How to Create Impact in a Changing Landscape
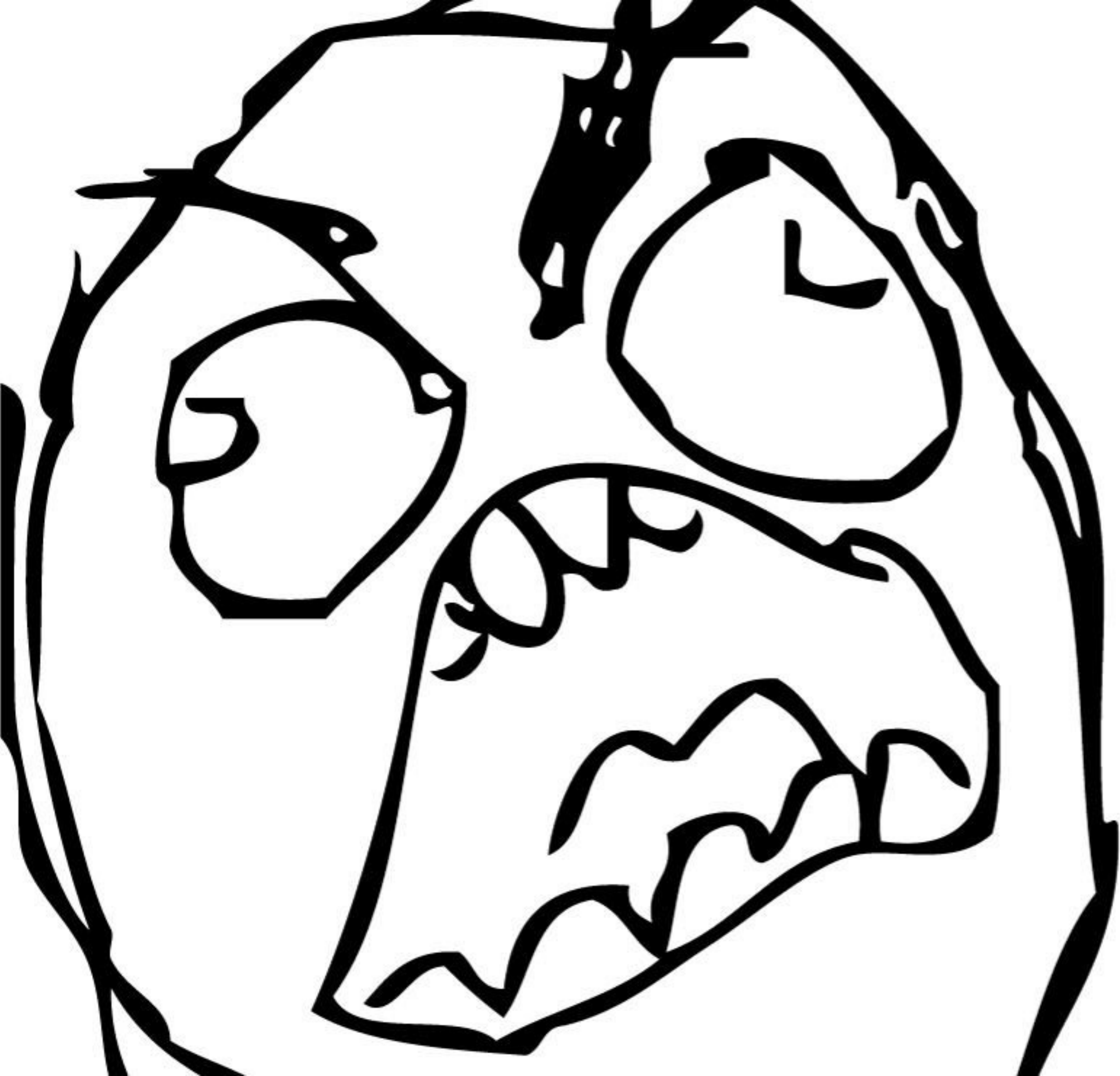
@tameverts

webperf.social/@tammy

#PerfNow
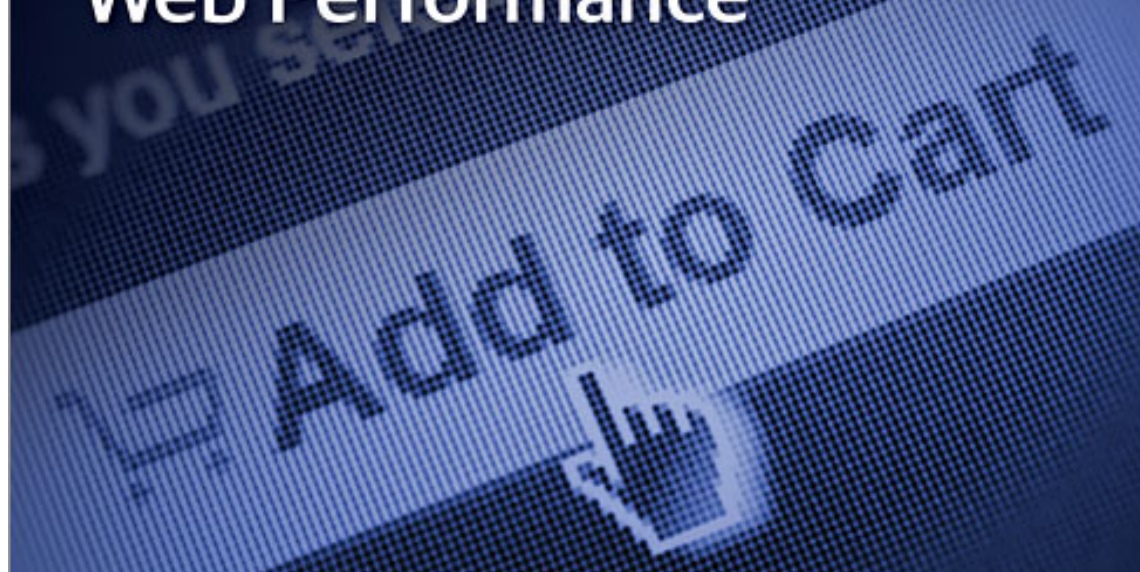
Work smarter,
not harder.

Work smarter, ~~not harder.~~

@tameverts
webperf.social/@tammy

O'REILLY®

Time Is Money

The Business Value of Web Performance

Tammy Everts

WPO stats

Case studies and experiments demonstrating the impact of web performance optimization (WPO) on user experience and business metrics.

Carpe improved Largest Contentful Paint by 52% and Cumulative Layout Shift by 41% and saw a 10% increase in traffic, a 5% increase in online store conversion rate, and a 15% increase in revenue.

PERMALINK   SHARE ON TWITTER

#bounce rate #conversion rate #traffic #revenue #2023 #core web vitals

Sunday Citizen improved their key performance metrics and were able to achieve 25% improvement in Largest Contentful Paint and 61% in Cumulative Layout Shift at the 75th percentile. This resulted in 4% decrease in bounce rate and over 6% increase in conversion.

PERMALINK   SHARE ON TWITTER

#bounce rate #conversion rate #2022 #core web vitals

Rakuten 24 ran an A/B test showing improved vitals brought a 53.4% incrase in revenue per visitor, 33.1% increase in conversion rate, 15.2% increase in average order value, 35.1% reduction in exit rate and more!

PERMALINK   SHARE ON TWITTER

#bounce rate #revenue #traffic #abandonment #session duration
#conversion rate #2022 #core web vitals

Filter by tag:

#2006 #2008 #2009
#2010 #2011 #2012
#2013 #2014 #2015
#2016 #2017 #2018
#2019 #2020 #2021
#2022 #2023
#abandonment #ads
#bounce rate #conversion
#conversion rate
#core web vitals
#engagement #expense
#impressions #orders
#page views #publishing
#reach #revenue #sales
#satisfaction #search #seo
#server #session duration
#sessions #traffic
#user timing #viewability

BROOKS

News Corp Australia

BBC

Drugs.com
Know more. Be sure.

VOX MEDIA

ancestry

Expedia

HGTV

HubSpot

eventbrite

edmunds

Zillow

The Guardian

food network

RollingStone

trivago

BuzzFeed

shopify

Forbes

Insider Inc.

nerdwallet

stickermule

DATADOG

Casper

lonely planet

udemy

DevOps lifecycle diagram showing the continuous loop: PLAN, BUILD, CONTINUOUS, INTEGRATION, DEPLOY, OPERATE, with CONTINUOUS FEEDBACK and REAL-TIME COMMUNICATION/NOTIFICATION, surrounded by tool logos.

InterviewBit
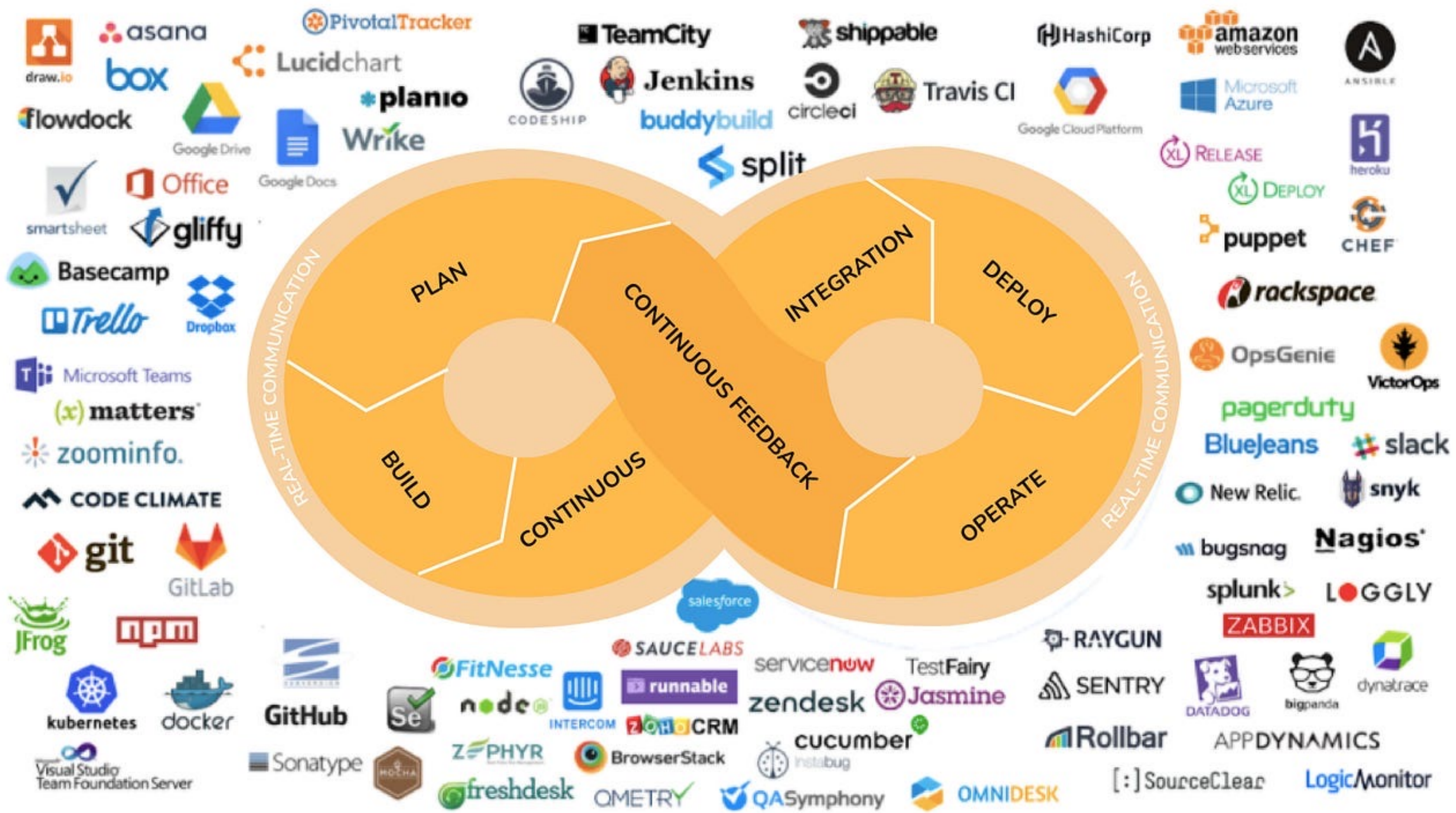
77% of developers have assumed more responsibility for testing in the last year
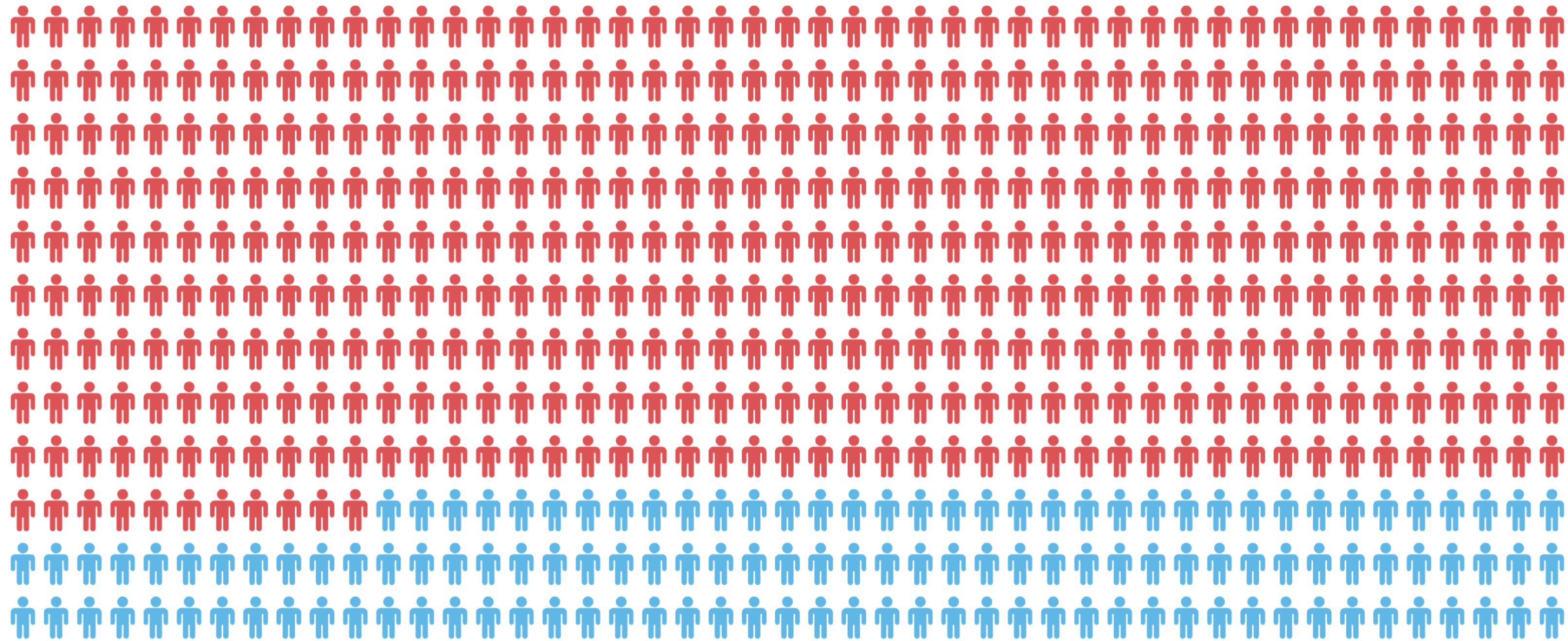
Impact

Problems for the company
Opportunities for the individual

Run toward unsolved problems

Define potential unsolved problems by asking yourself...

Am I looking at the right metrics?

Are my optimizations working?

Am I reporting effectively?

Am I involving the right people at the right time?

Am I motivating my team? Am *I* motivated?

Am I proving business value? Does my company care?

Chasing impact
is a healthy mental model
for your career

Chasing impact
is a healthy mental model
for your career

Challenges your comfort zone

Chasing impact
is a healthy mental model
for your career

Challenges your comfort zone

Treats your skills as a means to an end

Don't do the hard stuff until you've done the **easy stuff**.

Don't do the hard stuff until you've done the **easy stuff**.

If you're doing the hard stuff, make sure it actually **makes a difference**.

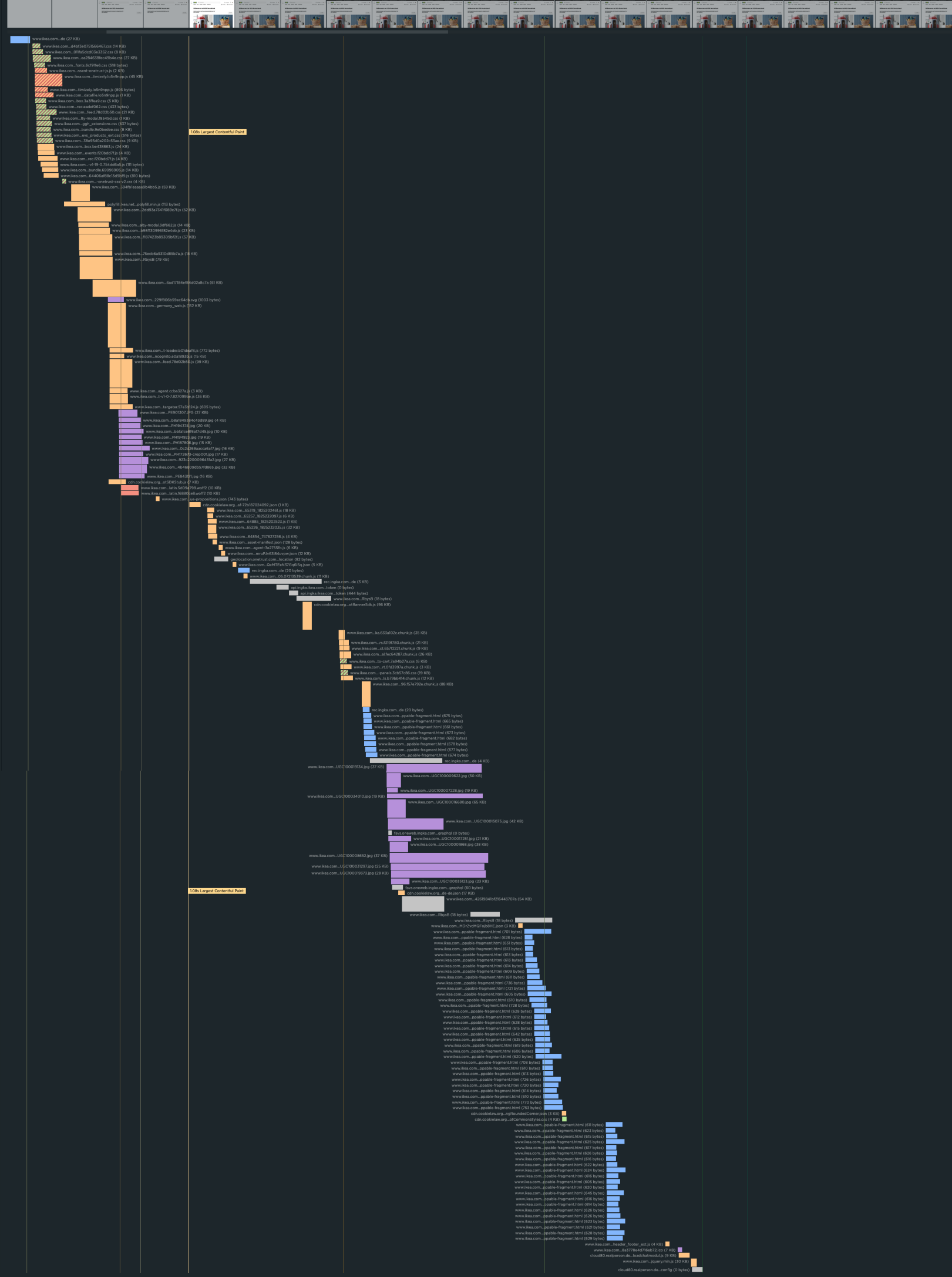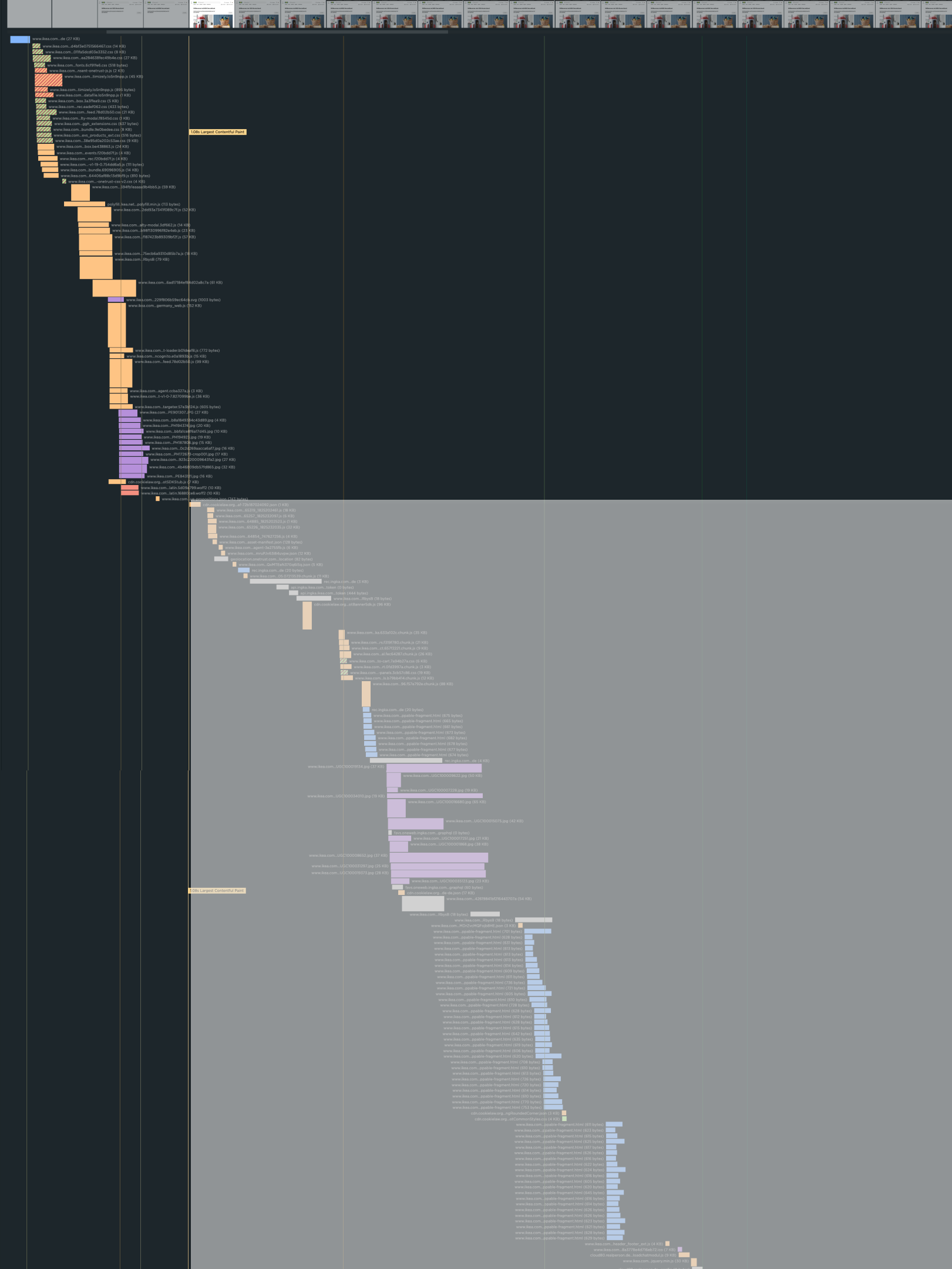common sense

uncommon sense

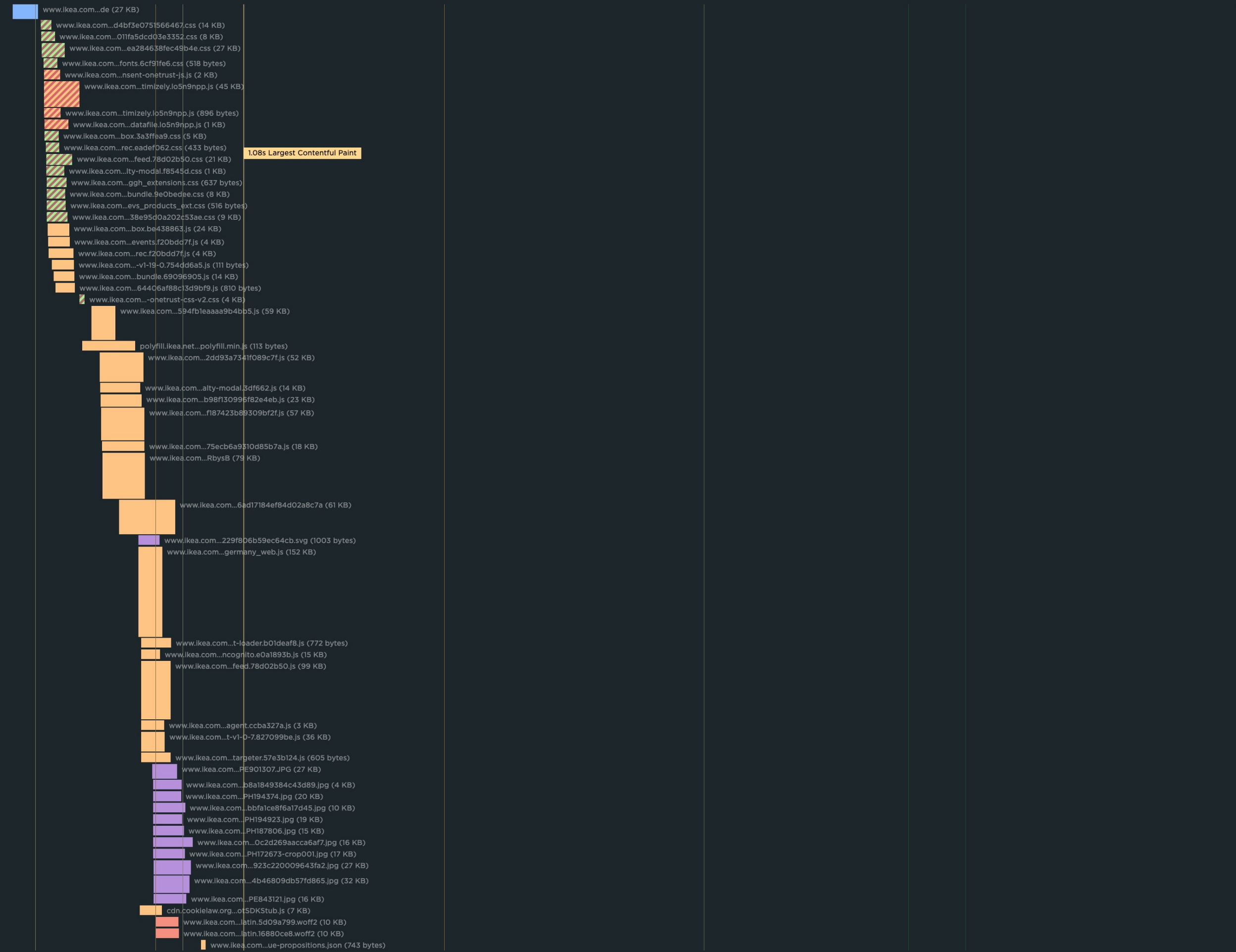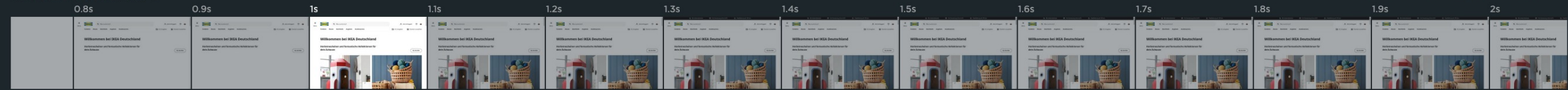# Focus on what matters

OPTIMIZE

ALL THE THINGS

memegenerator.net

*tangential book recommendation

VIDEO COLLAPSE OPTIONS

1.9s Largest Contentful Paint

1.9s Largest Contentful Paint

BROWSER WATERFALL

0.8s   0.9s   1s   1.1s   1.2s   1.3s   1.4s   1.5s   1.6s   1.7s   1.8s   1.9s   2s

www.ikea.com...de (27 KB)
www.ikea.com...d4bf3e0751566467.css (14 KB)
www.ikea.com...011fa5dcd03e3352.css (8 KB)
www.ikea.com...ea284638fec49b4e.css (27 KB)
www.ikea.com...fonts.6cf91fe6.css (518 bytes)
www.ikea.com...nsent-onetrust-js.js (2 KB)
www.ikea.com...timizely.lo5n9npp.js (45 KB)
www.ikea.com...timizely.lo5n9npp.js (896 bytes)
www.ikea.com...datafile.lo5n9npp.js (1 KB)
www.ikea.com...box.3a3ffba9.css (5 KB)
www.ikea.com...rec.eadefD62.css (433 bytes)
www.ikea.com...feed.78d02b50.css (21 KB)
www.ikea.com...lty-modal.f8545d.css (1 KB)
www.ikea.com...ggh_extensions.css (637 bytes)
www.ikea.com...bundle.9e0bedee.css (8 KB)
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www.ikea.com...38e95d0a202c53ae.css (9 KB)
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polyfill.ikea.net...polyfill.min.js (113 bytes)
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www.ikea.com...75ecb6a9310d85b7a.js (18 KB)
www.ikea.com...RbysB (79 KB)
www.ikea.com...6ad171l84ef84d02a8c7a (61 KB)
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www.ikea.com...germany_web.js (152 KB)
www.ikea.com...t-loader.b01deaf8.js (772 bytes)
www.ikea.com...ncognito.e0a1893b.js (15 KB)
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cdn.cookielaw.org...otSDKStub.js (7 KB)
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www.ikea.com...latin.16880ce8.woff2 (10 KB)
www.ikea.com...ue-propositions.json (743 bytes)

1.08s Largest Contentful Paint

56 resources

1 HTML

13 blocking CSS

4 blocking JS

24 non-blocking JS

12 images

2 custom fonts

Optimizing the **critical rendering path** refers to prioritizing the display of content that relates to the current user action.

Ilya Grigorik (2013)
web.dev/articles/critical-rendering-path

The Fight for the Main Thread

Geoff Graham

smashingmagazine.com/
2023/10/speedcurve-fight-main-thread/

Not all pages are equal
(Some are more equal than others)

1. **Product**
2. **Category**
3. **Home**
4. **Cart**
5. **Search**

1. **Article**

2. **Search**

3. **Department**

4. **Home**

5. **About**

Find the low-hanging fruit

"The dull boring stuff"

~Andy Davies

Scripts (especially third parties)

Scripts (especially third parties)

Images

Scripts (especially third parties)

Images

Extraneous code

Scripts (especially third parties)

Images

Extraneous code

Undeferred resources

Image elements do not have explicit `width` and `height` CLS

Ensure text remains visible during webfont load LCP

Serve static assets with an efficient cache policy (90 resources found)

Page prevented back/forward cache restoration (2 failure reasons)

Reduce unused JavaScript (Potential savings of 667 KiB) LCP

Reduce the impact of third-party code (Third-party code blocked the main thread for 860 ms) TBT

Largest Contentful Paint image was lazily loaded LCP

@tameverts

Small changes
can have a huge impact

Save big on your next hotel

🏨 **Hotels**   ✈ Flights   🧳 Bundle & Save   🚗 Cars   🚢 Cruises

🔍 Where to?

📅 Check-in - Check-out
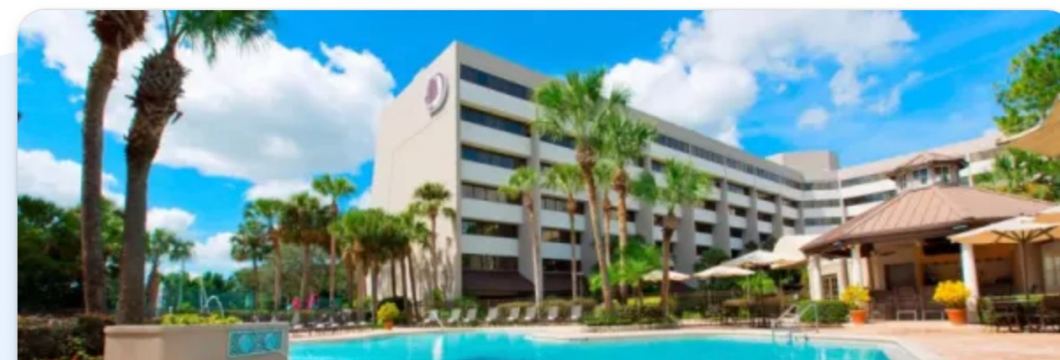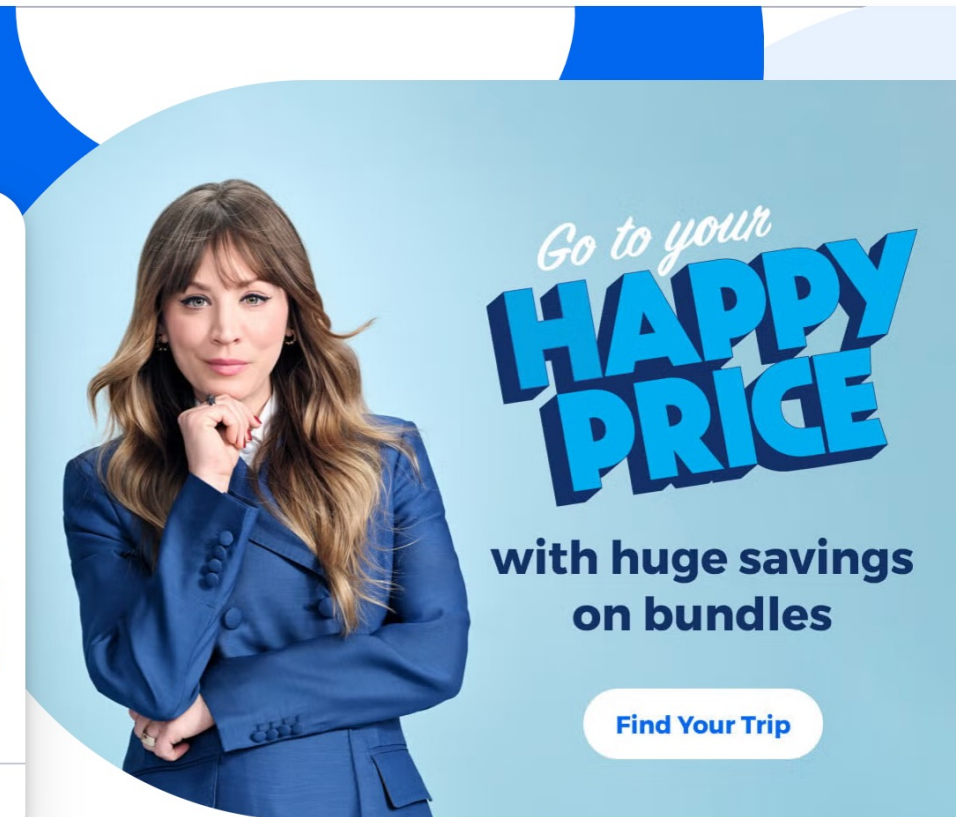10/27/2023 – 10/28/2023

👤 2 Adults, 1 Room

💲 **Bundle + Save**   ☐ Add a car   ☐ Add a flight

Find Your Hotel

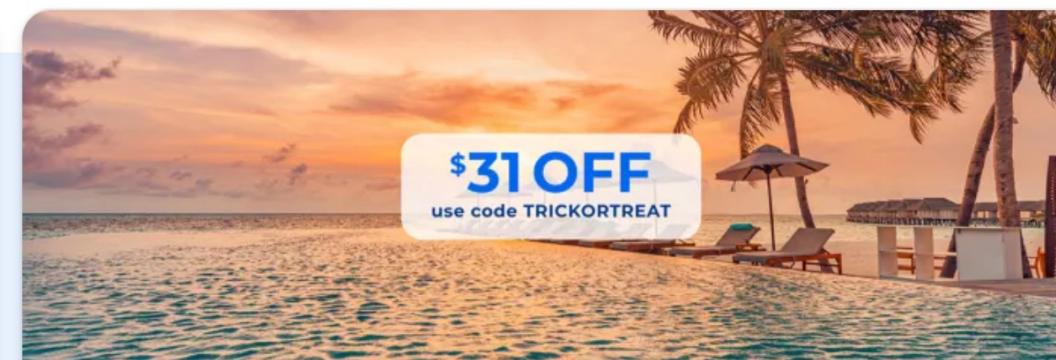Book a hotel with free cancellation for flexibility

Book all of your hotels at once and save up to $625

Go to your
HAPPY PRICE
with huge savings on bundles

Find Your Trip

$31 OFF
use code TRICKORTREAT

Bundle & save 30% or more with Hilton

Valid on select deals when you book a hotel + flight together. Book now-11/2/23 and travel by 3/31/24.

Explore Deals

SPOOKTACULAR GETAWAYS
Save $31 on hotels

Valid now- 11/2/23 9am EST. Must be signed in to redeem. $275 minimum spend required. Valid anywhere a coupon is accepted at checkout. Additional terms & conditions apply.

Learn More

Shaved 15KB off logo
Ran A/B test
Increased bookings

chasingwaterfalls.io/episodes/episode-one-with-malek-hakim/

@tameverts

Fanatics

1. **Compressed images**
2. **Deferred image sprite**
   that was blocking rendering
3. **Optimized CSS and JS**
   on the critical rendering path

Gift Card #   PIN #

PayPal Checkout   VISA DISCOVER MasterCard American Express
FanCash

Out of Stock

**2s improvement in median load time
almost doubled mobile conversions**

@tameverts

Manage expectations

Manage expectations
(including your own)

"I don't know if this helps anyone, but one thing I've been stressing to our dev teams at Crate and Barrel is this: We're not trying to speed up the website by 500ms. We're trying to speed up the website by 100ms, five times. Or 50ms, ten times."

Dan Gayle // Crate & Barrel

"Getting teams to think incrementally has proven to be more effective than trying to do everything all at once. It's less stressful, it's faster to implement, and everyone, including product managers, seems to get it. Smaller projects get more buy-in than megalithic projects that span multiple sprints or multiple teams."

Dan Gayle // Crate & Barrel

"It's not to say that large, structural issues shouldn't be addressed, but while we're waiting for someday to come around, we can do what we can now to improve in smaller chunks that ultimately add up."
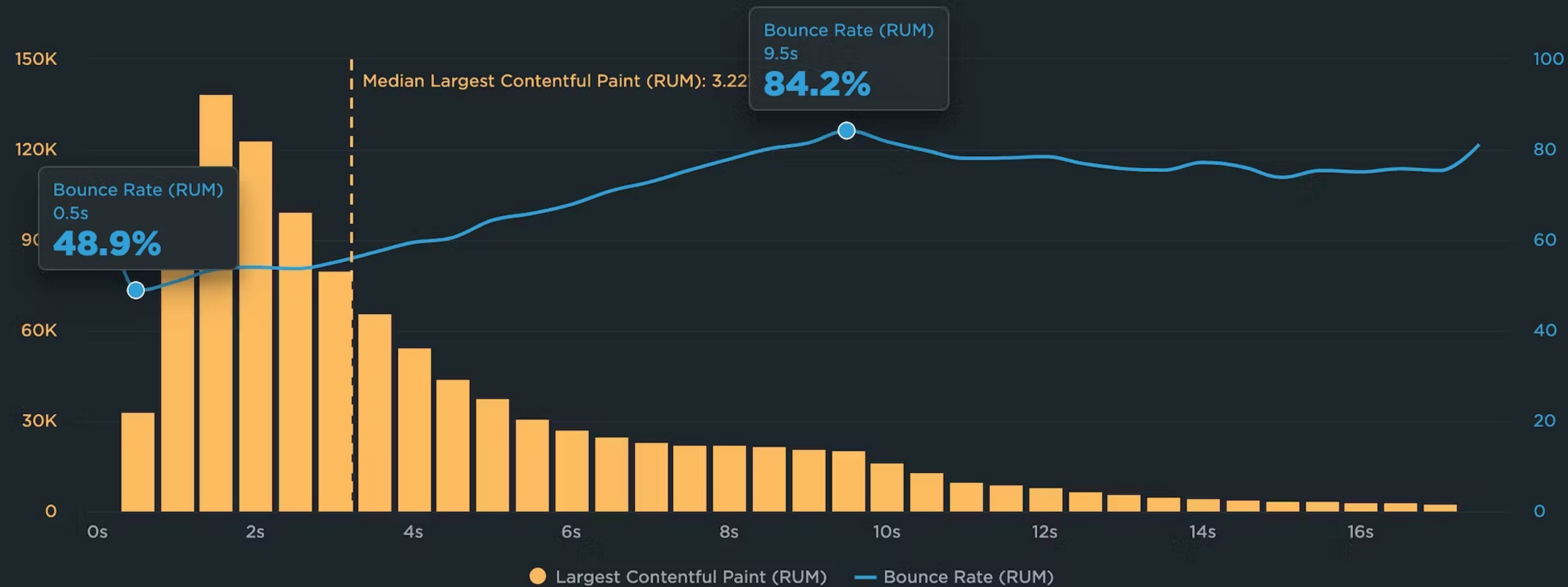
Dan Gayle // Crate & Barrel

Know your performance plateau

The performance plateau is the point at which changes to your website's rendering metrics cease to matter because you've bottomed out in terms of business and user engagement metrics.
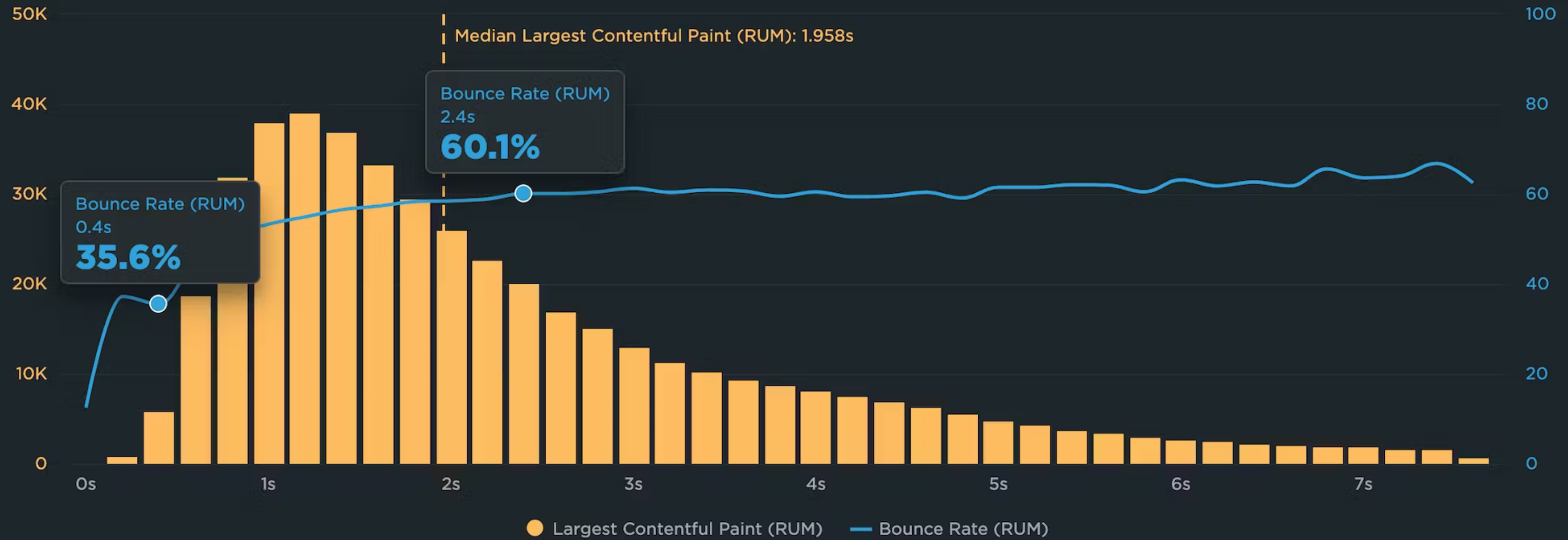
speedcurve.com/blog/web-performance-plateau/
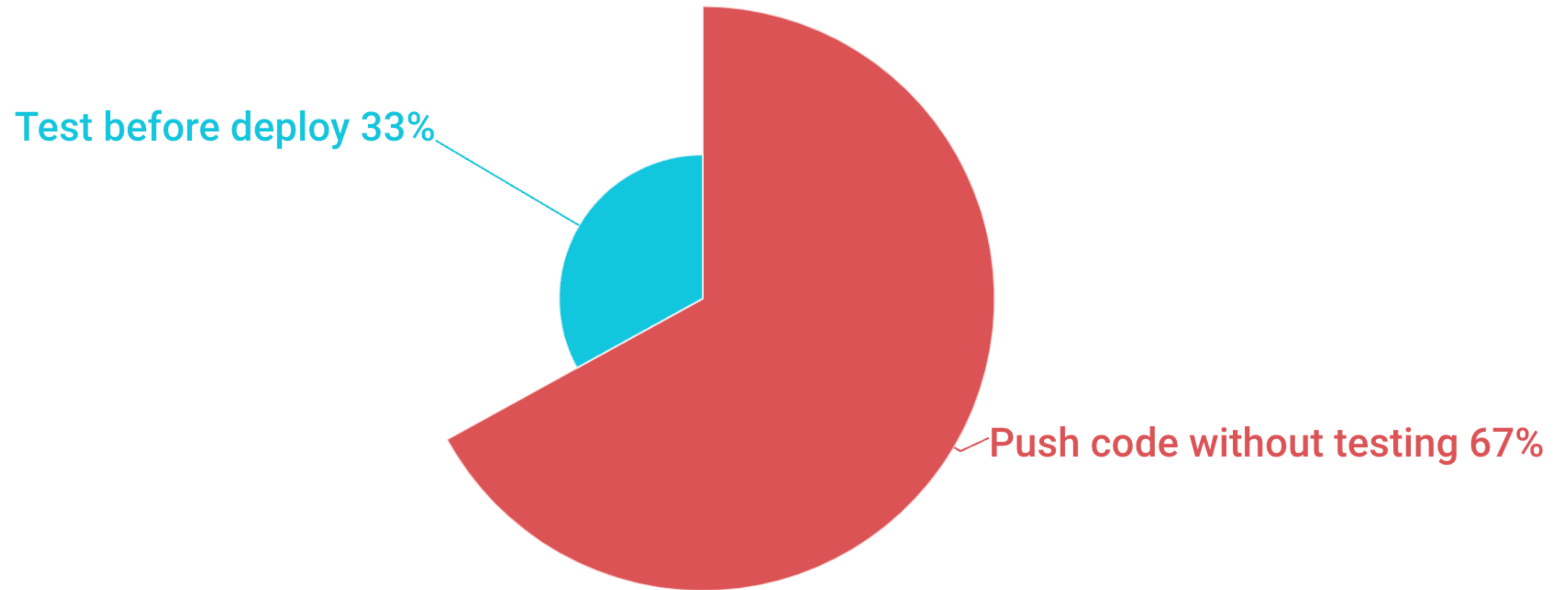
LARGEST CONTENTFUL PAINT VS BOUNCE RATE

Median Largest Contentful Paint (RUM): 3.22

Bounce Rate (RUM)
9.5s
84.2%

Bounce Rate (RUM)
0.5s
48.9%

● Largest Contentful Paint (RUM) ── Bounce Rate (RUM)

speedcurve.com/blog/web-performance-plateau/

LARGEST CONTENTFUL PAINT VS BOUNCE RATE

Median Largest Contentful Paint (RUM): 1.958s

Bounce Rate (RUM)
2.4s
60.1%

Bounce Rate (RUM)
0.4s
35.6%

● Largest Contentful Paint (RUM) — Bounce Rate (RUM)

speedcurve.com/blog/web-performance-plateau/

Fight regression

Test before deploy 33%

Push code without testing 67%

40%

Push untested ChatGPT code 60%
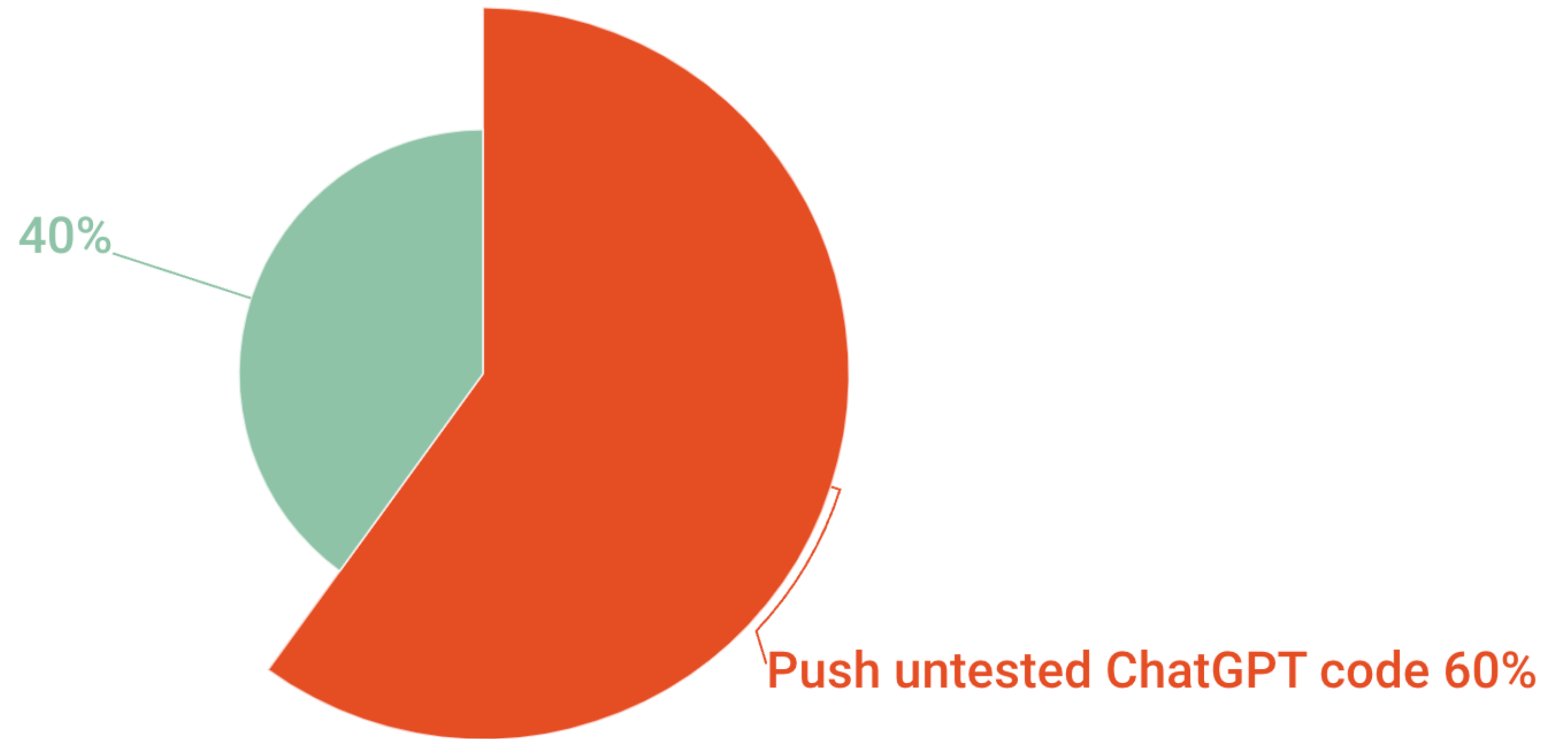
devops.com/survey-sees-spike-in-untested-code-leading-to-a-devops-crisis/

@tameverts

77% of developers have assumed more responsibility for testing in the last year

@tameverts
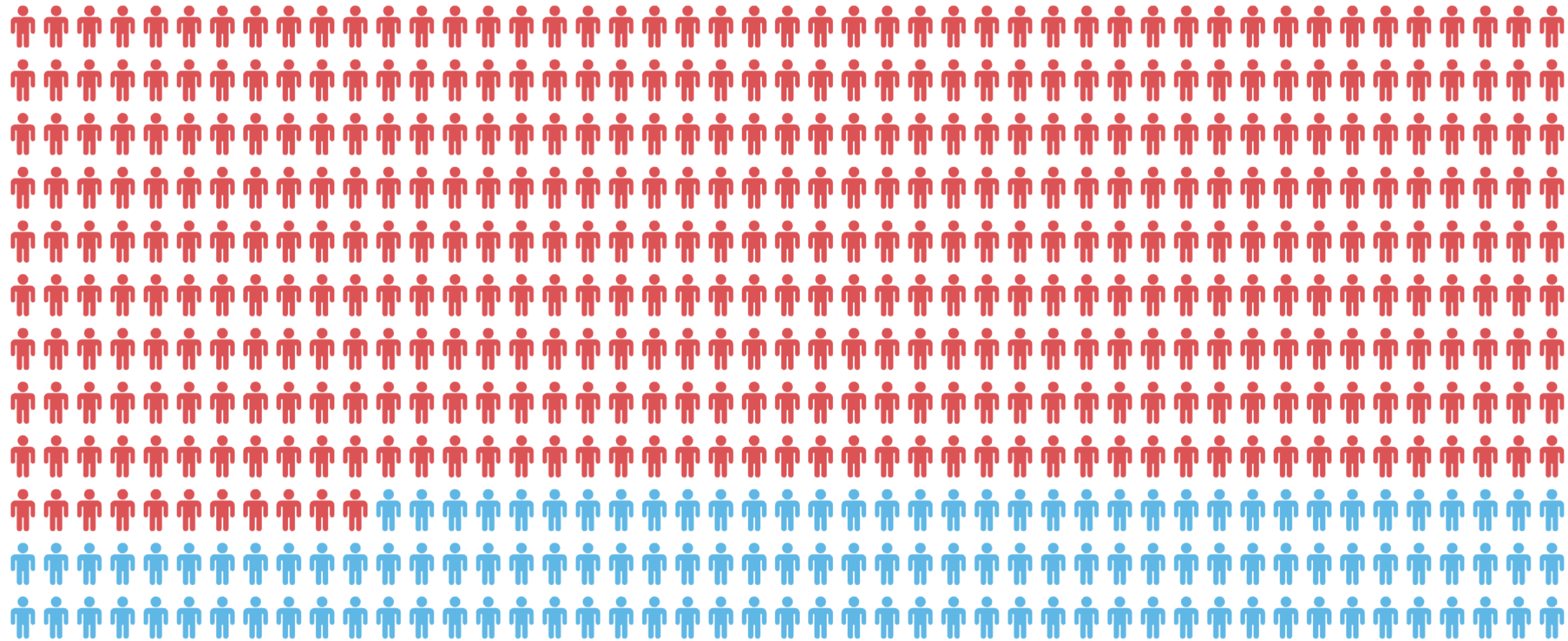
"My company used to do 'focus weeks' for performance, and I have found that to be ineffective.
We now have a continuous process for monitoring and improvement, and it works much better."

Renato Sinohara // Westwing

"Funny enough, the key was not the improvements themselves, but frequently monitoring to understand changes. Regular meetings to spot changes and investigate what caused them. This was the spark for a constant flow of ideas on how to improve things, plus free flow of 'low hanging fruits'. Results were staggering. Developers keep thinking about performance and keep learning more as we go."

Renato Sinohara // Westwing

Performance budgets FTW

Cristian Vanti • 1st

Technical architect focused on performance engineering

Performance budgets allow to shift left testing, enable continuous test and delivery. It's incredible that people know so little about it
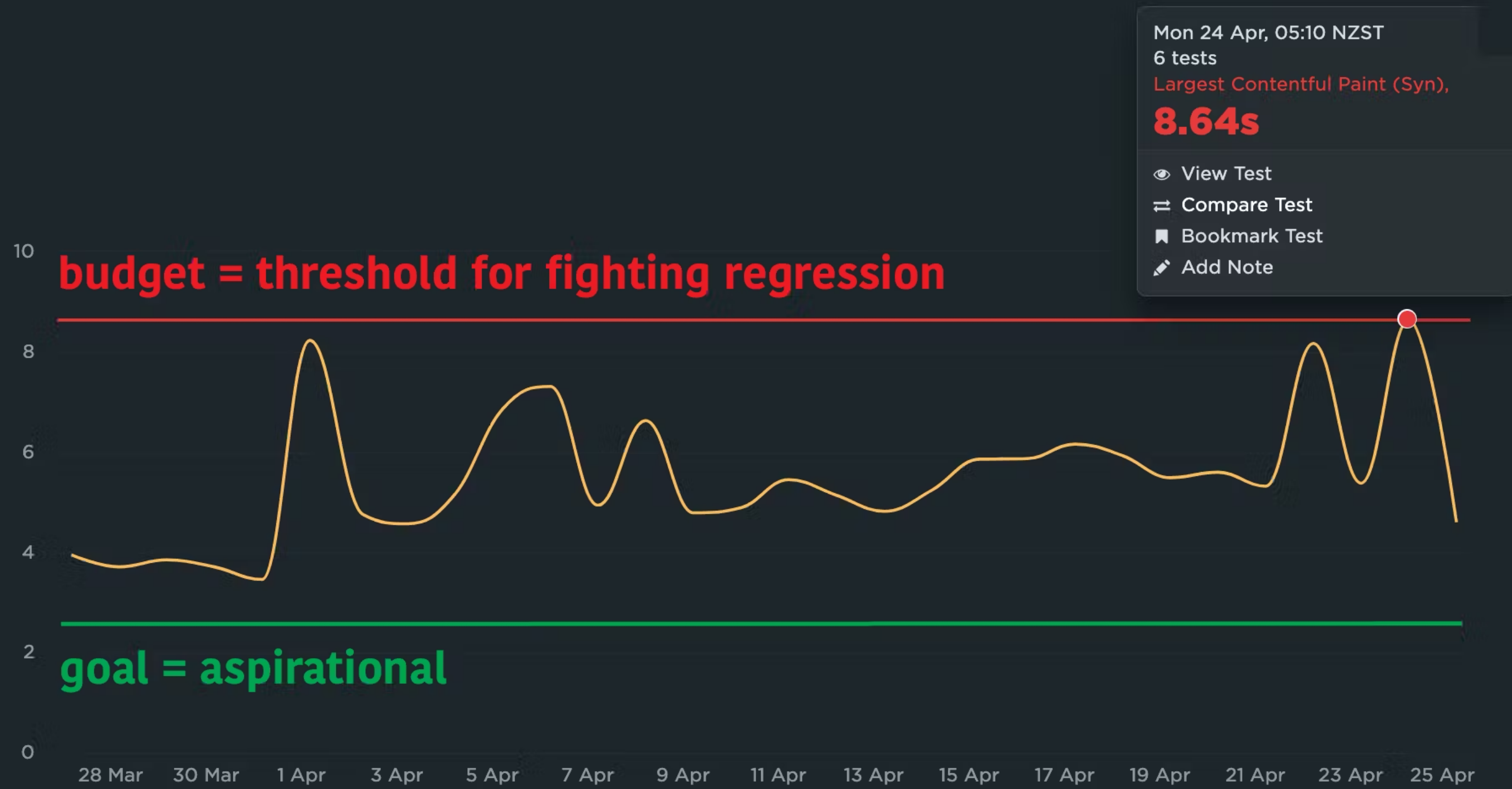
Cumulative Layout Shift

0.2132

Tue 9 Feb, 07:00 NZDT
Cumulative Layout Shift (LUX)
5.9K pvs
0.2831

✏ Add Note

— Cumulative Layout Shift (LUX)

Cumulative Layout Shift (LUX) — is currently **0.2199** which is 120% over budget

speedcurve.com/blog/performance-budgets/

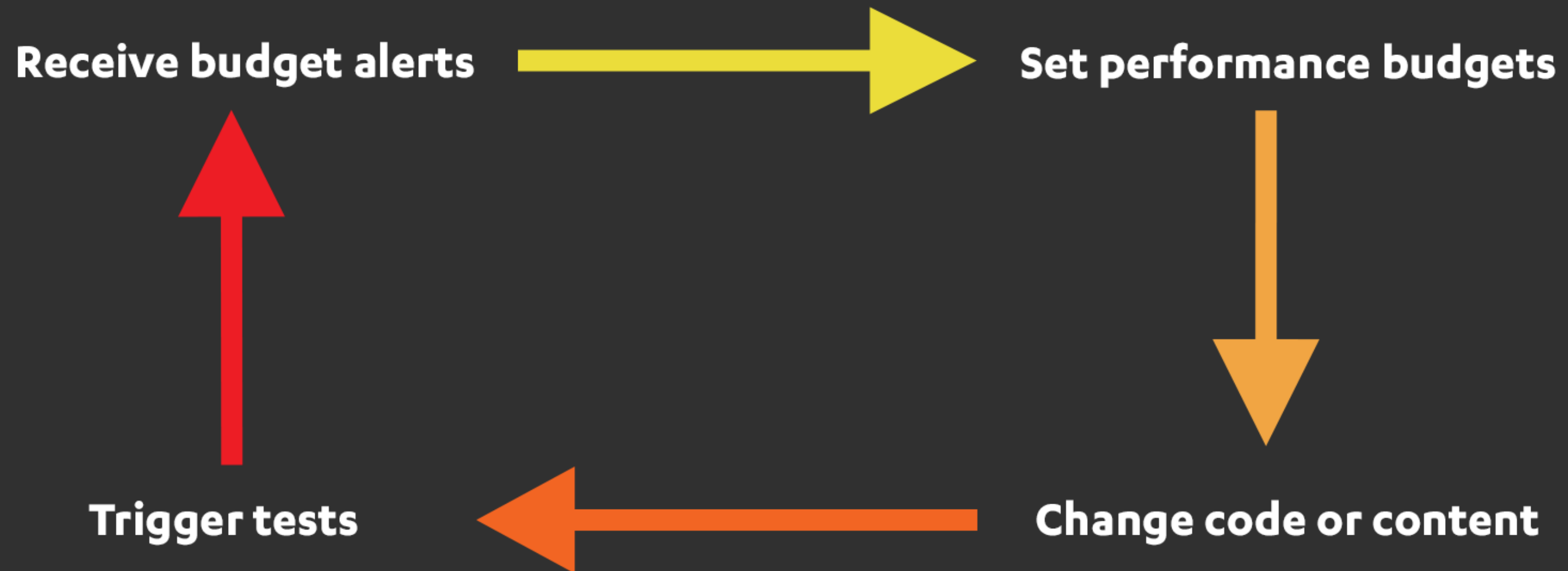budget = threshold for fighting regression

goal = aspirational

Mon 24 Apr, 05:10 NZST
6 tests
Largest Contentful Paint (Syn),
8.64s

👁 View Test
⇄ Compare Test
🔖 Bookmark Test
✏ Add Note

speedcurve.com/blog/performance-budgets/

AUTOMATE ALL THE THINGS!

MVB

Minimum Viable Budgets

LARGEST CONTENTFUL PAINT

3.93s

2.5s   4s

More detail ⌄
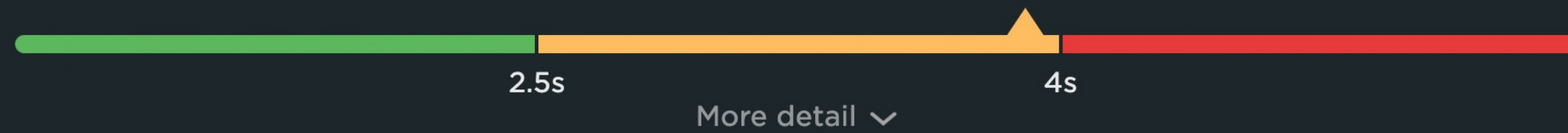
CUMULATIVE LAYOUT SHIFT

0.16

0.1   0.25

More detail ⌄

INTERACTION TO NEXT PAINT

544ms

200ms   500ms

More detail ⌄

0.3s 0.4s 0.5s 0.6s 0.7s 0.8s 0.9s 1s
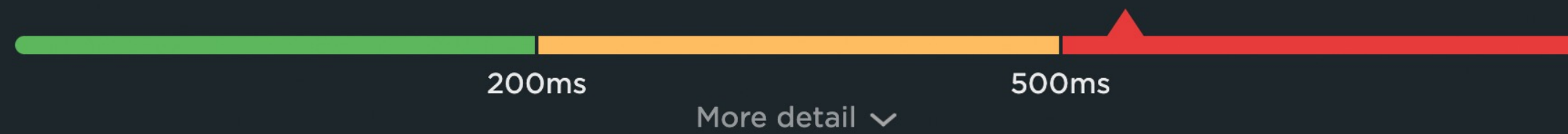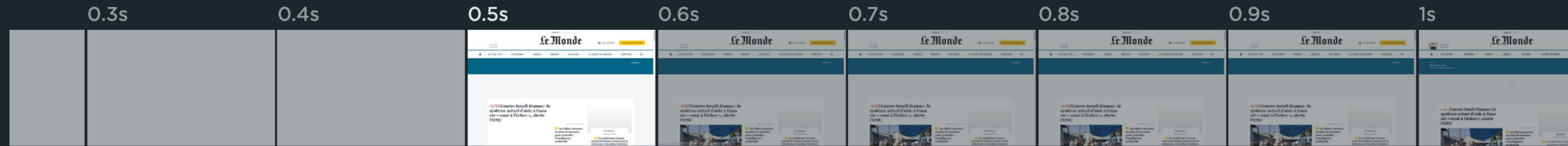
0.07s Backend

0.41s DOM Content Loaded

0.45s First Contentful Paint

0.5s Start Render

0.5s Hero Largest Background Image

0.67s Largest Contentful Paint

0.82s Largest Layout Shift

1s Hero H1

1.5s Last Painted Hero

1.5s Hero Largest Image

1.6s Visually Complete

1.61s Page Load

1.61s First CPU Idle

1.61s Time To Interactive

1.7s Fully Loaded

	Meaningful content	Usable out of the box	Broad browser support	Synthetic	RUM	Correlates to business/UX
Time to First Byte		★	★	★	★	☆
Start Render	☆	★	★	★	★	★
Largest Contentful Paint	☆	★		★	★	★
Last Painted Hero	☆	★	★	★		
Cumulative Layout Shift	☆	☆		★	★	
Long Tasks		★	★	★	★	☆
Interaction to Next Paint		★	★		★	★

@tameverts

Share the load

Everyone who touches a page should care about the performance of that page

"One of the original directives of the performance team was we weren't going to set ourselves up to be performance cops."

Dan Chilton, Vox Media
responsivewebdesign.com/podcast/vox-media-performance/

"We weren't going to go around slapping people on the wrist, saying, 'You built an article that broke the page size budget! You have to take that down or change that immediately!'

"Our goal setting out was to set up best practices, make recommendations, and be a resource within the company that people can turn to when they have to make performance-related decisions."

Dan Chilton, Vox Media
responsivewebdesign.com/podcast/vox-media-performance/

Give people ownership

For example...

If your **marketing team** is responsible for adding and maintaining third-party tags, they should:

For example...

If your **marketing team** is responsible for adding and maintaining third-party tags, they should:

• Have a basic understanding of the metrics (such as Long Tasks Time)
• Collaborate on setting the budget
• Receive alerts when the budget is violated
• Participate (or at least have visibility) in identifying and fixing the issue

Measure success

"We, as engineers, should learn how to show the impact on anything we do."

Malek Hakim // Priceline
chasingwaterfalls.io/episodes/episode-one-with-malek-hakim/

We moved from 6th place to 3rd place in our competitive dashboard.

0.0s 0.5s 1.0s 1.5s 2.0s 2.5s 3.0s 3.5s 4.0s 4.5s 5.0s 5.5s 6.0s 6.5s 7.0s

la Repubblica

t-online

BBC.co.uk

Le Monde

El Pais

Der Spiegel

Le Figaro

The Guardian

Radio Free Europe

Novinsky.cz

Bild.de

Irish Times

The Telegraph

Financial Times

We moved from 6th place to 3rd place
in our competitive dashboard.

We optimized (or removed) a third party
and reduced bounce rate from 87.5% to 62.1%.

Bounce Rate With and Without Cloud.typography
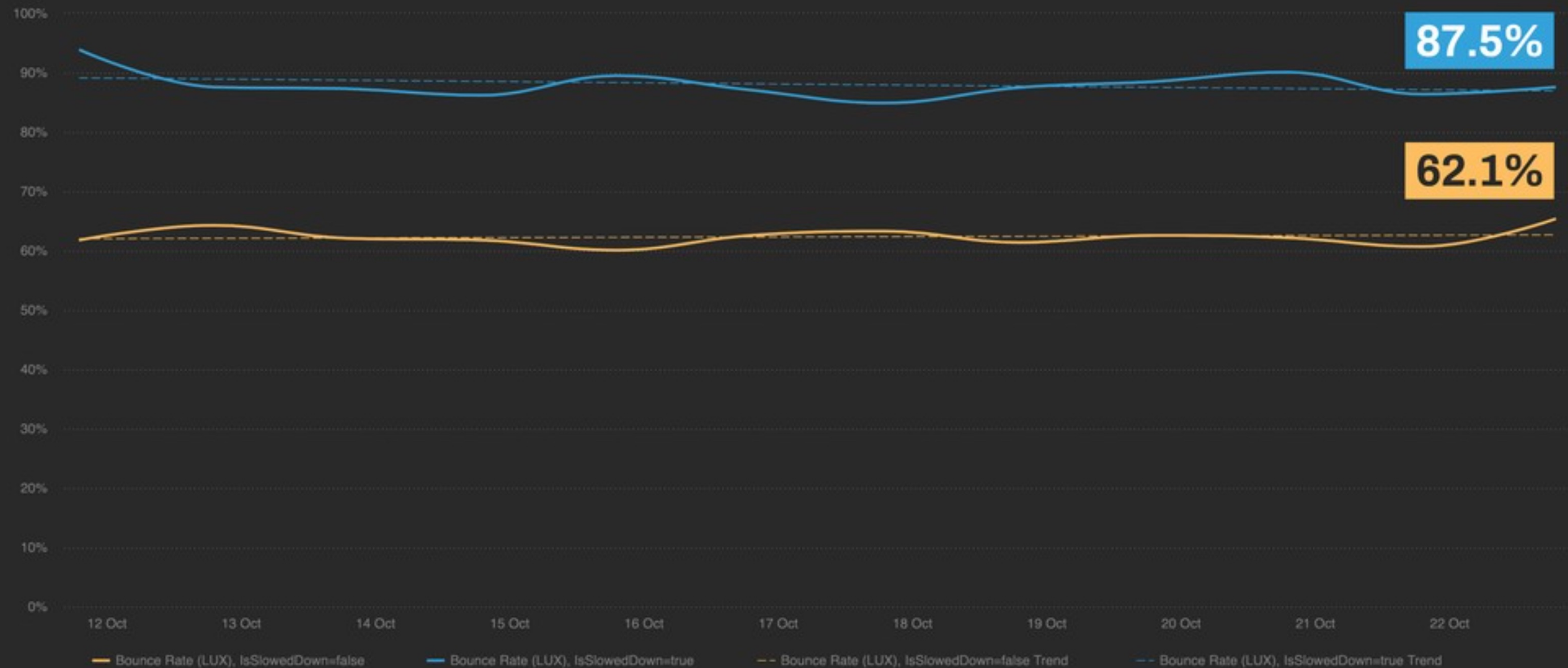
Harry Roberts // From Milliseconds to Millions // PerfNow 2019

youtube.com/watch?v=cXLOIIJ1UaE

Airbnb's faster, better trip to Linaria

Airbnb used SpeedCurve to ensure Linaria, their new CSS-in-JS library, delivered both better web performance and developer experience...

Read Story

25% Faster Hotel Search with Trivago

In emerging markets, maintaining optimal web performance can become a challenge: varying network conditions and different device topology cause issues. Thanks to trivago's rigorous testing culture, we identified these issues in one of our key emerging markets...

Read Story

Tim Kadlec: A/B testing Instant.Page with Netlify and Speedcurve

Tim walks through a demonstration of how to do A/B testing with Netlify and LUX, our RUM tool.....

Read Story

Bigger, Faster, and More Engaging while on a Budget

Zillow give a blow by blow account of using SpeedCurve performance budgets to catch a rouge A/B test...

Read Story

Launching A Successful Redesign For 20 Million Students at Quizlet

When more than 20 million people use your service each month, how and when you roll out a redesign matters. When considering making a big update, we knew we had to make it better for our users not just aesthetically but also functionally...

Read Story
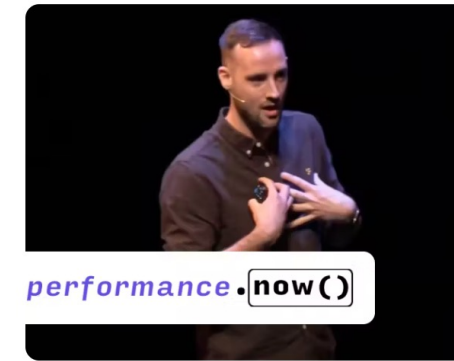
From Milliseconds to Millions

How to use SpeedCurve to do A/B testing – in this case, testing the impact of custom font usage on bounce rate...
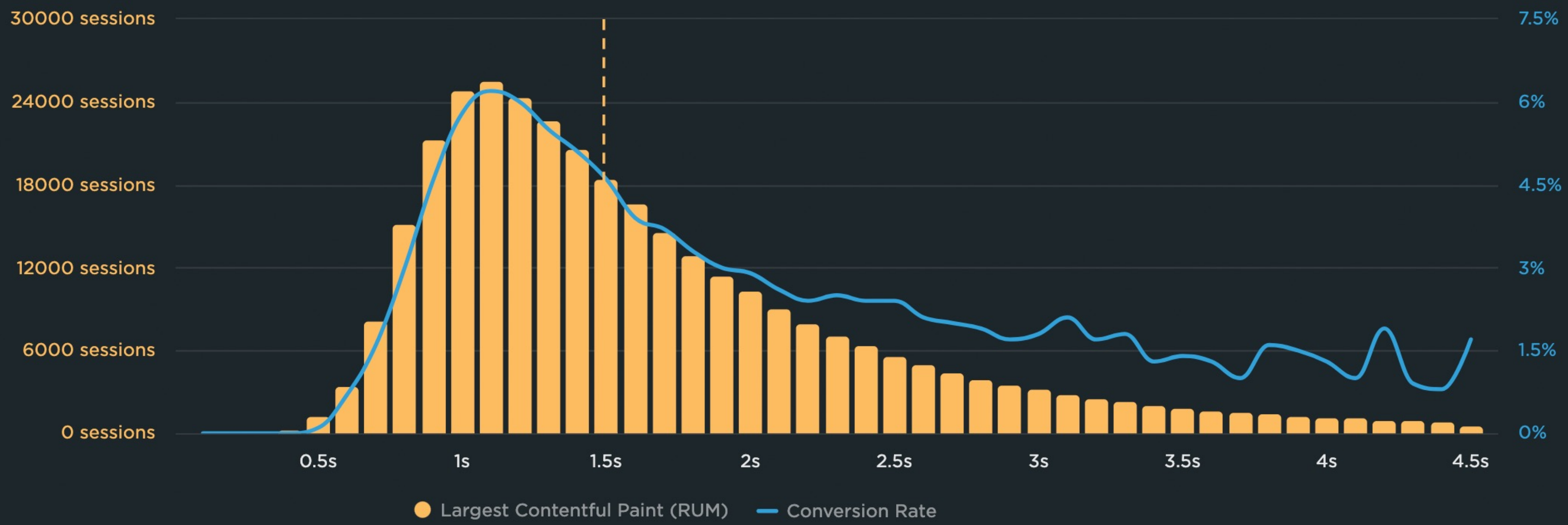
Watch Talk

speedcurve.com/customers/tag/ab-testing/

We moved from 6th place to 3rd place
in our competitive dashboard.

We optimized a third party
and reduced bounce rate from 87.5% to 62.1%.

We improved LCP by 0.8 seconds
and increased conversion rate from 4.2% to 5.3%.

Largest Contentful Paint (RUM) — Conversion Rate

@tameverts

We moved from 6th place to 3rd place
in our competitive dashboard.

We optimized a third party
and **reduced bounce rate from 87.5% to 62.1%.**

We improved LCP by 0.8 seconds
and **increased conversion rate from 4.2% to 5.3%.**

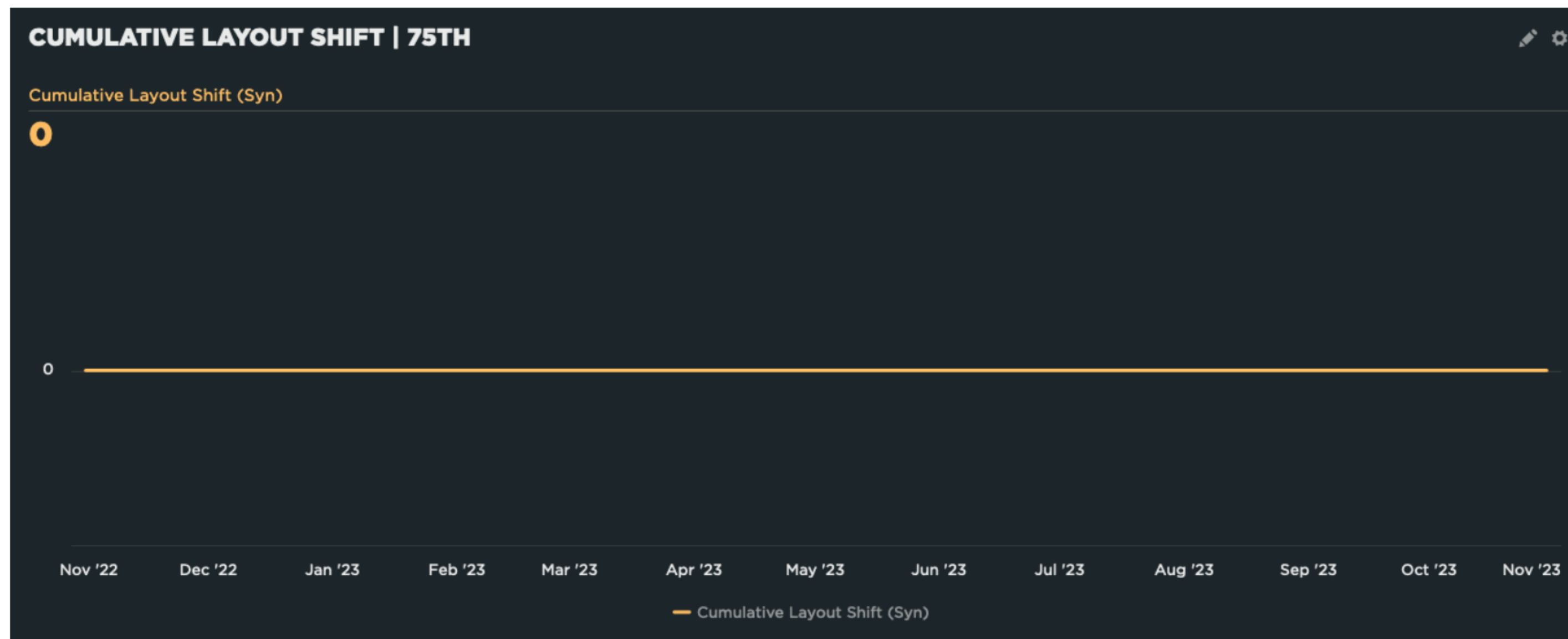**We prevented 3 regressions to LCP from going live,**
and **prevented degradation to conversion rate.**

Celebrate victories!

30 October 2023   CLS, SpeedCurve, WebPerf   2 reactions

I love (some) boring #SpeedCurve graphs... 😅

CUMULATIVE LAYOUT SHIFT | 75TH

Cumulative Layout Shift (Syn)

0

0 ——

Nov '22   Dec '22   Jan '23   Feb '23   Mar '23   Apr '23   May '23   Jun '23   Jul '23   Aug '23   Sep '23   Oct '23   Nov '23

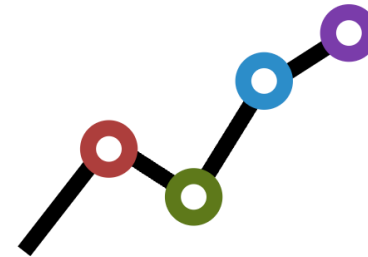— Cumulative Layout Shift (Syn)

Chris Fairbanks, Performance Hero

Chris optimized the mobile purchases page for great justice

WPO stats

Case studies and experiments demonstrating the impact of web performance optimization (WPO) on user experience and business metrics.

Carpe improved Largest Contentful Paint by 52% and Cumulative Layout Shift by 41% and saw a 10% increase in traffic, a 5% increase in online store conversion rate, and a 15% increase in revenue.

PERMALINK   SHARE ON TWITTER

#bounce rate   #conversion rate   #traffic   #revenue   #2023   #core web vitals

Sunday Citizen improved their key performance metrics and were able to achieve 25% improvement in Largest Contentful Paint and 61% in Cumulative Layout Shift at the 75th percentile. This resulted in 4% decrease in bounce rate and over 6% increase in conversion.

PERMALINK   SHARE ON TWITTER

#bounce rate   #conversion rate   #2022   #core web vitals

Rakuten 24 ran an A/B test showing improved vitals brought a 53.4% incrase in revenue per visitor, 33.1% increase in conversion rate, 15.2% increase in average order value, 35.1% reduction in exit rate and more!

PERMALINK   SHARE ON TWITTER

#bounce rate   #revenue   #traffic   #abandonment   #session duration
#conversion rate   #2022   #core web vitals

Filter by tag:

#2006   #2008   #2009
#2010   #2011   #2012
#2013   #2014   #2015
#2016   #2017   #2018
#2019   #2020   #2021
#2022   #2023
#abandonment   #ads
#bounce rate   #conversion
#conversion rate
#core web vitals
#engagement   #expense
#impressions   #orders
#page views   #publishing
#reach   #revenue   #sales
#satisfaction   #search   #seo
#server   #session duration
#sessions   #traffic
#user timing   #viewability

WPOstats.com

ring_the_bell

Increase your impact

Identify your critical rendering path

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Focus on the pages that matter

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Fix the low-hanging fruit

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Quantify success – and brag about it!

There's no magic.
Show up with a plan.
Do the work.
Be patient.

There's no magic.
Show up with a plan.
Do the work.
Be patient.
Be kind.

Thank you!

@tameverts
webperf.social/@tammy

Critical Rendering Path // Ilya Grigorik
web.dev/articles/critical-rendering-path/

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smashingmagazine.com/2023/10/speedcurve-fight-main-thread/

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responsivewebdesign.com/podcast/vox-media-performance/

Why You Need to Know Your Site's Performance Plateau
speedcurve.com/blog/web-performance-plateau/

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devops.com/survey-sees-spike-in-untested-code-leading-to-a-devops-crisis/

A Complete Guide to Performance Budgets
speedcurve.com/blog/performance-budgets/

Scaling a Culture of Performance // Malek Hakim
chasingwaterfalls.io/episodes/episode-one-with-malek-hakim/

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