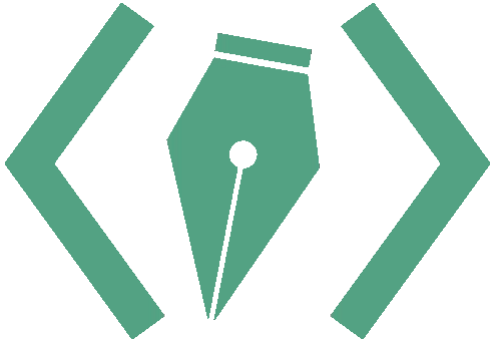
Week 07

Responsive Design



Announcements

Midterm Project
Submit by **tonight @ 11:59pm: wdd.io/go/project-submit**

This week
No HW or lab!

Thursday Lab [+2 Extra Credit for coming!]
Join main lecture Zoom call! Top project selections will present in lab! Support your classmates!

Come to office hours via Piazza or wdd.io/go/OH

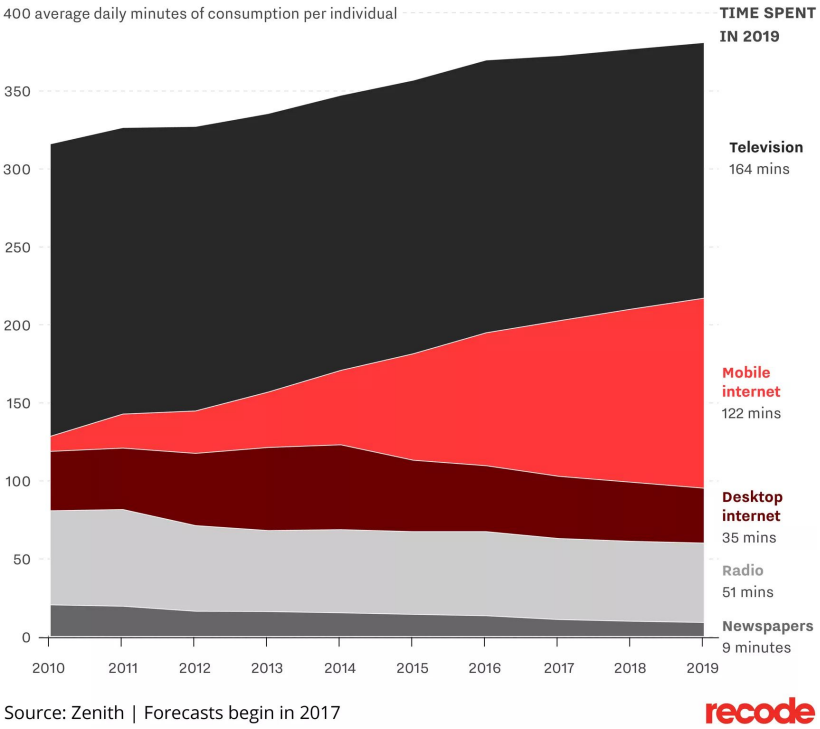
Give us anonymous feedback at wdd.io/go/feedback

State of the Internet

- Nearly 4.4 billion people have access to the internet today
- Internet is accessible from all kinds of devices including:
  - Laptops and Desktops
  - Tablets
  - Smartphones
  - Game consoles
  - Smartwatches
  - Fridges
  - Microwaves

- We are in the post-PC era!

Worldwide average media consumption by type

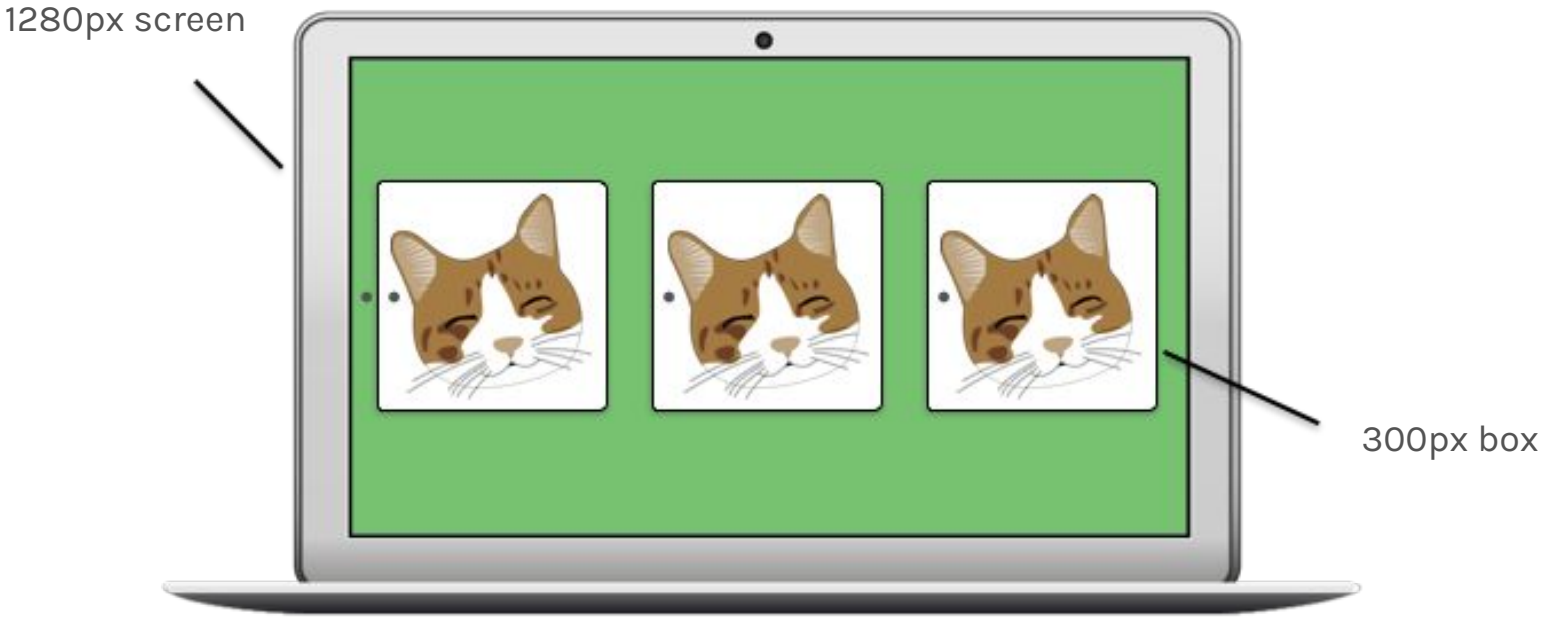


Source: Zenith | Forecasts begin in 2017

recode

Vox — How Apple's iPhone changed the world

Why won’t my site work on all devices?



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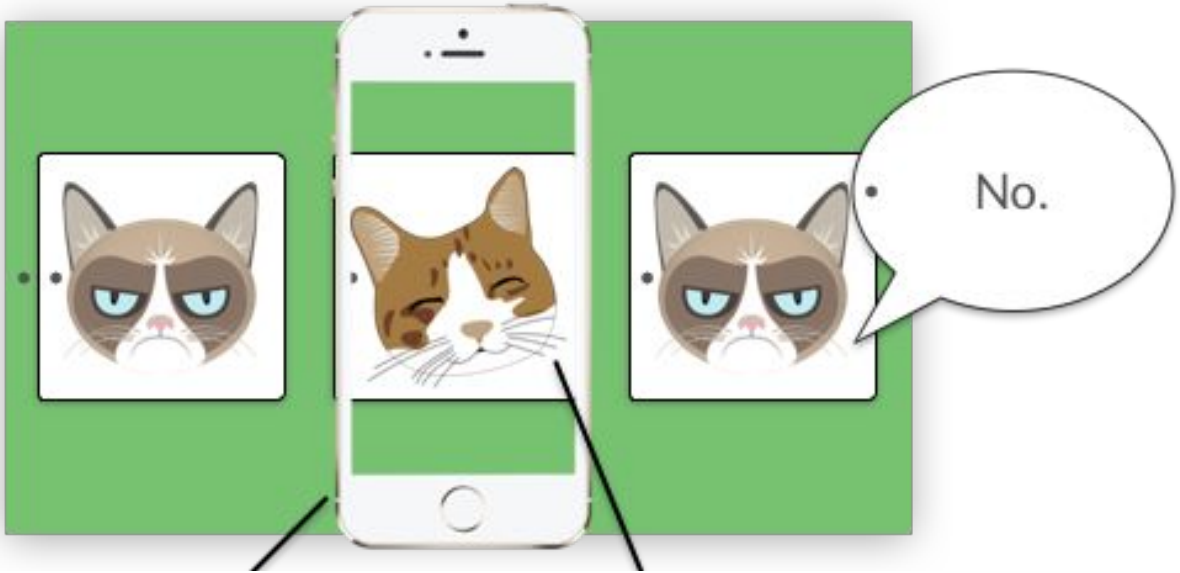
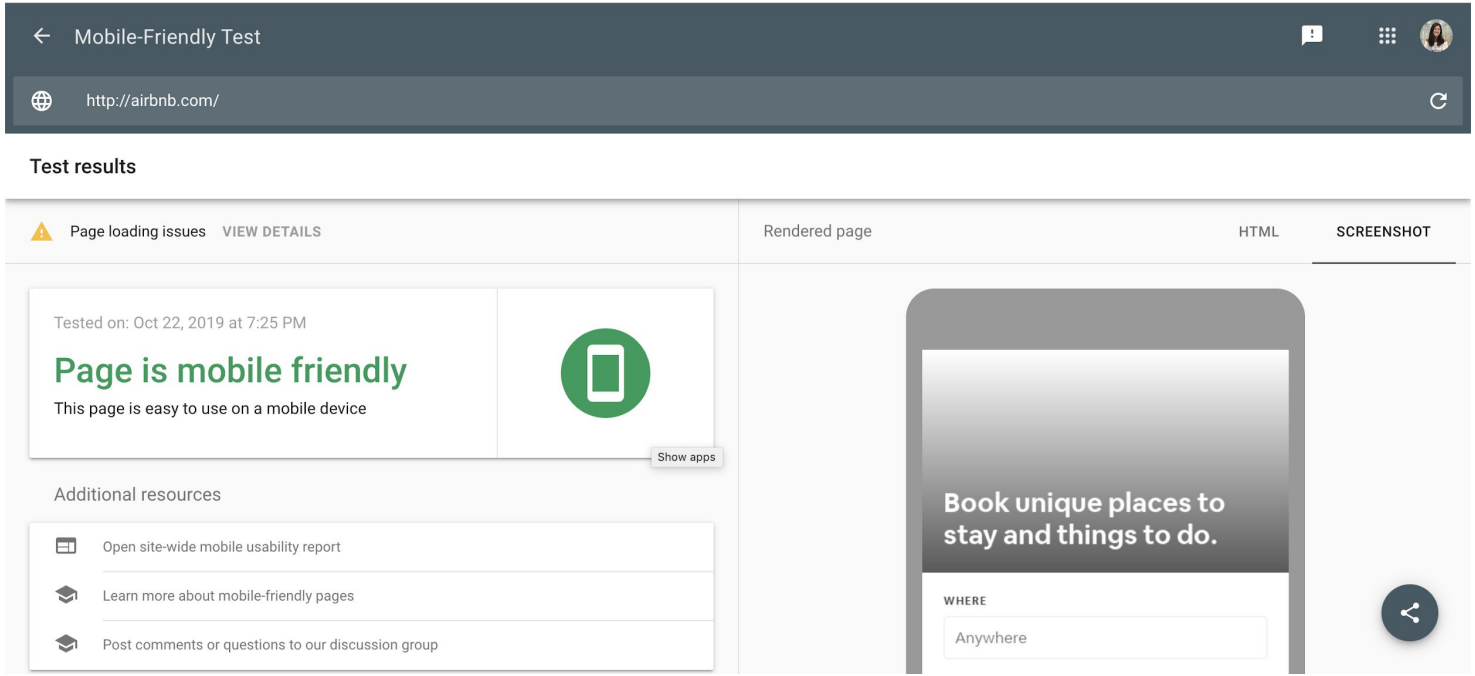


300px screen

300px box

Inspector Demo — What does my site look like on mobile, anyway?

Google Mobile Friendly Test



Link

Why won’t my site work on all devices?

- Different devices come with different screen sizes and rendering engines

- Content designed for a laptop with a much bigger screen won’t look the same on a tablet/mobile with a much smaller screen

What does this mean for designers?

We need to make sure our websites work on
all devices & browsers

Responsive Web Design

- “Designing websites for multiple screen sizes and devices, so that there is an optimal experience for every user at every possible size.”

- Responsive design deals with:
  - Browser compatibility
  - Screen resolutions
  - Mobile compatibility

- We will be exploring each of these aspects today

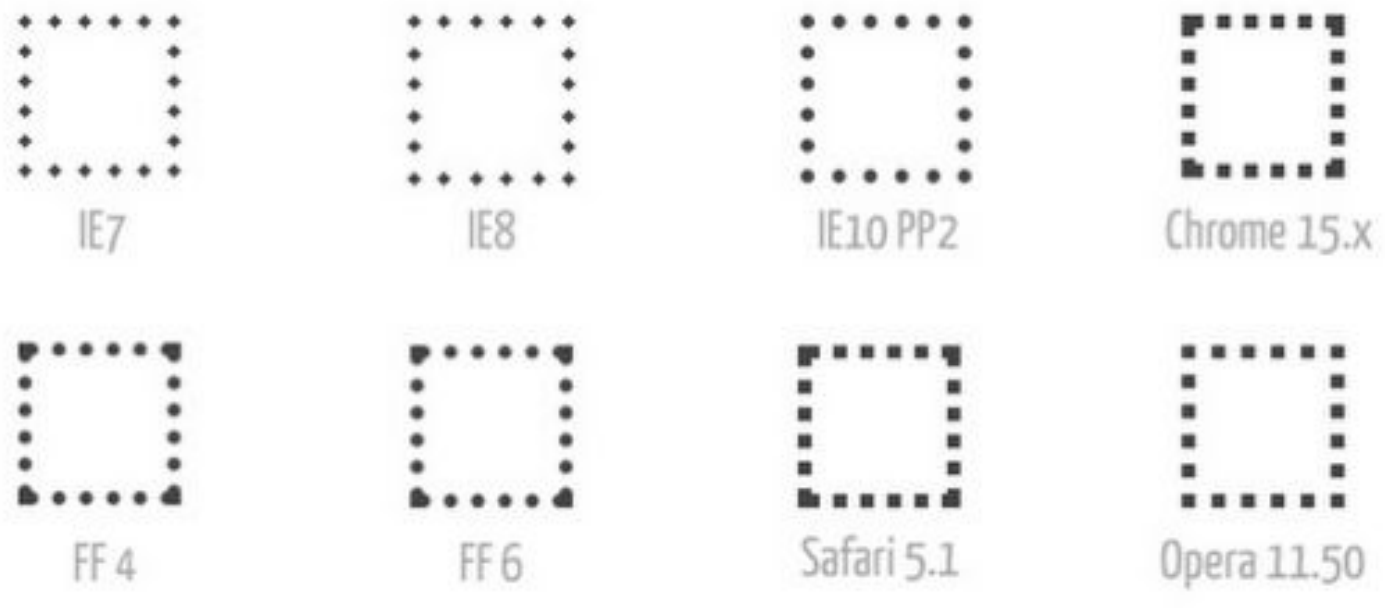
Issue 1: Browser Compatibility

Browser Compatibility

- The ability of a website to function “as expected” on any web browser

- Browsers have different rendering engines, which is the component that displays the HTML and CSS onto the screen
  - As a result, each browser interprets your code differently

Dotted Border Differences



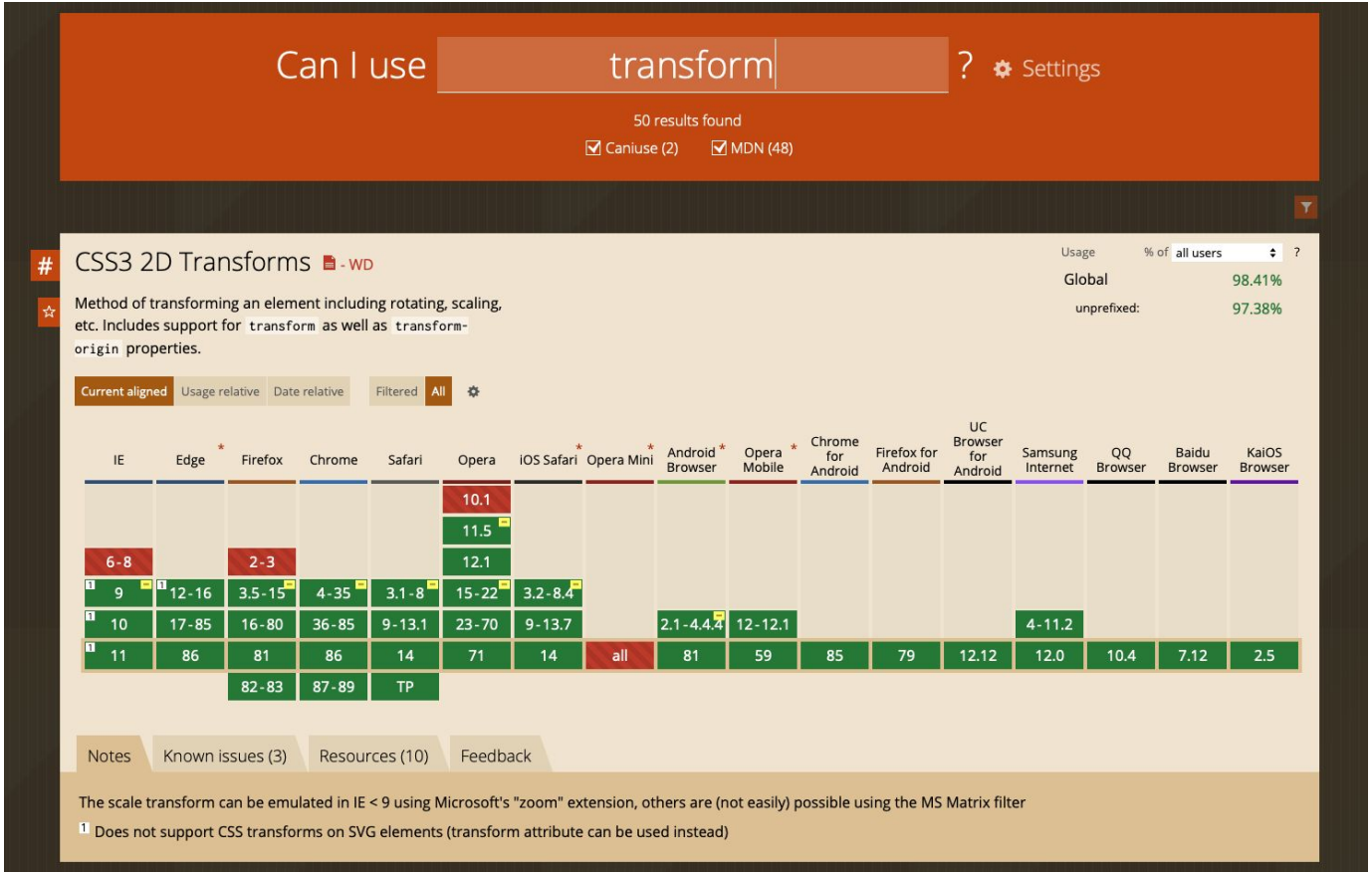
Vendor Prefixes

```
#container-3 {
    display: none;
    background-color: white;
    width: 100%;
    -webkit-transition: opacity 0.3s;
    -moz-transition: opacity 0.3s;
    -o-transition: opacity 0.3s;
    transition: opacity 0.3s;
}
```

Vendor Prefixes — Limitations

- Commonly used vendor prefixes for simple things (linear gradients, transitions, etc.)

- Instead of vendor prefixes, major browsers are moving away from prefixes and toward **@supports** or **feature queries**.
  - Not really in the scope of this class, but feel free to research on your own!



Caniuse.com — Great resource!

Issue 2: Screen Resolutions

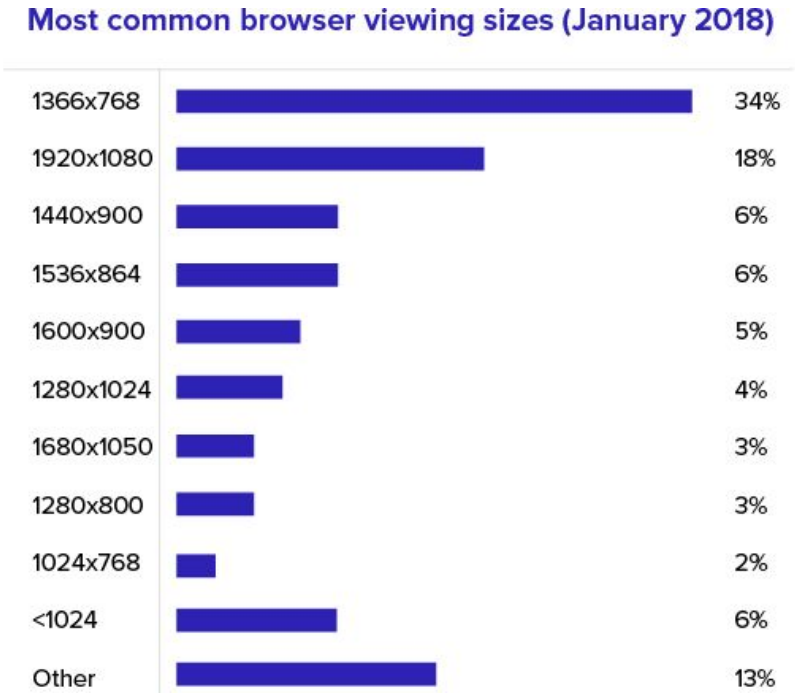
Screen Res, y’all

- Resolution: how many pixels your screen can display horizontally and vertically
  - whatismyscreenresolution.com

- Not all users will view your website on devices with the same screen resolution
  - 13” Macbook Pro vs 15” Macbook Pro

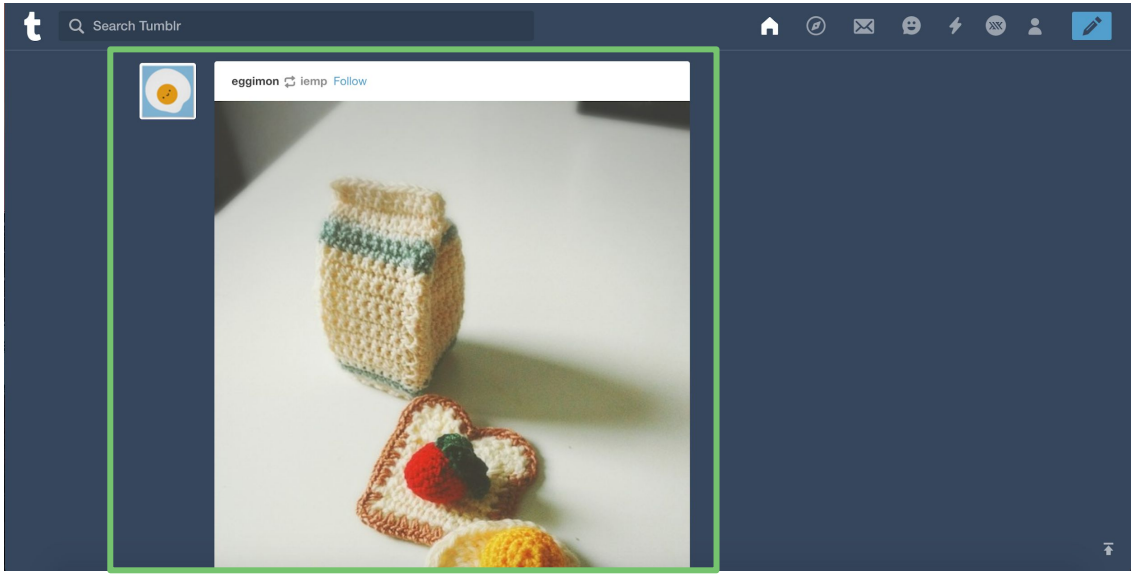
- Changing the size of your browser window also affects how your website looks

Screen Res, y’all



Screen Res, y’all

- Use containers to make your content fit a certain size
  - Using a container size of ~1024x768 is ideal:
  - All screen resolutions greater than or equal the size of the container will have a good viewing experience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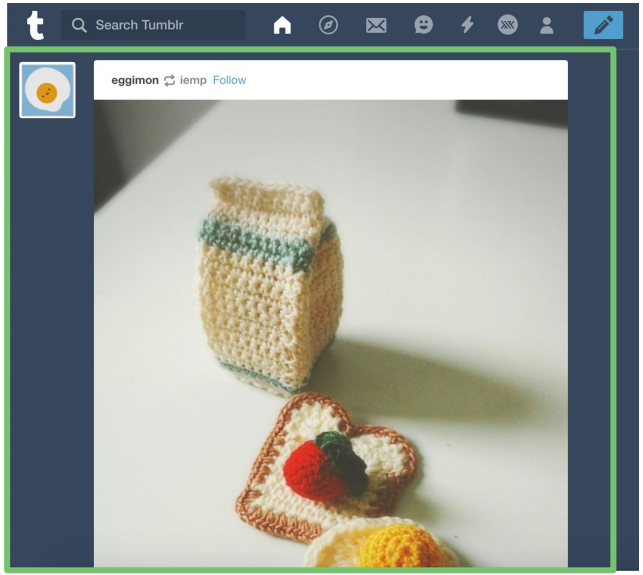
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Lower Screen Resolutions:
Use CSS Media Queries

Issue 3: Mobile Compatibility

Designing for Mobile

- User interfaces for mobile websites are quite different than those for desktop

- They differ in three main ways:
  - Screen size
  - Touchscreen capabilities
  - Performance

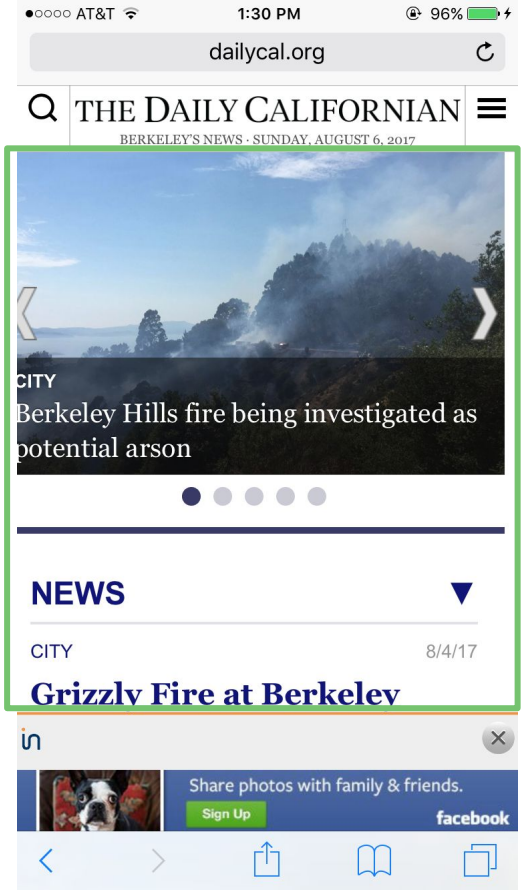
Mobile vs Desktop

	Mobile	Desktop
Screen Size	4” - 6.1”	11” - 30”
Input Method	Touchscreen	Mouse/trackpad
Performance	Relatively slow	Relatively fast

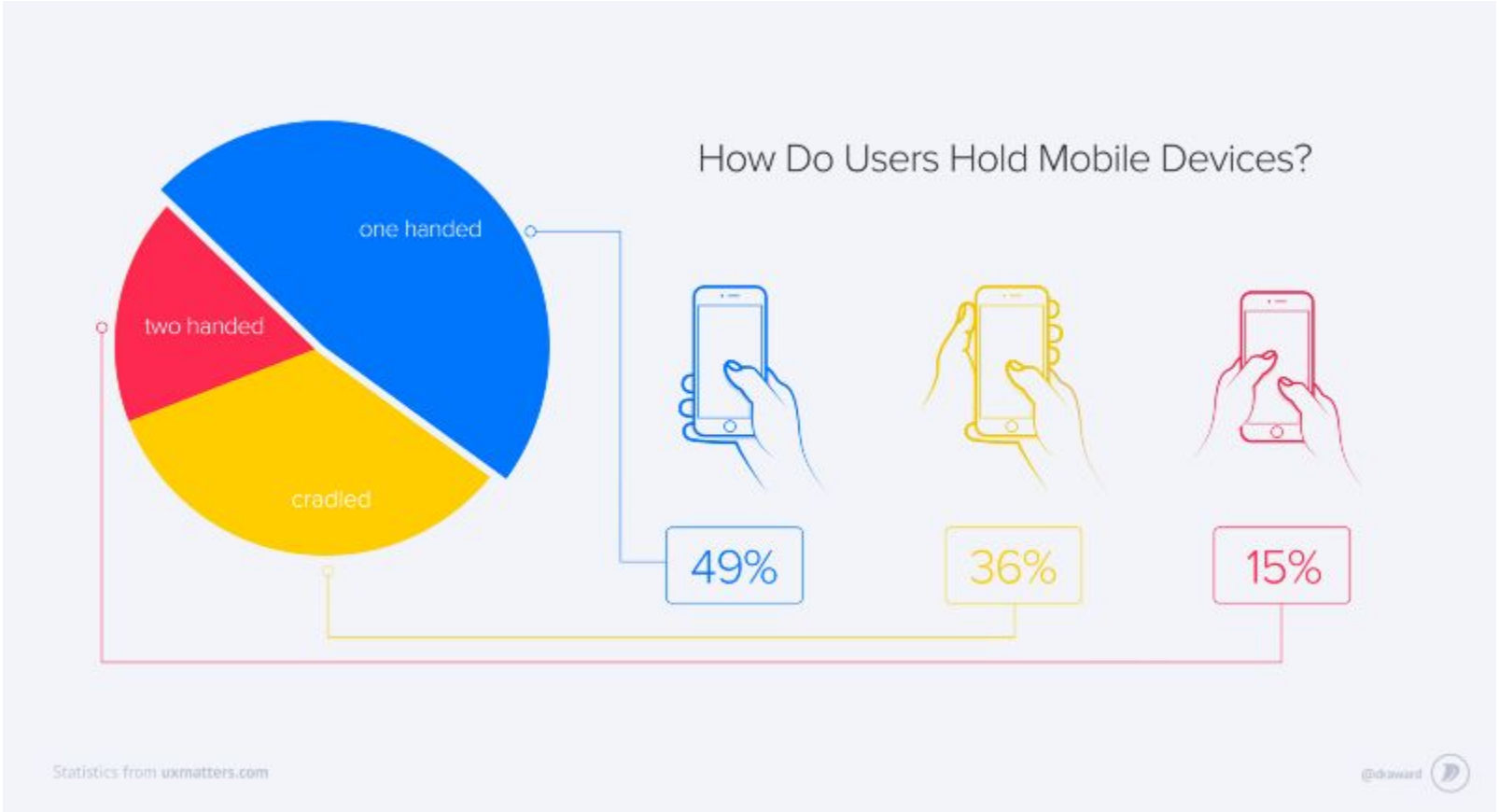
Screen Size

- Screen size is much, much smaller than on desktop:
  - Focus on the content and tuck everything else away

- Due to the restricted space, most UIs should stack elements vertically
  - Helps maximize the width and emphasis on each element



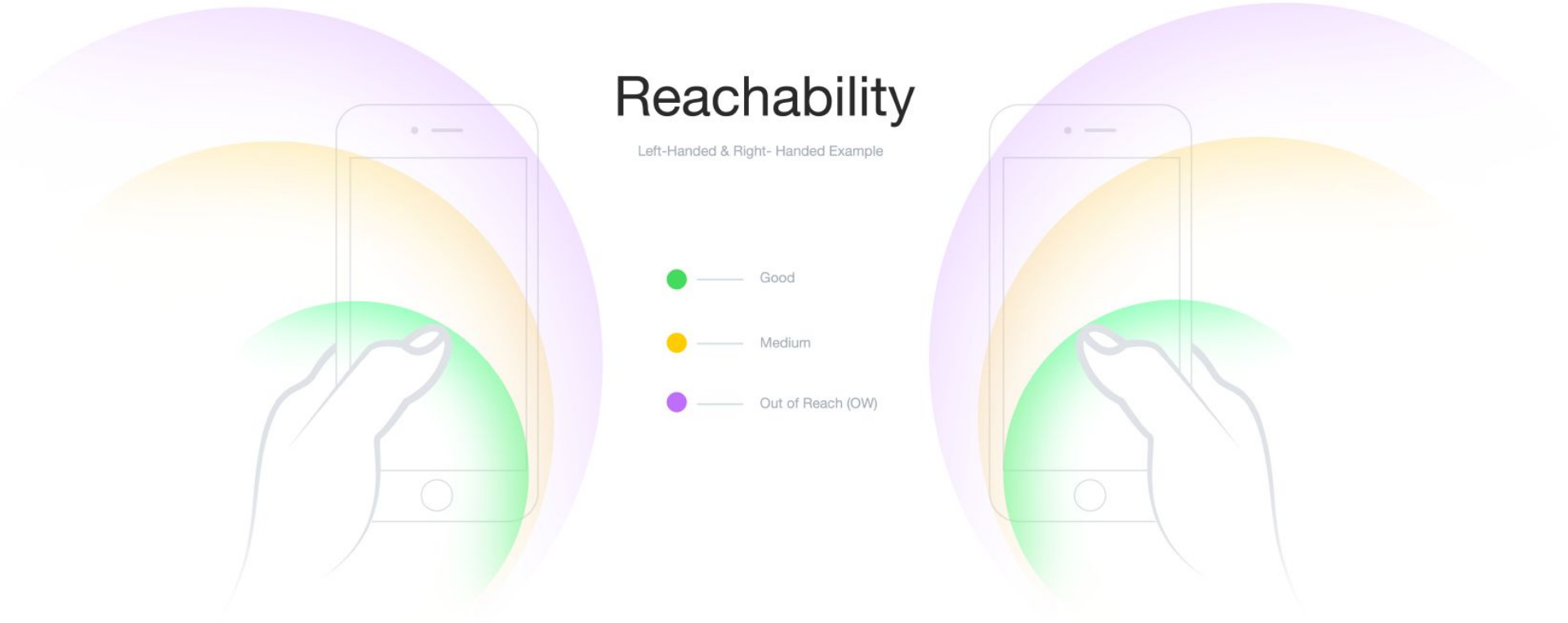
- Restrict your use of position: fixed elements
  - They reduce space for content
- Top bar and ad at the bottom are fixed, leaving less space for content



We mostly use our mobile phones one-handed

Reachability

Left-Handed & Right- Handed Example

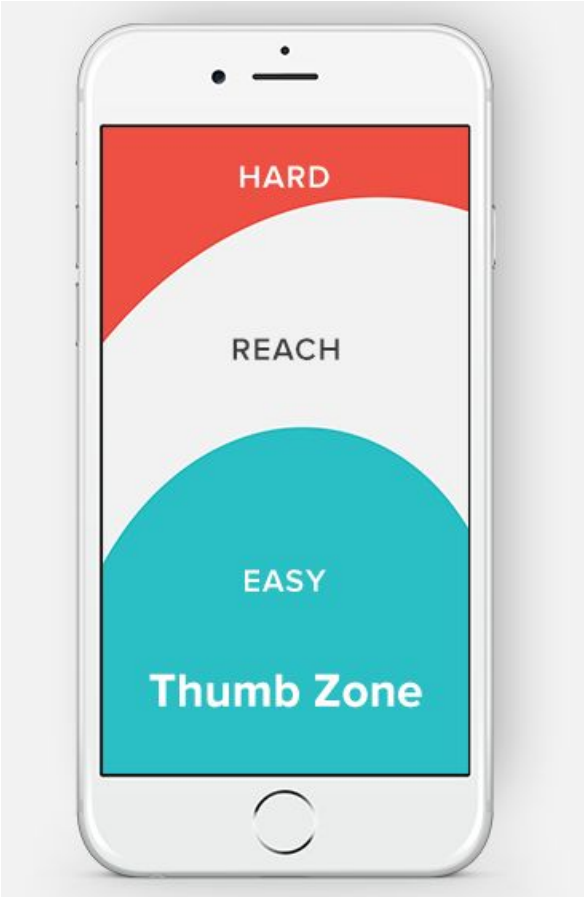


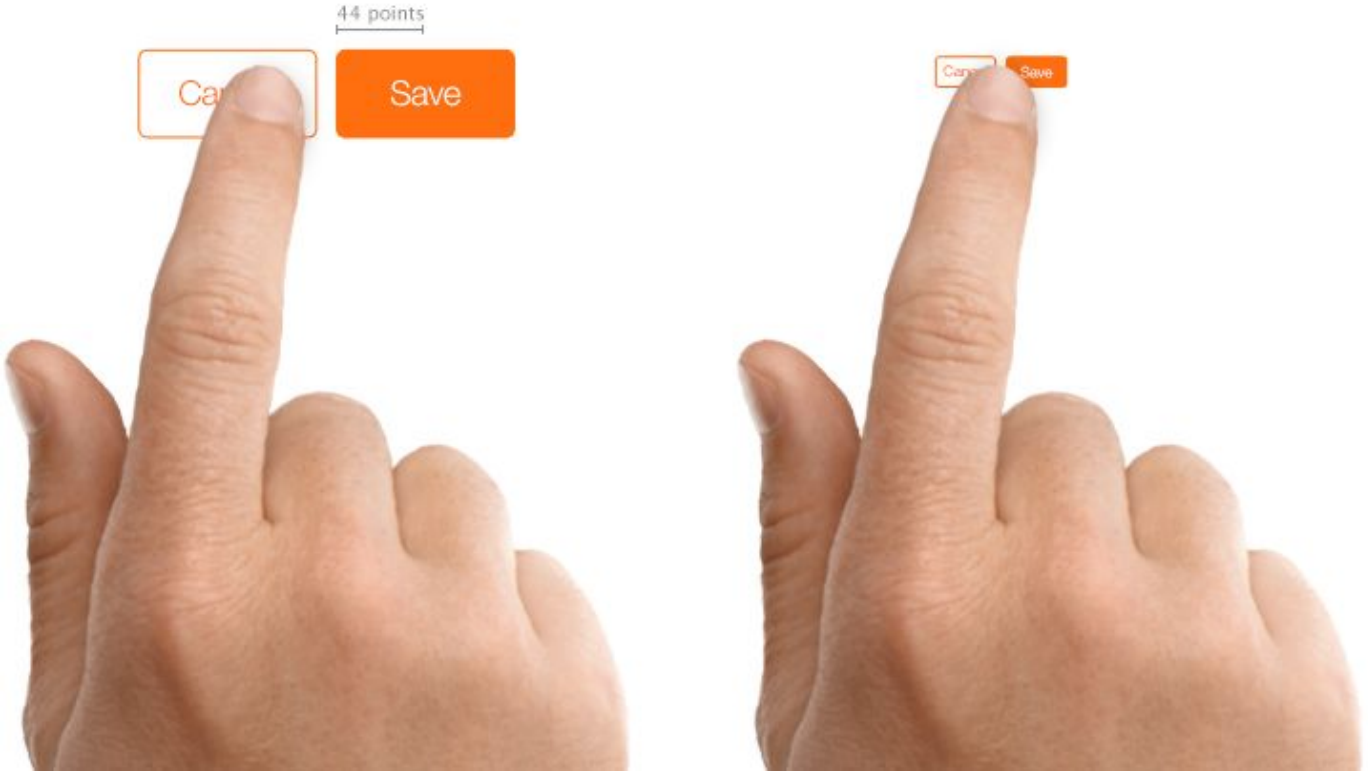
Reachability has physical limits

Touch Screen

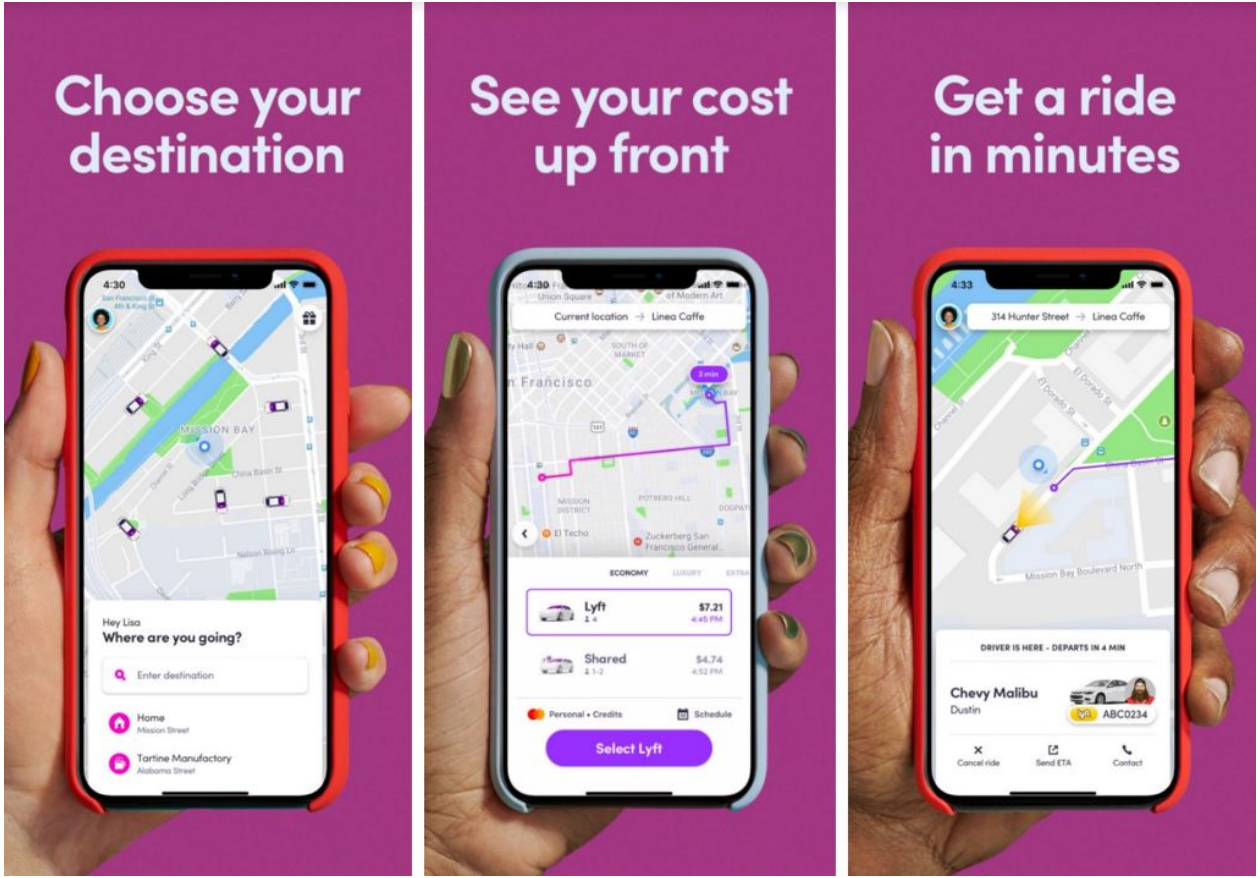
- Thumbs are less precise than cursors
  - Add padding to accommodate for the size of people's thumbs

- Commonly used buttons should be placed at the bottom of the screen: Improves reachability



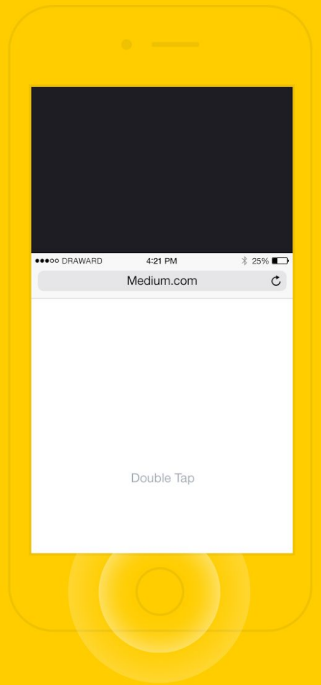


Mobile UI elements should have accessible dimensions


Choose your destination
Hey Lisa
Where are you going?
Enter destination
Home
Mission Street
Tartine Manufactory
Alabama Street
See your cost up front
Current location → Linea Caffe
ECONOMY
Lyft
$7.21
Shared
$4.74
Personal • Credits
Schedule
Select Lyft
Get a ride in minutes
314 Hunter Street → Linea Caffe
DRIVER IS HERE - DEPARTS IN 4 MIN
Chevy Malibu
Dustin
ABC0234
Cancel ride
Send ETA
Contact

EXAMPLE

iOS Reachability Solution



477px
Of **Useful** Space

@draward

iOS Human Interface Guidelines Reachability Solution (2014)

Performance

- Rendering performance on mobile is roughly half that of desktop
  - This causes mobile websites to be slow

- Minimize heavy JavaScript front-end manipulation
- Minimize use of transitions, animations, hover effects, etc.
- Mobile UIs should be as simple as “click and scroll”

Solution: Mobile-First Design

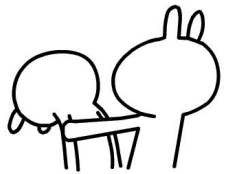
Performance

- It’s harder to squash things down to fit more things in smaller space than opening things up and adding more things to fill a larger space

- Design for mobile first, then design for larger screens
  - forces you think about what is important (visual hierarchy!)
  - take accessibility to the next level

Review

- Designing for variation is important
- Make sure your websites work on all browsers
  - Add prefixes if necessary
- Make sure your websites work WELL on all devices
  - Mobile-first design



Questions?