



Responsive image overview

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Responsive Web Design with Flexbox and
CSS Grid



Photo by [Snapwire](#) from [Pexels](#)

Responsive images

Content choices – “art direction”

Format – GIF, JPG, PNG, SVG, AVIF, WebP, others

Pixel density

Image display dimensions

Who chooses which image to use – you or the browser?

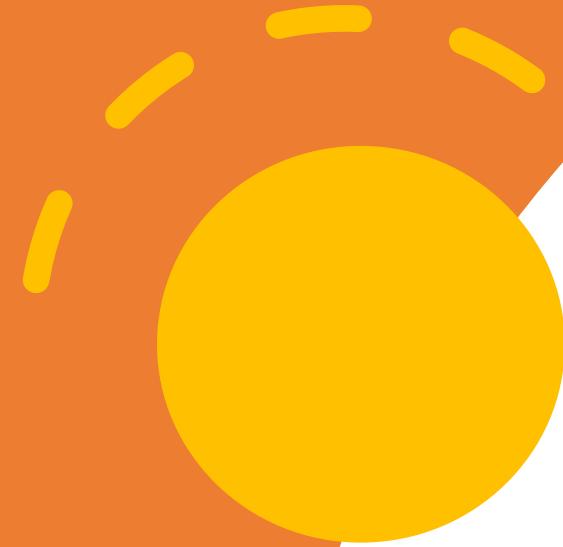


<https://www.smashingmagazine.com/printed-books/image-optimization/>

A brief history

- May 2010: Responsive images defined
- 2010-2014: Disaster
- 2014-2015: Standards defined
- 2016: `<picture>` supported
- 2017: `srcset` and `sizes` supported





Prime Directive

Only one image should load, even if many are specified.

```
<marquee>BAD CODE</marquee>
```

```
<div class="fakeresponsive">  
    
    
</div>
```

```
@media (max-width: 500px) {  
  .big { display: none; }  
}  
  
@media (min-width: 501px) {  
  .tiny { display: none; }  
}
```

Use cautiously

```

```

```
img {  
  width: 100%;  
  max-width: 800px;  
}
```

<picture>:
You decide
which image displays



```
<picture>
```

```
  <source
```

```
    src="balloons-lg.jpg"
```

```
    media="(min-width: 850px)">
```

```
  
```

```
</picture>
```



```
<picture>
```

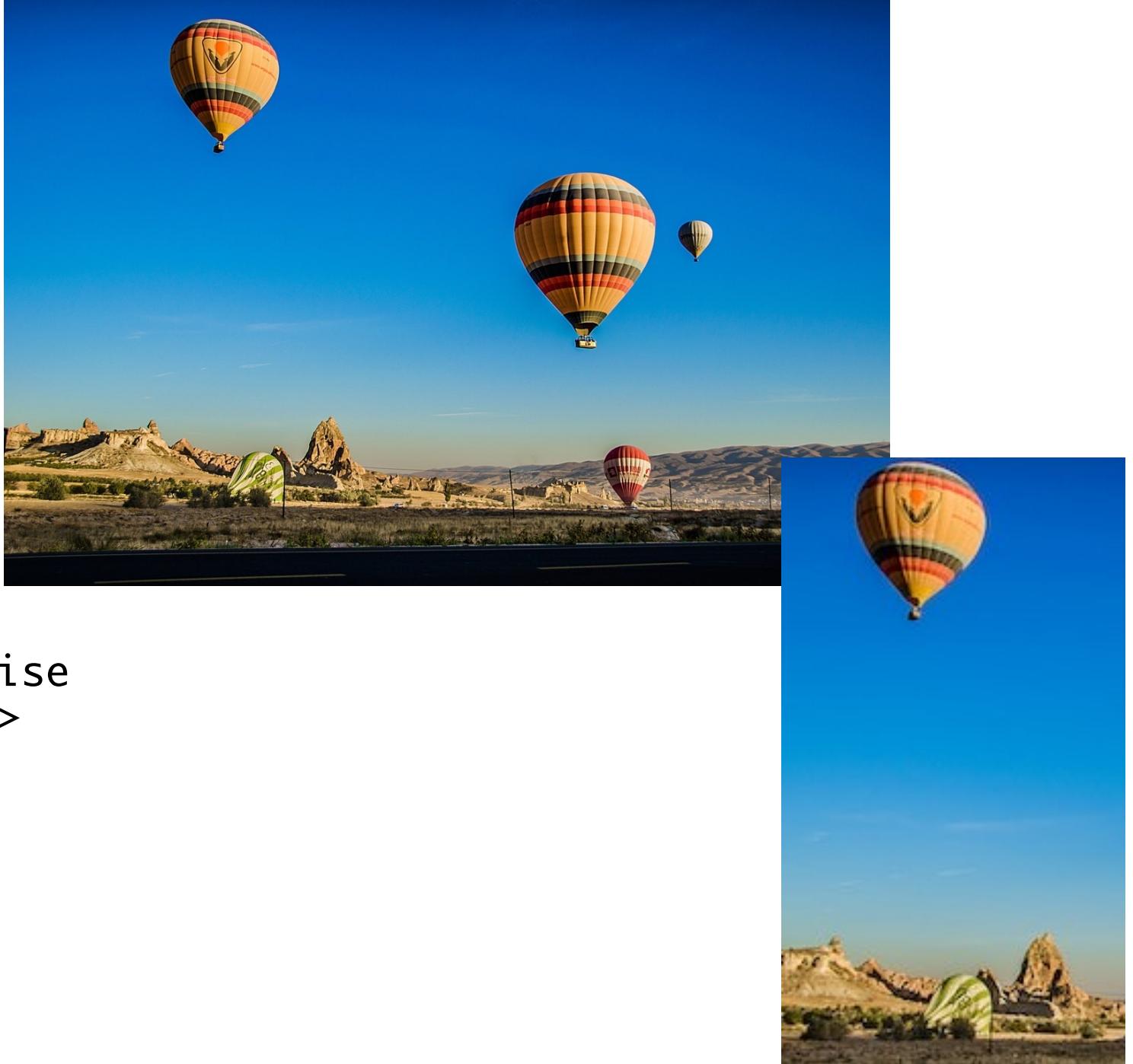
```
  <source
```

```
    src="landscape.jpg"
```

```
    media="(orientation:  
landscape)">
```

```
  
```

```
</picture>
```



```
<picture>
```

```
  <source
```

```
    src="landscape.webp"
    type="image/webp">
```

```
  <source
```

```
    src="landscape.png"
    type="image/png">
```

```
  
```

```
</picture>
```



However,
<picture>
forgets
things...

How big is the image location
(the hole) in the page layout?

How big are the images (the
peg) that might be displayed?

What is the pixel density of
the screen?

```
<picture>
```

```
  <source src="large.jpg"  
         media="((min-device-pixel-ratio: 1.5) and (min-width: 20.001em) and (max-width: 35.999em))  
              or ( (max-device-pixel-ratio: 1.5) and (min-width: 120.001em) )  
              or ( (min-device-pixel-ratio: 1.5) and (min-width: 60.001em) )" />
```

```
  <source src="medium.jpg"  
         media="((max-device-pixel-ratio: 1.5) and (min-width: 20.001em) and (max-width: 35.999em))  
              or ( (max-device-pixel-ratio: 1.5) and (min-width: 60.001em) )  
              or ( (min-device-pixel-ratio: 1.5) and (min-width: 10.001em) )" />
```

```
  <source src="small.jpg" />
```

```
  <!-- fallback -->
```

```
  
```

```
</picture>
```

srcset and *sizes*:
The browser decides
which image displays

Known unknowns...

Variable	Known by author when she's writing the code?	Known by browser when it's loading the page?
viewport dimensions	no	yes
image size relative to the viewport	yes	no
screen density	no	yes
source files' dimensions	yes	no

<https://ericportis.com/posts/2014/srcset-sizes/>

Known unknowns...

Variable	Known by author when she's writing the code?	Known by browser when it's loading the page?
viewport dimensions	no	yes
image size relative to the viewport	yes	no yes! via sizes!
screen density	no	yes
source files' dimensions	yes	no yes! via srcset!

<https://ericportis.com/posts/2014/srcset-sizes/>

There's a catch



The browser decides which image to load.



The browser may not decide to load the image you expect.



Different browsers may make different choices.

```

```

<https://ericportis.com/posts/2014/srcset-sizes/>

```

```

Fallback – if browser can't understand srcset/sizes, it displays this image.

alt attribute is the same for all images.

```

```

File names and width
of images **in pixels**.

Other units not
accepted.

Same as ``

```

```

Size of the hole on
the web page.

If the min-width is at
least 36em, display
the image at 33.3vw.

Otherwise, display
the image at 100vw.

```

```

That's a nice, compact way to supply hi-DPI imagery. But!
It only works for fixed-width images.

<https://alistapart.com/article/responsive-images-in-practice/>

```
<picture>

    <!-- 16:9 crop -->
    <source media="(min-width: 36em)"
        srcset="quilt_2/detail/large.jpg 1920w,
                quilt_2/detail/medium.jpg 960w,
                quilt_2/detail/small.jpg 480w" />

    <!-- square crop -->
    <source srcset="quilt_2/square/large.jpg 822w,
                  quilt_2/square/medium.jpg 640w,
                  quilt_2/square/small.jpg 320w" />

</picture>
```

<https://alistapart.com/article/responsive-images-in-practice/>

```
<picture>

    <!-- 16:9 crop -->
    <source media="(aspect-ratio: 16/9)"
        srcset="quilt_2/detail/large.jpg 1920w,
                quilt_2/detail/medium.jpg 960w,
                quilt_2/detail/small.jpg 480w" />

    <!-- square crop -->
    <source media="(aspect-ratio: 1/1)"
        srcset="quilt_2/square/large.jpg 822w,
                quilt_2/square/medium.jpg 640w,
                quilt_2/square/small.jpg 320w" />

</picture>
```

<https://developer.mozilla.org/en-US/docs/Web/CSS/@media/aspect-ratio>

Which should you use?

<picture>



Image optimized for **content reasons** matters more than technical reasons.

src, srcset



Image optimized for **technical reasons** matters more than content reasons.



Author chooses the best image.



Browser chooses the best image.



Images may be very different in composition and dimension.



Images vary in dimension but not composition.