

Core Web Vitals

Everything you need to know

adtrak.



What are they??



PageSpeed Insights

CWVs introduced to PageSpeed Insights / Lighthouse in May 2020

They are new page speed metrics designed to measure the *page experience*

Field Data — Over the previous 28-day collection period, [field data](#) shows that this page **passes** the [Core Web Vitals](#) assessment.

■ First Contentful Paint (FCP) 2 s



● First Input Delay (FID) ■ 74 ms



● Largest Contentful Paint (LCP) ■ 2.3 s



● Cumulative Layout Shift (CLS) ■ 0.06



☐ [Show Origin Summary](#)

Lab Data



■ First Contentful Paint 2.6 s

■ Time to Interactive 5.9 s

● Speed Index 3.3 s

■ Total Blocking Time 290 ms

▲ Largest Contentful Paint ■ 4.4 s

● Cumulative Layout Shift ■ 0.002

Values are estimated and may vary. The [performance score is calculated](#) directly from these metrics. [See calculator](#).

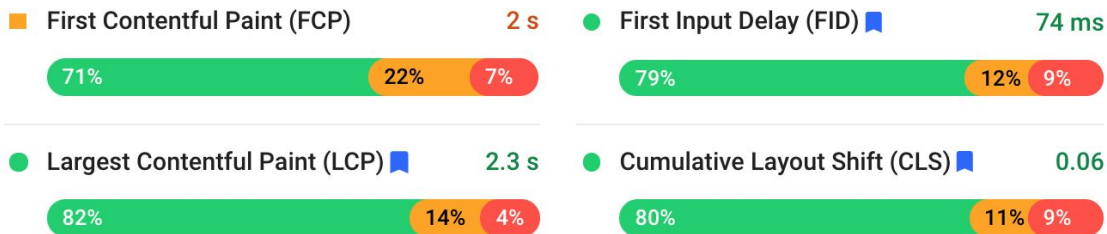
Core Web Vitals are based on real world **Field Data** from the previous 28 days

Two of them are also available in Lab Data, but these scores **can be significantly different**

Reason is Lab Data scores are based on a single test with specific conditions

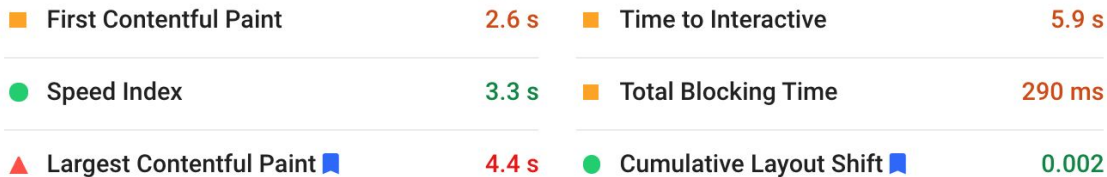
Field Data is based on thousands of tests in varying conditions

Field Data — Over the previous 28-day collection period, **field data** shows that this page **passes** the **Core Web Vitals** assessment.



☐ [Show Origin Summary](#)

Lab Data



Values are estimated and may vary. The **performance score is calculated** directly from these metrics. [See calculator](#).

First Input Delay

Time between user's first interaction and the site responding to that interaction

Largest Contentful Paint 25%

When largest element in viewport has loaded

Cumulative Layout Shift 15%

The amount the layout shifts during page load

First Contentful Paint 10%

When first text/image is painted

Time to Interactive 10%

Time it takes for page to become fully interactive

Speed Index 10%

How quickly the contents of the page are populated

Total Blocking Time 30%

Time between First Contentful Paint and Time to Interactive



So PSI score is not a direct reflection of your Core Web Vitals performance, but there is a lot of overlap.

- PSI based on a single test with specific conditions
- CWVs assessment is based on real world field data from the previous 28 days
- Field data is essentially based on hundreds/thousands of tests with varying devices, locations and network connections
- First Input Delay metric is a CWV but not possible in lab test so isn't part of the PSI score
- However it does correlate strongly with Total Blocking Time



CWV Assessment is slow to update

- The field data is based on the previous 28 days, and within that, only the 75th percentile of that data
- Because of this, it will be a while before any changes you make actually take effect
- Very simplistic example:
 - Your LCP scores is 10s - you fix this to get it down to 1s
 - Your site gets the same traffic every day
 - Your LCP score will remain as 10s until 75% of users in the 28-day data have experienced the 'fixed' page
 - So **20 days** after the fix, 71.5% of visits in the 28-day field data would have experienced the 1s LCP, **so it still fails** (needs to be >75%)
 - **21 days** after the fix, 75% of visits in the 28-day field data would have experienced the 1s LCP, **so it now passes**

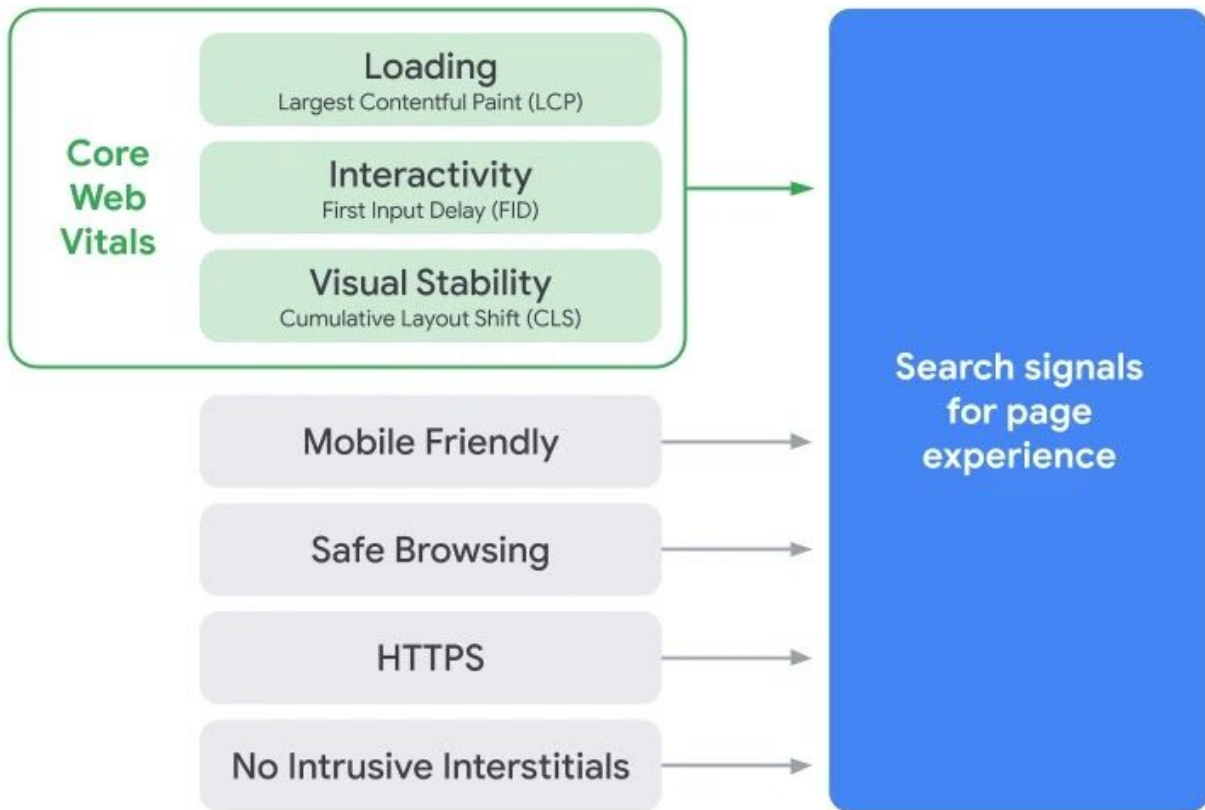


Why all the fuss?



New 'Page Experience' Ranking Signal

- The Core Web Vitals are part of Google's new **Page Experience** ranking signal
- This will start to roll-out in mid-July and will be **fully live by end of August**



Questions?



LCP – Largest Contentful Paint



What is LCP?

The time it takes your largest image / text block (above the fold) to load

-
- ★ Largest Contentful Paint (LCP) is an important, user-centric metric for measuring perceived load speed because it marks the point in the page load timeline when the page's main content has likely loaded—a fast LCP helps reassure the user that the page is useful.
 - Simplest / easiest to understand
 - Good proxy for other more complex metrics (TTFB, FMP, Speed Index etc.)
 - Simple, single metric that attempts to give a good indication of page load



LCP

Largest Contentful Paint



What elements are considered for the LCP?

- `` elements
- `<video>` elements (the poster fallback image is used)
- Elements with a background image (unless the background is a CSS gradient)
- Block-level elements containing only text nodes or other inline text elements children
- `<image>` elements inside an `<svg>` element

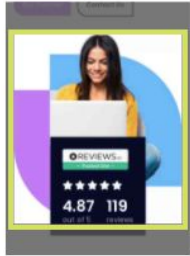


● Largest Contentful Paint element — 1 element found



This is the largest contentful element painted within the viewport. [Learn More](#)

Element



CTC Training

```

```

PSI will show you which element is being recognised as your largest in the Diagnostics section (towards the bottom)



How to improve LCP Score



LCP is primarily affected by:

- Slow server response times
- Render blocking JS / CSS
- Resource load times



Slow Server Response times

In terms of the actual server, this is mostly out of our control

A **WordPress caching plugin** can vastly improve TTFB

Caches a static HTML version of your pages and serves this to the user

Cuts out all the server processing that's normally required to serve the page

WP Super Cache



Wp Fastest Cache
The simplest and fastest WP Cache system



Render blocking CSS

- Make sure your CSS is being minified
- Inline critical CSS in your <head>
 - This is any CSS required for the above-the-fold part of the page
 - Latest boilerplate inlines whole stylesheet as it should usually be small enough
- Defer loading of any other non-critical stylesheets
 - Can now be done really simply:

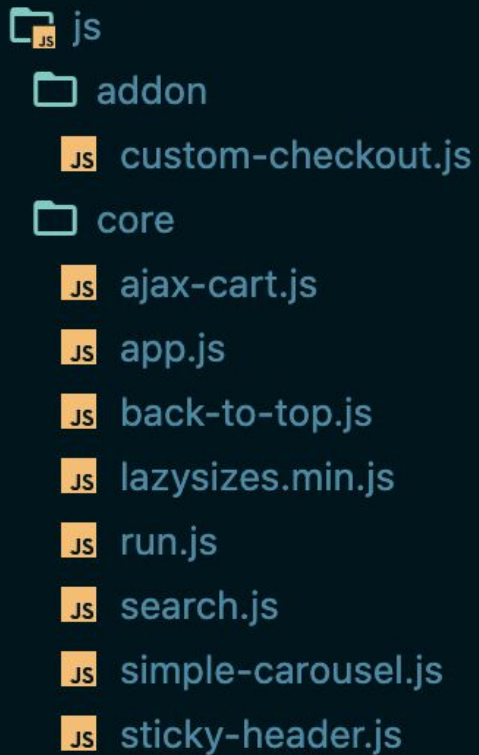
```
<link rel="stylesheet" href="style.css" media="print"  
onload="this.media='all'">
```



Render blocking JavaScript

- Minimise amount of JS used
 - If you're using jQuery libraries for stuff - do you really need to?
- Make sure your JS is being minified
- Defer your scripts
- Don't lazy load anything above-the-fold
- Don't append hero <video> elements using JS
- If you have a large chunk of JS that's only being used for 1 or 2 pages, put this in its own file and include it only on the page(s) that need it (make sure it's still minified)





```
if(is_checkout()) {  
    wp_enqueue_script('checkout', get_theme_file_uri() . '/dist/  
    production-custom-checkout.js', ['production'], '', true);  
}
```



```

1 /**
2  * Custom Function to display all currently enqueued scripts and stylesheets
3  */
4  function print_scripts_styles() {
5      $result = [];
6      $result['scripts'] = [];
7      $result['styles'] = [];
8      // Print all loaded Scripts
9      global $wp_scripts;
10     foreach( $wp_scripts->queue as $script ) :
11         $result['scripts'][] = $wp_scripts->registered[$script]->handle . " ";
12     endforeach;
13     // Print all loaded Styles (CSS)
14     global $wp_styles;
15     foreach( $wp_styles->queue as $style ) :
16         $result['styles'][] = $wp_styles->registered[$style]->handle . " ";
17     endforeach;
18     return $result;
19 }
20 add_action('wp_footer', function() {
21     print_r(print_scripts_styles());
22 });

```

```

<div id="wp-notification" class="closed">
    <div class="wp-notification-container">
        <p>This website uses cookies to enhance
    </div>
</div>Array
(
    [scripts] => Array
        (
            [0] => adtrak-cookie;
            [1] => location-dynamics-front;
            [2] => contact-form-7;
            [3] => production;
            [4] => svgxuse;
            [5] => mixitup;
            [6] => owlcarousel;
        )
    [styles] => Array
        (
            [0] => ;
            [1] => ;
            [2] => contact-form-7;
        )
)

```



Resource Load Times

- Time it takes to load images/videos etc. above-the-fold will have a direct effect on LCP
- Optimise/compress images
- Use WebP images where possible
- If your LCP element is an image/video, consider preloading it in your <head>

```
<link rel="preload" as="image" href="img.webp" />
```



A lot of the time, your LCP will be an image. If it is, the first thing I'd do is look at that particular image for potential issues.

- Is the image WebP?
- Check the file size - run it through an image optimiser like TinyPNG and see if you can shed any KBs
- Open the image in a new tab to see its true dimensions - if it's considerably bigger than the size it's being rendered at then this will have a big negative impact on your LCP
 - Make use of the <picture> element to ensure the image being served on mobile isn't much bigger than 375px wide




```
{% include "_components/picture.twig" with {  
  source: post.thumbnail.src,  
  lazyload: false,  
  breakpoints: {  
    "480px" : {  
      w: 700,  
      h: 550,  
      crop: 'center'  
    },  
    "1px" : {  
      w: 480,  
      h: 325,  
      crop: 'center'  
    },  
  },  
  img: {  
    w: 480,  
    h: 325,  
    crop: 'center',  
  }  
}  
%}
```



Questions?



FID – First Input Delay



What is FID?

Time between user clicking on something (e.g. a button) and the page responding to this

—

-
- ★ First Input Delay (FID) is an important, user-centric metric for measuring load responsiveness because it quantifies the experience users feel when trying to interact with unresponsive pages—a low FID helps ensure that the page is usable.
 - If page appears to be loaded but doesn't respond to interaction, it's a very frustrating UX
 - It's the first impression of your site's responsiveness
 - Based on real world actual clicks from users



What causes the delay?

- If the user clicks a button/link whilst the browser's main thread is busy, it won't be able to respond straight away
- The main thread is busy when it's parsing and executing JavaScript files loaded by your site

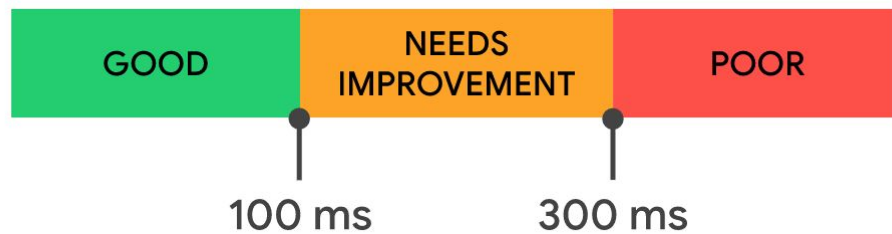
tl;dr - JavaScript

will directly correlate to amount of JS the browser has to parse



FID

First Input Delay



How to improve FID Score



How to improve FID

- Reduce the impact of third-party code
- Reduce JavaScript execution time
- Split your JS up where appropriate



Reduce impact of third-party code

- Firstly, is it actually needed? Can you remove it? e.g. Mouseflow
- Defer scripts using the **defer** attribute
- Lazyload 3rd party embeds that include their own scripts
 - Lazyload iframes (videos, maps etc.)
 - Only use Wistia's iframe code (not popover)
- Use Reviews.io API instead of their widgets



Reduce JavaScript execution time

- Defer your scripts wherever possible
- Use less JS
 - View source and look at what .js files are being included
 - Avoid latest Contact Form 7 versions (5.4+)
 - Are there more scripts from other WP or jQuery plugins? Could you do anything about them?
 - e.g. search autocomplete WP plugin - Horne wrote a nice custom one using REST
 - modals, tabs, accordions, carousels etc.
 - Potentially write your own custom replacement or..
 - Look at the Modular components and see if there's anything you can use



Split up your JS where appropriate

- Instead of bundling your whole site's JS into a single file, think about separating significant chunks into separate files and only including them when needed
- e.g. maybe you have carousel code that's only used on the home page
- Or custom JS for a specific content piece etc.
- It makes sense to extract this JS from your main production file and put them in their own files (still making sure they're minified)
- Then use an if statement to enqueue these scripts only on pages that need them



Questions?



CLS – Cumulative Layout Shift



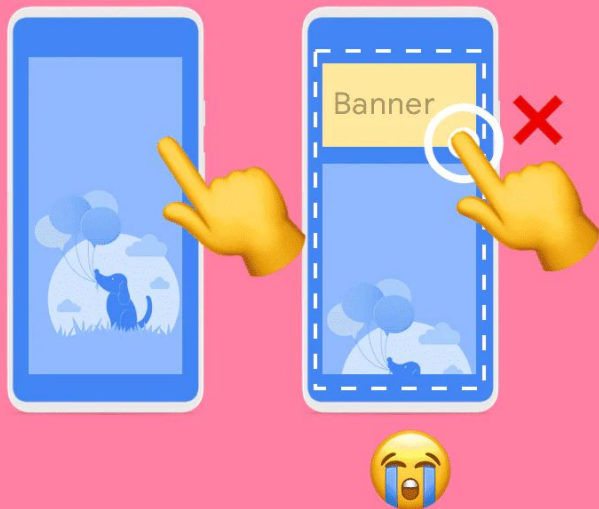
What is CLS?

Measures how much the page unexpectedly shifts around (mainly during loading)

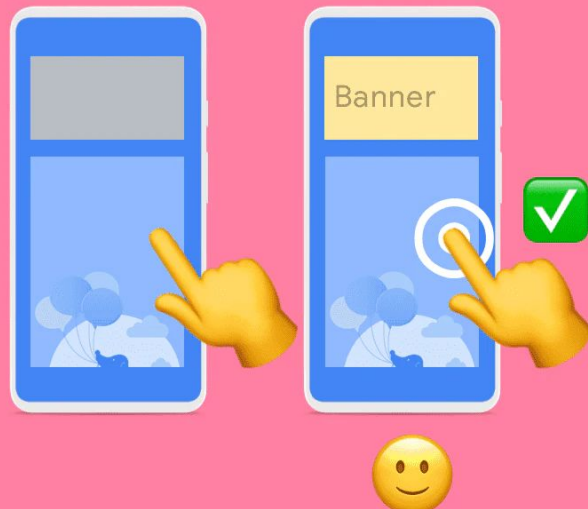
A **Key Term:** Cumulative Layout Shift (CLS) is an important, user-centric metric for measuring visual stability because it helps quantify how often users experience unexpected layout shifts—a low CLS helps ensure that the page is delightful.

- Unexpected layout shifts are visually jarring
- Can also lead to very frustrating experience when links/buttons are pushed down by something else loading





CLS = 0.44



CLS = 0



Order confirmation

You have selected **14** items. Is this correct?

Yes, place my order

No, go back

CLS

Cumulative Layout Shift


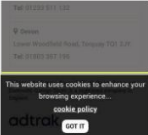
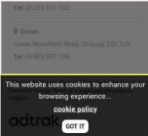

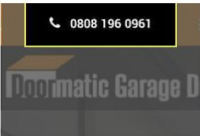


How to improve CLS Score



● Avoid large layout shifts — 5 elements found

These DOM elements contribute most to the CLS of the page. [\[CLS\]](#)

Element	CLS Contribution
 <p>SEE IF WE COVER YOUR AREA ROLLER GARAGE DOORS SECTIONAL GARAGE DOORS UP & OVER ...</p> <pre><div class="buckets-wrap wrapper"></pre>	0.941
 <p>This website uses cookies to enhance your browsing experience... cookie policy ...</p> <pre><div class="wp-notification-container"></pre>	0.157
 <p>This website uses cookies to enhance your browsing experience... cookie policy ...</p> <pre><div id="wp-notification" class="closed open"></pre>	0.157
 <p>GARAGE DOORS</p> <pre></pre>	0.133
 <p>0808 196 0961</p> <pre><div class="mobile-top-bar__location-number"></pre>	0.102

PSI will show you which elements are causing the most layout shift on your page (under ‘Avoid large layout shifts’)

Primary Causes of High CLS

- Images/videos/iframes without width & height attributes
- Fallback font is significantly different to the web font that replaces it
- Dynamically injected content

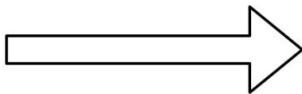


Images without size attributes

Your title

Introductory paragraph.

Lorem ipsum dolor sit amet,
consectetur adipisicing elit, sed
do eiusmod tempor incididunt
ut labore et dolore magna
aliqua.



Your title

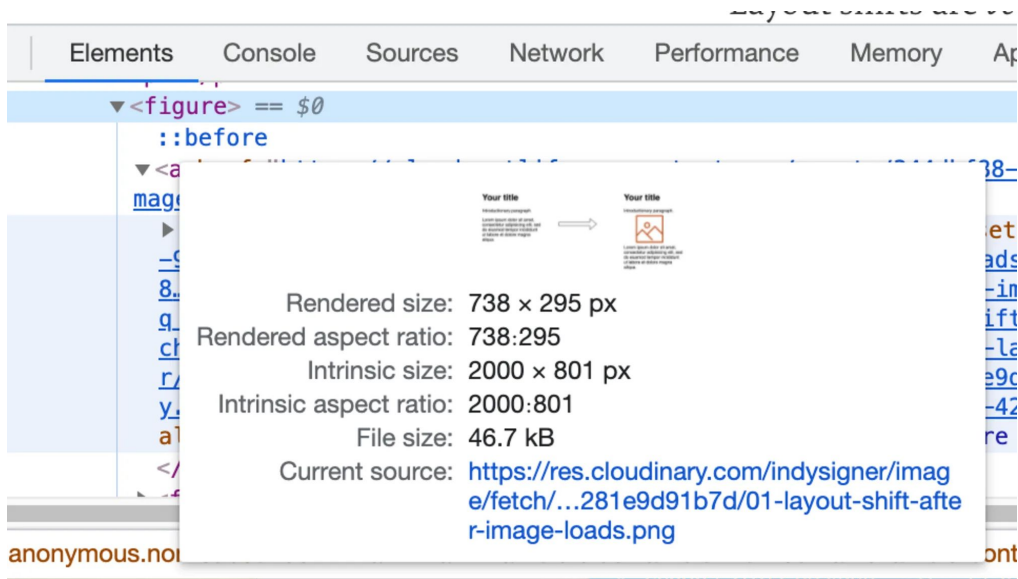
Introductory paragraph.



Lorem ipsum dolor sit amet,
consectetur adipisicing elit, sed
do eiusmod tempor incididunt
ut labore et dolore magna
aliqua.

Images without size attributes

- Reserve the image's space with width/height attributes
- Inspect the image, hover over it and use the 'intrinsic size' values



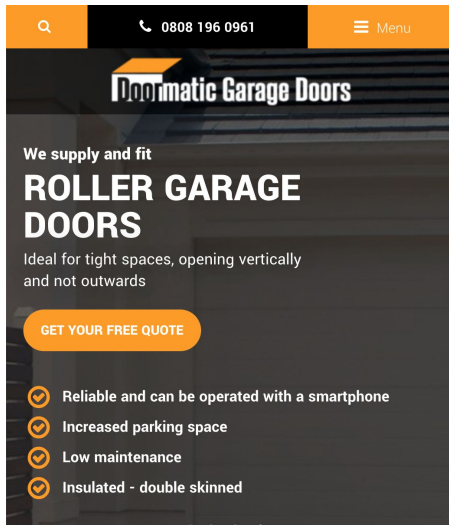
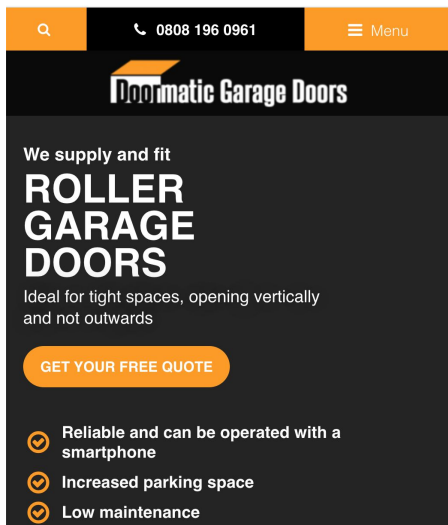
Images without size attributes

- Don't worry about setting these 'fixed' values on responsive images
- The browser will calculate an aspect ratio based on these width/height values
- Can also be used on <picture> elements (on fallback)
- Caveat:
 - This will only work on images that have the same aspect ratio at all screen sizes
 - i.e. won't work on hero images that are portrait on mobile / landscape on desktop



Fallback font significantly different to webfont

- As your page is loading it will initially load a default system font and then swap it out for your webfont once that has loaded
- If these 2 are significantly different then it could cause significant layout shift





Fallback font significantly different to webfont

- Usually won't be too much of a problem, unless the fonts are significantly different in size like in the Doormatic example
- Options are limited
 - Be aware of this during build stage
 - Try out other web safe fallback fonts to see if they're a better match
 - Use min-height to reserve space
 - There are new CSS properties on the way (*CSS Font Descriptors*) which will allow you to adjust the sizing of your fallback font to make it a closer match



Dynamically Injected Content




 ACTUALITÉS ▾ ÉCONOMIE ▾ VIDÉOS ▾ OPINIONS ▾ CULTURE ▾ M LE MAG ▾ SERVICES ▾ 

Se connecter

S'abonner

Consulter le journal

Voir plus >




Covid-19 : en Europe, un nouveau tour de vis pour tenter d'endiguer la troisième vague de l'épidémie

LIVE

En direct :
l'Assemblée approuve
les nouvelles
restrictions,
l'opposition boycotte

ENQUÊTE

Delphine Roucaute

 La vaccination avec
AstraZeneca freinée par des
difficultés logistiques et la
méfiance des Français

Seulement trois quarts des doses
livrées par le laboratoire suédo-



Dynamically Injected Content

- When new content is inserted into the page using JavaScript
- If it's **position:fixed** it shouldn't cause any layout shift
- If it's not, try to reserve the space with a height / min-height



Questions?

