Responsive Web Design

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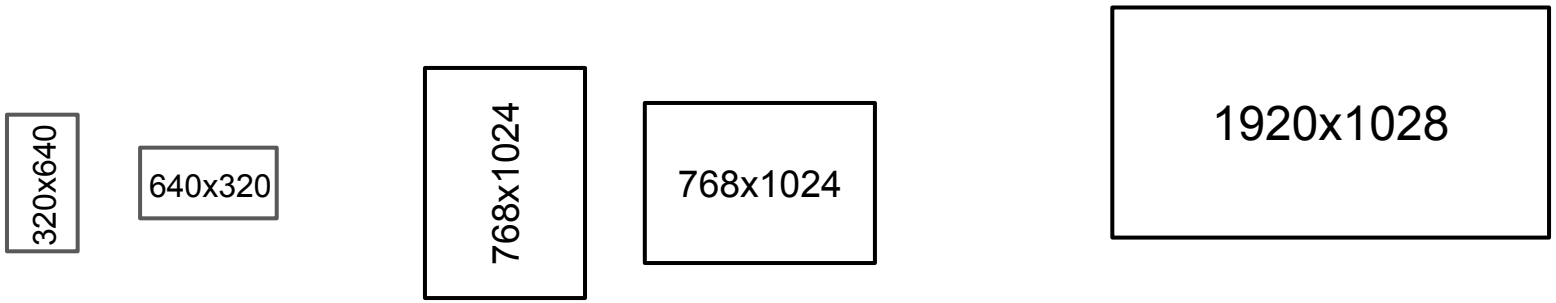
Web App Challenges: Screen real estate

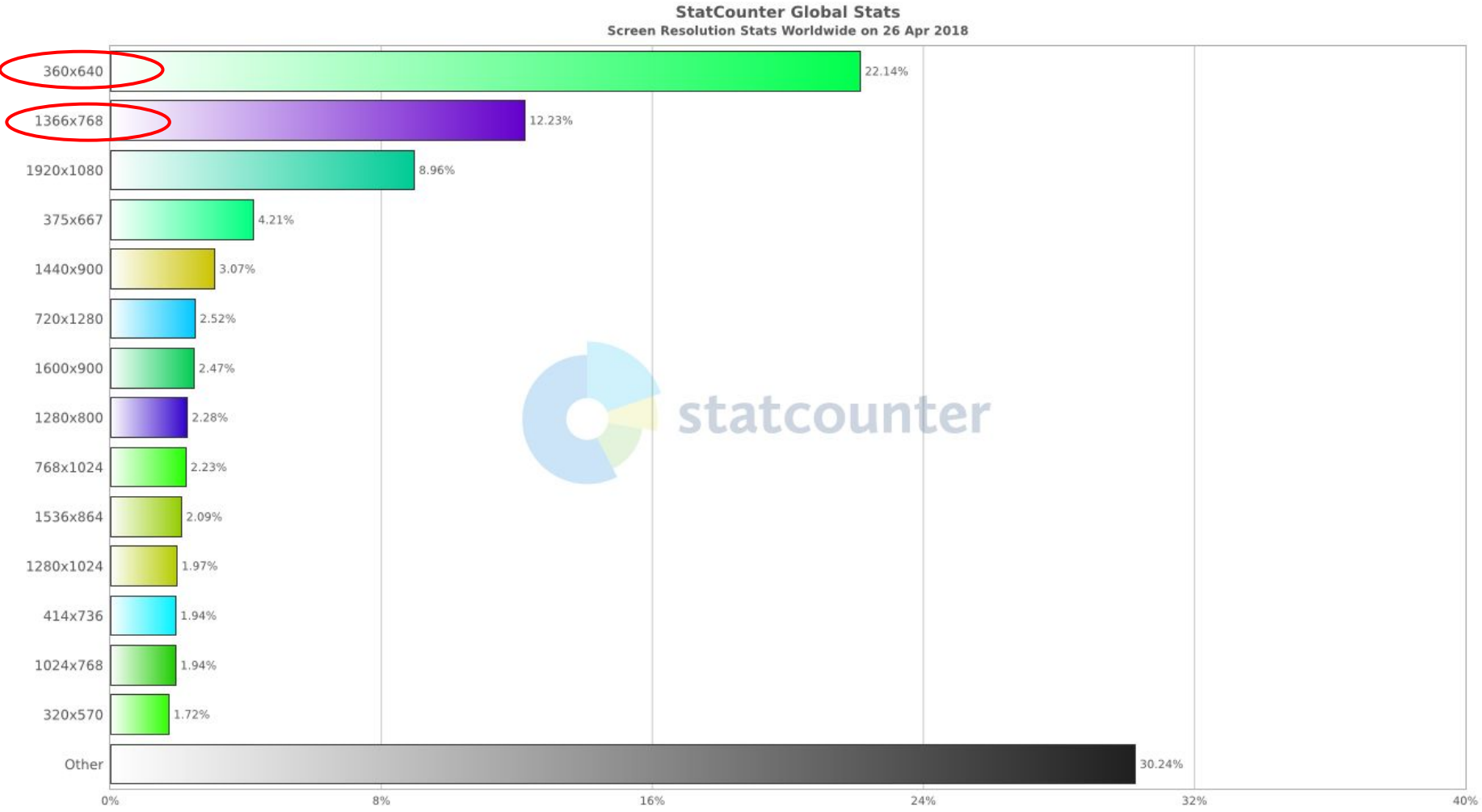


Cell Phones

Tablets

Desktops

- Do we need to build N versions of each web application?

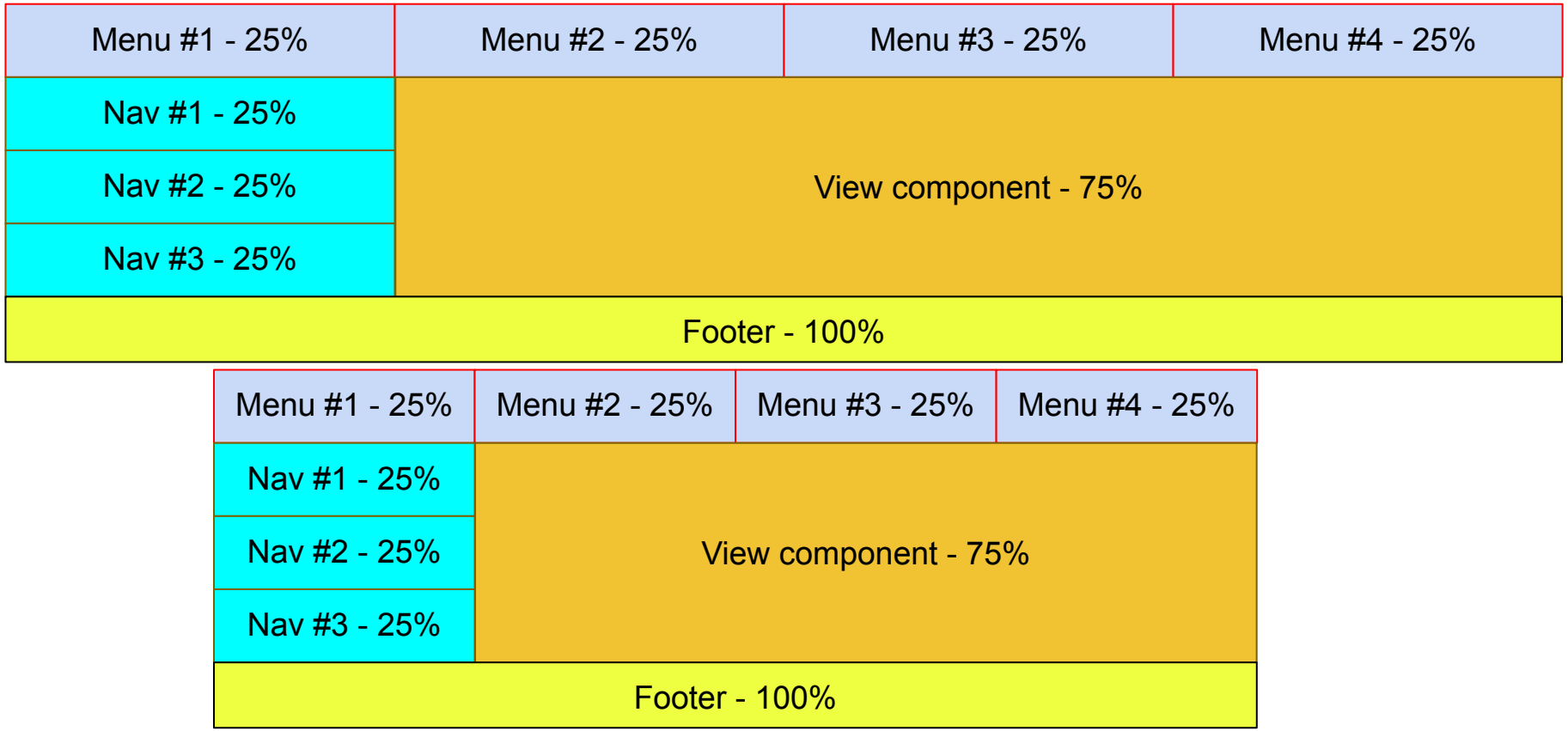

StatCounter Global Stats
Screen Resolution Stats Worldwide on 26 Apr 2018
360x640
22.14%
1366x768
12.23%
1920x1080
8.96%
375x667
4.21%
1440x900
3.07%
720x1280
2.52%
1600x900
2.47%
1280x800
2.28%
768x1024
2.23%
1536x864
2.09%
1280x1024
1.97%
414x736
1.94%
1024x768
1.94%
320x570
1.72%
Other
30.24%
0%
8%
16%
24%
32%
40%
statcounter

Responsive Web Design

- Content is like water!
  - The web app should flow into and fill whatever device you have.
- Possible with CSS extensions:
  - Add grid layout system with relative (e.g. 50%) rather than absolute (e.g. 50pt) measures
    - Specify element packing into columns and rows
  - Add `@media` rules based on screen sizes
    - Switch layout based on screen size
  - Made images support relative sizes
    - Autoscale image and videos to fit in screen region

```
img { width: 100%; height: auto; }
video { width: 100%; height: auto; }
```

Example of Responsive Web Layout



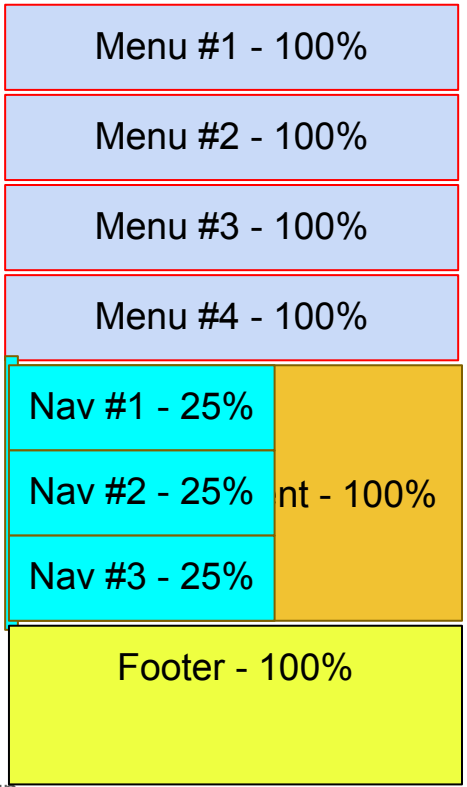
CSS Breakpoints

CSS Rules:

```
@media only screen and (min-width: 768px) {
     /* tablets and desktop layout */ }

@media only screen and (max-width: 767px) {
      /* phones */ }

@media only screen and (max-width: 767px)
     and (orientation: portrait) {
          /* portrait phones */ }
```



Responsive implementation

- Build components to operate at different screen sizes and densities
  - Use relative rather than absolute
  - Specify sizes in device independent units
- Use CSS breakpoints to control layout and functionality
  - Layout alternatives
  - App functionality conditional on available screen real estate
- Mobile first popular
  - Expand a good mobile design to use more real estate