943744/)

No more lazysizes.js to lazyload images





```
<button popovertarget="my-popover">Open Popover</button>  
<div id="my-popover" popover>Popover without JS</div>
```

[linkedin.com/feed/update/urn:li:activity:7340729297864671233/](https://www.linkedin.com/feed/update/urn:li:activity:7340729297864671233/)

No more popper/tooltip.js to create popovers



linkedin.com/feed/update/urn:li:activity:7345385459981705217/

Other browser APIs to benefit from

- Back/forward cache
- Speculation Rules
- View Transitions



linkedin.com/feed/update/urn:li:activity:7352964791960760320/

Caveat: potentially skewed analytics data

- bfcache = underreported, SpecRules = overreported
- Piwik Pro + Fathom Analytics fixed it since my LinkedIn post
- still affecting tools like Clarity, Simple Analytics etc



9. Third parties



✔ low impact	8 hostname(s)	⚠ moderate impact	12 hostname(s)	❗ critical impact	3 hostname(s)
✔ cdn-cookieyes.com	69 ms	🕸 cdn.privacy-mgmt.com	243 ms	🔗 consent.cookiefirst.com	753 ms
🇦🇹 cdn.cookielaw.org	102 ms	🔗 web.cmp.usercentrics.eu	244 ms	🔗 app.prive.eu	1576 ms
🇦🇹 cdn-ukwest.onetrust.com	103 ms	🍯 assets.cookieconfirm.com	264 ms	🔗 cdn.clarip.com	4859 ms
🇱🇹 ats-wrapper.privacymana...	127 ms	🔗 eu-us-cdn.consentmanag...	272 ms		
🇳🇱 cdn.cookiecode.nl	128 ms	🇸🇪 cdn.cookie-script.com	277 ms		
🇬🇧 fundingchoicesmessages....	152 ms	🔗 static.fastcmp.com	311 ms		
🇮🇹 cdn.iubenda.com	182 ms	🔗 app.usercentrics.eu	316 ms		
🔗 consent.cookiebot.com	196 ms	🔗 cdn.consentmanager.net	363 ms		
		🇸🇮 choices.consentframewor...	405 ms		
		🔗 consent.cookiebot.eu	468 ms		

[linkedin.com/feed/update/urn:li:activity:7364279898313486336/](https://www.linkedin.com/feed/update/urn:li:activity:7364279898313486336/)

impact from CMPs on INP (good <= 200ms)



📅 April 14, 1994

Tobacco company CEOs declare (under oath) that nicotine is not addictive



10. Validate with user data



How to measure INP

INP can be measured both in [the field](#) and in [the lab](#) through a variety of tools.



Key point: The best way to measure your website's INP is by gathering metrics from actual users in the field. If you're accustomed to relying on lab data for assessing performance, take some time to read [Why lab and field data can be different \(and what to do about it\)](#).

In the field

Ideally, your journey in optimizing INP will start with field data. At its best, field data from Real User Monitoring (RUM) will give you not only a page's INP value, but also contextual data that highlights what specific interaction was responsible for the INP value itself, whether the interaction occurred during or after page load, the type of interaction (click, keypress, or tap), and other valuable information.

web.dev/articles/inp#how-to-measure-inp

Lab and field data can be different



rumvision.com/blog/understanding-the-difference-between-core-web-vitals-tools/

Real User Monitoring

- RUM a.k.a. field data tracks all users and browsers
- tells you how to reproduce it + impact of the fix
- DIY: BigQuery or Simo Ahava's GTM template
- or commercial tool for real-time data, filters, auto-updates, reports, alerts



4x featured at Google I/O



Slides and more

Thanks! Find me at:

- linkedin.com/in/erwinhofman
- rumvision.com/seo-benelux

