

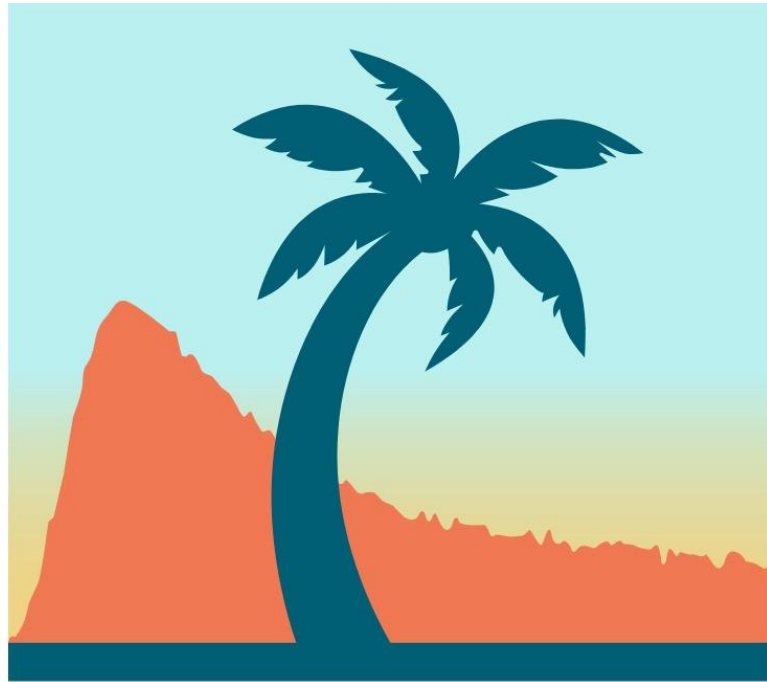
# Insights from the RUM Archive

Robin Marx

@programmingart





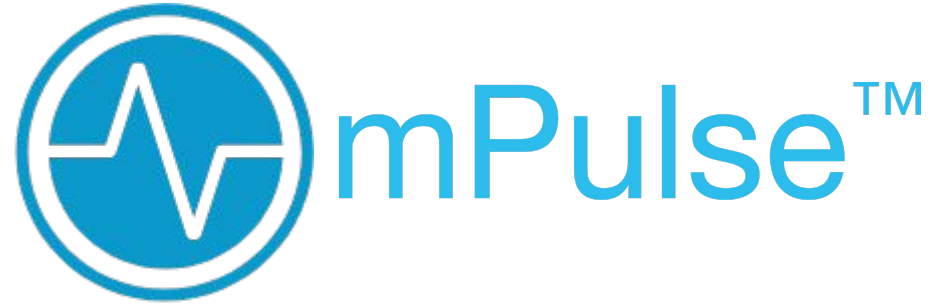


**RUM**  
**ARCHIVE**

[www.rumarchive.org](http://www.rumarchive.org)

A public **dataset** of  
*anonymized*  
Real User Monitoring (RUM)  
measurements.

# What?



## Filtered

Data from top 100 customers

## Anonymized

URLs and other PII stripped

## Aggregated

Combine data in fewer rows with histograms

<https://rumarchive.com/datasets/>  
<https://rumarchive.com/docs/methodology/>  
<https://www.akamai.com/products/mpulse-real-user-monitoring>

# What?

## Page Loads

Date

!!! DeviceType DeviceModel OS ...

!!!! UserAgent UserAgentVersion

Country

DNS TCP TLS TTFB ...

Landing page NavigationType ...

FCP LCP CLS FID TBBT INP BBQ ...

🤔!!!!!!! RageClicks

Top 100 customers  
~200 million daily beacons

## Third party resources

Date

DeviceType DeviceModel OS ...

UserAgent UserAgentVersion

Country

DNS TCP TLS TTFB ...

AssetType InitiatorType ...

ResponseTime DownloadTime ...

DecodedSize TransferSize ...

!! Cached

URL URLGroup

500 most common  
~160 million daily beacons

# Why?

Be **complementary** to other *popular* datasets:



Synthetic

VS



Real Users



Single browser

VS

Cross-browser

moz://a data portal



Single site

VS

Multi-site

(Both great for comparing yourself to others)

# How?



Google  
Big Query

# Some gotchas when querying directly

AND BEACONTYPE = 'page view'  
AND USERAGENTFAMILY = 'Firefox'  
AND DEVICETYPE = 'Mobile'  
GROUP BY COUNTRY  
ORDER BY SUM(BEACONS) DESC



I do get data for Chrome and Safari using the same query, but none for Firefox or Opera

Nov 6, 2023, 9:03 PM

I think the Firefox useragent is called "Firefox Mobile" on Android/most others and "Firefox iOS" on iOS



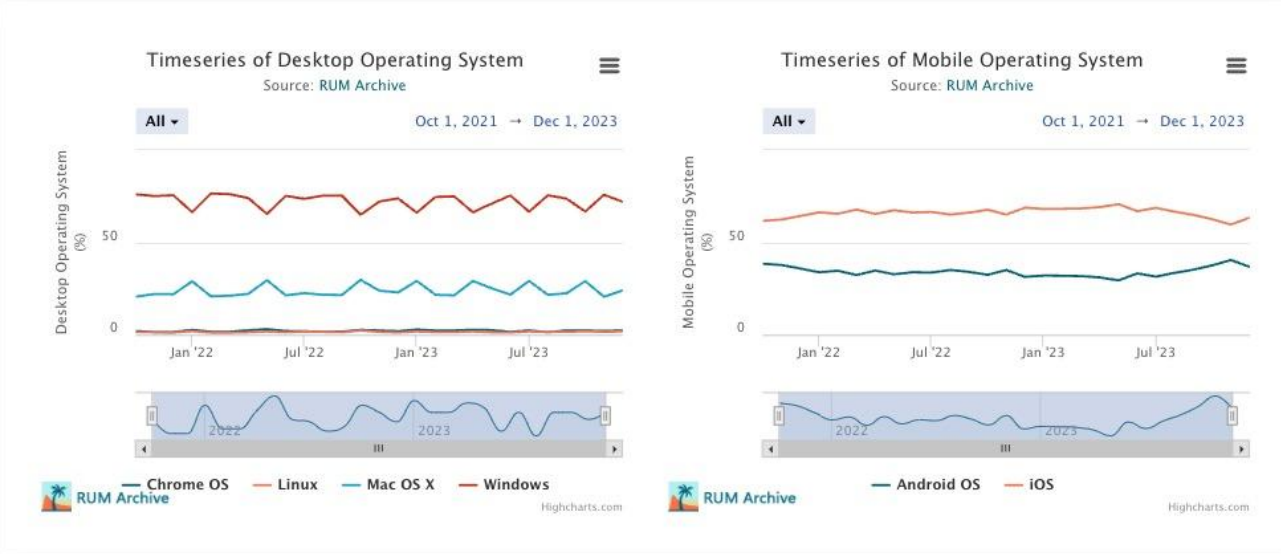


# How?

## RUM Insights

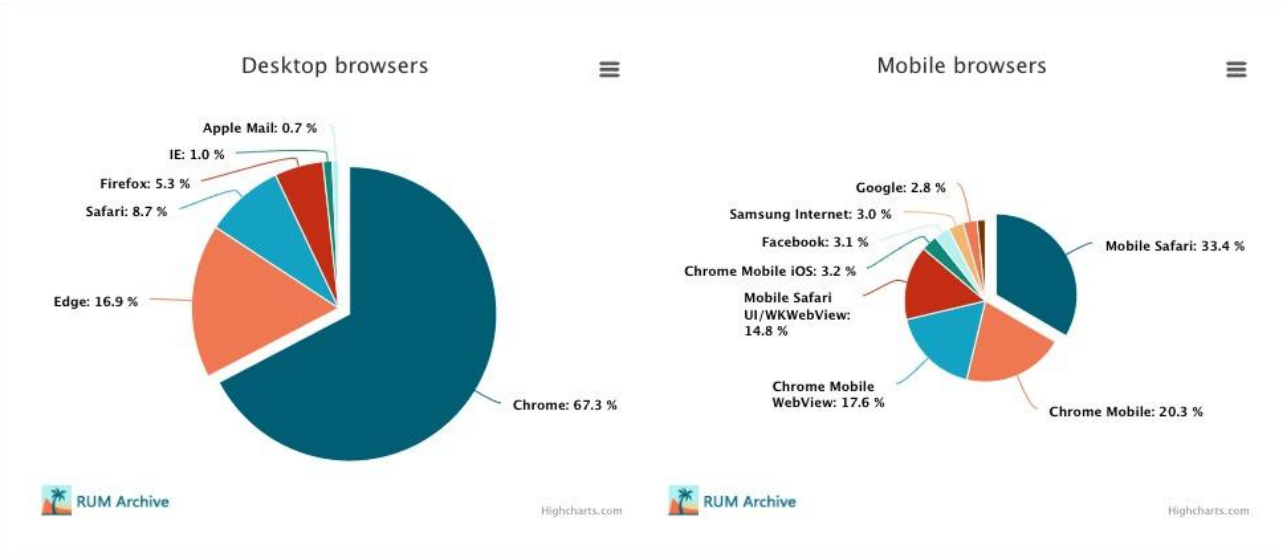
### Operating System

The following graphs show the usage of different Operating Systems for Desktop and Mobile devices (OSes with < 1% usage share have been filtered out).



### Browser

The following charts show the usage of different Browsers / User Agents for Desktop and Mobile devices (entries with < 1% usage share have been filtered out). The data shown is from December 1st 2023.



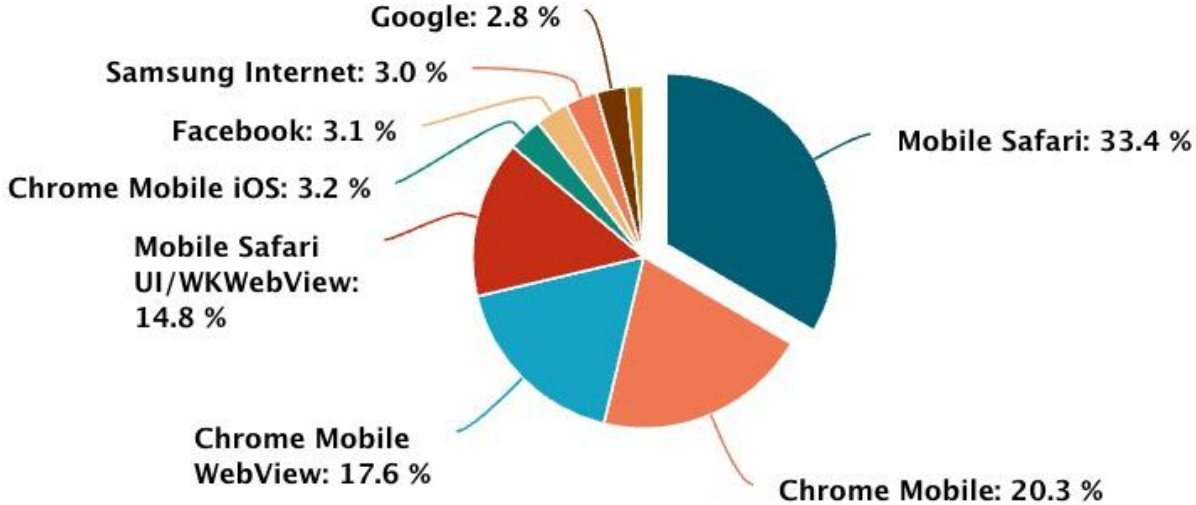
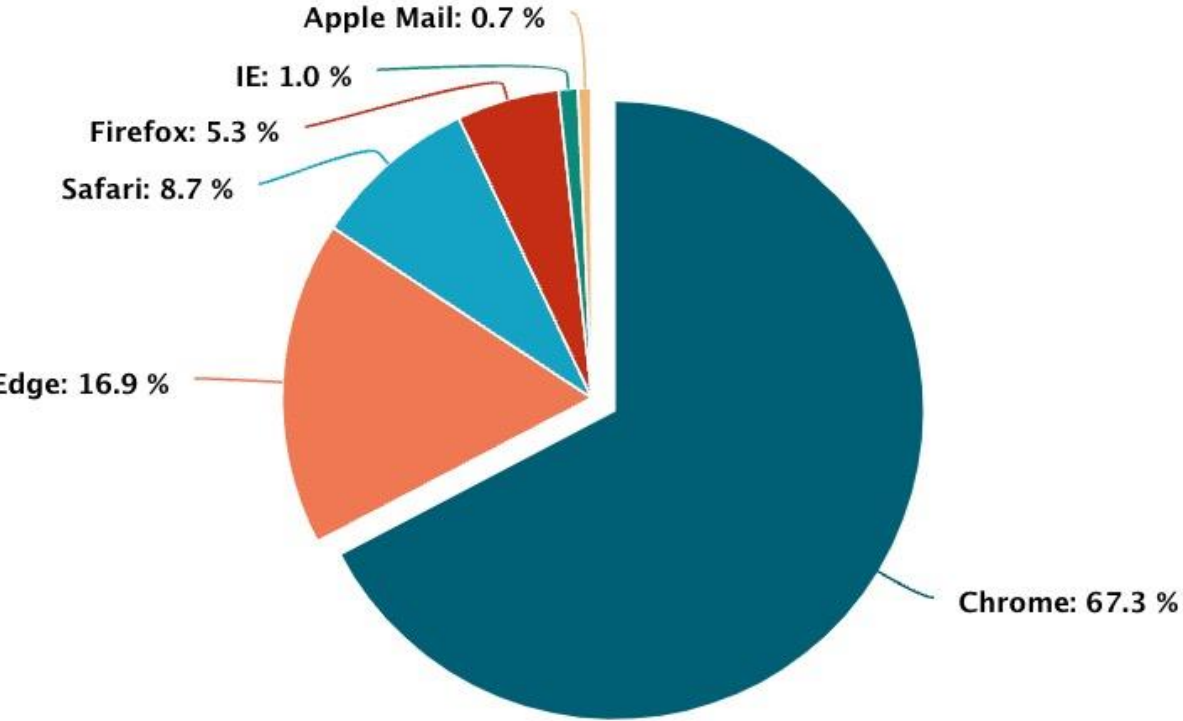


# Still not great for Firefox on Mobile, sorry :(

Desktop browsers



Mobile browsers



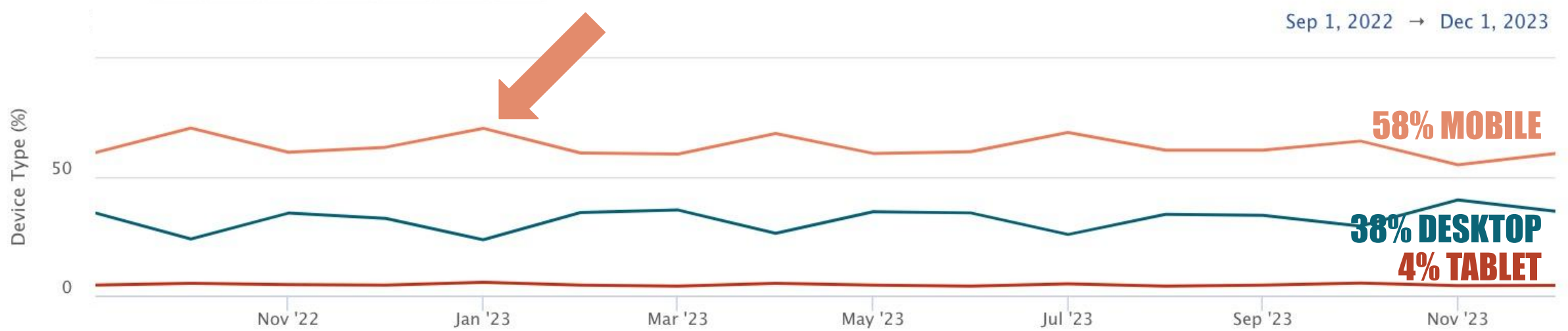
Not showing entries < 1%

**INSIGHTS**

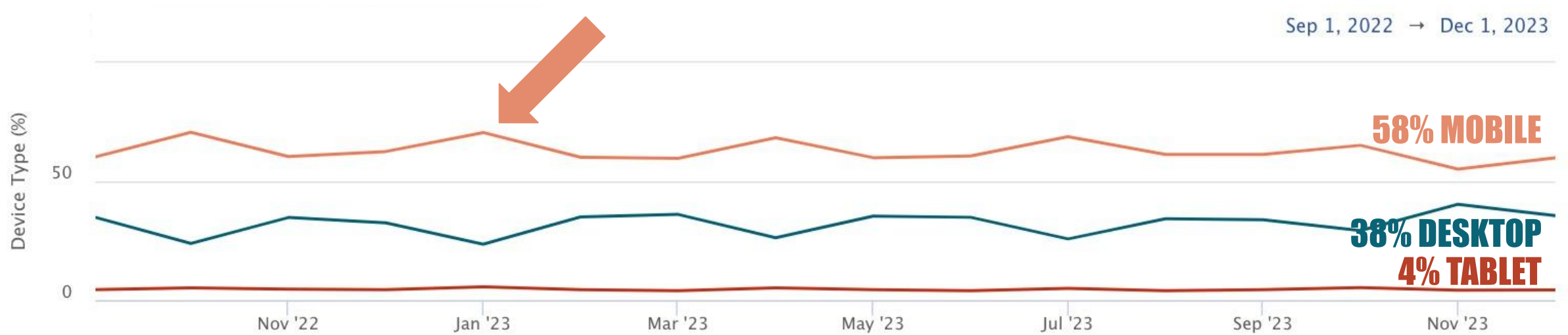
~~INSIGHTS~~  
INSIDES



# Device Types fluctuate very heavily?



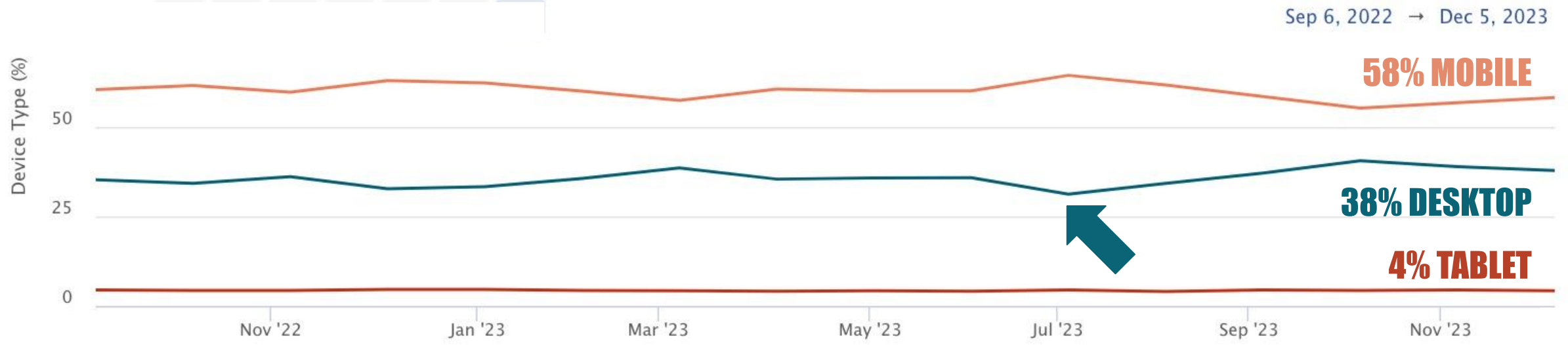
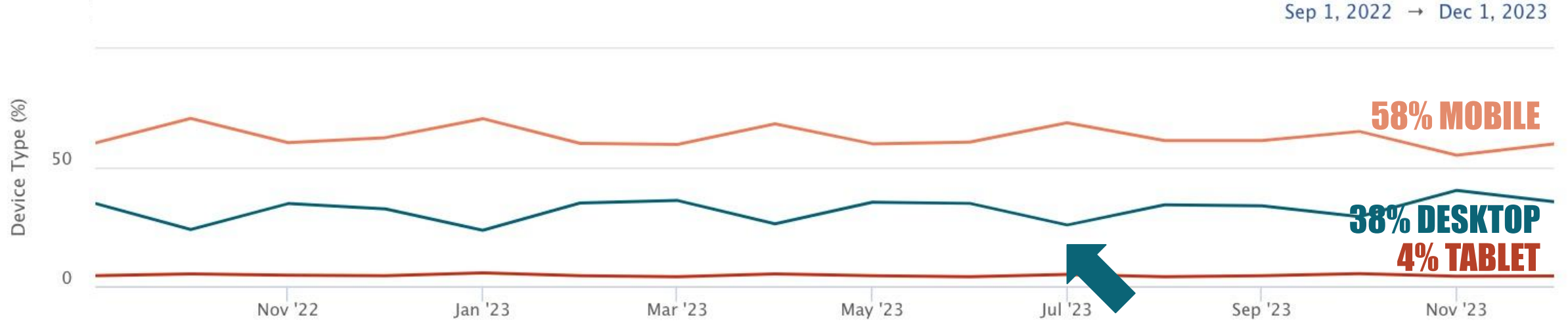
# Temporal Interference



Showing data for only **the 1st of the month**

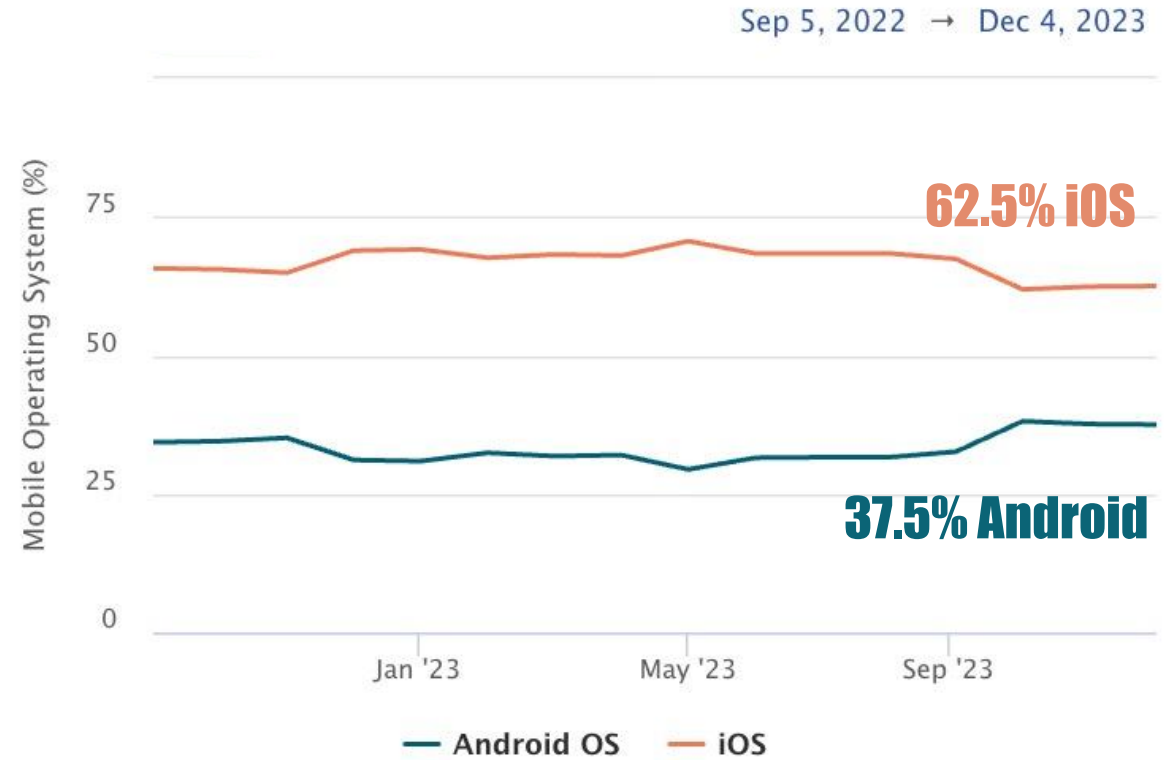
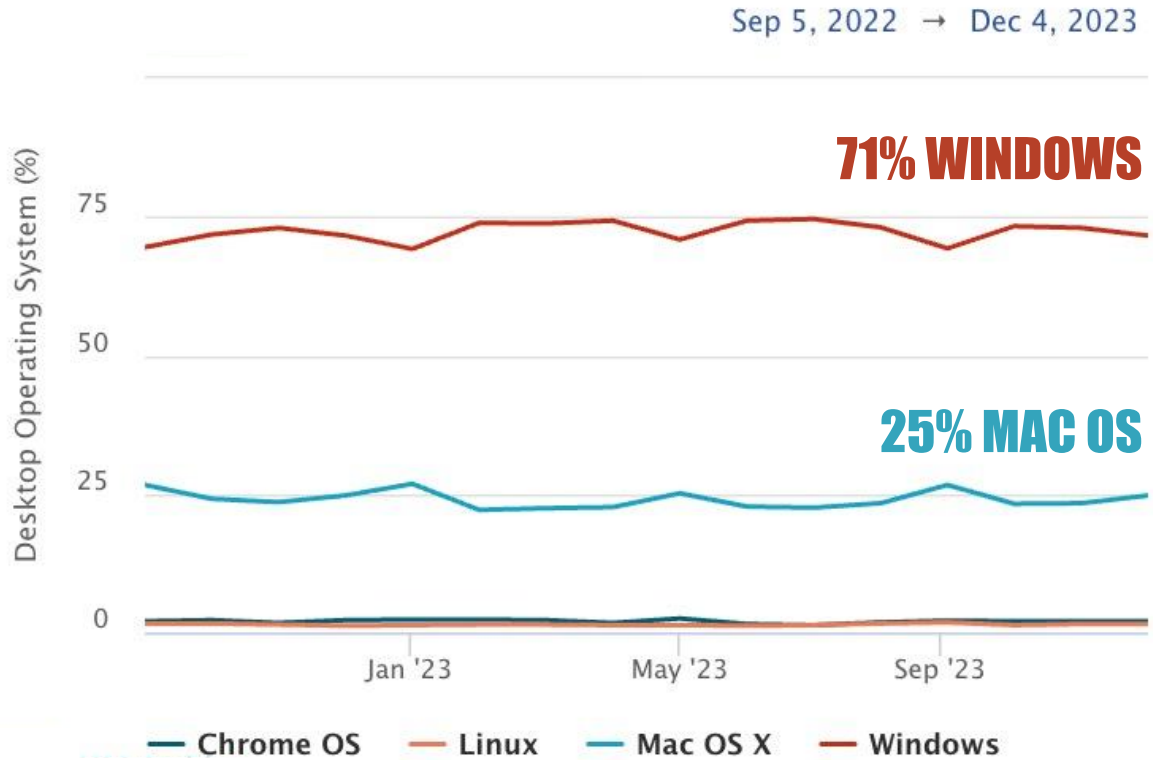
Why? Querying for *all* the dates is too expensive :(

# First day vs First Tuesday



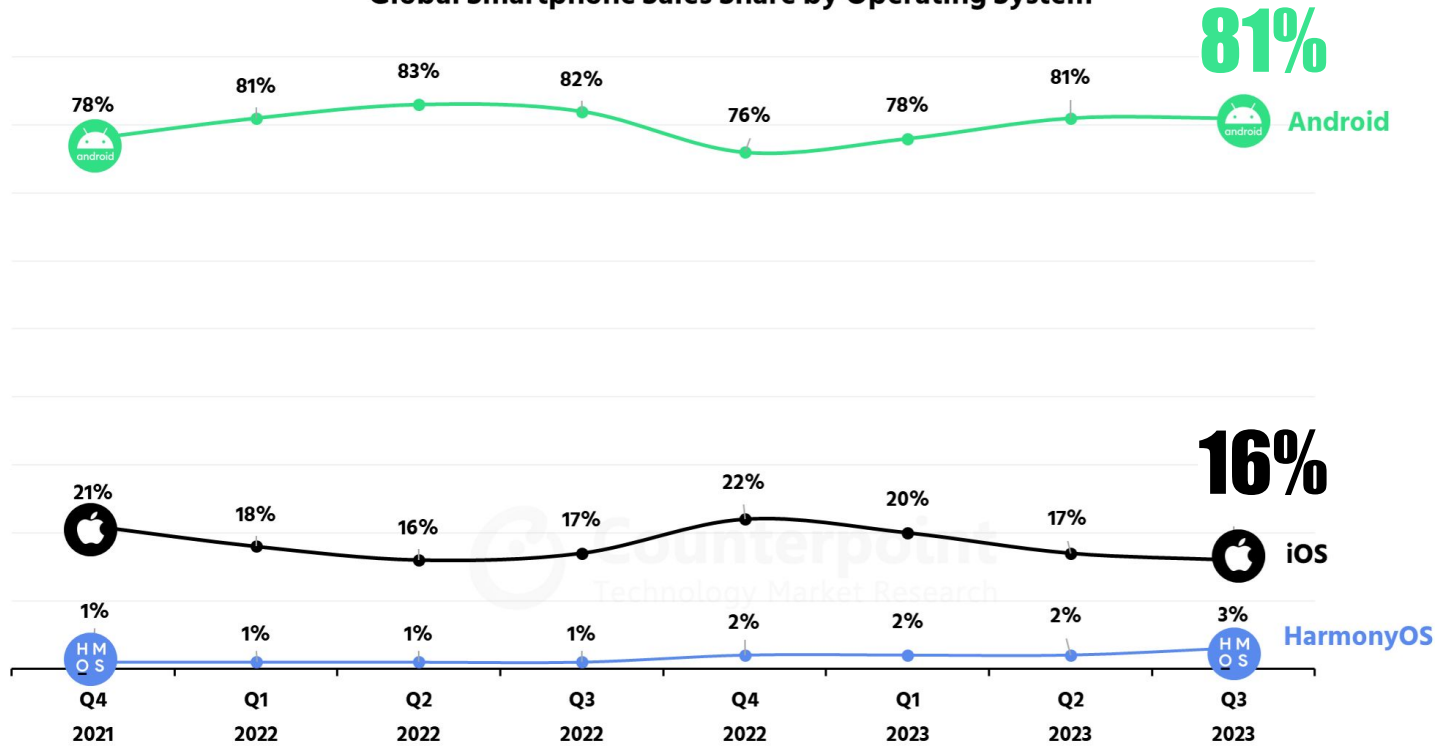


# The RUM Archive is biased towards **mobile + iOS**



# Contrary to global sales...

Global Smartphone Sales Share by Operating System



53% Android

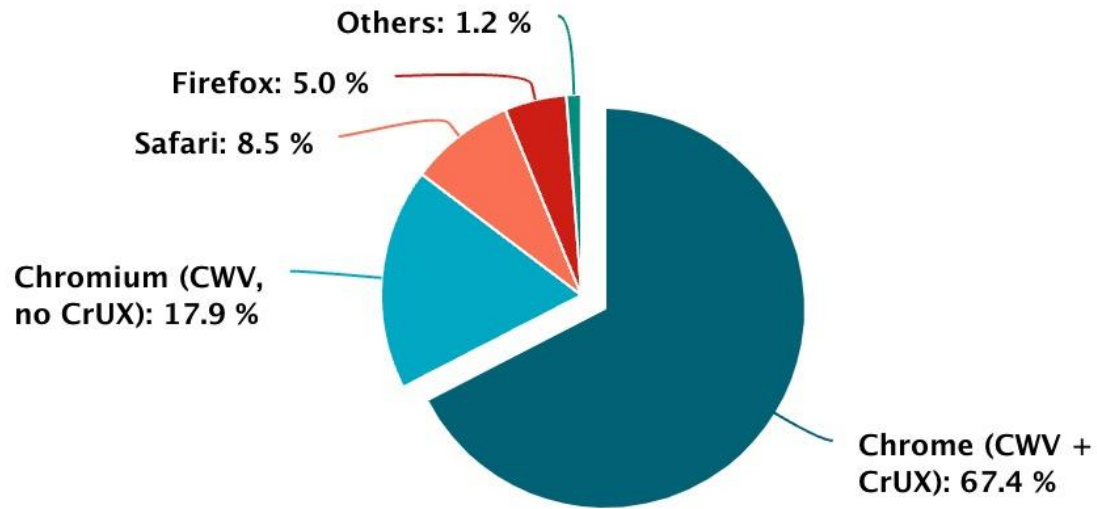
VS

47% iOS

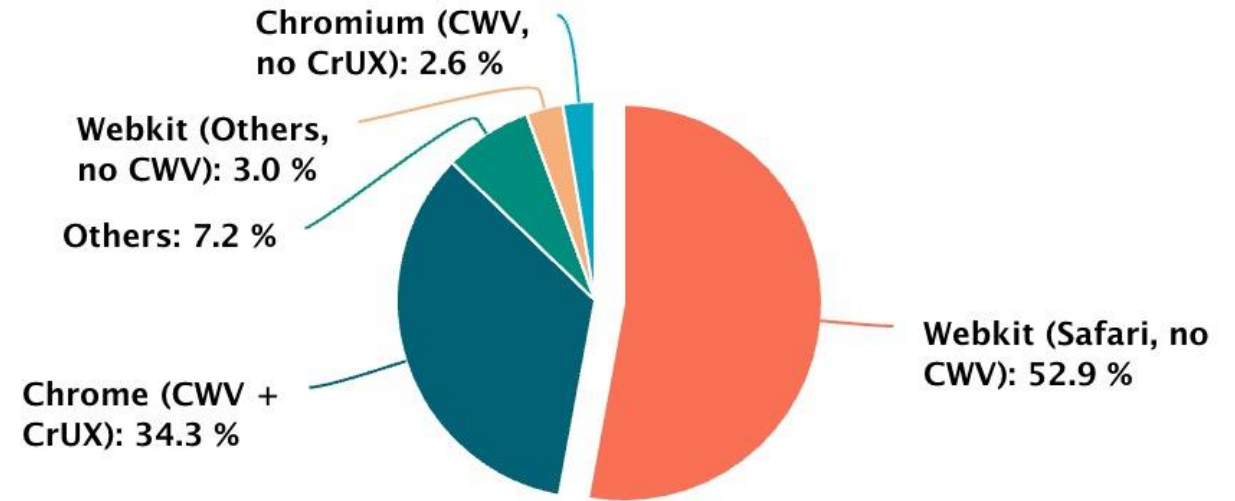
(Australia 2023)

# Core Web Vitals: Chromium vs CrUX vs iOS

## Desktop Browsers



## Mobile Browsers



**62.5% iOS**  
**VS**  
**37.5% Android**



# Might improve (in EU)?

Apple (has) to start allowing other browser engines!

## Using alternative browser engines in the European Union

iOS 17.4 introduces new capabilities that let iOS apps use alternative browser engines — browser engines other than WebKit — for dedicated browser apps and apps providing in-app browsing experiences in the EU. To use an alternative browser engine in your app, you'll need to request the Web Browser Engine Entitlement (for browser apps that want to use alternative browser engines) or the Embedded Browser Engine Entitlement (for apps that provide in-app browsing experiences that want to use alternative browser engines).

Apple will provide authorized developers access to technologies within the system that enable critical functionality and help developers offer high-performance modern browser engines. These technologies include just-in-time compilation, multiprocess support, and more.

<https://developer.apple.com/support/alternative-browser-engines/>

<https://www.theverge.com/2024/1/25/24050200/apple-third-party-app-stores-allowed-iphone-ios-europe-digital-markets-act>

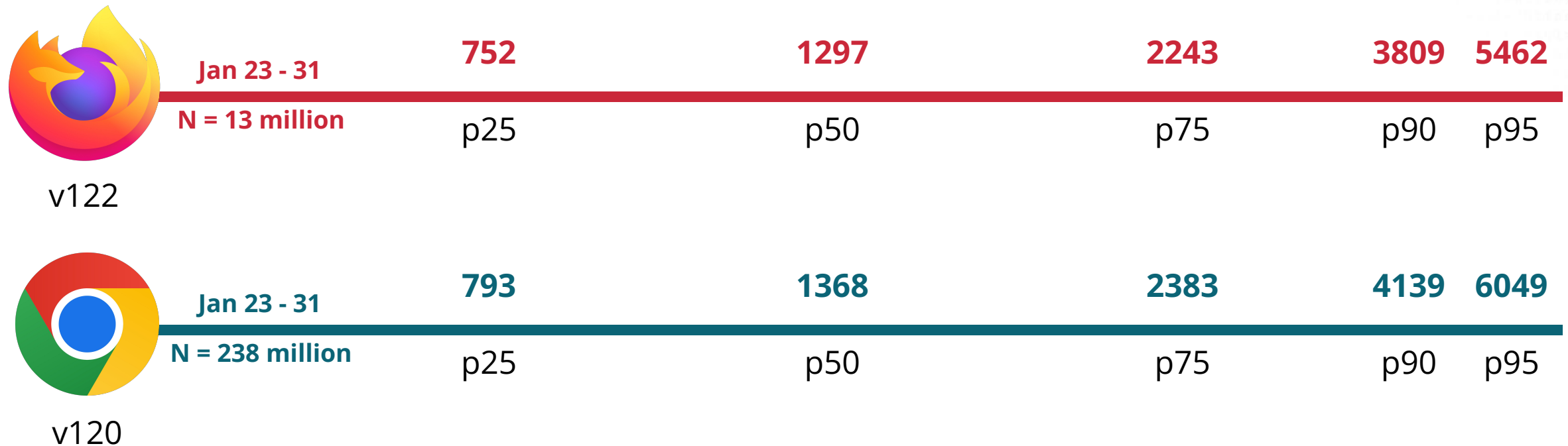
# We can still compare non-CWV across browsers!



# SOON™

# LCP in Firefox vs Chrome (Desktop)

Only enabled by default in FF v122, went stable on Jan 23 2024

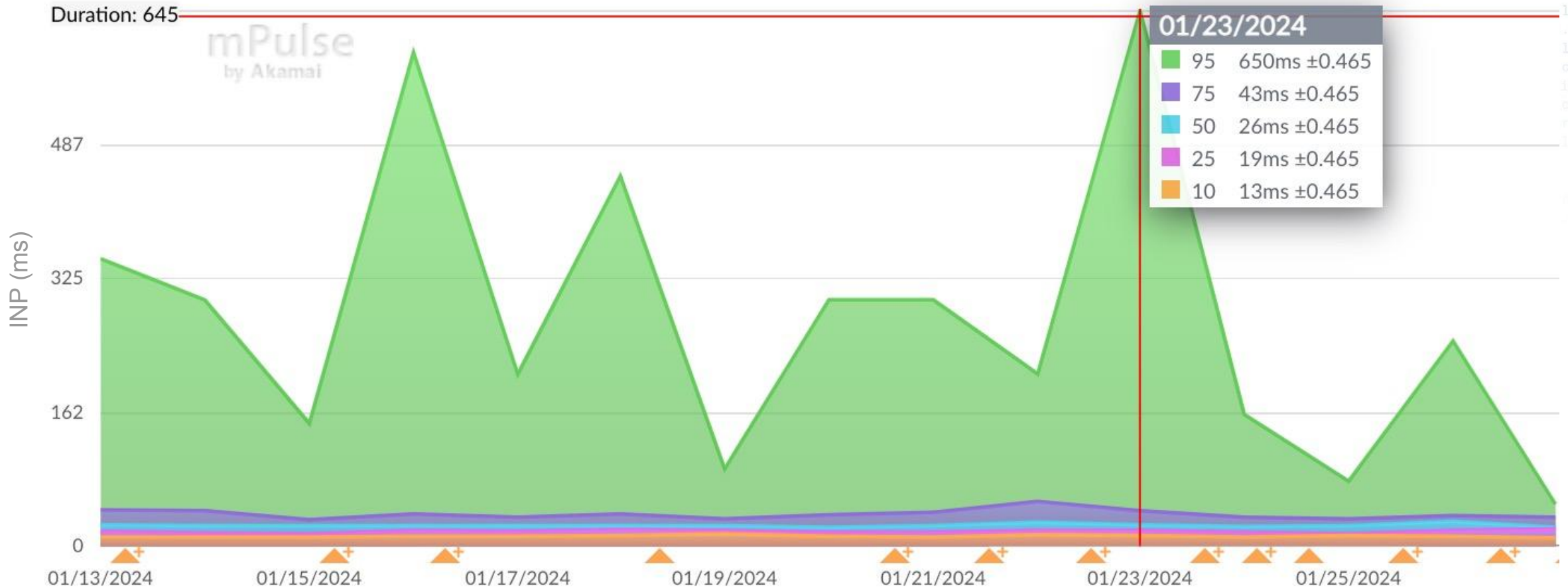


Similar trend for Firefox Mobile vs Chrome Mobile









# What about Interaction to Next Paint?!?

INP over time (10P, 25P, 50P, 75P, 95P)









scalemates

# 3rd party resources

Rank	Source		FETCHES
1-2	Google Tag Manager (gtm)		16%
3	Facebook tracking pixel		5.3%
4-7	Google Analytics		20.82%
8	Google Ads (doubleclick.net)		2.35%
9	Akamai mPulse		1.98%
10	Bing Ads		1.81%
11-20	Pinterest, tiktok, Amazon Ads, Adobe		10.08%
21-22	Google Fonts		1.8%
23-97	Snapchat, criteo, youtube, twitter, linkedin		a lot
98	First cookie consent manager (Trustarc)		0.14%

# 3rd party resources

Rank	Source		FETCHES
1-2	Google Tag Manager (gtm)		16%
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10	Bing Ads		1.81%
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21-22	Google Fonts		1.8%
23-97	Snapchat, criteo, youtube, twitter, linkedin		a lot
98	First cookie consent manager (Trustarc)		0.14%
495	jQuery mousewheel plugin (cdnjs)		0.01%



# 3rd party resources: Caching and Sizes

## Cache hits Dec 31

1.8%

22% 35% 53%

p50

p90 p95 p99

## Transfer size Dec 31

343 bytes

7.7KB 42KB 131KB

p50

p90 p95 p99

**Smallest:** [www.facebook.com/tr/](http://www.facebook.com/tr/) @ 185 bytes x 333k loads

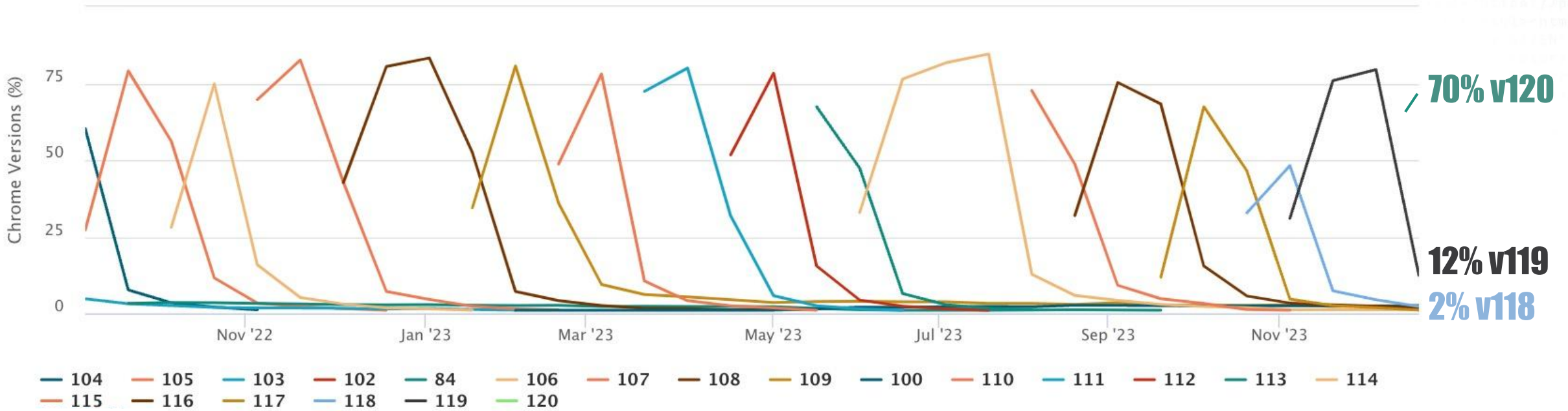
**Largest:** [securepubads.g.doubleclick.net/.../pubads\\_impl.js](http://securepubads.g.doubleclick.net/.../pubads_impl.js) @ 131 KB x 264k loads



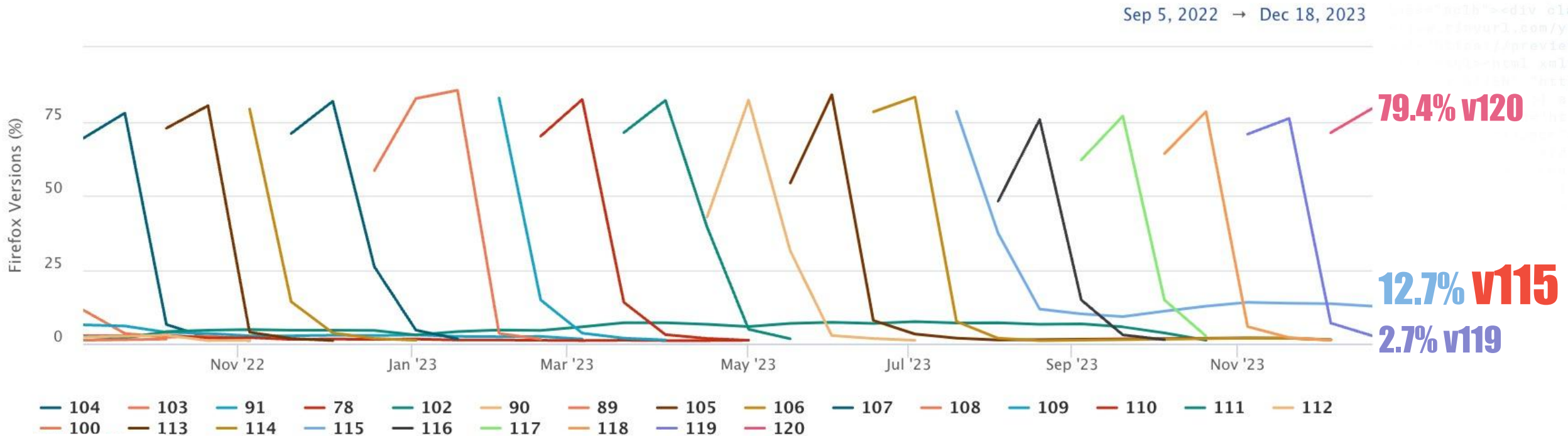
# The EverGreen/Self-Updating browser: **Chrome**



Sep 5, 2022 → Dec 18, 2023

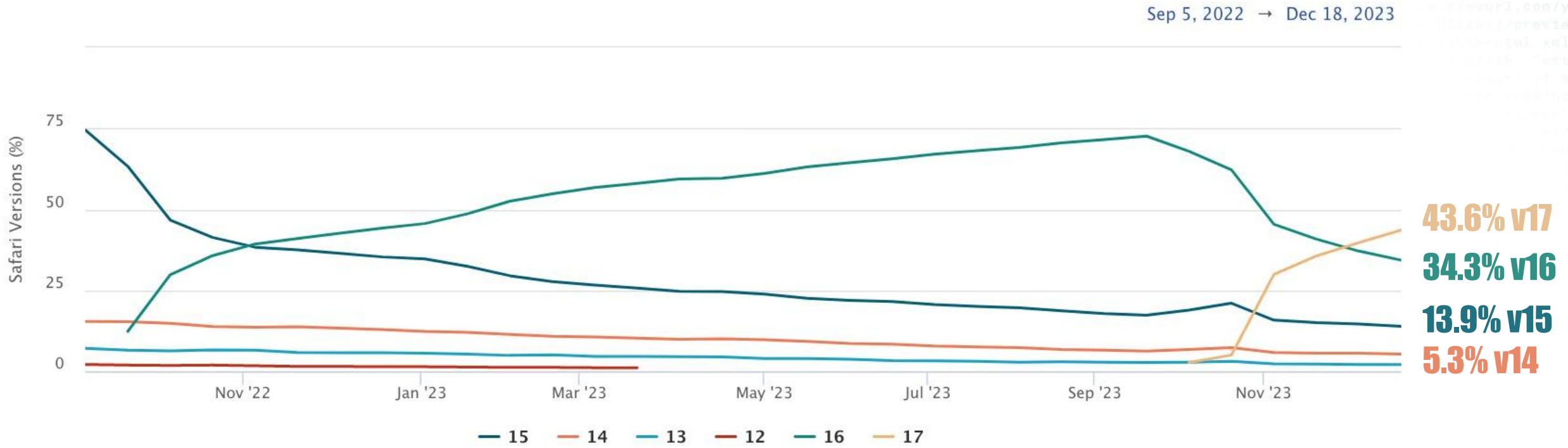


# The EverGreen/Self-Updating browser: **Firefox**



v115 is ESR (Extended Support Release)

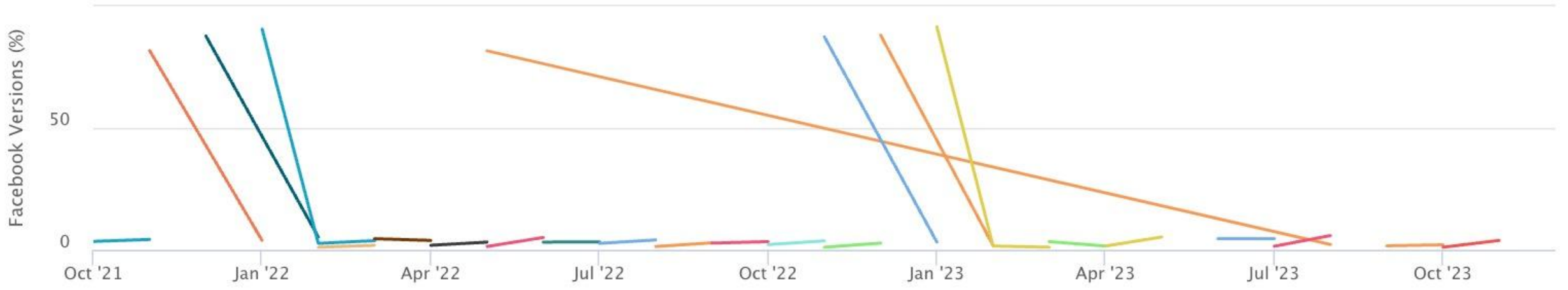
# The Laggard: Safari



# The Work Hard/Play Hard UA: Facebook



Oct 1, 2021 → Dec 1, 2023



337	338	336	331	332	335	342	341	340	345	339	348	351	350	349
355	354	359	360	358	353	364	363	362	368	367	372	373	371	377
376	375	381	380	379	386	385	384	390	389	388	393	387	394	396
399	398	392	403	397	402	407	408	401	406	412	411	416	415	410
420	421	361	419	414	425	424	429	430	423	370	428	433	434	427
374	432	438	436	437	439	378	441	442	435	382				

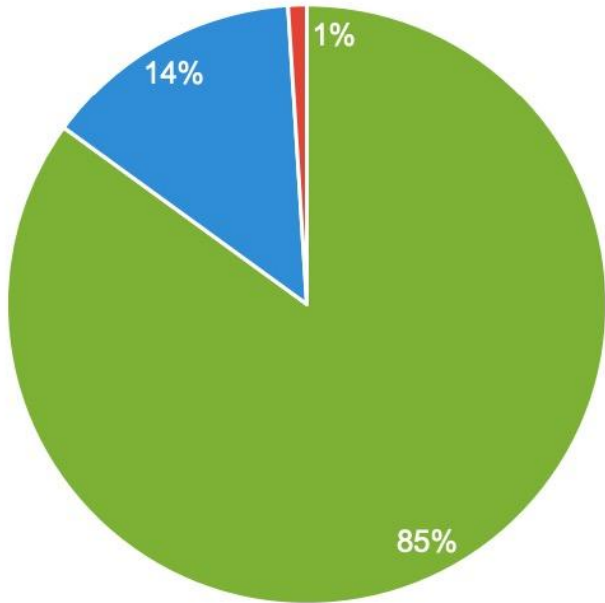


# Per-site RUM

vs

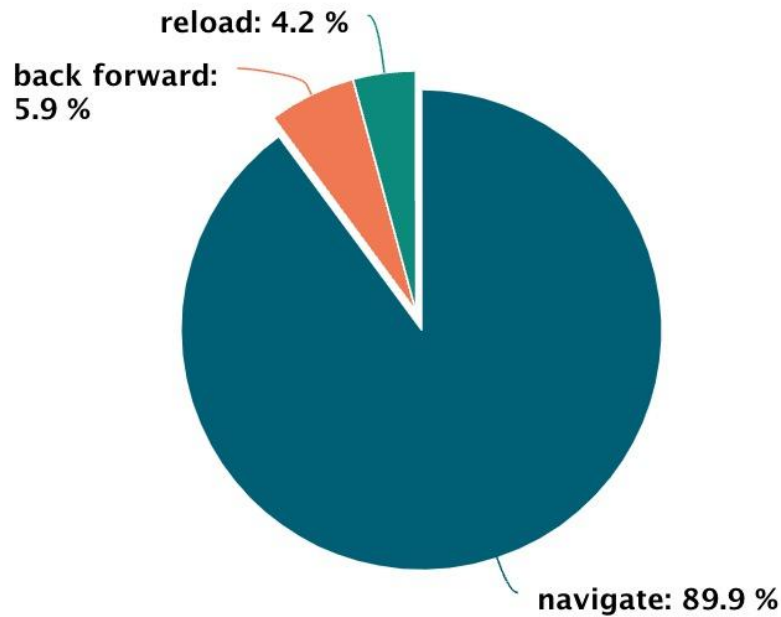
# Aggregated RUM

Navigation Types (MPA)

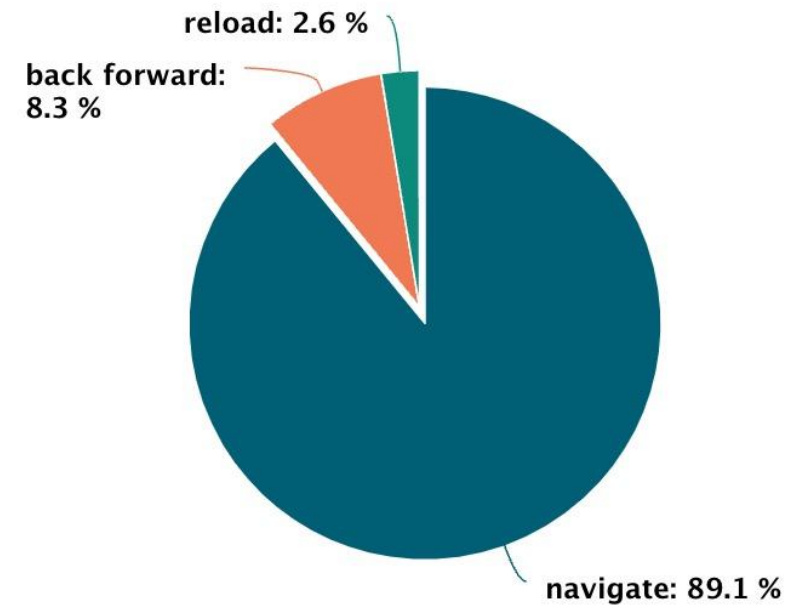


■ Navigation ■ Back-Forward ■ Reload

## Desktop



## Mobile



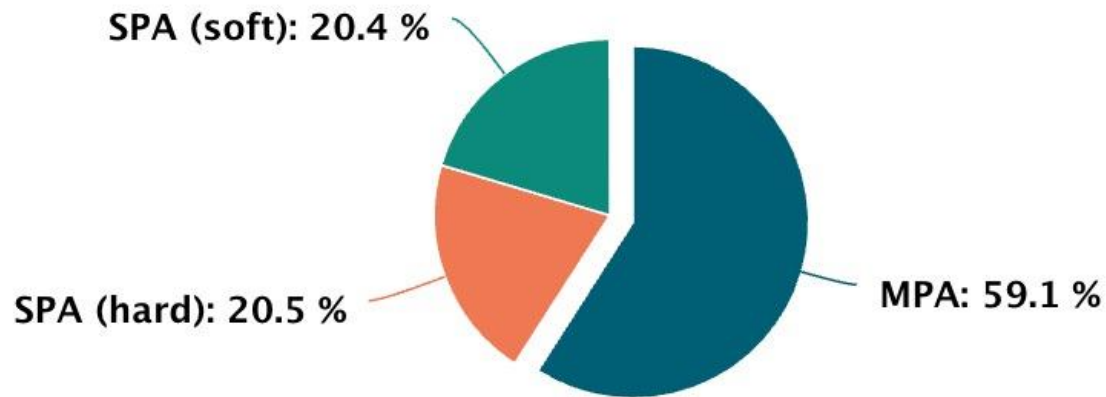
scalemates

<https://web.dev/articles/bfcache>

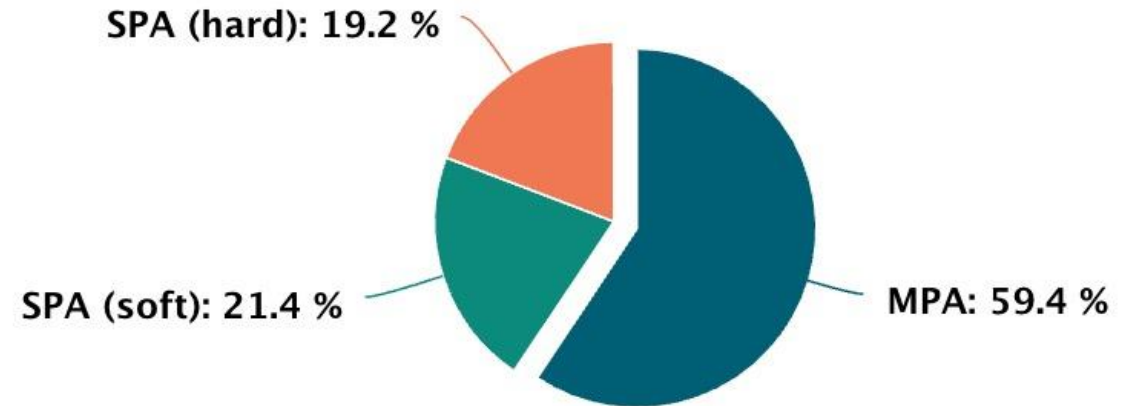
Tim Vereecke - Noise Cancelling RUM - <https://www.youtube.com/watch?v=YzkdITPxRM4>

# Multi- VS Single-Page Apps : challenging assumptions

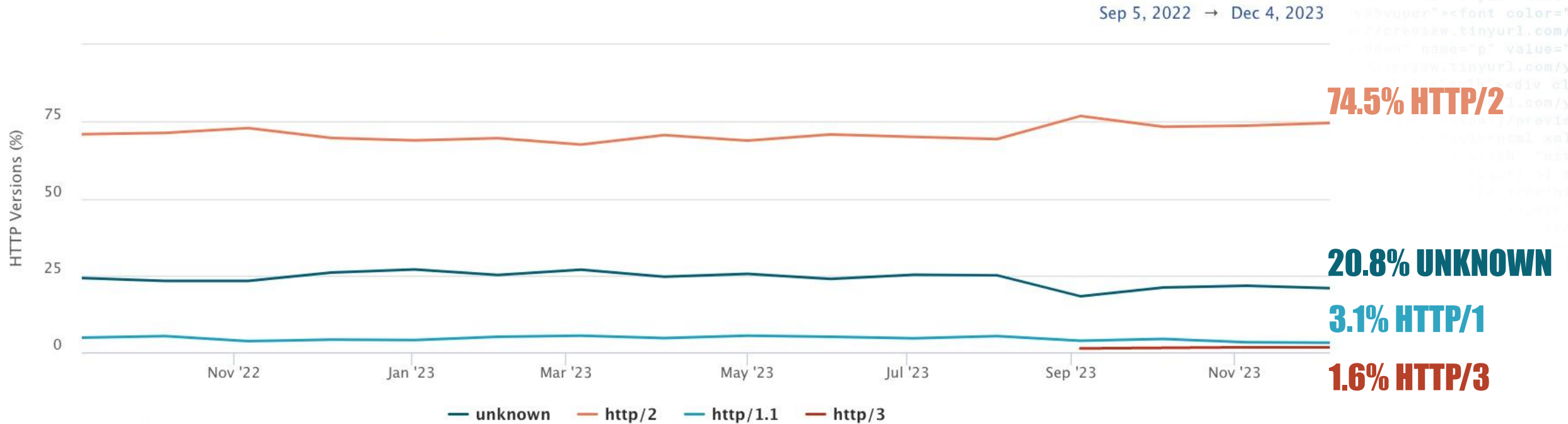
## Desktop



## Mobile



# Page load HTTP versions over time

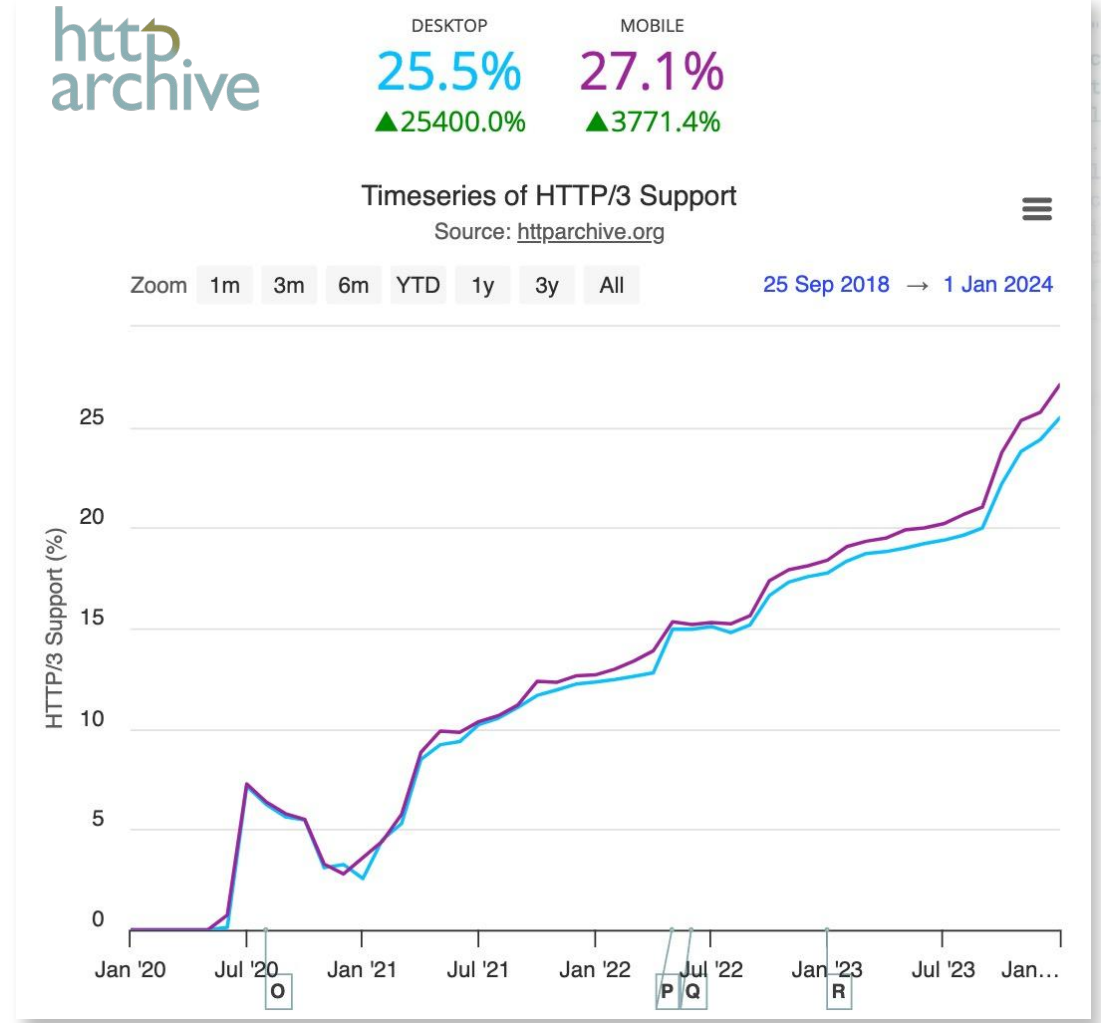
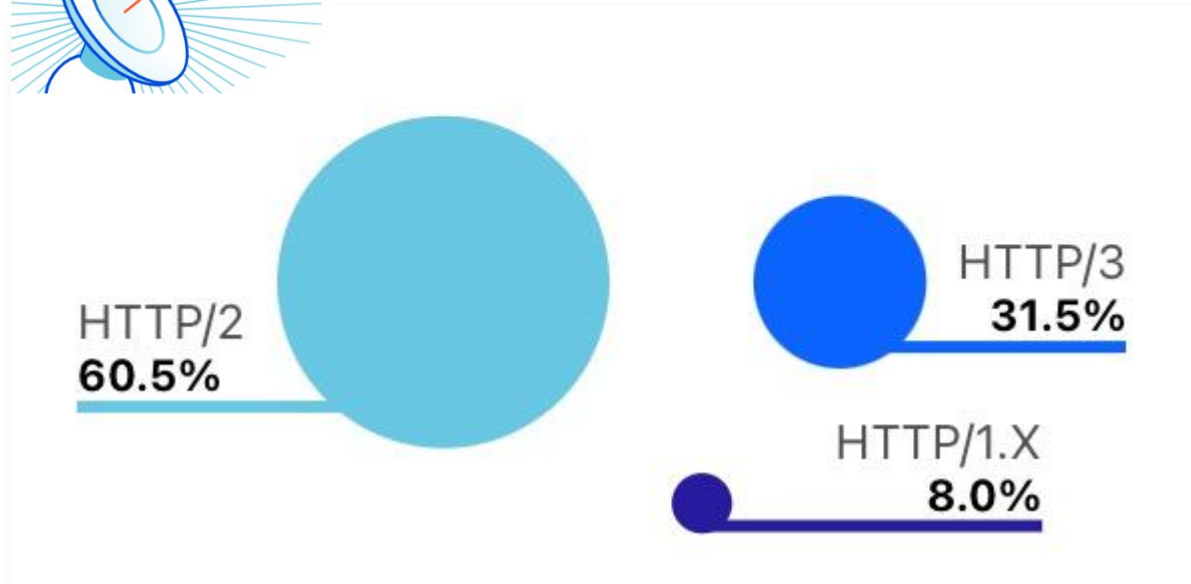


# 3rd party resources HTTP versions over time

Row	protocol ▼	rowcount ▼	fetchcount ▼
1	<i>null</i>	34590773	4768736846



# HTTP/3 support seen in other datasets



<https://radar.cloudflare.com/>  
<https://httparchive.org/reports/state-of-the-web>



# It's the RUM Archive, not the mPulse Archive



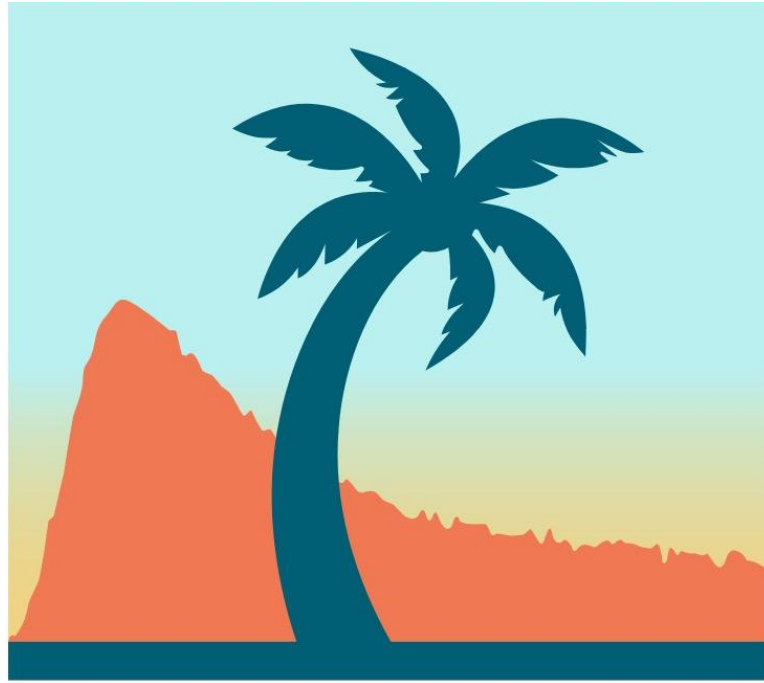
WIKIPEDIA

# Simple query to go from mPulse to RUM Archive

```
1660         landingPage
1661     ) redirect
1662 USING (
1663     date,
1664     deviceType,
1665     userAgentFamily,
1666     userAgentVersion,
1667     deviceModel,
1668     os,
1669     osVersion,
1670     beaconType,
1671     country,
1672     visibilityState,
1673     navigationType,
1674     protocol,
1675     ipVersion,
1676     landingPage
1677 )
1678 WHERE beacons >= %MIN_BEACON_COUNT%
```

<https://rumarchive.com/contribute/>

<https://github.com/rum-archive/rum-archive/blob/main/samples/bigquery/aggregation/example-mpulse.sql>



# RUM ARCHIVE

[www.rumarchive.org](http://www.rumarchive.org)

**Now open for business!**

**Come get some!**