



Fast Fashion...

How Missguided revolutionised their approach to site performance

Mark Leach, Missguided
Andy Davies, Eggplant

DeltaV Conf, May 2018





Mark Leach
Missguided



@AndyDavies
Eggplant

free next day delivery
on orders over £60

50% off dresses. code: dresslove
excludes sale & peace + love

20% student discount
excludes sale - shop now

coats & jackets

knitwear

tops

boots

dresses

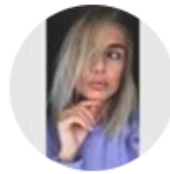
say what, winter?

This is our actually useful guide to dressing for AW 17

view the guide



click here to score 20% off with your first app order* (t&c's apply)



Ames @amyjogray_ · 1h



Missguided need to srsly **** the **** off with their bullshit, saying an item is in stock then as soon as you go to pay nah 'out of stock'





[@elishapicotx](#) · 11m



when an item on [@Missguided](#) isn't listed as out of stock until you try to add it to your basket

joy [@f112x](#)

what's worse than a heartbreak?





Lola @lolaa_ade · 15 Nov 2017



When **missguided** is having 50% off but the apps being so **slow** and won't load
😊 sign from God I need to stop shopping 🙌



1



4



Lucy @__lucyb · 18 Nov 2016



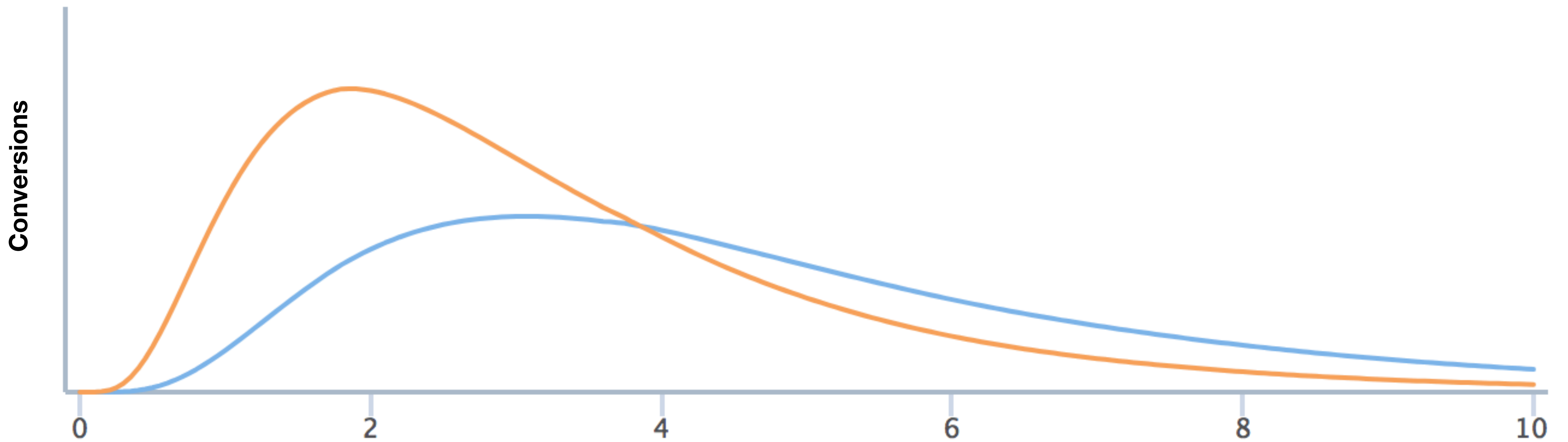
50% off **missguided** and the website is being so so **slow**, all get off it now you



10

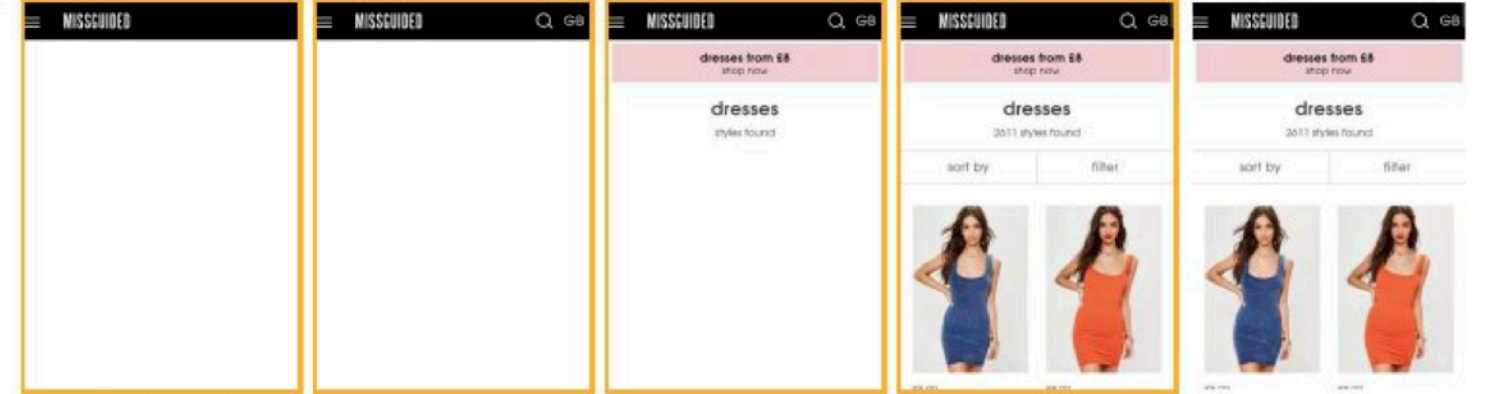
In the beginning...

What if we improved our sites speed

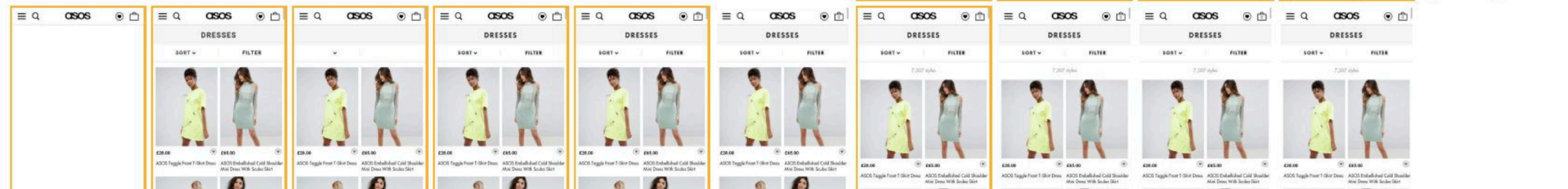


0.0s 1.0s 2.0s 3.0s 4.0s 5.0s 6.0s 7.0s 8.0s 9.0s 10.0s 11.0s 12.0s 13.0s 14.0s 15.0s

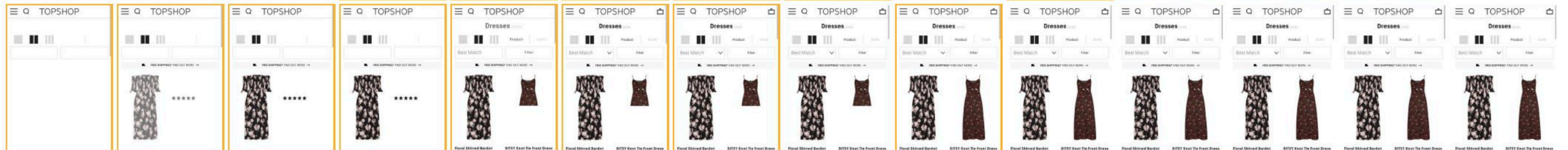
MISSGUIDED



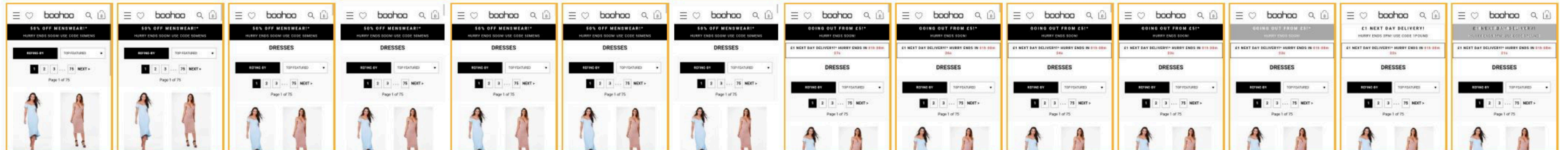
ASOS



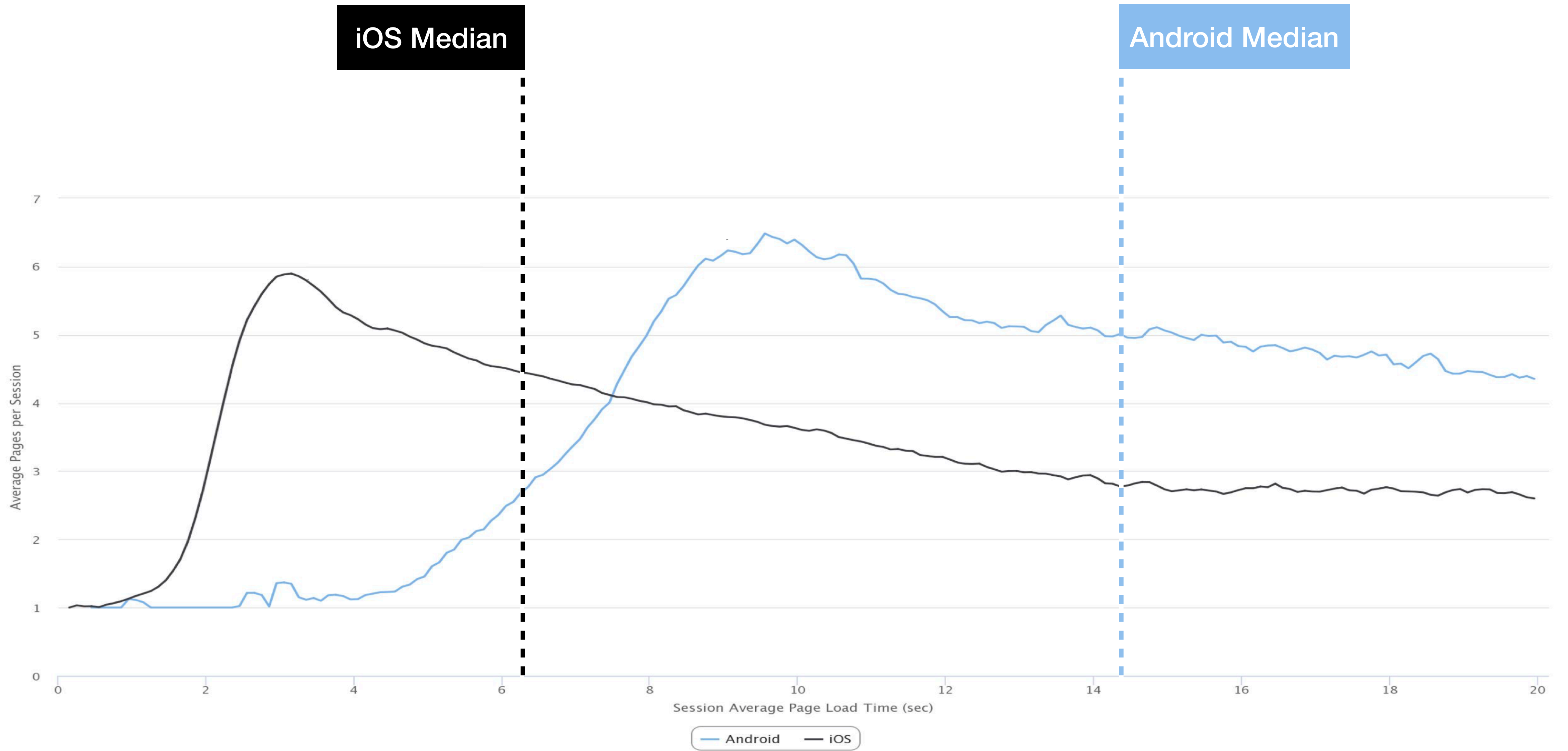
TOPSHOP



BOOHOO



April 2017



Base of good practices already in place

Using HTTP/2 and CDN

Compression enabled for text resources (& minification)

Images optimised using a specialised service

Responsive images

Bundling assets

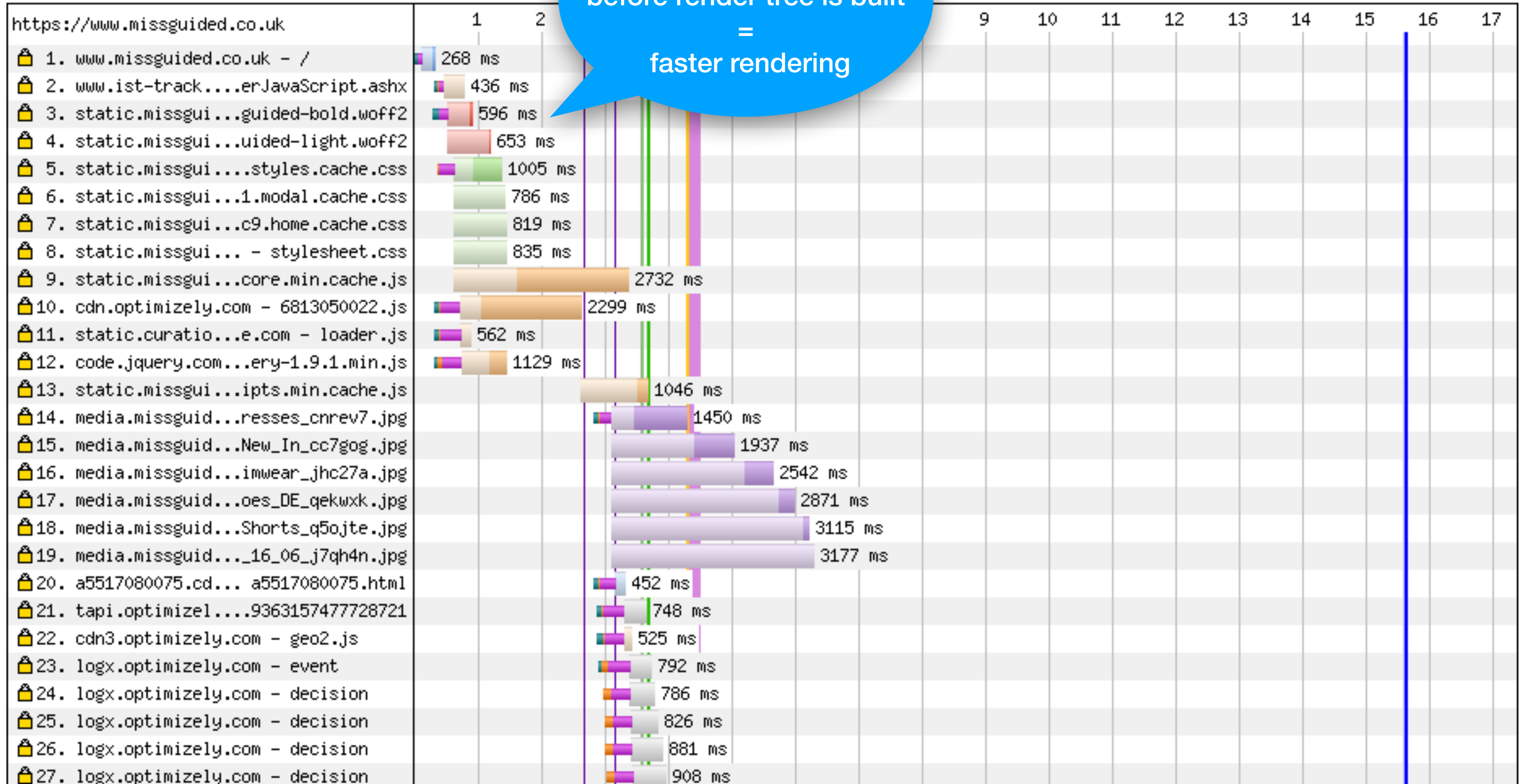
The early fixes

Pre-loading fonts speeds up rendering

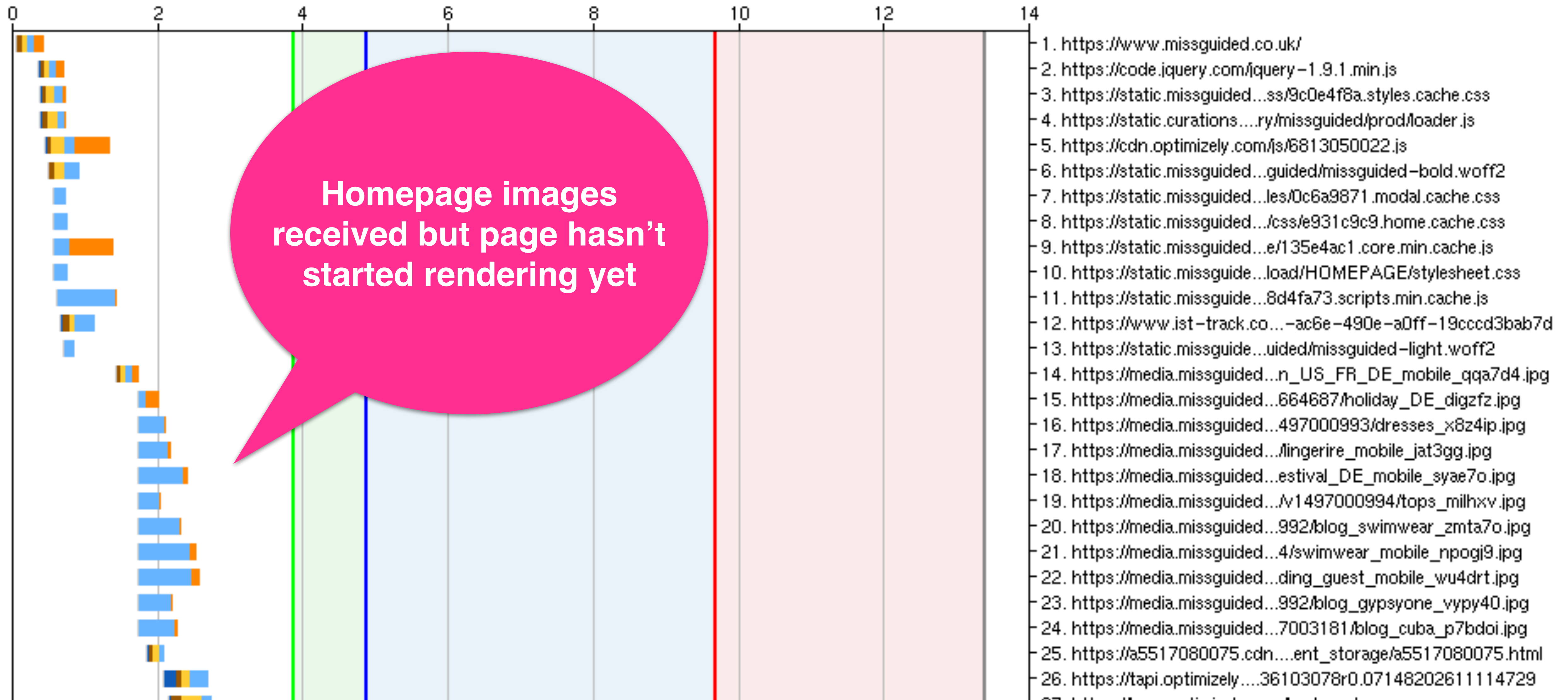
```
<link rel="preload" href="https://static.missguided.co.uk/skin/  
frontend/mgresponsive/default/fonts/missguided/missguided-bold.woff2"  
as="font" type="font/woff2" crossorigin>
```

```
<link rel="preload" href="https://static.missguided.co.uk/skin/  
frontend/mgresponsive/default/fonts/missguided/missguided-  
light.woff2" as="font" type="font/woff2" crossorigin>
```

Browser
downloads fonts
before render tree is built
=
faster rendering



What's delaying rendering?



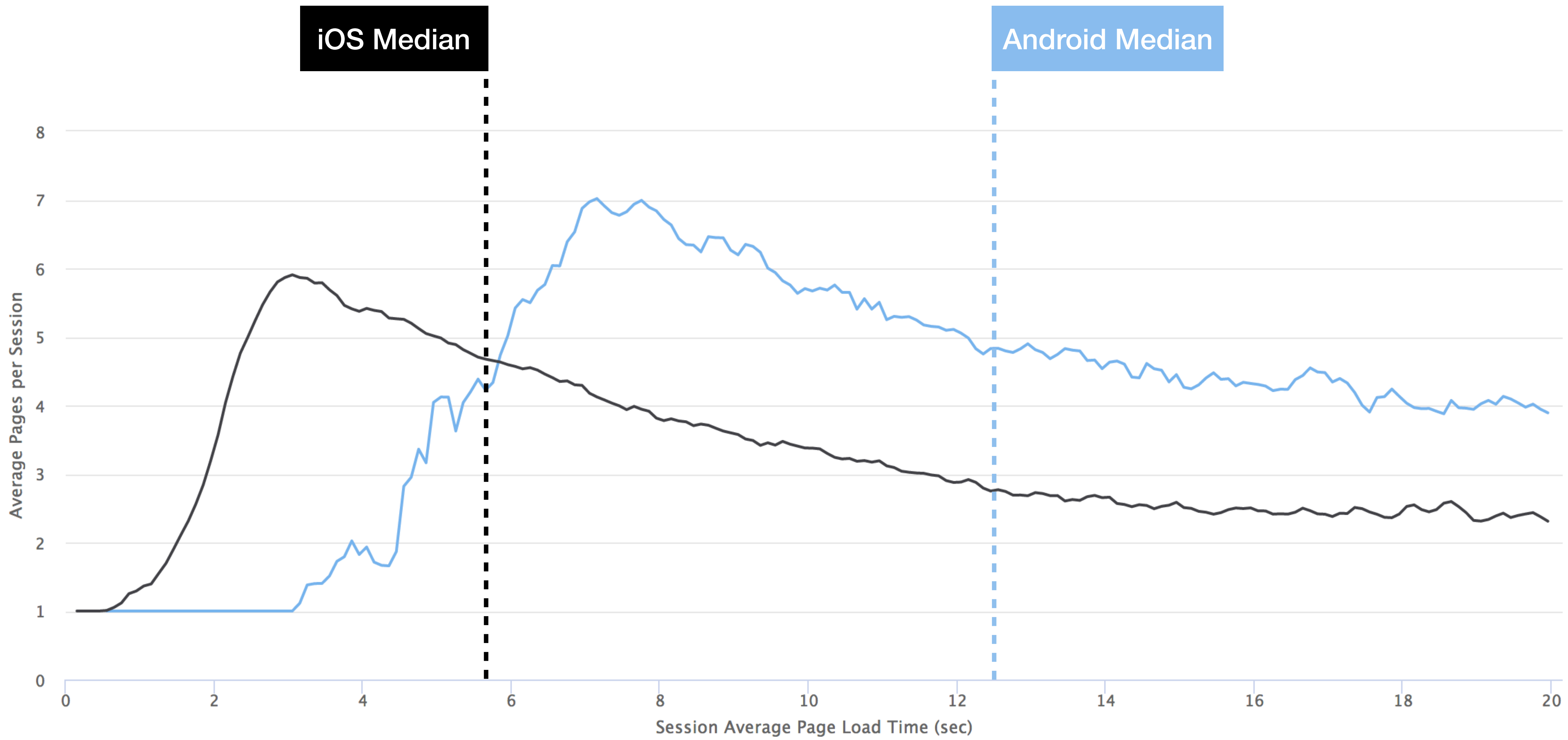
Optimizely was very chatty

- 17. https://media.missguided.../ingerire_mobile_jat3gg.jpg
- 18. https://media.missguided...estival_DE_mobile_syae7o.jpg
- 19. https://media.missguided.../v1497000994/tops_milhxv.jpg
- 20. https://media.missguided...992/blog_swimwear_zmta7o.jpg
- 21. https://media.missguided...4/swimwear_mobile_npogi9.jpg
- 22. https://media.missguided...ding_guest_mobile_wu4drt.jpg
- 23. https://media.missguided...992/blog_gypsyone_vypy40.jpg
- 24. https://media.missguided...7003181/blog_cuba_p7bdoi.jpg

- 26. <https://tapi.optimizely...36103078r0.07148202611114729>
- 27. <https://logx.optimizely.com/log/event>
- 28. <https://logx.optimizely.com/log/decision>
- 29. <https://logx.optimizely.com/log/decision>
- 30. <https://logx.optimizely.com/log/decision>
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- 39. <https://logx.optimizely.com/log/decision>
- 40. <https://logx.optimizely.com/log/decision>
- 41. <https://cdn3.optimizely.com/js/geo2.js>
- 42. <https://logx.optimizely.com/log/decision>
- 43. <https://logx.optimizely.com/log/decision>
- 44. <https://logx.optimizely.com/log/decision>

- 46. <https://logx.optimizely.com/log/decision>
- 47. <https://logx.optimizely.com/log/decision>
- 48. http://media.missguided...v1497008157/cuba_byew32.webm
- 49. https://www.googleadserv...m/pagead/conversion_async.js
- 50. <https://bat.bing.com/bat.js>
- 51. <https://static.criteo.net/js/ld/ld.js>
- 52. <https://go.affec.tv/f/57...efined&oid=undefined&xtr=New>

June 2017



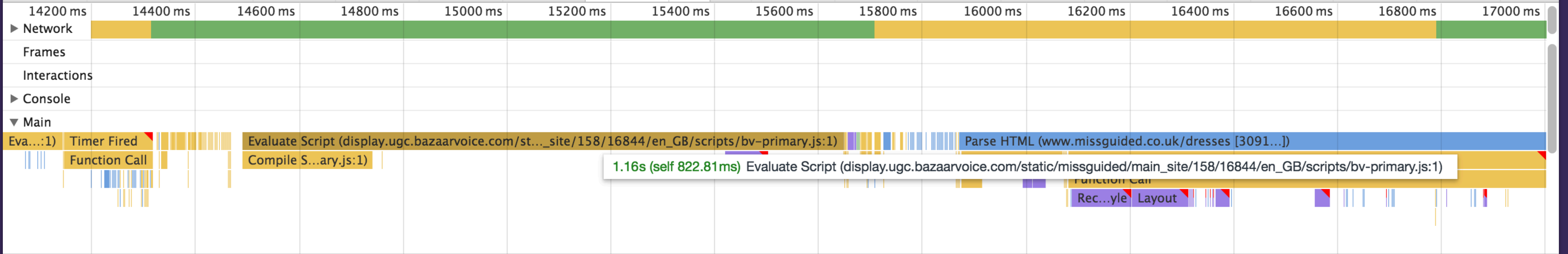
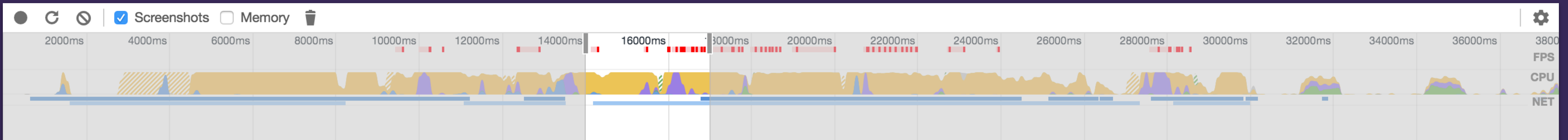
Summer 2017

Proving the value of performance

Customers love reviews



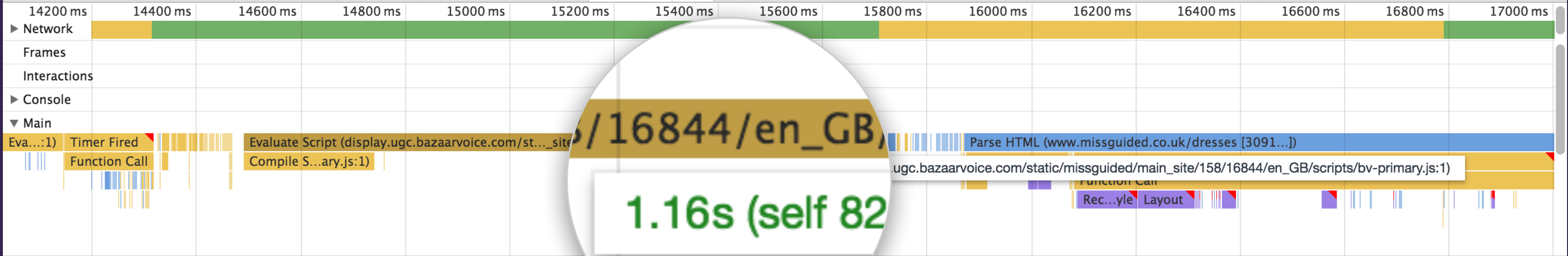
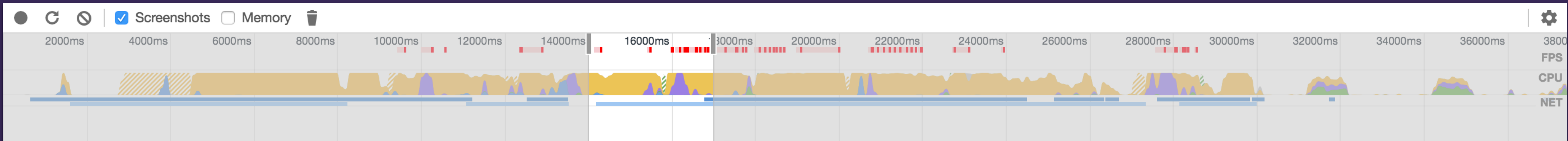
**But some review services can have
a large impact on performance**



Summary Bottom-Up Call Tree Event Log

Filter Group by URL

Self Time	Total Time	Activity
1059.1ms 35.6%	1059.1ms 35.6%	https://display.ugc.bazaarvoice.com/common/static-assets/2.0.0/jquery-bv%401.11.1%2Blodash-bv%401.2.0.js
762.9ms 25.7%	762.9ms 25.7%	unattributed
666.3ms 22.4%	666.3ms 22.4%	https://www.missguided.co.uk/dresses
0.8ms 0.0%	0.8ms 0.0%	https://static.missguided.co.uk/skin/frontend/mgresponsive/default/images/svg/f8896a75.svg-defs.cache.svg



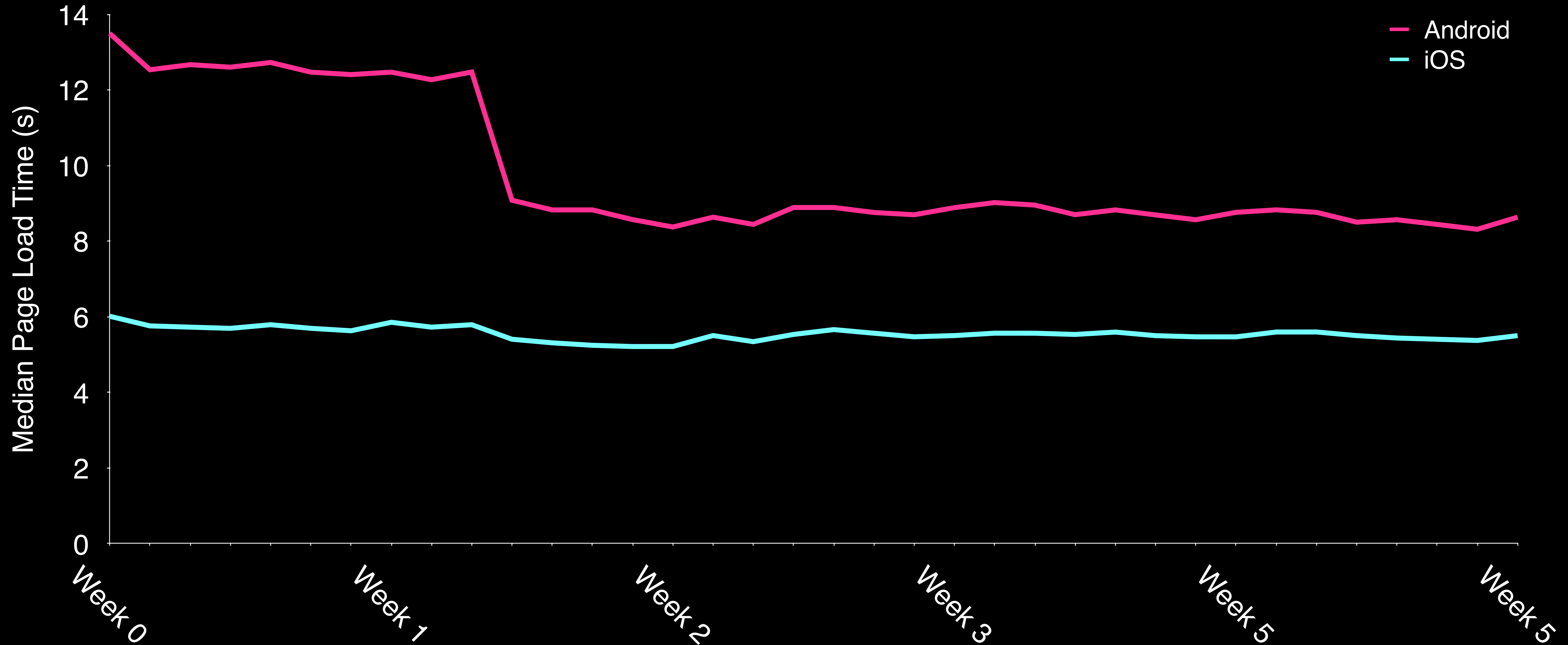
1.16s (self 82)

Summary Bottom-Up Call Tree Event Log

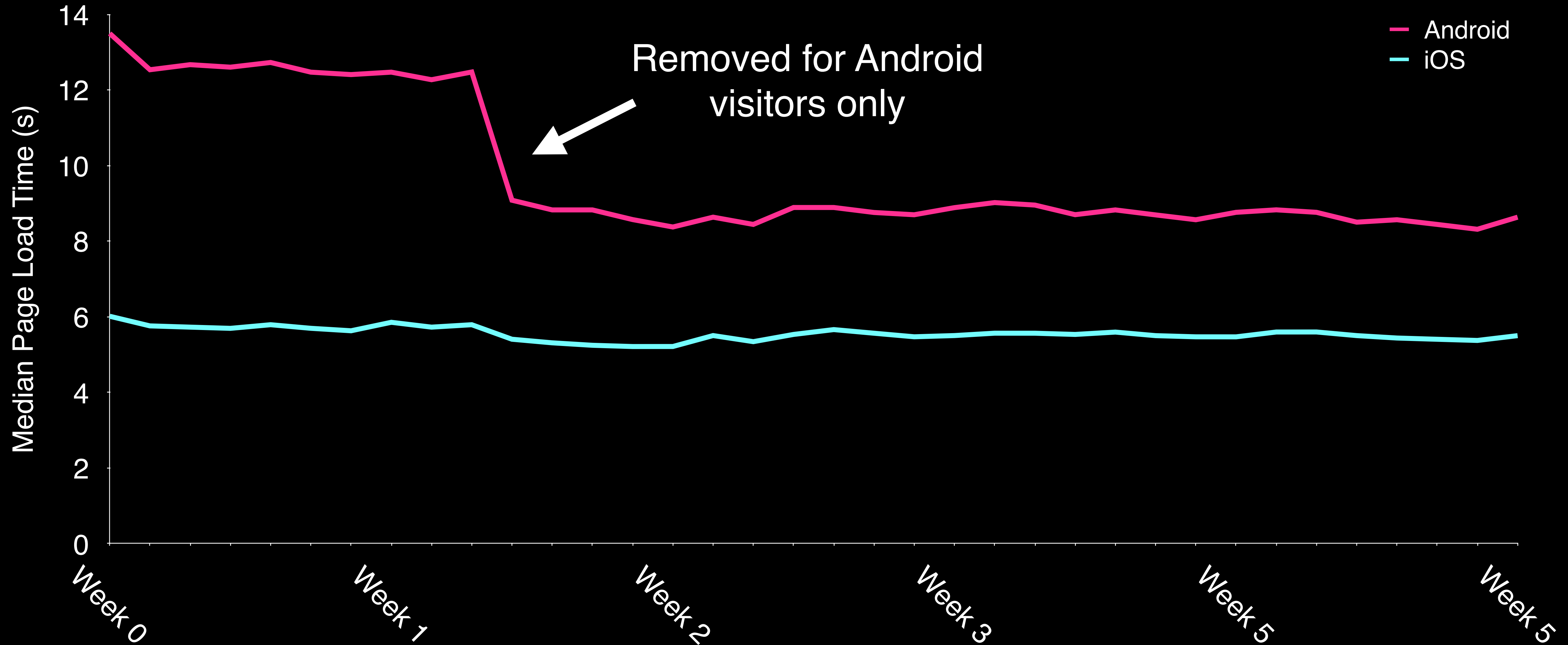
Filter Group by URL

Self Time	Total Time	Activity
1059.1ms 35.6%	1059.1ms 35.6%	https://display.ugc.bazaarvoice.com/common/static-assets/2.0.0/jquery-bv%401.11.1%2Blodash-bv%401.2.0.js
762.9ms 25.7%	762.9ms 25.7%	unattributed
666.3ms 22.4%	666.3ms 22.4%	https://www.missguided.co.uk/dresses
0.8ms 0.0%	0.8ms 0.0%	https://static.missguided.co.uk/skin/frontend/mgresponsive/default/images/svg/f8896a75.svg-defs.cache.svg

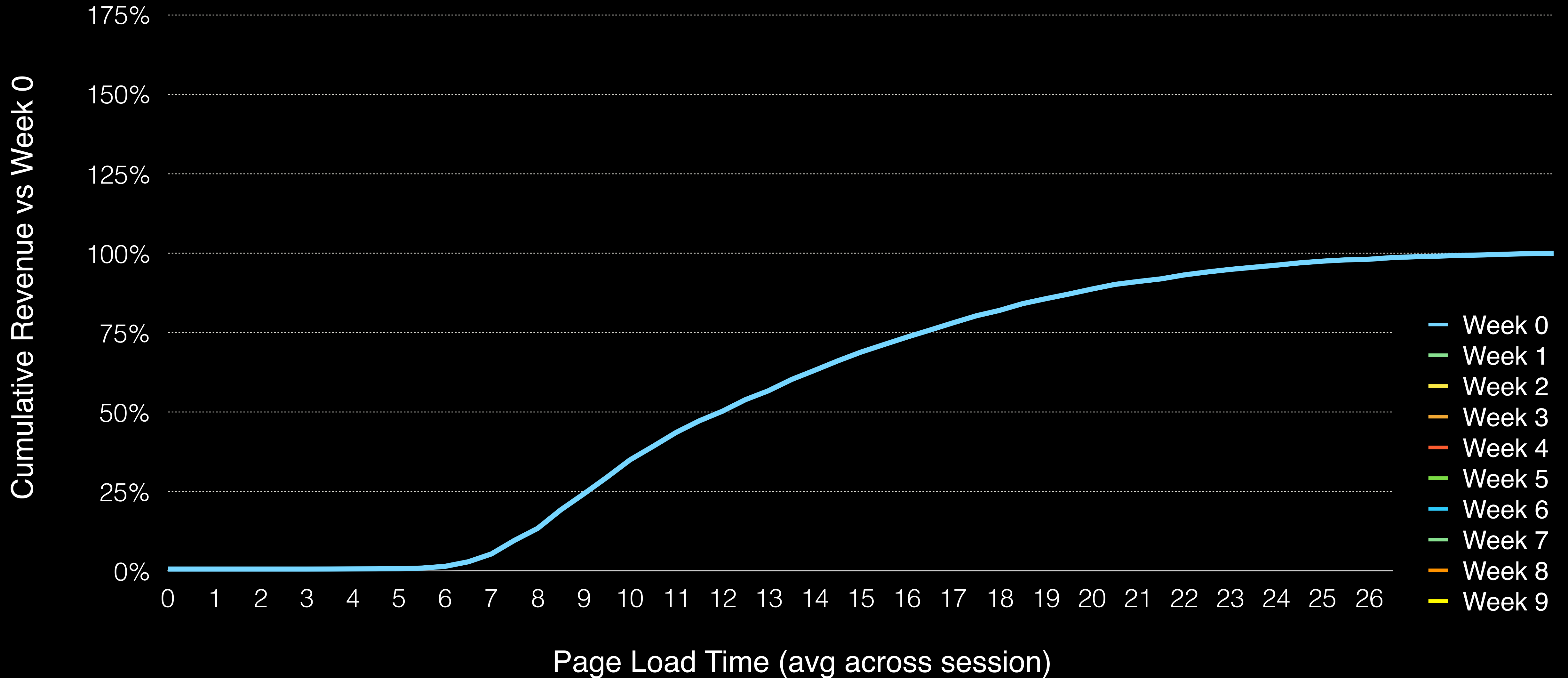
So what happens when you remove it?



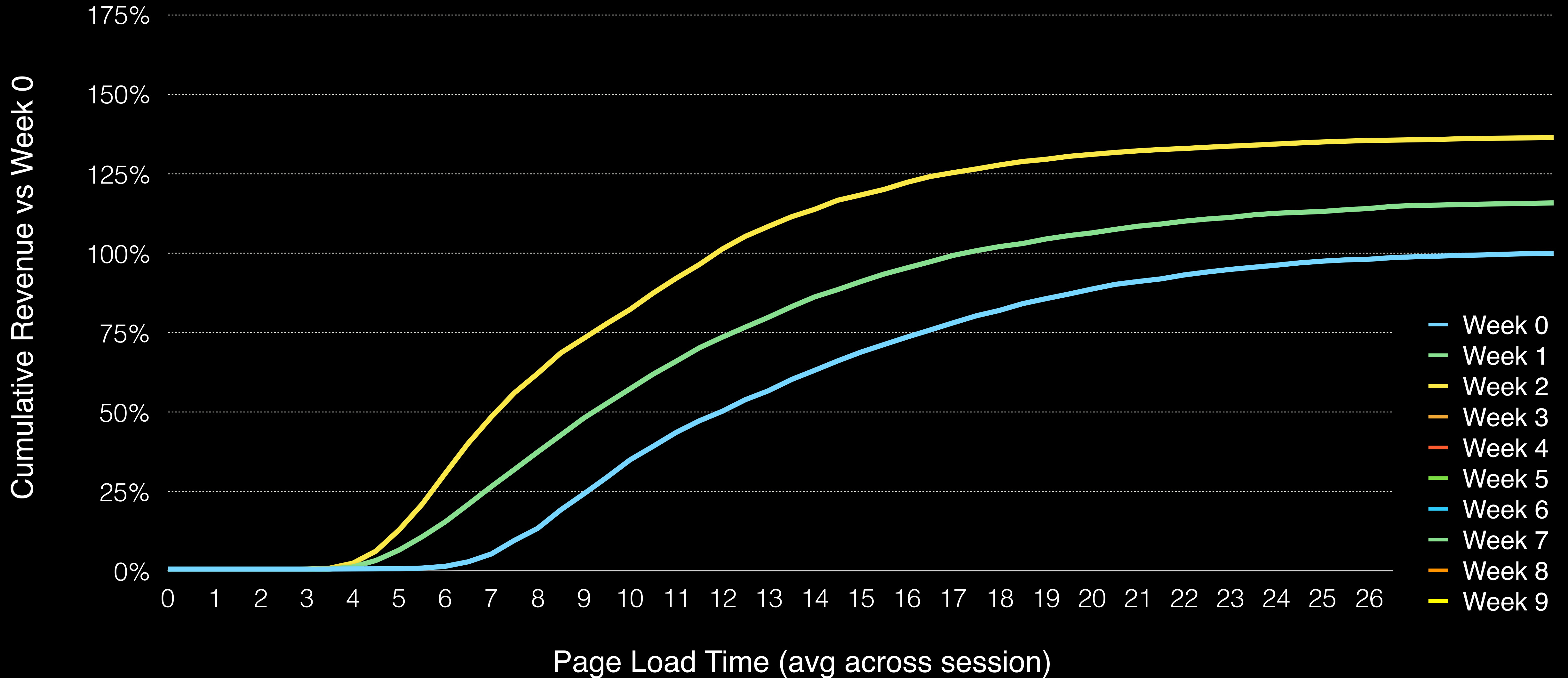
So what happens when you remove it?



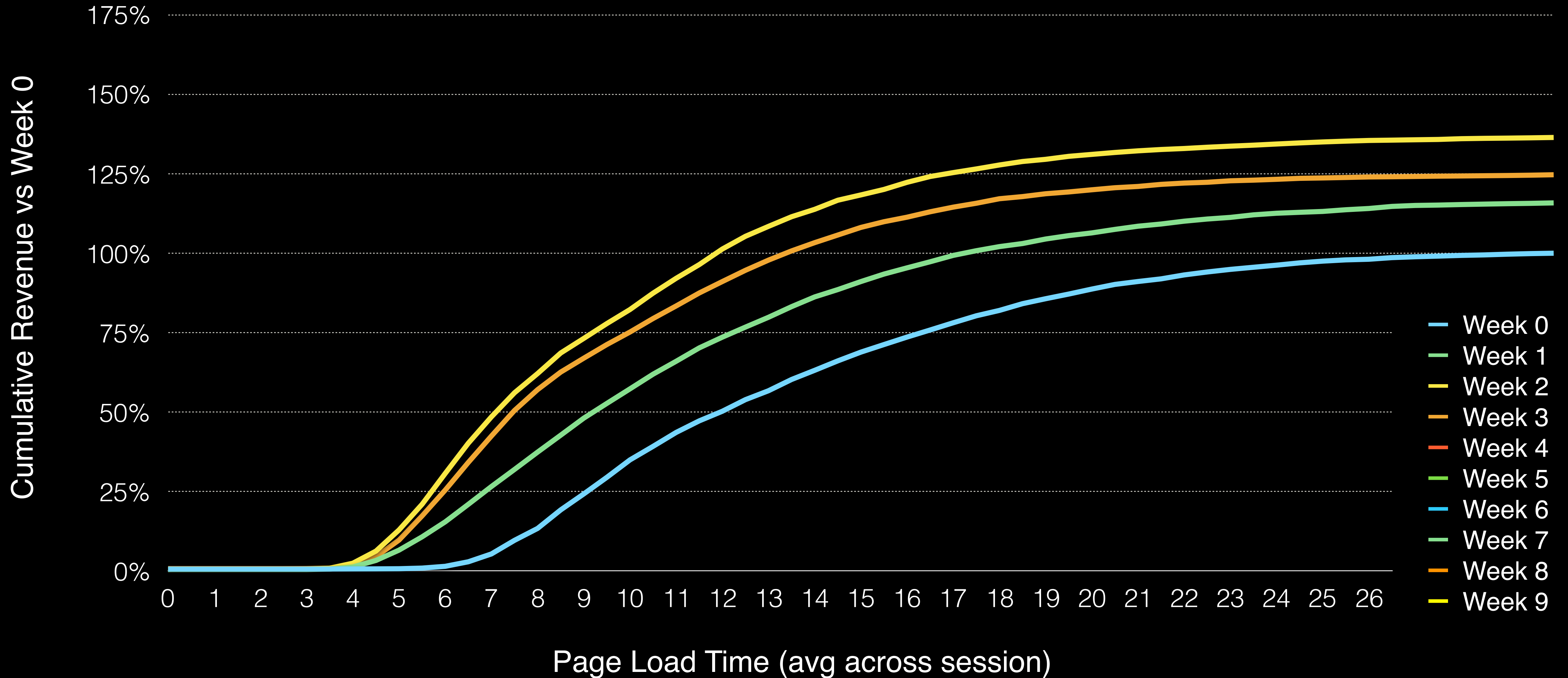
Effect on Android revenue



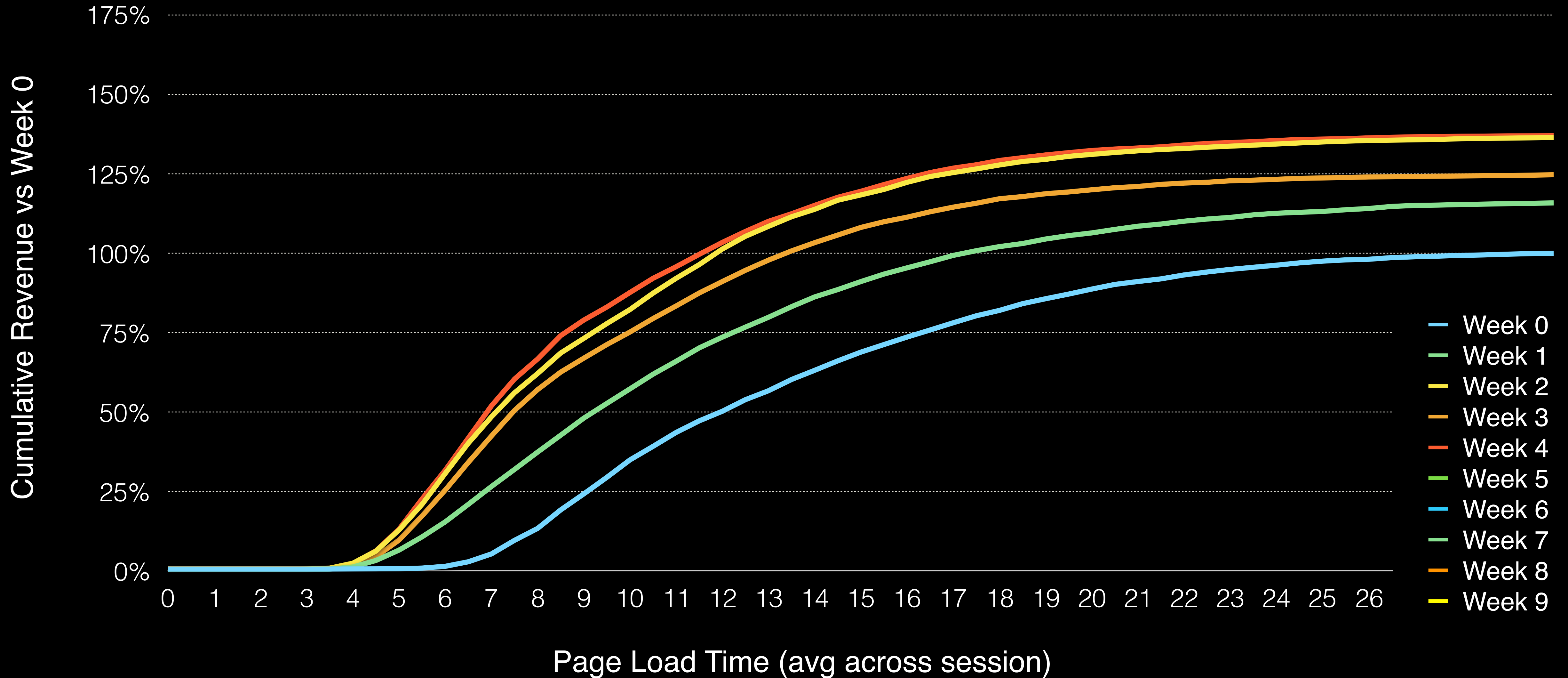
Effect on Android revenue



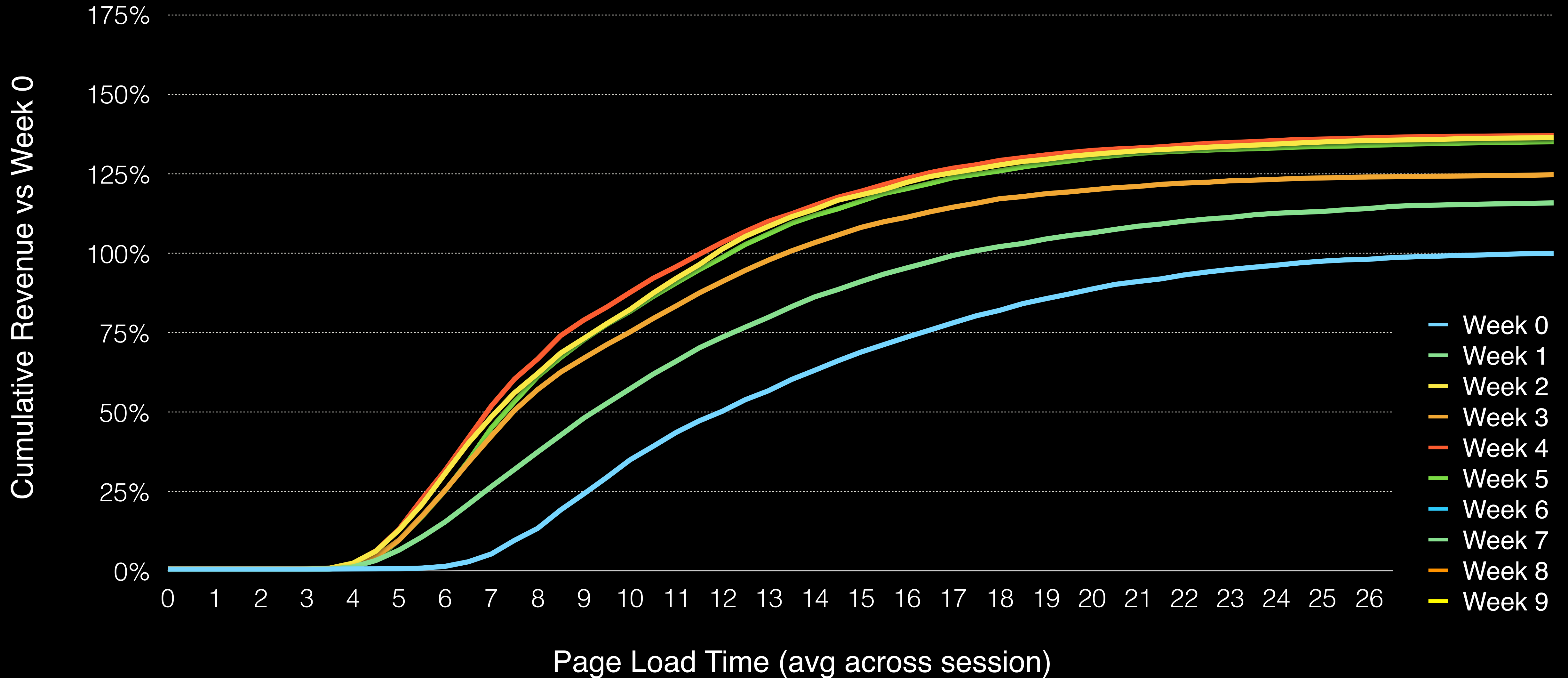
Effect on Android revenue



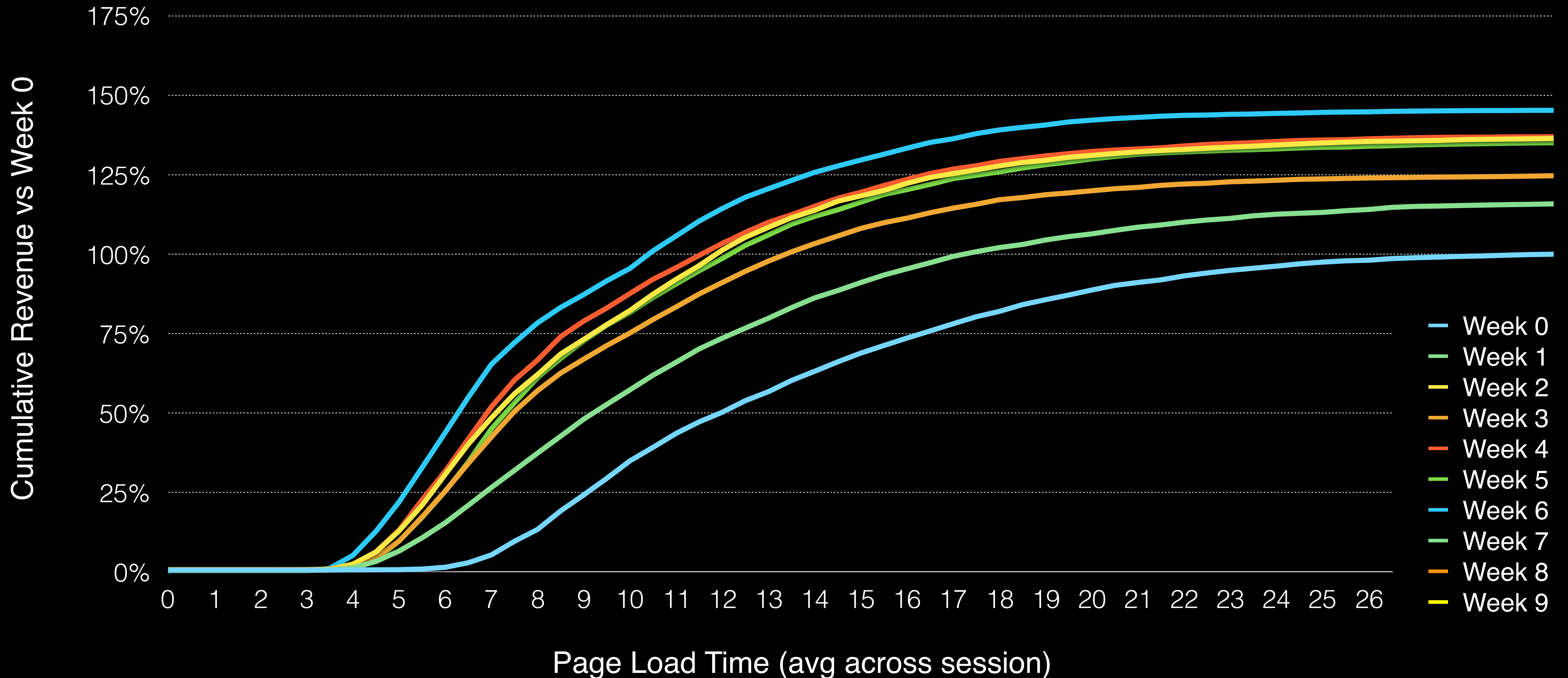
Effect on Android revenue



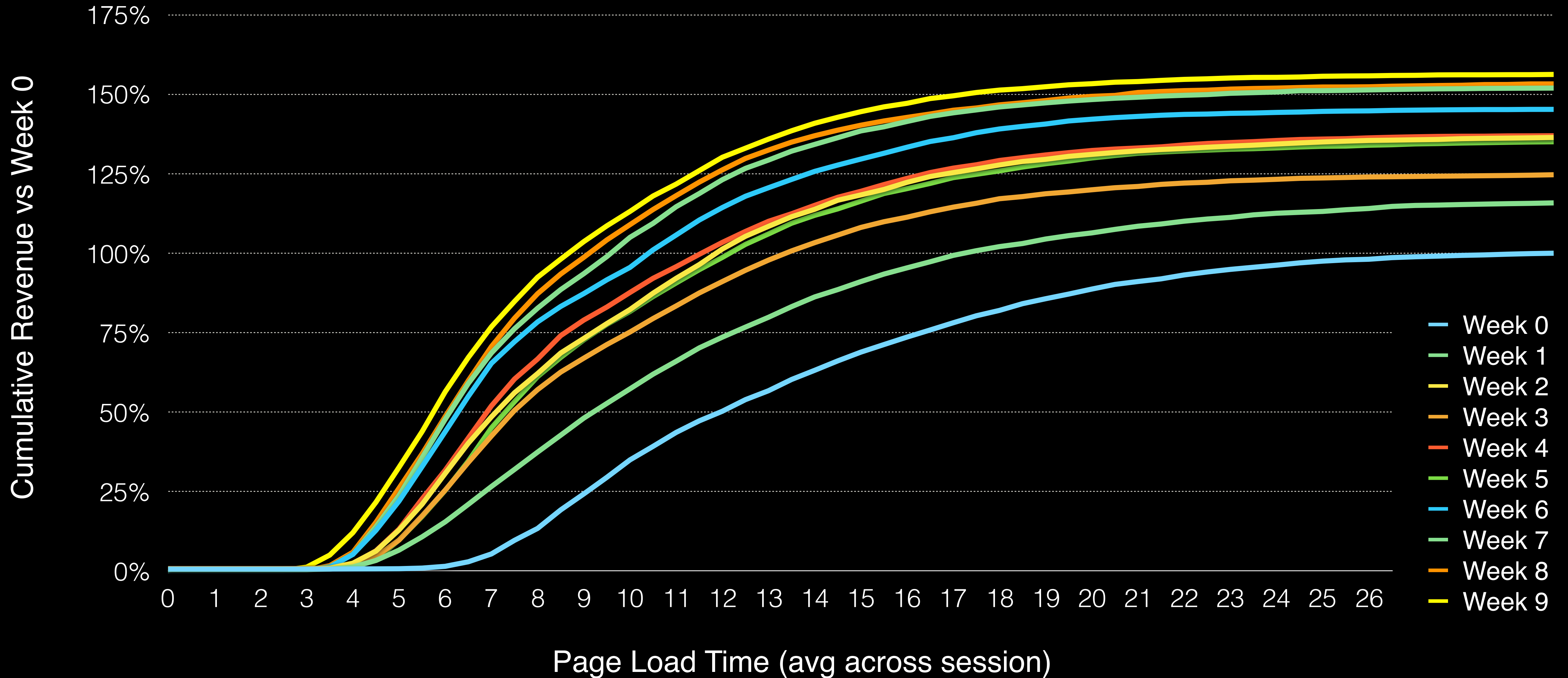
Effect on Android revenue



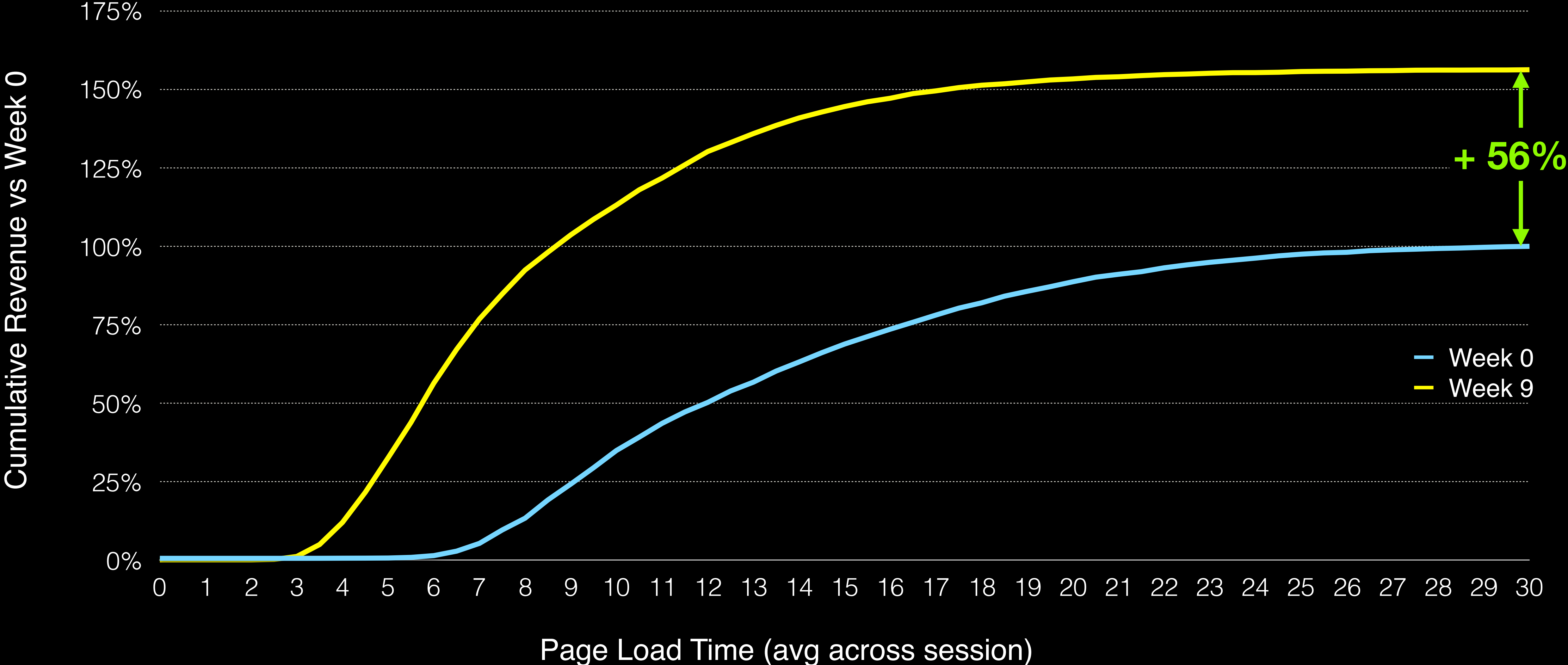
Effect on Android revenue



Effect on Android revenue



Android revenue increased week-on-week



**Nothing
stays still in
retail!**





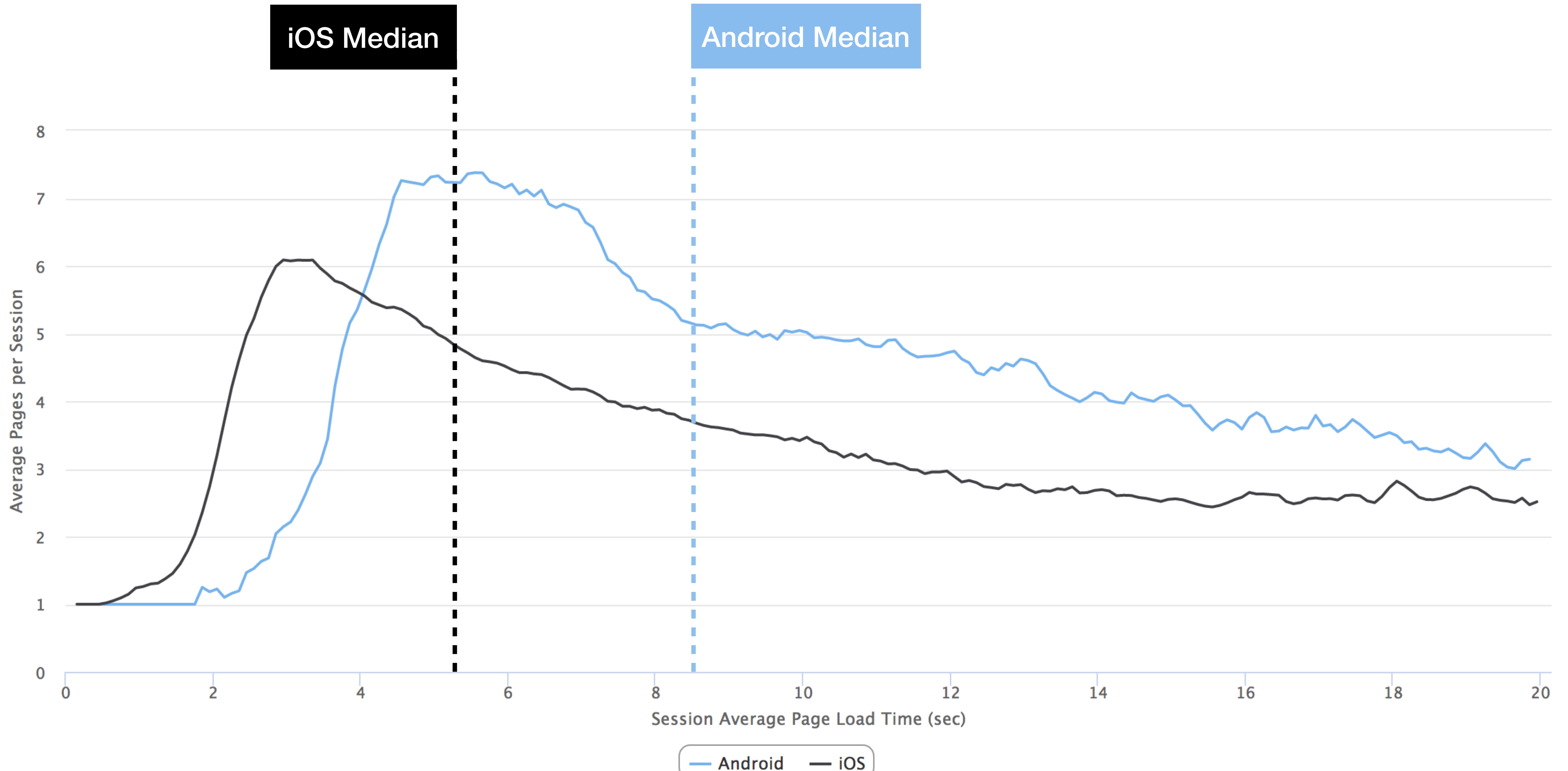
-4s



+26%

(Baselined against other platforms)

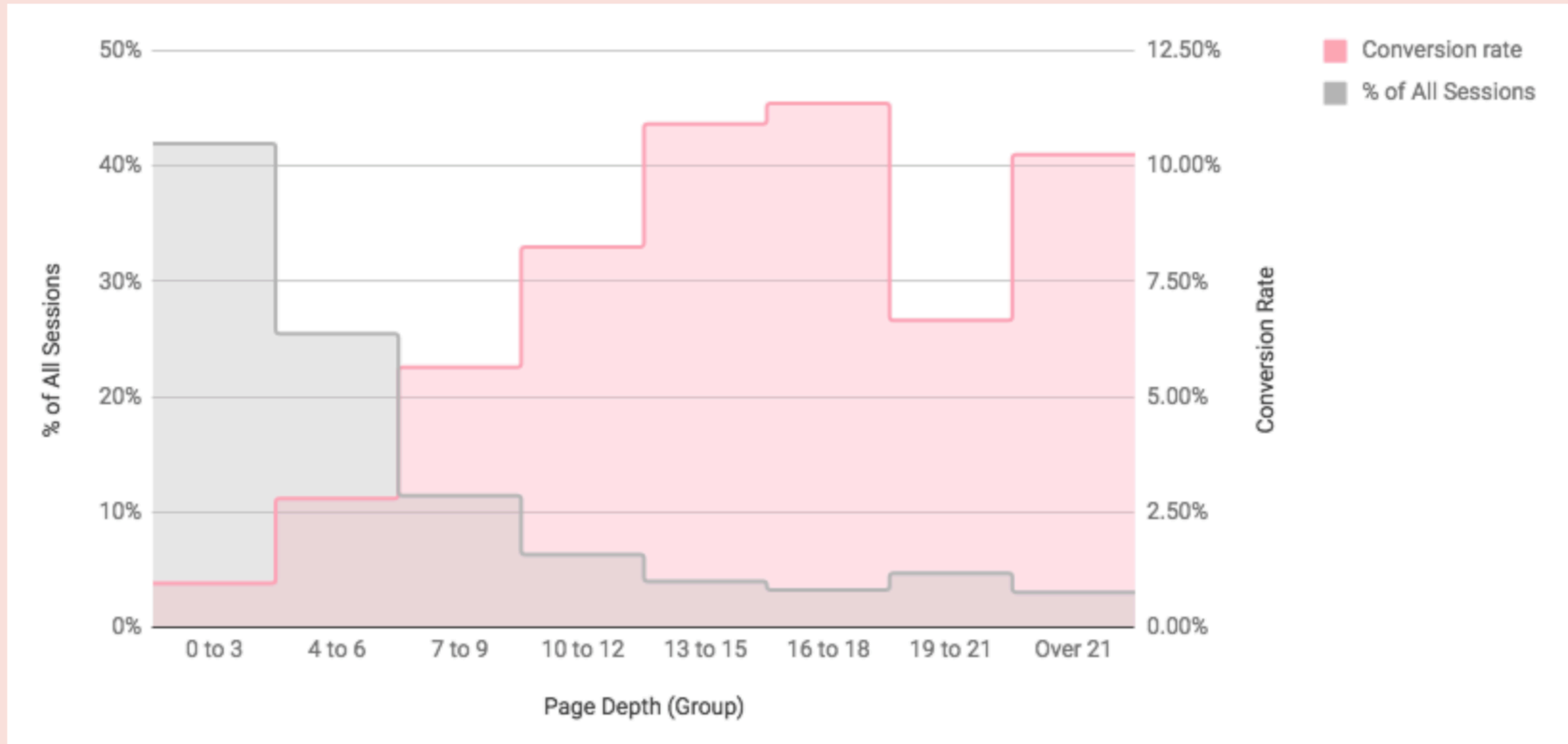
August 2017





Proving the link between page depth and conversion

Faster page loads mean more pages viewed – more pages viewed mean more conversions
r-value is 0.75 indicating a strong correlation



Winter 2017

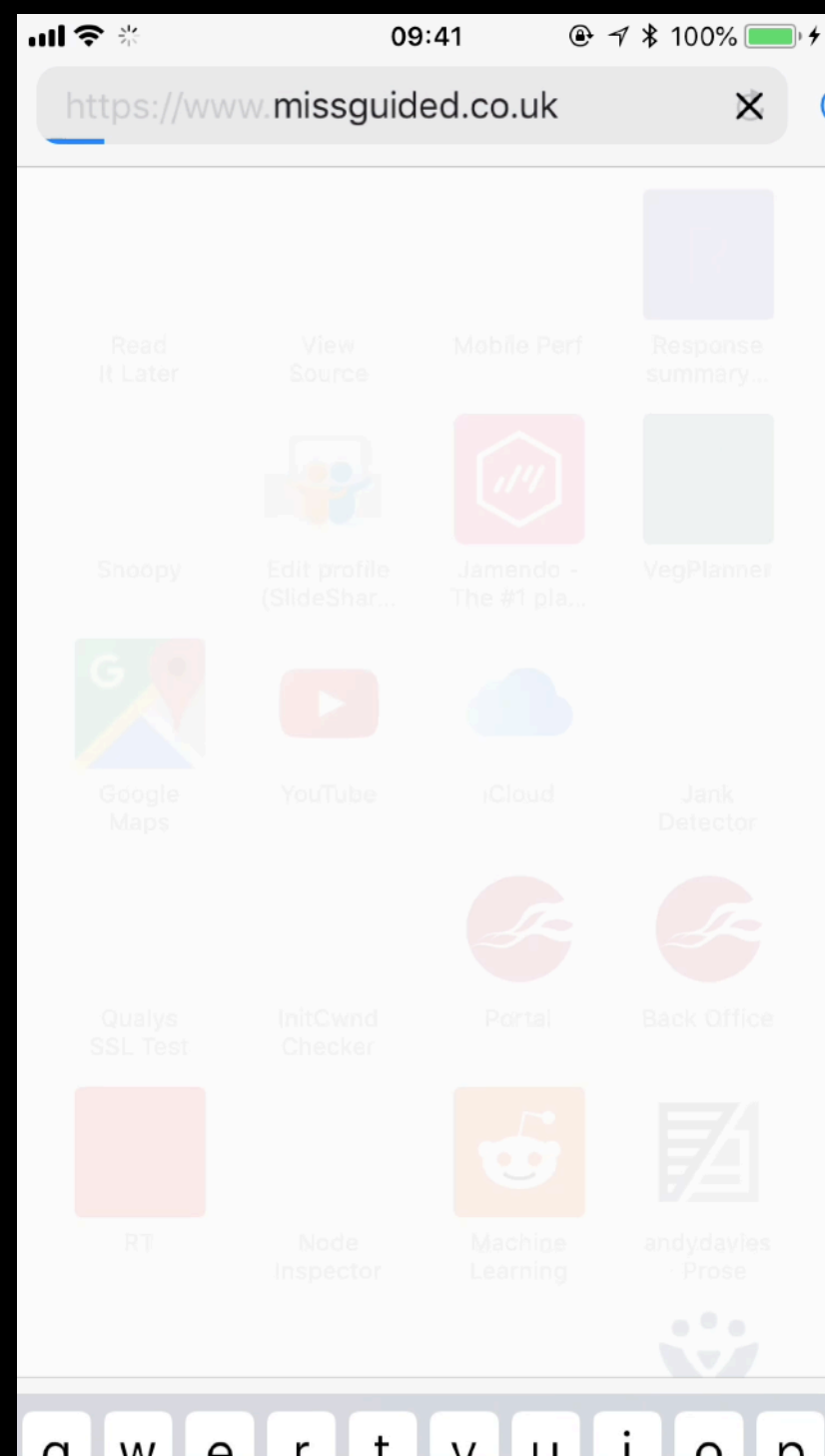
“Can we make it to three seconds?”

Assembled a performance team

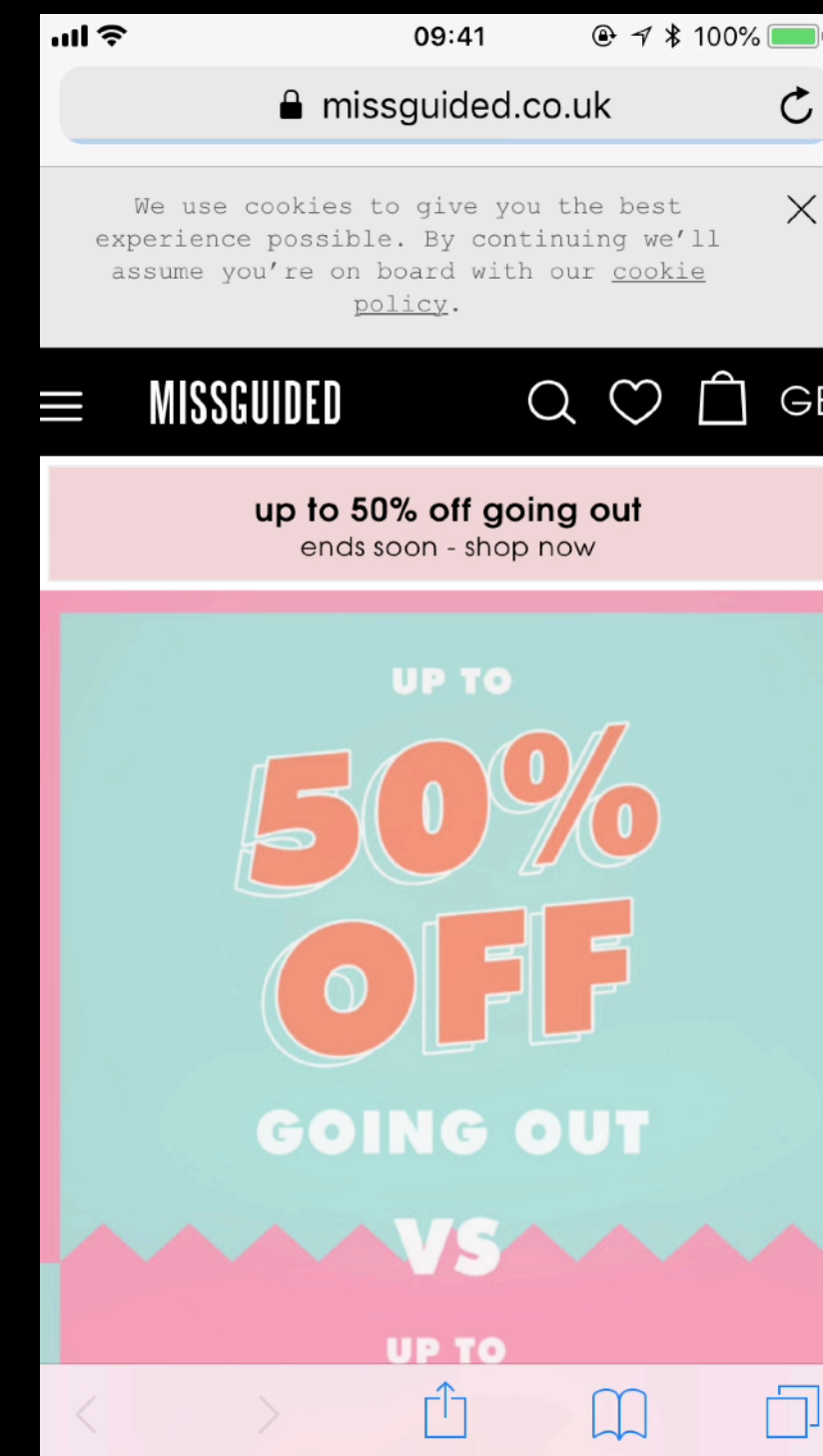
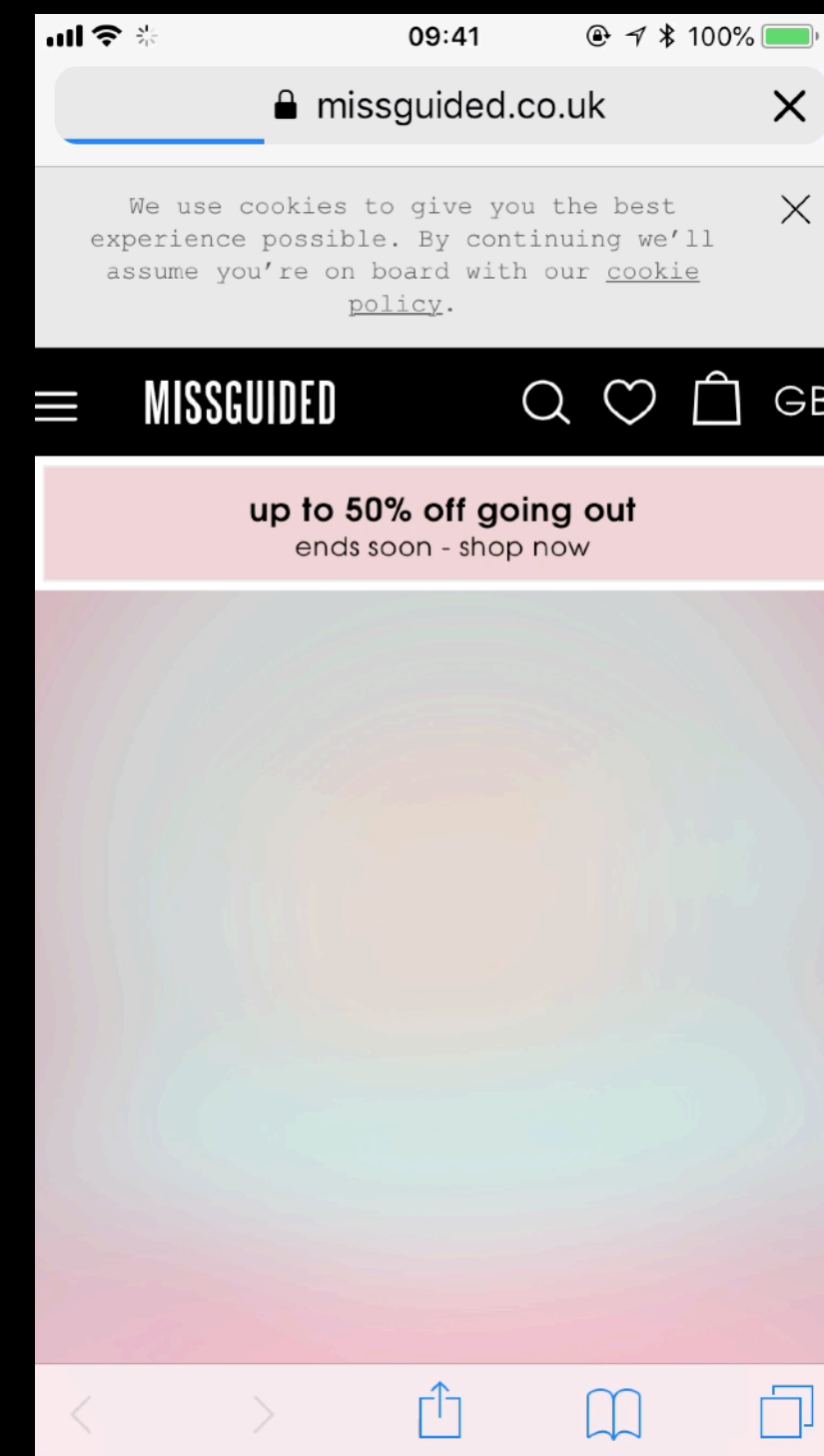


Focused on reducing time to useful and usable

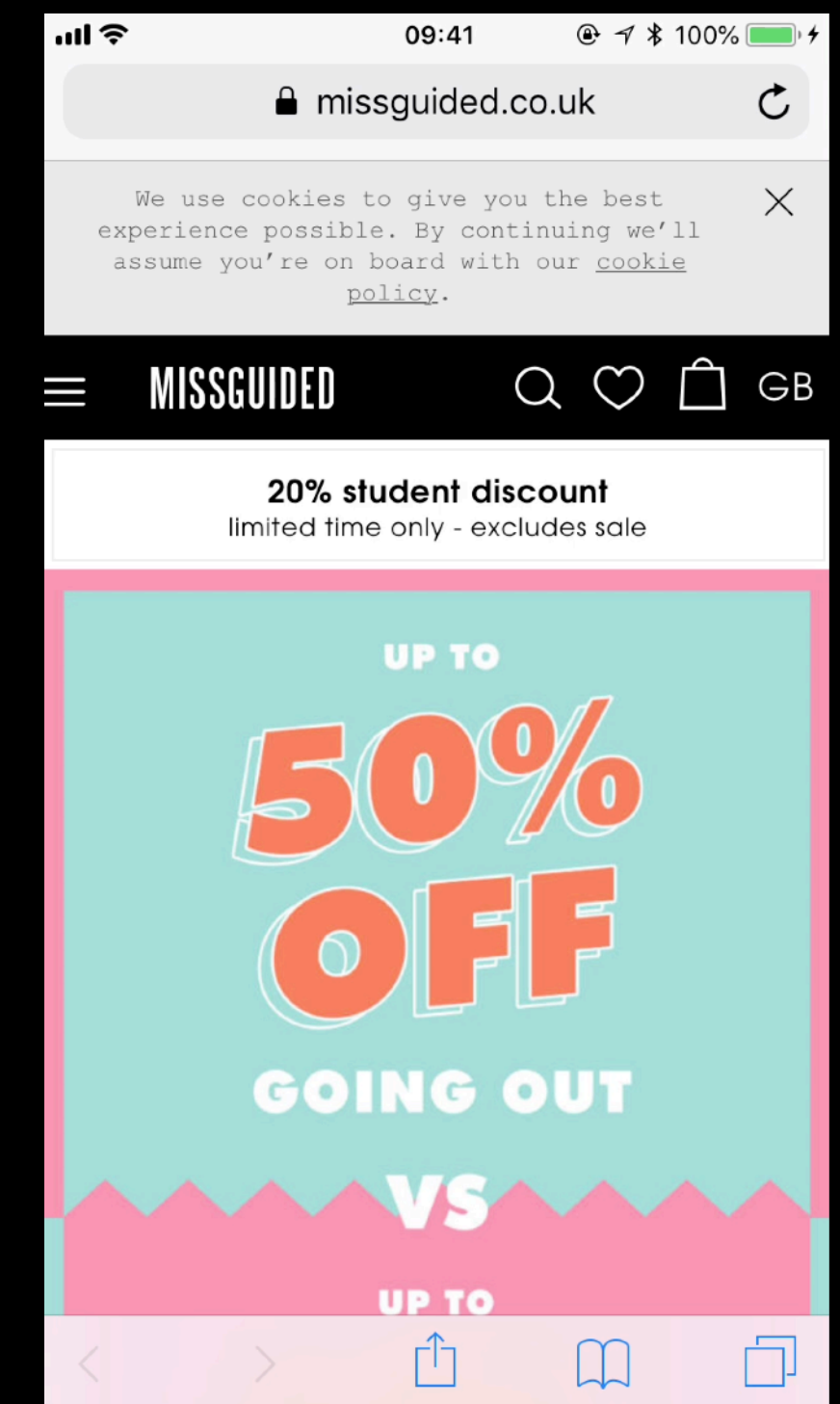
Working?



Useful?



Usable?



Especially rendering delays

No magic go faster button

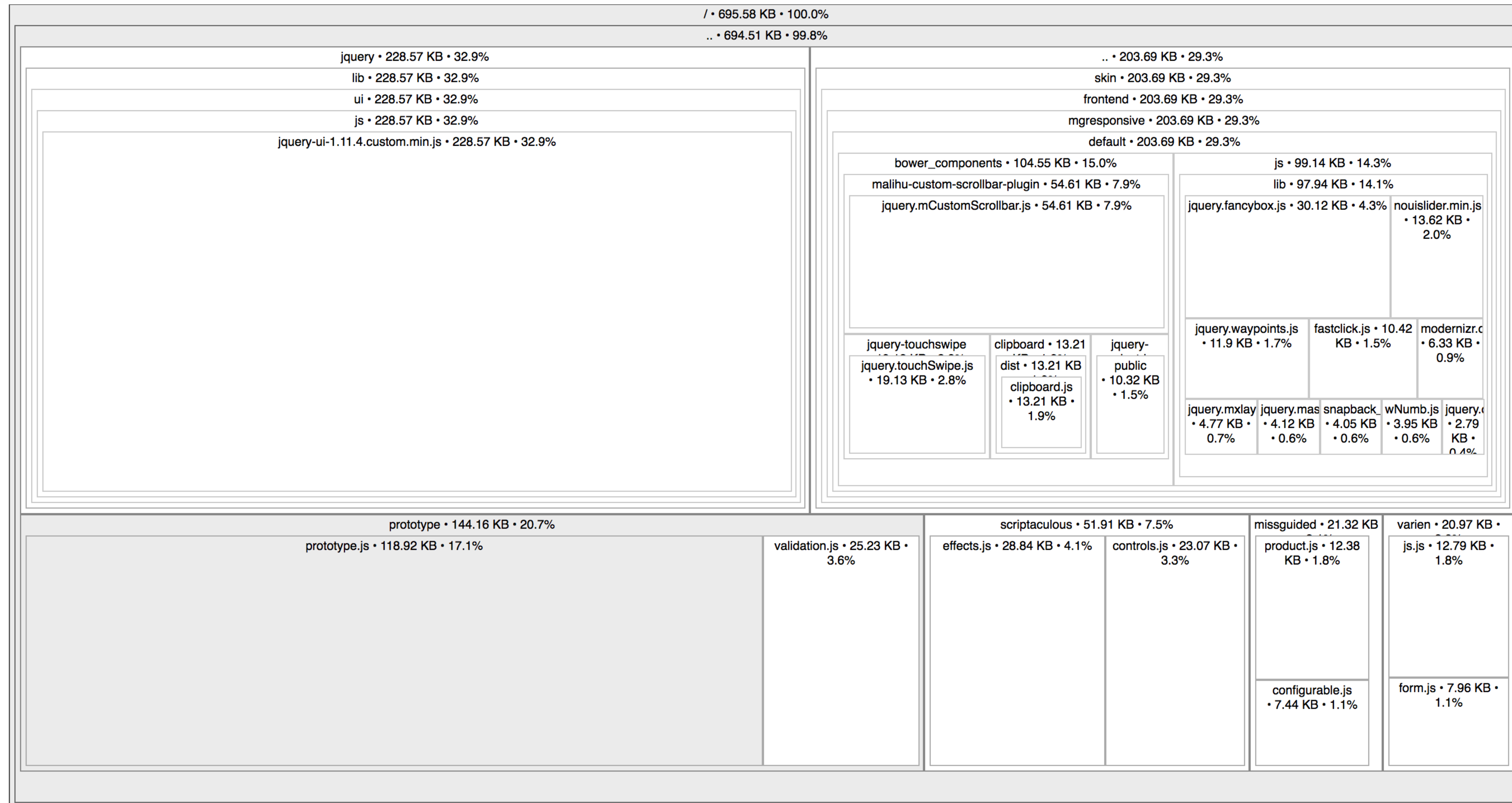


“Frontend Performance Archaeology”

Katie Saylor-Miller

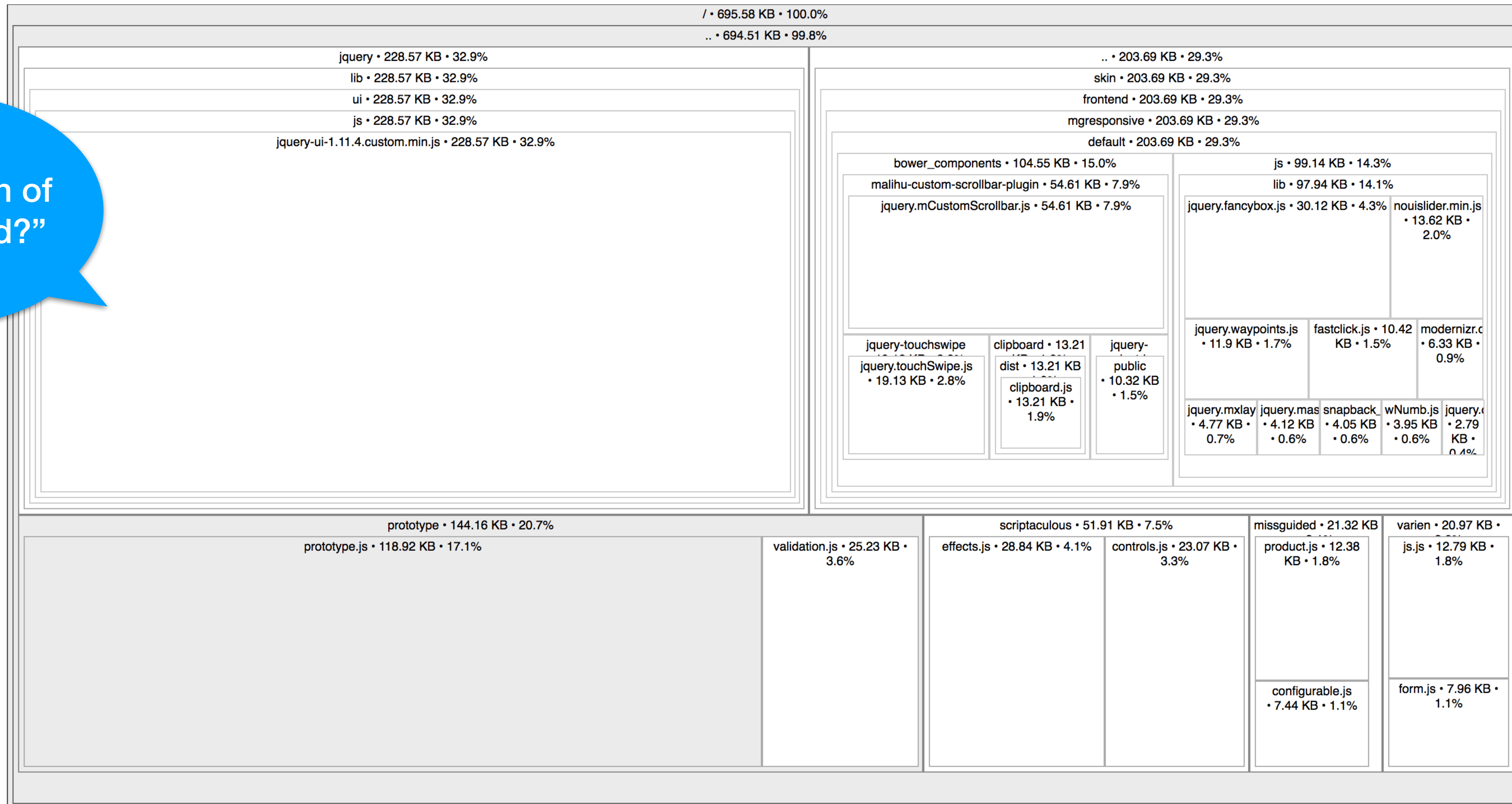


Visualising JavaScript and CSS bundles can be a great conversation starter



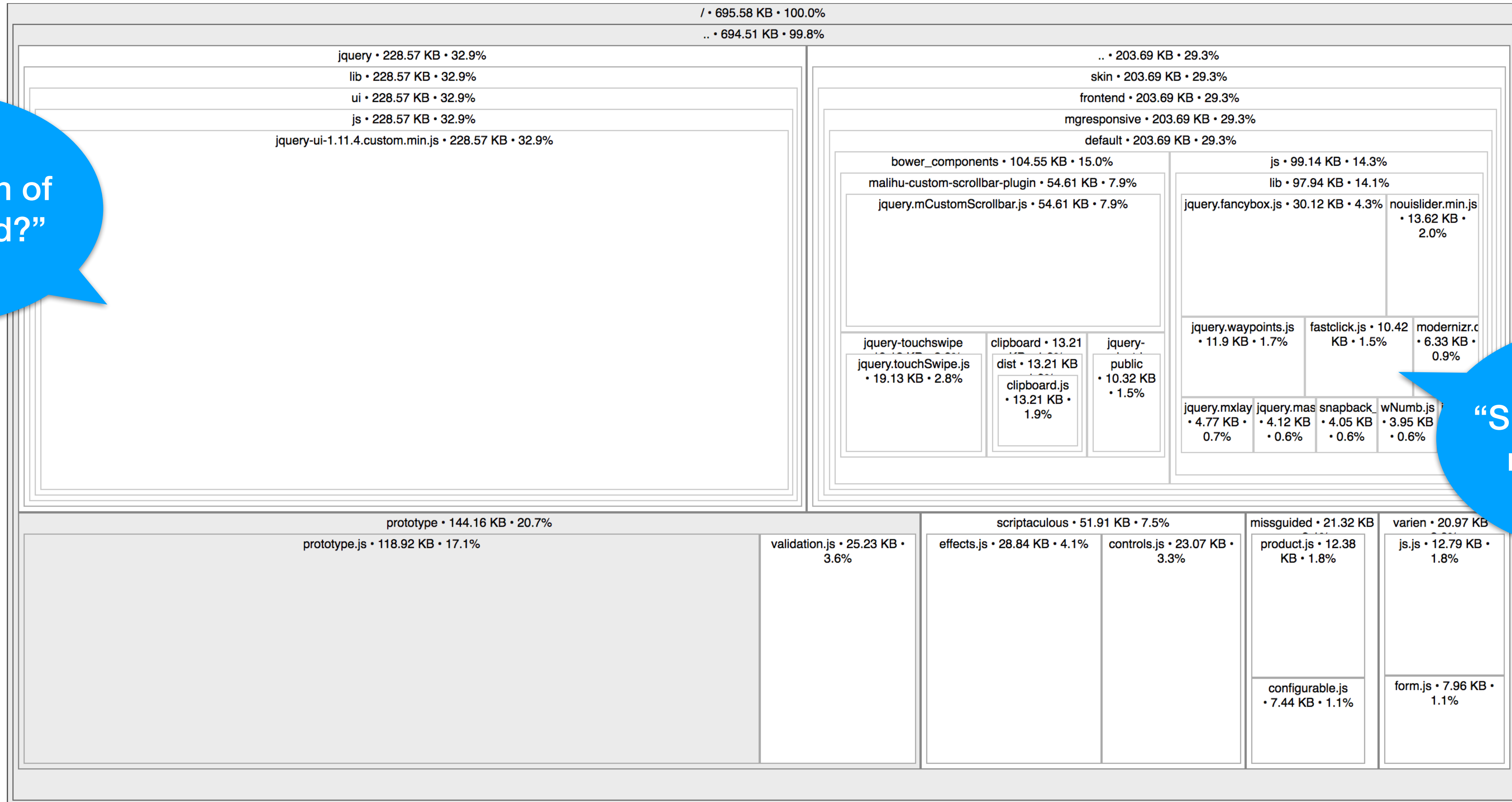
Visualising JavaScript and CSS bundles can be a great conversation starter

“How much of this is used?”



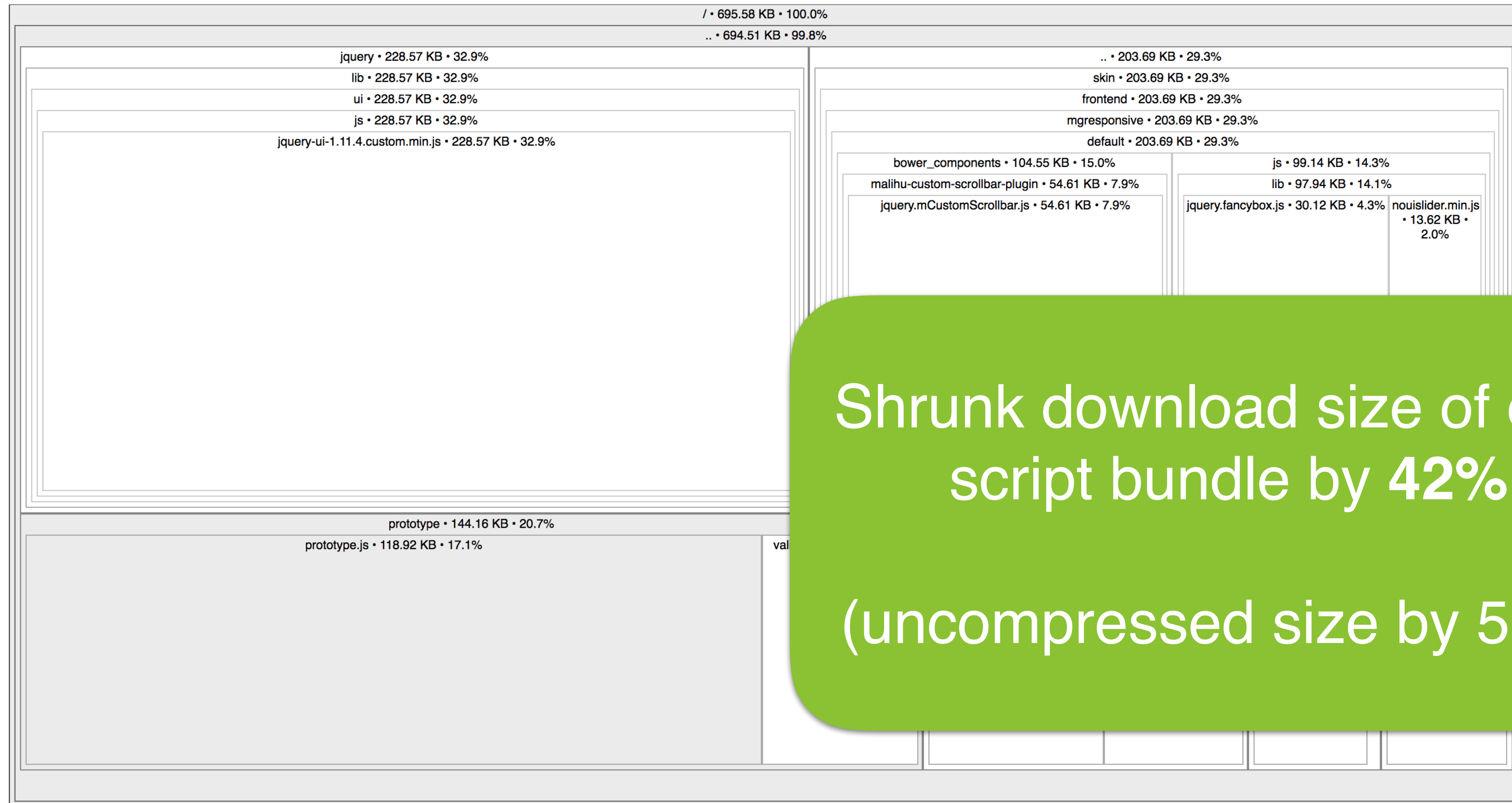
Visualising JavaScript and CSS bundles can be a great conversation starter

“How much of this is used?”



“Suspect we can remove this”

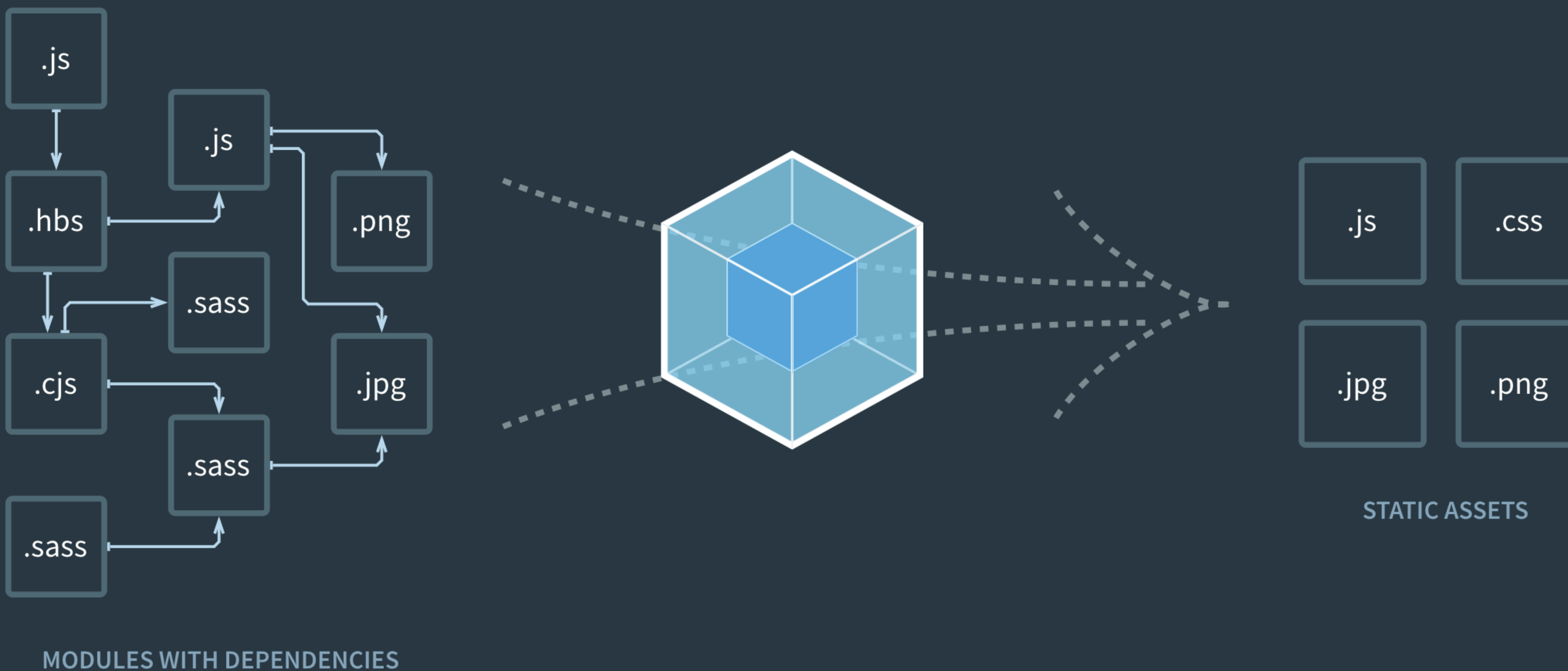
Visualising JavaScript and CSS bundles can be a great conversation starter



Shrunk download size of core script bundle by 42%

(uncompressed size by 55%)

bundle your scripts



Performance Improvements were mostly dull, boring stuff

Removing unused / un-needed code

Removing duplicate styles

Replacing social media libraries with ordinary links

Moving 3rd party libraries onto Missguided domain

Adding Resource Hints - preconnect, dns-prefetch

Defering loading until later where possible

Cleaned up Optimizely

Switched to Optimizely to use jQuery on the page rather than bundled version

Removed A/A tests (were being used as Hotfixes)

Stripped out duplicate plugins, experiments for other environments, and expired ones

There were a few bumps along the way



picture element enables format selection

```
<picture>  
  <source type="image/webp" srcset="foo.webp">  
  <source type="image/jp2" srcset="foo.jp2">  
    
</picture>
```

picture element enables format selection

Browsers that support webp

```
<picture>  
  <source type="image/webp" srcset="foo.webp">  
  <source type="image/jp2" srcset="foo.jp2">  
    
</picture>
```

picture element enables format selection

```
<picture>  
  <source type="image/webp" srcset="foo.webp">  
  <source type="image/jp2" srcset="foo.jp2">  
    
</picture>
```

Browsers that
support
jpeg2000

picture element enables format selection

```
<picture>  
  <source type="image/webp" srcset="foo.webp">  
  <source type="image/jpeg" srcset="foo.jpg2">  
    
</picture>
```



Everything else

Web Inspector — Andy — Safari — www.missguided.co.uk — burgundy-embellished-toe-ankle-boots-10068743

148 21.13s 32 35 0 Search

Elements Network Resources Debugger Storage Console Search Timelines

All Resources Documents burgundy-embellished-toe-ankle-boots-10068743

Name	Domain	Method	St...	Cached	Size	Transferred	Start ... ^	Latency	Duration	50.00s
f9aba6b0.styles.cache.css	static.missguid...	GET	200	No	330.93 KB	55.16 KB	395.4ms	101.7ms	83.05ms	
jquery.1.12.4.noconflict.min.js	static.missguid...	GET	200	No	94.94 KB	33.33 KB	395.7ms	219.2ms	69.35ms	
product_UK.js		GET	200	No	1.22 MB	248.79 KB	395.9ms	422.6ms	2.55s	
c5ab0cda.modal.cache.css		GET	200	No	11.19 KB	2.55 KB	396.4ms	290.9ms	0.008ms	
product.css		GET	200	No	93 B	474 B	396.8ms	291.0ms	0.003ms	
e0e397f4.shop-the-look.cache.css		GET	200	No	13.71 KB	2.80 KB	397.0ms	309.2ms	0.013ms	
video-js.css		GET	200	No	14.36 KB	3.42 KB	397.1ms	310.3ms	0.010ms	
72361e63.video.cache.css		GET	200	No	13.74 KB	2.93 KB	397.3ms	310.4ms	0.005ms	
ce67ab07.bazaar-voice-reviews.cache.css		GET	200	No	17.76 KB	3.20 KB	397.5ms	310.5ms	0.005ms	
burgundy-embellished-toe-ankle-boots.webp		GET	200	No	239.12 KB	239.48 KB	397.7ms	508.7ms	2.14s	
burgundy-embellished-toe-ankle-boots.webp		GET	200	No	236.08 KB	236.44 KB	397.9ms	380.2ms	2.47s	
burgundy-embellished-toe-ankle-boots.webp		GET	200	No	252.96 KB	253.32 KB	398.0ms	452.7ms	2.48s	
burgundy-embellished-toe-ankle-boots.webp		GET	200	No	12.29 KB	12.65 KB	398.2ms	388.0ms	11.36ms	
burgundy-embellished-toe-ankle-boots.webp		GET	200	No	11.44 KB	11.80 KB	398.3ms	483.1ms	17.13ms	
burgundy-embellished-toe-ankle-boots.webp		GET	200	No	11.45 KB	11.80 KB	398.7ms	1.39s	6.487ms	
burgundy-embellished-toe-ankle-boots.jpg	media.missguid...	GET	200	No	24.45 KB	24.81 KB	398.9ms	645.5ms	24.67ms	
e1f3e376.core.min.cache.js	static.missguid...	GET	200	No	679.30 KB	177.85 KB	399.1ms	333.6ms	1.65s	
video.js	static.missguid...	GET	200	No	115.75 KB	35.18 KB	399.2ms	932.0ms	60.07ms	
99aee45f.catalog.min.cache.js	static.missguid...	GET	200	No	62.75 KB	17.13 KB	399.4ms	876.8ms	0.090ms	
all.js	cdn.klarna.com	GET	200	No	16.03 KB	6.52 KB	399.5ms	424.3ms	1.025ms	
ContainerItemJavaScript.ashx	www.ist-track.c...	GET	200	No	1 B	465 B	417.6ms	337.6ms	0.898ms	
b5f6840b.scripts.min.cache.js	static.missguid...	GET	200	No	125.44 KB	30.28 KB	419.6ms	1.12s	125.0ms	
oeu1505126558028r0.21162014940928164	tapi.optimizely...	GET	200	No	7.56 KB	885 B	4.37s	1.07s	1.007ms	
geo2.js	cdn3.optimizely...	GET	200	No	289 B	696 B	4.38s	2.13s	0.641ms	
burgundy-embellished-toe-ankle-boots.jpg	media.missguid...	GET	200	No	303.53 KB	303.89 KB	4.66s	68.21ms	1.86s	
burgundy-embellished-toe-ankle-boots.jpg	media.missguid...	GET	200	No	293.01 KB	293.37 KB	4.66s	431.5ms	3.30s	
burgundy-embellished-toe-ankle-boots.jpg	media.missguid...	GET	200	No	308.49 KB	308.85 KB	4.66s	1.07s	6.11s	
data:image/svg+xml;base64,PD9...g==	—	GET	200	No	844 B	890 B	4.72s	0ms	162.8ms	
data:image/svg+xml;base64,PD9...z4=	—	GET	200	No	1.40 KB	1.44 KB	4.72s	0ms	163.5ms	
data:image/svg+xml;base64,PD9...g==	—	GET	200	No	1.56 KB	1.60 KB	4.72s	0ms	164.4ms	
data:image/svg+xml;base64,PD9...mc+	—	GET	200	No	2.24 KB	2.29 KB	4.72s	0ms	168.2ms	
data:image/svg+xml;base64,PD9...z4=	—	GET	200	No	3.66 KB	3.70 KB	4.72s	0ms	169.1ms	
data:image/svg+xml;base64,PD9...g==	—	GET	200	No	1.40 KB	1.45 KB	4.72s	0ms	169.7ms	

webp images downloaded even though they're not supported in Safari

Product image that's displayed is delayed by them

Filter Resource List

Main Frame

It's a Safari pre-loader bug!

The `type` attribute in `<source>` tags are ignored by the preloader. A common pattern is to use the `<source>` tag for content negotiation selection to specify webp for chrome and jp2 for safari. For example:

```
<picture>  
  <source type="image/webp" srcset="foo.webp">  
  <source type="image/jp2" srcset="foo.jp2">  
    
</picture>
```

However, the HTMLPreloadScanner only considers the media query when selecting (or not) the appropriate `<source>` element. As a result the preloader greedily selects the `foo.webp` and then later requests the correct `foo.jpg`. It should also evaluate the `type` attribute.

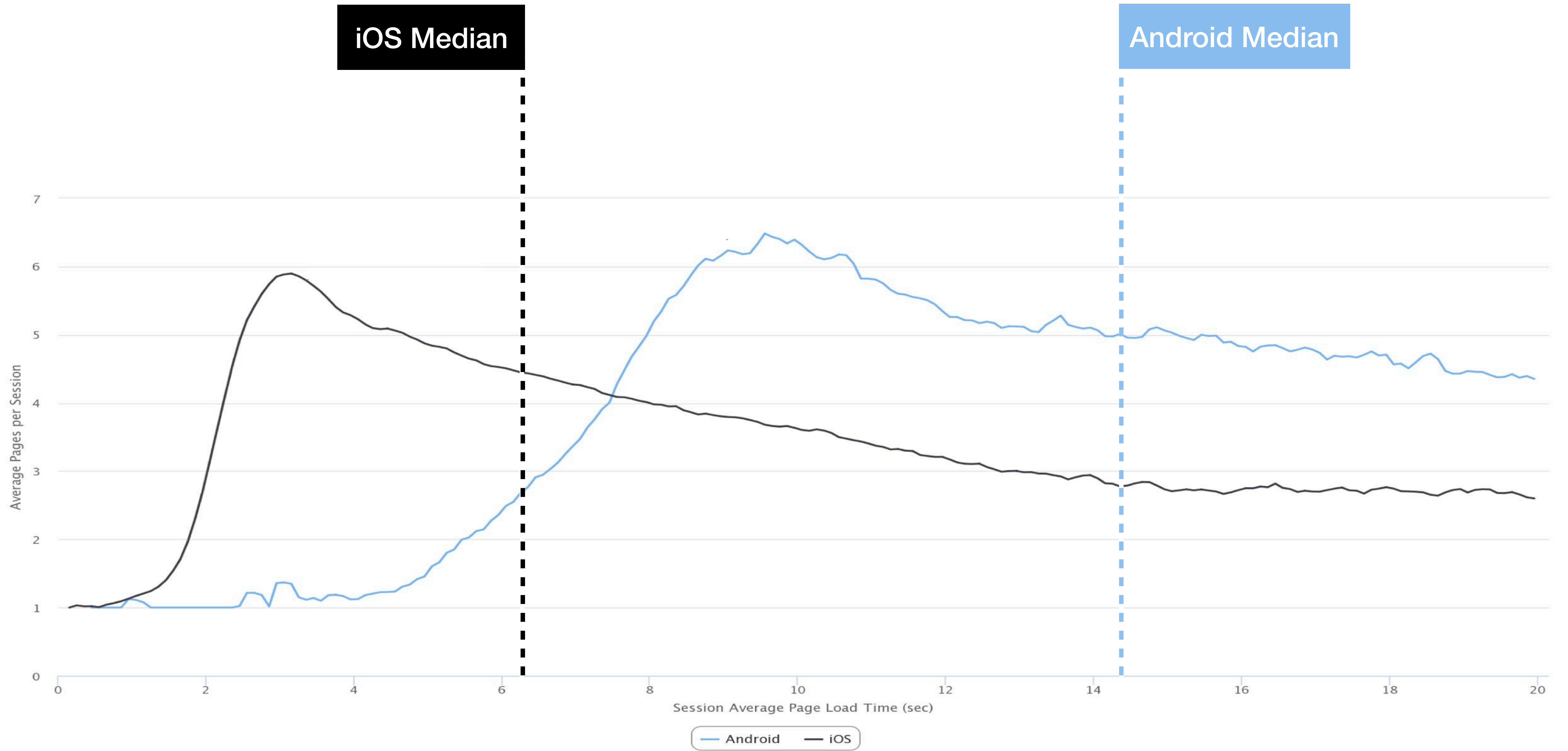
Optimizely snippet got larger (temporarily)

While switching out Optimizely's jQuery some extensions needed to be duplicated

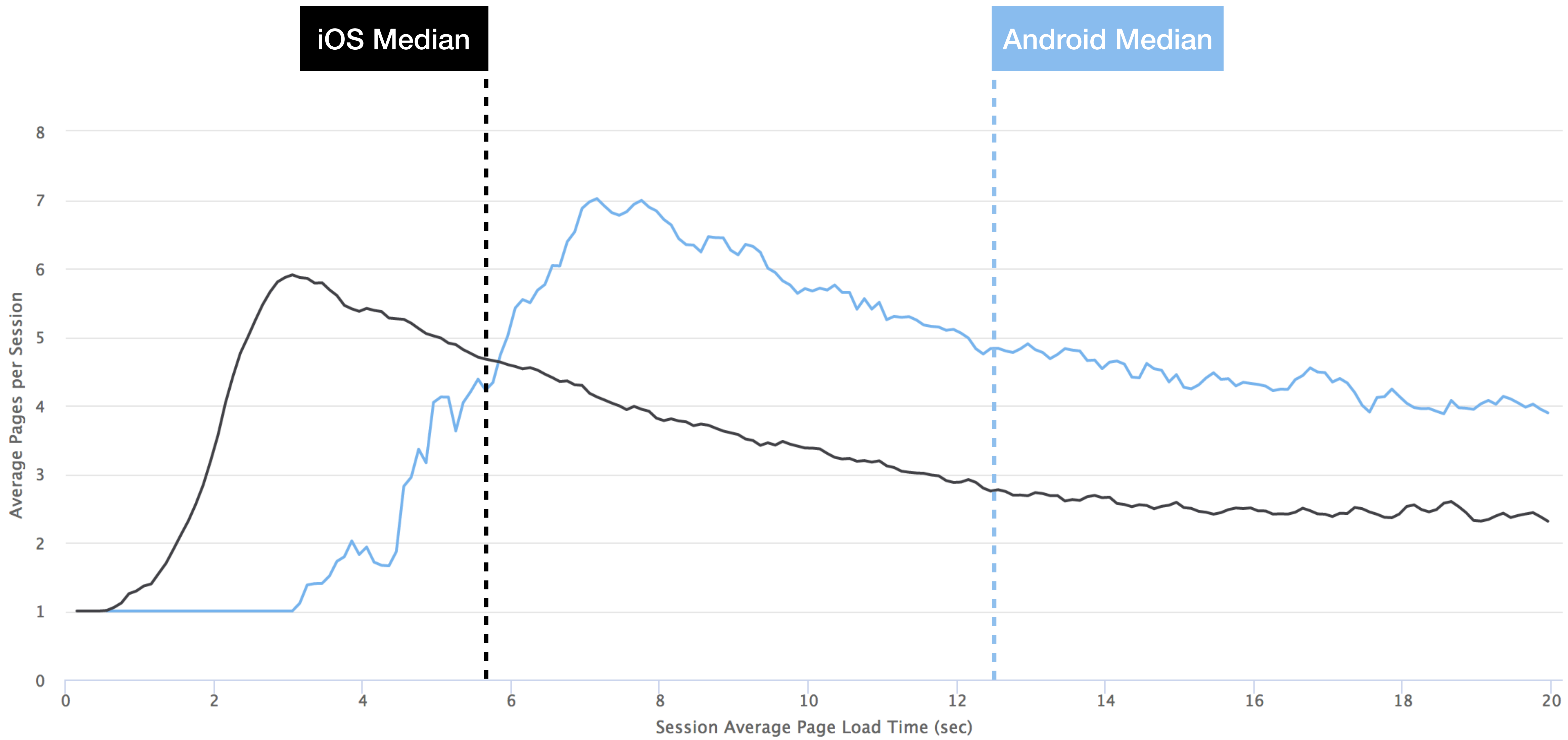
This made the bundle larger and slower until the migration was completed

So where are we now?

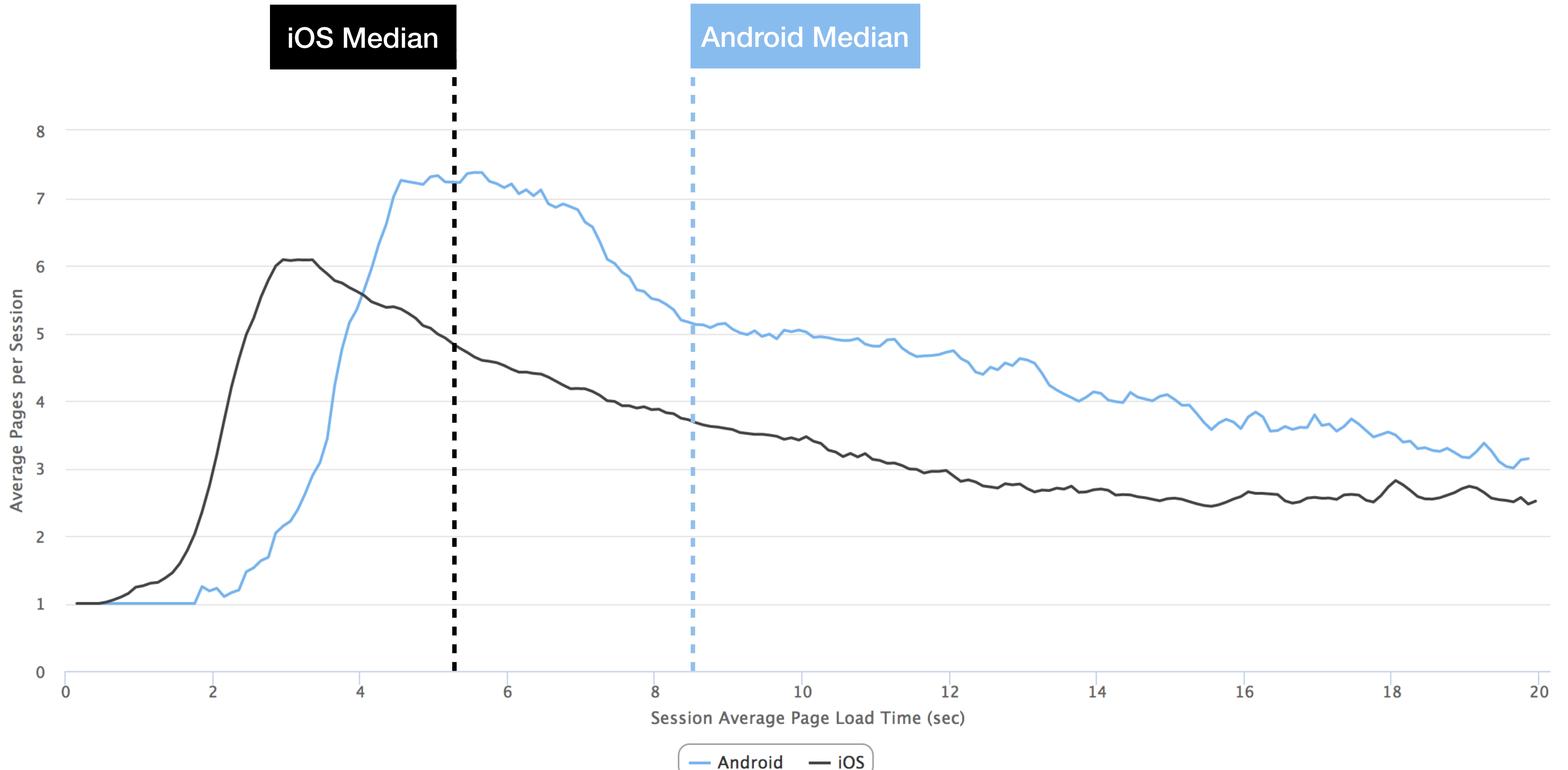
April 2017



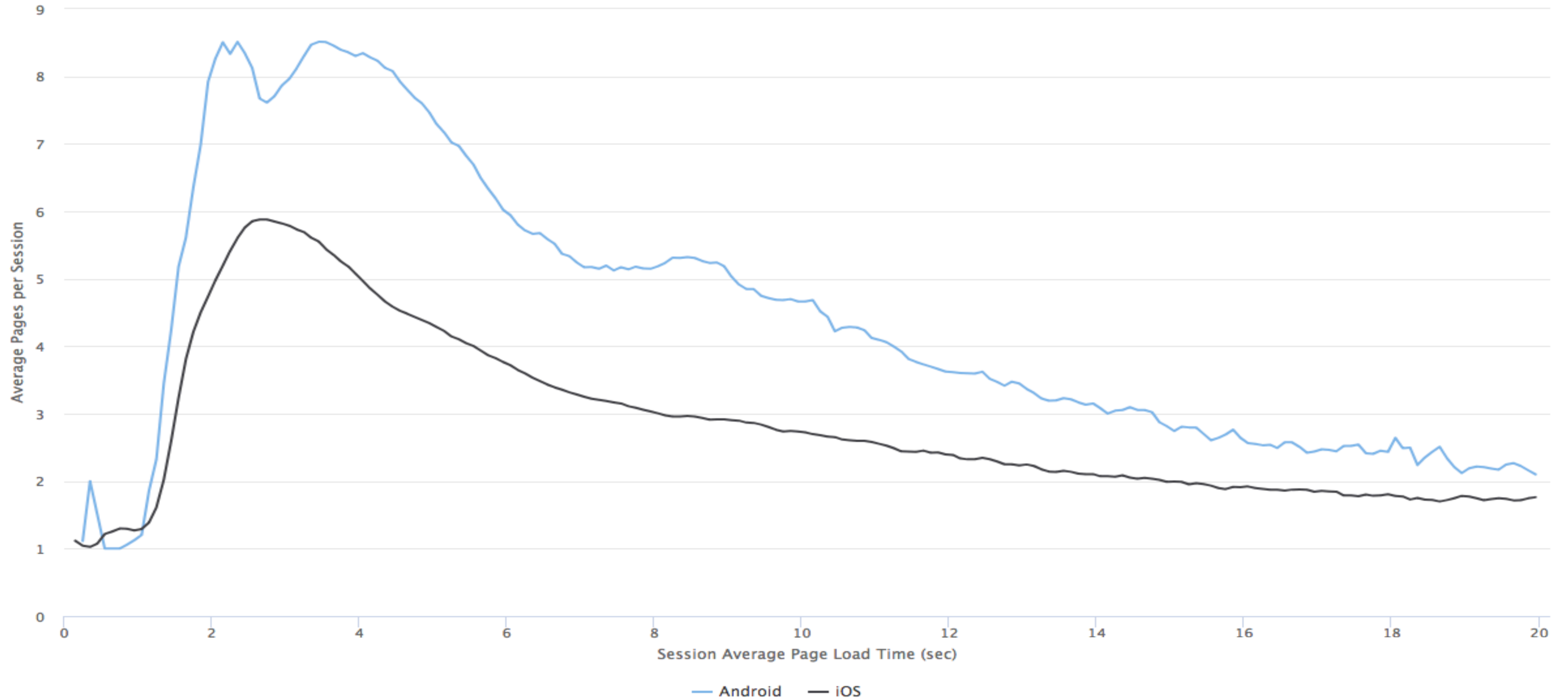
June 2017



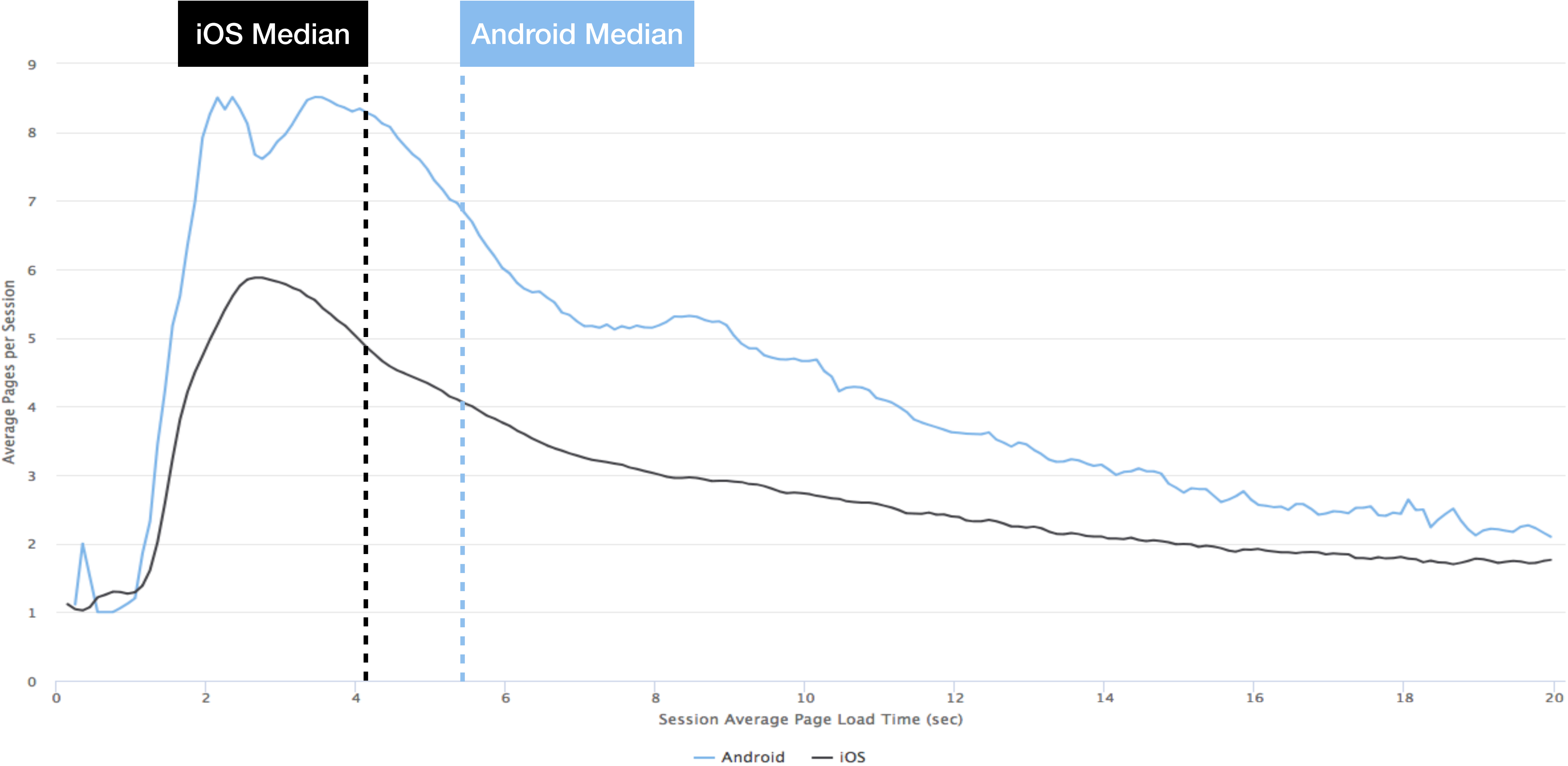
August 2017



April 2018 – HUGE improvement over 12 months



April 2018 – HUGE improvement over 12 months



What did we learn?

Linking revenue increases to performance improvements is still hard...

Many other factors to account for including:

Pricing

Promotions

New brands

Trends

Seasonality

etc.

Optimizely needs careful management

Easy to blow-up the script size

Optimizely are working on features to help

They also capture performance data and will share

Perseverance Pays

Where next?

Add performance monitoring to build process

Testez, analysez et optimisez votre site web

Performance web, référencement, sécurité, qualité, etc

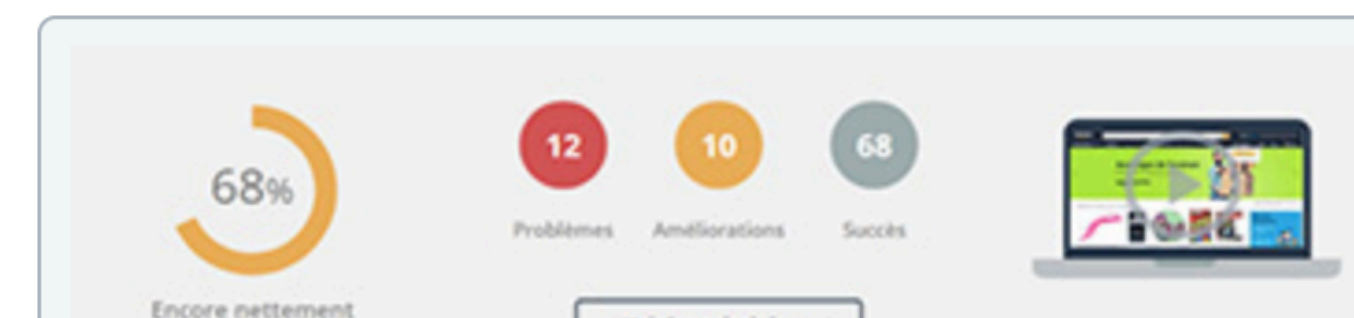
Tester la vitesse et la qualité de mon site web : audit gratuit



www.exemple.com

Analyser ma page

Un audit complet de la qualité



Further Optimizely improvements

Move experiments into React front-end and use Optimizely for feature flags

Did we make it to 3 seconds?

Over May bank holiday weekend
median was just above 3.5s

Thank You!

<https://www.slideshare.net/andydavies>



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