

Fixed to Fluid to Responsive Grids in Design

R. Scott Granneman & Jans Carton

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Notes & URLs for this presentation can be found...

- » underneath the link to this slide show on granneman.com
- » at files.granneman.com/presentations/webdev/Fixed-to-Fluid-to-Responsive.txt

Grids

Josef Müller-Brockmann

Grid systems

in graphic design

A visual communication manual
for graphic designers,
typographers and
three dimensional designers

Raster systeme

für die
visuelle Gestaltung

Ein Handbuch für
Grafiker, Typografen und
Ausstellungsgestalter

Niggli

1961

Vermont Symphony Orchestra

Winter
2007
Season

Aaron Copland
The Tender Land
January 2007

Eric Satie
Gymnopedie 1, 2
February 2007

01/12/07
**Middlebury College
Center for the Arts**
8:00 pm

02/03/07
**Johnson State College
Dibden Center for the Arts**
8:00 pm

01/19/07
**Johnson State College
Dibden Center for the Arts**
8:00 pm

02/10/07
**Castleton State College
Fine Arts Center**
8:00 pm

01/26/07
**Lyndon State College
Alexander Twilight Theater**
8:00 pm

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**Middlebury College
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Vermont Symphony Orchestra

Winter
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An aerial photograph of a city grid, showing a dense pattern of streets and buildings. The image is tilted slightly to the right, creating a sense of movement and perspective. The colors are muted, with a lot of greys and browns, and some green from trees and parks.

Ordering Disorder

Grid Principles
for Web Design

Khoi Vinh

2010

Why use a grid system?

Elements line up

Proportion

Makes things easier for designers (& editors)

Particularly suited for how web rendering engines work

Rule of Thirds

Rule of thumb or guideline for images, designs, & websites

First named by John Thomas Smith in *Remarks on Rural Scenery* (1797)

“... an image should be imagined as divided into nine equal parts by two equally-spaced horizontal lines & two equally-spaced vertical lines ... important compositional elements should be placed along these lines or their intersections” —Wikipedia













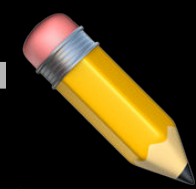




Grid-based frameworks

- » Foundation
- » Bootstrap
- » Skeleton

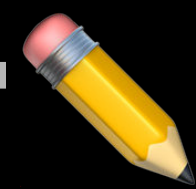
Good list at en.wikipedia.org/wiki/CSS_frameworks



SIDE NOTE

What's a framework?

“A CSS framework is ... meant to allow for easier, more standards-compliant web design using ... Cascading Style Sheets... Most of these frameworks contain at least a grid. More functional frameworks also come with more features and additional JavaScript based functions, but are mostly design oriented and unobtrusive.” —Wikipedia



SIDE NOTE

Advantages

- » Quicker development process
- » Should include many well thought out design patterns
- » Usually tested across multiple browsers

Disadvantages

- » Often lots of unused code in the framework, so can be bloated

Foundation

Last major release: 6.0 in November 2015

License: MIT

Layout: Fixed, Fluid, Responsive

Columns: 12

Foundation

The most advanced responsive front-end framework in the world.

Download Foundation 6

★ 21.8k GitHub stars

🐦 @ZURBfoundation



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foundation.zurb.com

Bootstrap

“Bootstrap is a free and open-source collection of tools for creating websites and web applications. It contains HTML- and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions. ... As of May 2015, it was the most-starred project on GitHub, with over 81,000 stars and more than 32,000 forks.” —Wikipedia

MSNBC

Constant Contact

NBA

PayPal

Dell

Target

GoDaddy

Reuters

Bloomberg Business

Wal-Mart

iStock

Codecademy

NASA

Home Depot

Newsweek

StumbleUpon

Digg

Healthcare.gov

PHP.net

SugarSync

BitBucket

Business Insider

Fender

Visual Studio Code

Last major release: 4.0 in January 2018

License: MIT

Layout: Fixed, Fluid, Responsive

Columns: 12



The most popular front-end framework for developing responsive, mobile first projects on the web.

[Download Bootstrap](#)

Currently v3.1.1



SendGrid SMTP Service:

Avoid Spam Folders &
Ensure Email Delivery.
Free Sign-up.

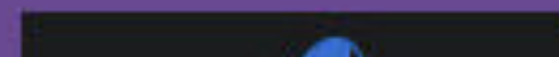
ads via **Carbon**



The most popular front-end framework for developing responsive,
mobile first projects on the web.

[Download Bootstrap](#)

Currently v3.1.1



SendGrid SMTP Service

getbootstrap.com

SIDE NOTE

Bootstrap used to be called *Twitter Bootstrap*

2 developers at Twitter created Bootstrap, & Twitter sponsored it for a while

Twitter never actually used Bootstrap on its website!

Skeleton

“You should use Skeleton if you’re embarking on a smaller project or just don’t feel like you need all the utility of larger frameworks. Skeleton only styles a handful of standard HTML elements and includes a grid, but that’s often more than enough to get started.”

“It’s a starting point, not a UI framework”

Around 400 lines of CSS unminified & including comments (versus ~9000 with Bootstrap 4!)

Only provides...

- » Grid (5 breakpoints: >1200px, >1000px, >750px, >550px, >400px)
- » Typography
- » Buttons
- » Forms
- » Lists
- » Code
- » Tables
- » Utilities (floats)

Last major release: 2.0 in December 2014

License: MIT

Layout: Fixed, Fluid, Responsive

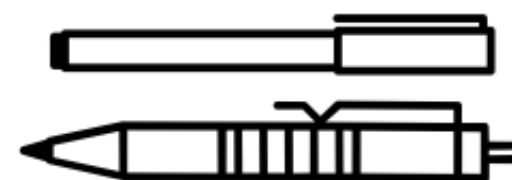
Columns: 12

A dead simple, responsive boilerplate.

DOWNLOAD



Light as a feather at ~400 lines & built with mobile in mind.



Styles designed to be a starting point, not a UI framework.



Quick to start with zero compiling or installing necessary.

INTRO

CODE

EXAMPLES

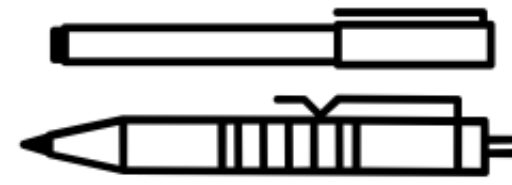
MORE

A dead simple, responsive boilerplate.

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getskeleton.com

Spectre.css

The lightweight, responsive and modern CSS framework

[Docs](#)[GitHub](#)

Lightweight

Lightweight (~10KB gzipped) starting point for your projects

Responsive

Flexbox-based, responsive and mobile-friendly layout

Modern

Carefully designed elements and components

Getting started

[Introduction](#)[Installation](#)[Custom version](#)

Introduction

Spectre.css is a lightweight and responsive and modern CSS framework for faster and extensible development

Spectre.css

The lightweight, responsive and modern CSS framework

[Docs](#)[GitHub](#)

Lightweight

Lightweight (~10KB gzipped) starting point for your projects

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Flexbox-based, responsive and mobile-friendly layout

Modern

Carefully designed elements and components

[Getting started](#)[Introduction](#)

picturepan2.github.io/spectre/

Fluid Layouts

AKA liquid

Layout resizes to fit the display

Printable version

Languages

- Català
- Español
- فارسی
- Français
- Ido
- Қазақша
- Kreyòl ayisyen
- Nederlands
- O‘zbekcha
- Português
- Српски / srpski
- Srpskohrvatski / српскохрватски
- Volapük
- Edit links

Demographics [edit]

2010 census [edit]

As of the [census](#)^[2] of 2010, there were 13,065 people, 4,741 households, and 2,946 families residing in the city. The [population density](#) was 1,278.4 inhabitants per square mile (493.6/km²). There were 5,276 housing units at an average density of 516.2 per square mile (199.3/km²). The racial makeup of the city was 79.2% [White](#), 7.8% [African American](#), 0.4% [Native American](#), 0.7% [Asian](#), 1.2% [Pacific Islander](#), 7.7% from [other races](#), and 3.0% from two or more races. [Hispanic](#) or [Latino](#) of any race were 13.2% of the population.

There were 4,741 households of which 33.6% had children under the age of 18 living with them, 42.4% were [married couples](#) living together, 14.1% had a female householder with no husband present, 5.6% had a male householder with no wife present, and 37.9% were non-families. 30.5% of all households were made up of individuals and 14.1% had someone living alone who was 65 years of age or older. The average household size was 2.49 and the average family size was 3.07.

The median age in the city was 32.9 years. 23.8% of residents were under the age of 18; 15.8% were between the ages of 18 and 24; 23.5% were from 25 to 44; 22.8% were from 45 to 64; and 14.2% were 65 years of age or older. The gender makeup of the city was 49.2% male and 50.8% female.

2000 census [edit]

As of the 2000 [census](#)^[4], with a population of 12,433, showed 4,732 households, and 2,985 families residing in the city. The [population density](#) was 1,225.4 people per square mile (472.9/km²). There were 5,127 housing units at an average density of 505.3 per square mile (195.0/km²). The racial makeup of the city was 86.05% [White](#), 7.40% [African American](#), 0.43% [Native American](#), 0.39% [Asian](#), 0.34% [Pacific Islander](#), 3.46% from [other races](#), and 1.94% from two or more races. [Hispanic](#) or [Latino](#) of any race were 7.17% of the population.

• Estimate ^(2012^[3])	13,033
• Density	1,278.4/sq mi (493.6/km ²)
Time zone	Central (CST) (UTC-6)
• Summer (DST)	CDT (UTC-5)
ZIP code	65340
Area code(s)	660
FIPS code	29-46316 ^[4]
GNIS feature ID	0721900 ^[5]
Website	www.marshall-mo.com ↗

Print/export

Create a book

Download as PDF

Printable version

Languages

Català

Español

فارسی

Français

Ido

Қазақша

Kreyòl ayisyen

Nederlands

O‘zbekcha

Português

Српски / srpski

Srpskohrvatski / српскохрватски

Volapük

Edit links

Marshall, Missouri – Wikipedia, the free encyclopedia

https en.wikipedia.org/wiki/Marshall,_Missouri

Reader

Demographics

[edit]

2010 census

[edit]

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There were 4,741 households of which 33.6% had children under the age of 18 living with them, 42.4% were **married couples** living together, 14.1% had a female householder with no husband present, 5.6% had a male householder with no wife present, and 37.9% were non-families. 30.5% of all households were made up of individuals and 14.1% had someone living alone who was 65 years of age or older. The average household size was 2.49 and the average family size was 3.07.

The median age in the city was 32.9 years. 23.8% of residents were under the age of 18; 15.8% were between the ages of 18 and 24; 23.5% were from 25 to 44; 22.8% were from 45 to 64; and 14.2% were 65 years of age or older. The gender makeup of the city was 49.2% male and 50.8% female.

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There were 4,732 households out of which 30.7% had children under the age of 18 living with them, 45.8% were **married couples** living together, 12.9% had a female householder with no husband present, and 36.9% were non-families. 31.1% of all households were made up of individuals and 15.4% had someone living alone who was 65 years of age or older. The average household size was 2.42 and the average family size was 3.00.

In the city the population was spread out with 24.7% under the age of 18, 13.0% from 18 to 24, 25.3% from 25 to 44, 21.8% from 45 to 64, and 15.3% who were 65 years of age or older. The median age was 36 years. For every 100 females there were 95.3 males. For every 100 females age 18 and over, there were 93.5 males.

The median income for a household in the city was \$31,649, and the median income for a family was \$36,686. Males had a median income of \$26,556 versus \$19,688 for females. The **per capita income** for the city was \$16,646. About 12.5% of families and 15.0% of the population were below the **poverty line**, including 23.6% of those under age 18 and 5.1% of those age 65 or over.

Censorship debate

[edit]

• **Water**

0.06 sq mi (0.16 km²)

Elevation

764 ft (233 m)

Population ⁽²⁰¹⁰⁾^[2]

• **Total**

13,065

• **Estimate** ⁽²⁰¹²⁾^[3]

13,033

• **Density**

1,278.4/sq mi (493.6/km²)

Time zone

Central (CST) (UTC-6)

• **Summer (DST)**

CDT (UTC-5)

ZIP code

65340

Area code(s)

660

FIPS code

29-46316^[4]

GNIS feature ID

0721900^[5]

Website

www.marshall-mo.com [↗](#)

Open "https://en.wikipedia.org/wiki/African_American_(U.S._Census)" in a new tab


```
body {  
  width: 100%;  
  margin: 0 30px;  
}
```

```
.column1, .column2, .column3 {  
  width: 31.3%;  
  float: left;  
  margin: 1%;  
}
```

$$31.3 \times 3 = 93.9$$

$$1 \times 6 = 6$$

$$93.9 + 6 = 99.9$$

Advantages

- » Adapts to most screen resolutions & devices
- » Reduces user scrolling
- » Allows for users on smaller displays while being optimized for larger displays

Disadvantages

- » Challenging to read when text spans a wide distance
- » Harder to execute successfully
- » Limits imposed on whitespace
- » Horrible on mobile & high resolution (retina) devices

Fixed Layouts

Layout has same width on every display


```
body {  
    width: 960px;  
    margin: 0 auto;  
}
```

```
.column1, .column2, .column3 {  
    width: 300px;  
    float: left;  
    margin: 10px;  
}
```

$$300 \times 3 = 900$$

$$10 \times 6 = 60$$

$$900 + 60 = 960$$



search

Scott Grannem

[Writing](#)[Presentations](#)[Teaching](#)[Web Development](#)[Tech Info](#)[Personal](#)

Scott Granneman is an [author](#), [educator](#), & partner in a Web development company in St. Louis, Missouri. Scott has written six books, contributed to two, and penned monthly columns for SecurityFocus and *Linux Magazine*. He is an Adjunct Professor at Washington University in St. Louis & Webster University, [teaching courses](#) on technology, security, web development, & the Internet. As a Principal of [WebSanity](#), he plans, develops, and hosts websites for clients in 12 states using an open source, UNIX-based [content management system](#). He has given [presentations](#) all over the United States, and loves speaking to people.

News & Updates

Note: The following news items are personal in nature & are automatically selected from [GranneBlog](#).

Subscribe to News via:

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- [Email](#)

[Talk about Markdown to SLUUG this Wednesday](#)

November 7, 2011

Key Site Links

Pages you're probably looking for

- [Publications](#)
- [Summer Vacation 2007: The](#)
- [Web Development Key Links](#)
- Wash U: [Website Design & Development Syllabus](#)
- Webster U: [Programming for Communications Syllabus](#)
- Webster U: [Intro to Web Programming Syllabus](#)
- Webster U: [Senior Overview](#)

Advantages

- » Gives designer more control over how an image floated within the content will look
- » Allows for planned whitespace
- » Improves readability with narrower text blocks

Disadvantages

- » Can appear dwarfed in large browser windows
- » Takes control away from users (or is this an advantage?)

Mobile Solutions

Mobile Site

Create 2 different sites with different HTML, CSS, & content:

- » 1 for desktops (www.foobar.com)
- » 1 for mobile (m.foobar.com)

Browser sniffing on the server determines which site is served

Adaptive Design

AKA reactive design & progressive enhancement

Create 3 sites (at 1 URL) with the same content, but different HTML & CSS:

- » A basic site without CSS or JavaScript for older, low-end devices
- » A site with CSS & JavaScript appropriate for mobile
- » A site with CSS & JavaScript appropriate for desktops

Browser sniffing on the server determines which site is served

Zooming

2007



2007



Responsive Design

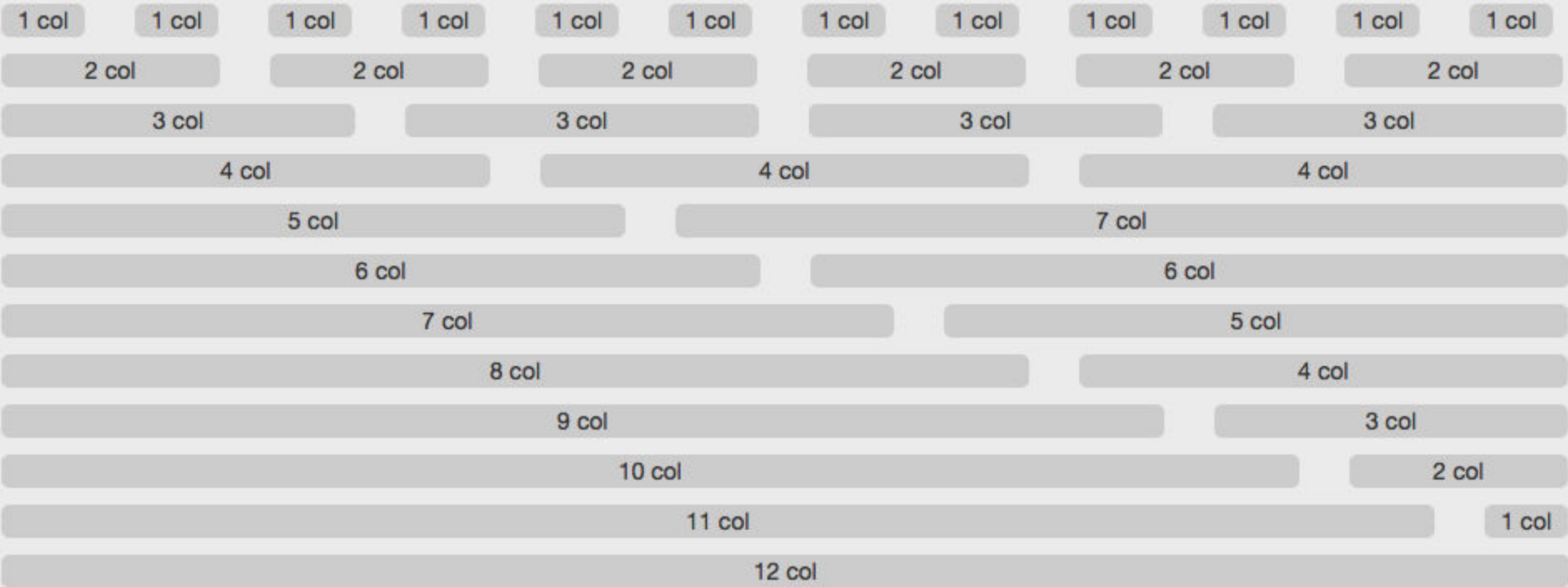
Create 1 site (at 1 URL) with the same content & HTML, but the CSS changes depending upon the width of the browser's or device's viewport:

- » Phones
- » Tablets in portrait
- » Tablets in landscape & small desktops & laptops
- » Desktops & laptops

Width detection is done on the client, not the server

Medium Bootstrap Grid

992px to 1199px viewport, fixed widths, 970px container, 30px gutters

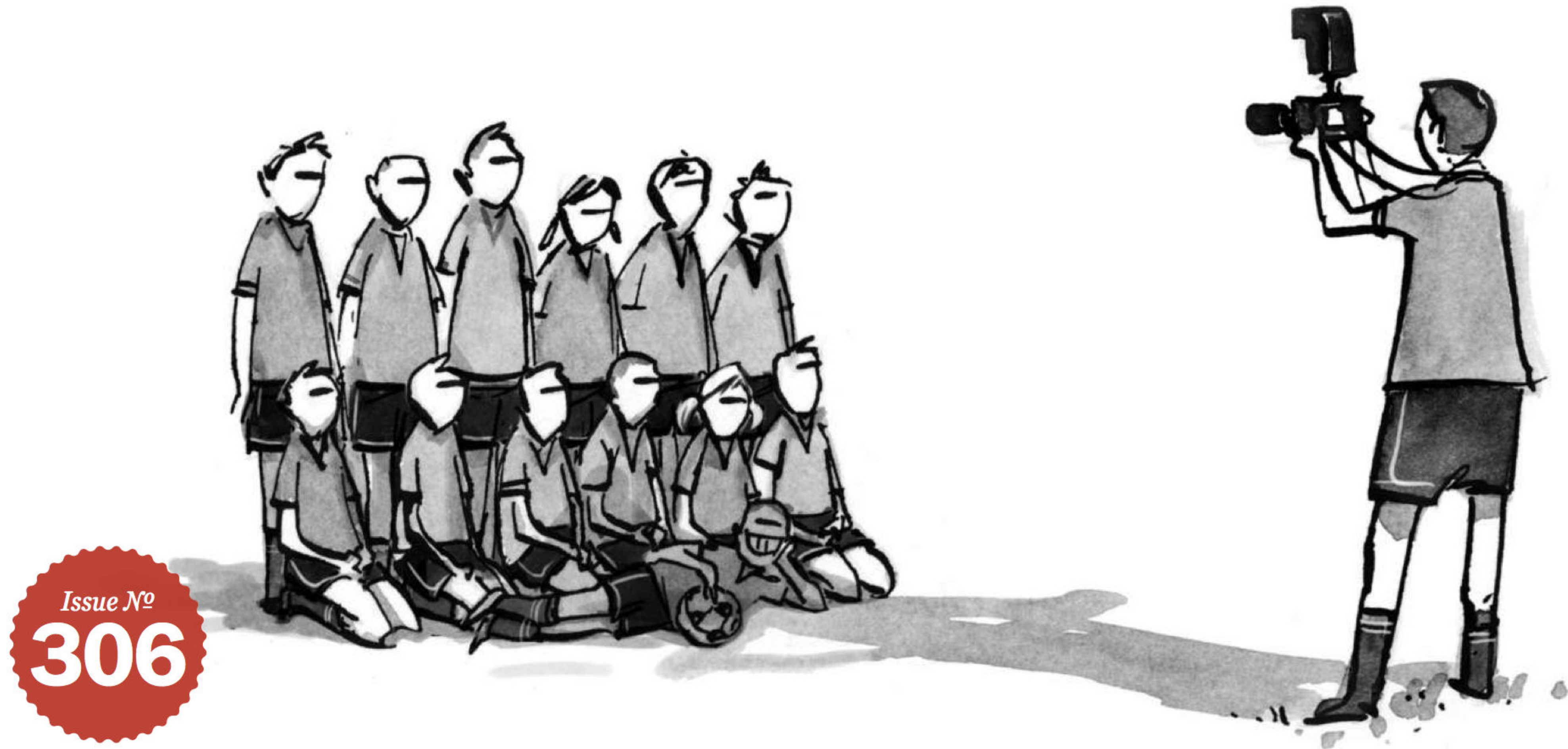


All layout is based on *columns*

-md

Responsive Layouts

A LIST A PART



Responsive Web Design

by **ETHAN MARCOTTE** · May 25, 2010

Published in [CSS](#), [Layout & Grids](#), [Mobile/Multidevice](#), [Responsive Design](#), [Interaction Design](#) · 103 Comments

“... a web design approach aimed at crafting sites to *provide an optimal viewing experience*—easy reading and navigation with a minimum of resizing, panning, and scrolling—*across a wide range of devices* (from mobile phones to desktop computer monitors)” —
Wikipedia



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ANIMALS

CONSERVATION

EDUCATION

EVENTS

MEMBERSHIP

GIVE



ZooMail

Join ZooMail to receive updates on events, animals, Zoo attractions and more!

FEATURES

- Kall's first Cardinals home opener
- St. Louis Children's Hospital Make Tracks for the Zoo
- Stingrays at Caribbean Cove presented by Mercy Kids opens April 15
- First Bank Sea Lion Show
- Blog: Fighting Mosquitoes Takes On Whole New Urgency As Warm Weather Arrives!

FEATURES

Book a Behind the Scenes Tour

VISIT

Hours, Prices, Directions
Zoo Hours: 9 a.m.-5 p.m. daily
Save with Adventure Passes
Zoo Attractions
Plan Your Visit

CONTACT

Zoo Address & Phone
Employment
Contact Us
Press Room

SOCIALIZE

Blog

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FEATURES

- Blog: Where do the kids who get off to help with Research?
- Using Technology & Summer Education Programs
- St. Louis Children's Hospital Make Tracks for the Zoo
- First Bank Sea Lion Show

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**Help make us
the best zoo in the
whole wild world.**

Click here to learn more and donate
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FEATURES

- [Penguin & Puffin Webcams](#)
- [Valentine Adoption](#)
Cuddle with a colobus monkey!
- [Baby colobus monkey](#)
- Delta Dental [Winter Zoo](#)

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Saint Louis Zoo
Animals Always®



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Delta Dental Winter Zoo

Fun family activities all around the Zoo.

Help
the best
whole

Click here to
to *The Living*

FEATURES

- Penguin & Puffin Webcams
- Valentine Adoption Cuddle with a colobus monkey!
- Baby colobus monkey
- Delta Dental Winter Zoo and Mardi Gras
- Untamed Hearts: Valentine's Day Dinner



Saint Louis Zoo
Animals Always®



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**Delta Dental
Winter Zoo**

Fun family activities all around the Zoo.

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the best
whole**

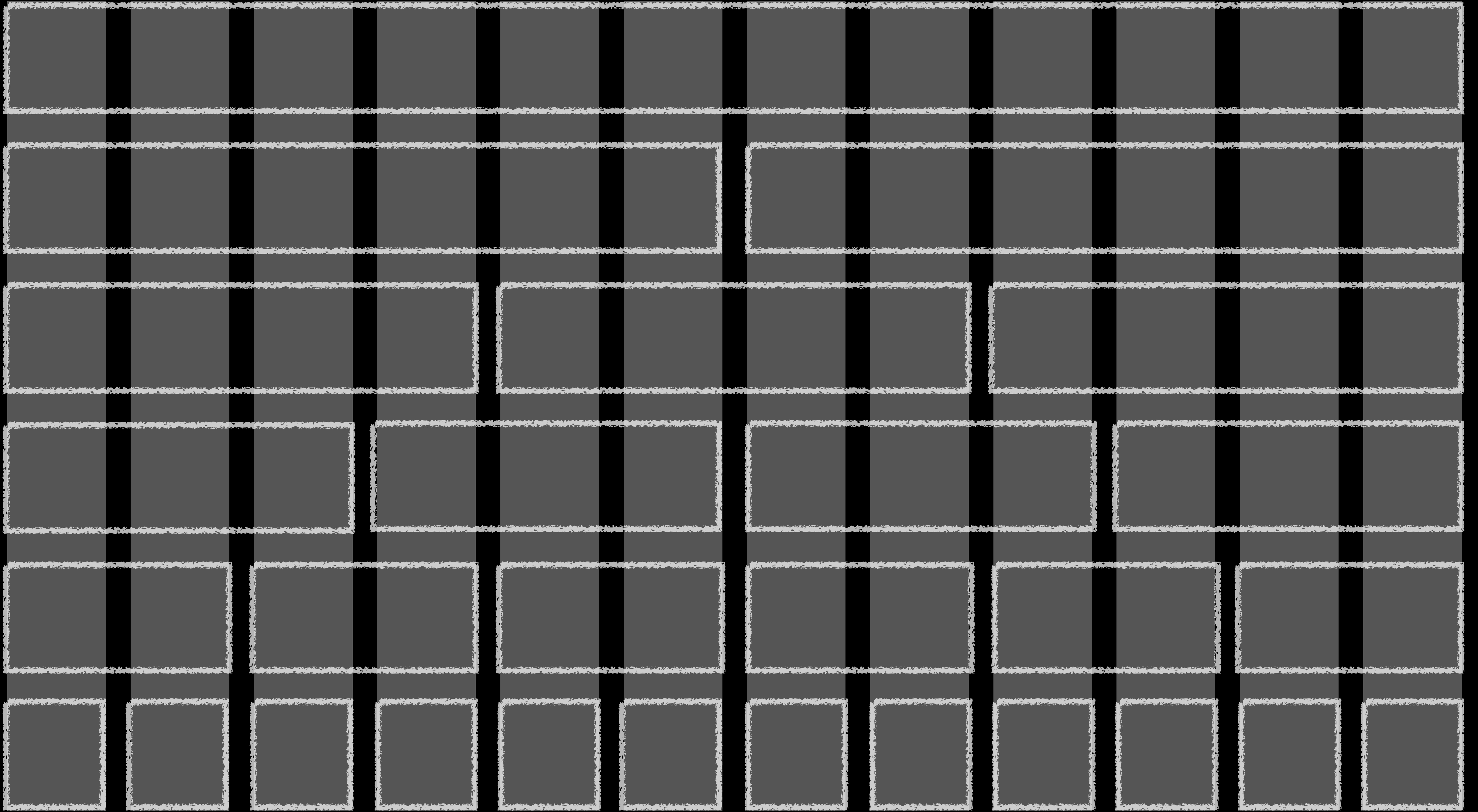
[Click here to
to The Living](#)

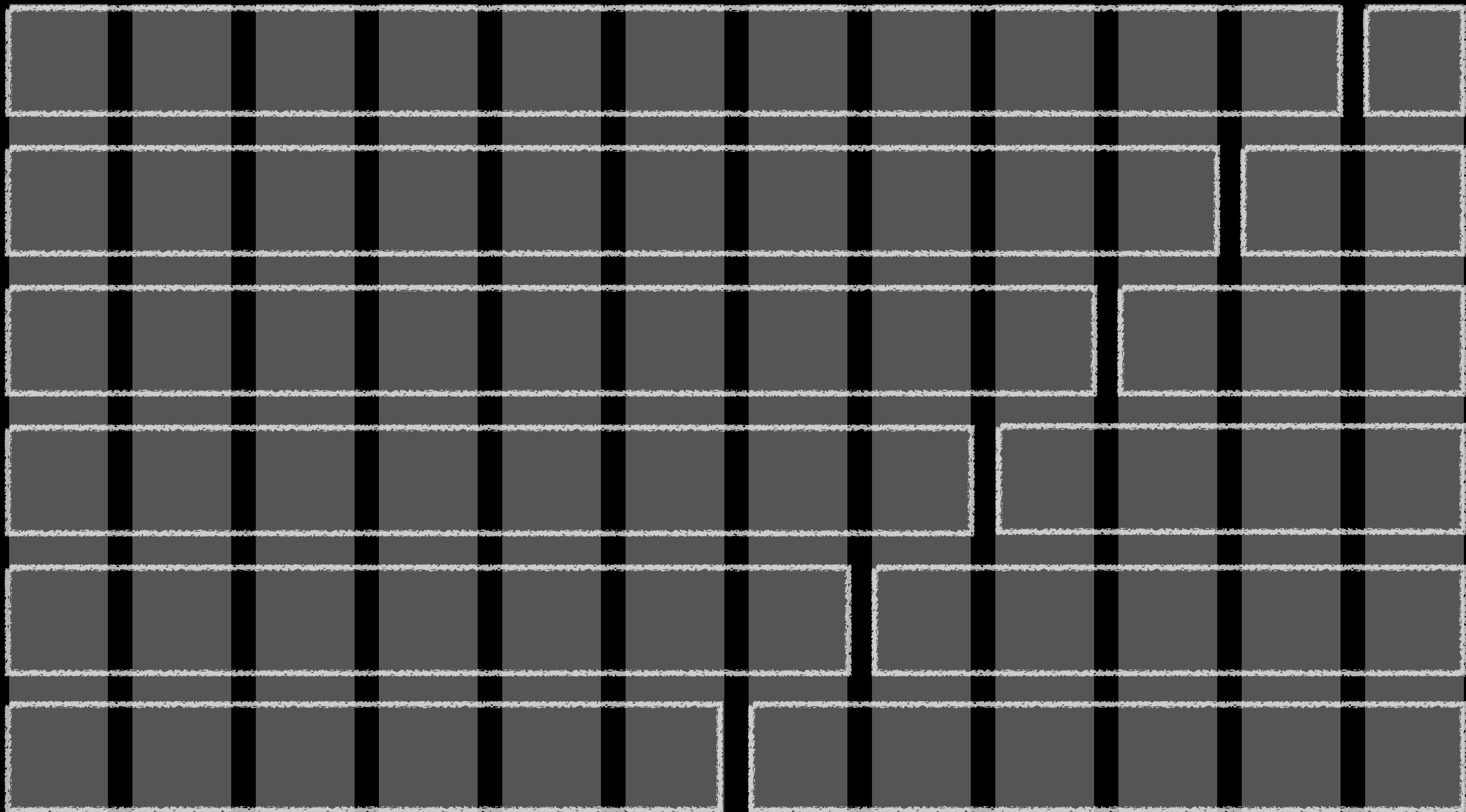
FEATURES

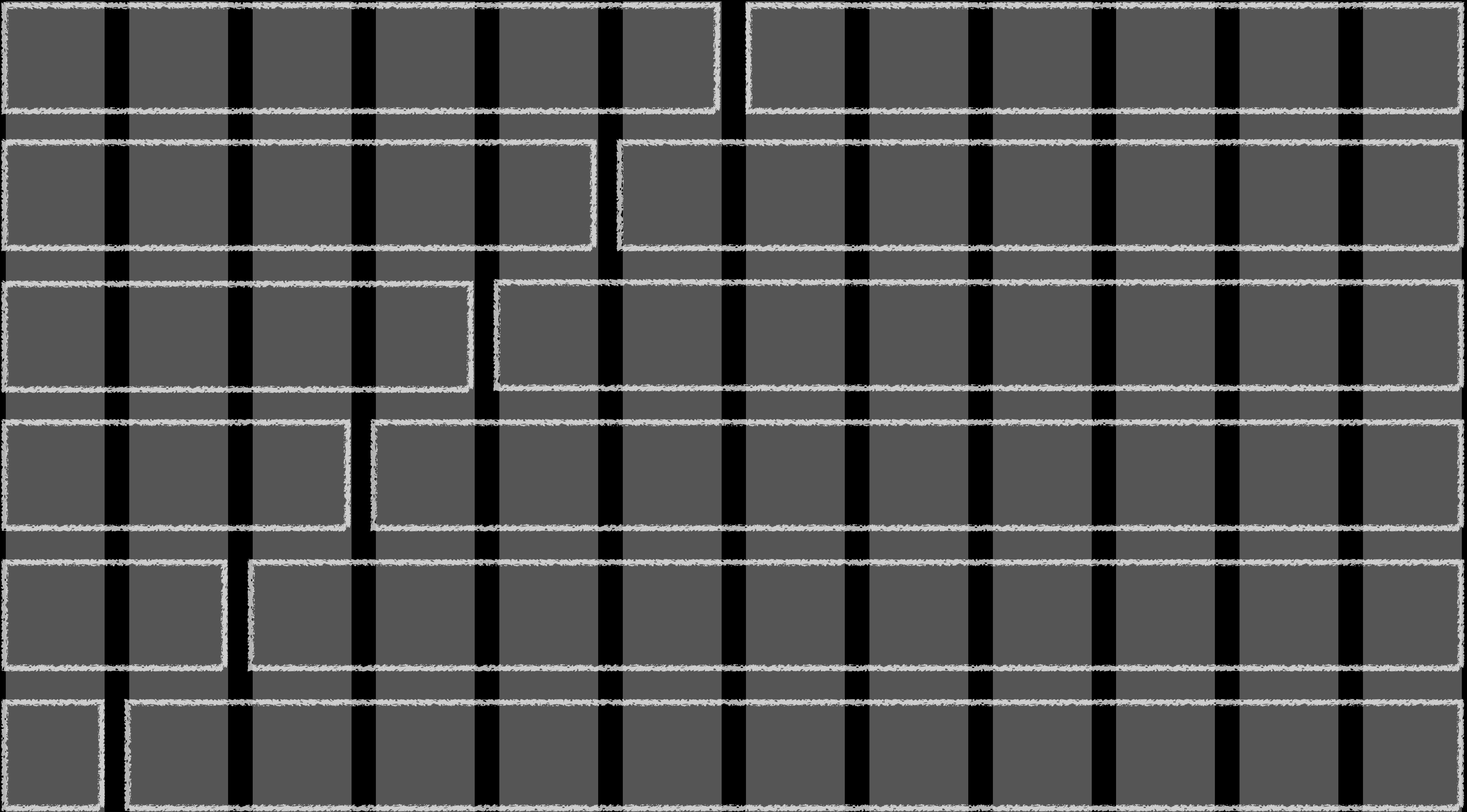
- [Penguin & Puffin Webcams](#)
- [Valentine Adoption](#) Cuddle with a colobus monkey!
- [Baby colobus monkey](#)
- [Delta Dental Winter Zoo and Mardi Gras](#)
- [Untamed Hearts: Valentine's Day Dinner](#)

Bootstrap uses 12 columns to layout the webpage

Why 12 & not 10? or 20? or 5?







Based around *breakpoints*: viewport widths (defined by media query declarations) that change the layout & appearance of the webpage once the viewport is within the range defined by the media query

Bootstrap 3

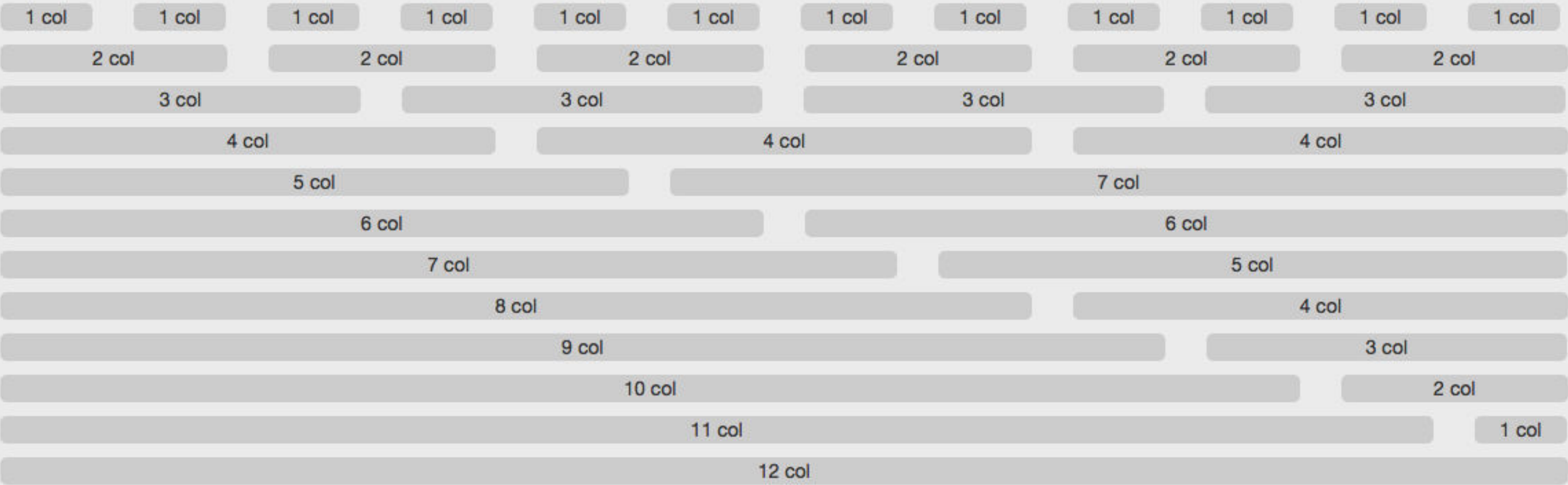
Desktops	lg	≥ 1200 px
Tablets (landscape)	md	≥ 922 px
Tablets (portrait)	sm	≥ 768 px
Phones	xs	< 768 px

Bootstrap 3			Bootstrap 4		
Desktops	lg	≥1200 px	≥1200 px	xl	Large desktops
Tablets (landscape)	md	≥922 px	≥922 px	lg	Desktops
Tablets (portrait)	sm	≥768 px	≥768 px	md	Tablets
Phones	xs	<768 px	≥576 px	sm	Phones (landscape)
			<576 px	*	Phones (portrait)

Bootstrap 4			Bootstrap 5		
			$\geq 1400\text{px}$	xxl	Really large desktops
Large desktops	xl	$\geq 1200\text{px}$	$\geq 1200\text{px}$	xl	Large desktops
Desktops	lg	$\geq 992\text{px}$	$\geq 992\text{px}$	lg	Desktops
Tablets	md	$\geq 768\text{px}$	$\geq 768\text{px}$	md	Tablets
Phones (landscape)	sm	$\geq 576\text{px}$	$\geq 576\text{px}$	sm	Phones (landscape)
Phones (portrait)	*	$< 576\text{px}$	$< 576\text{px}$	*	Phones (portrait)

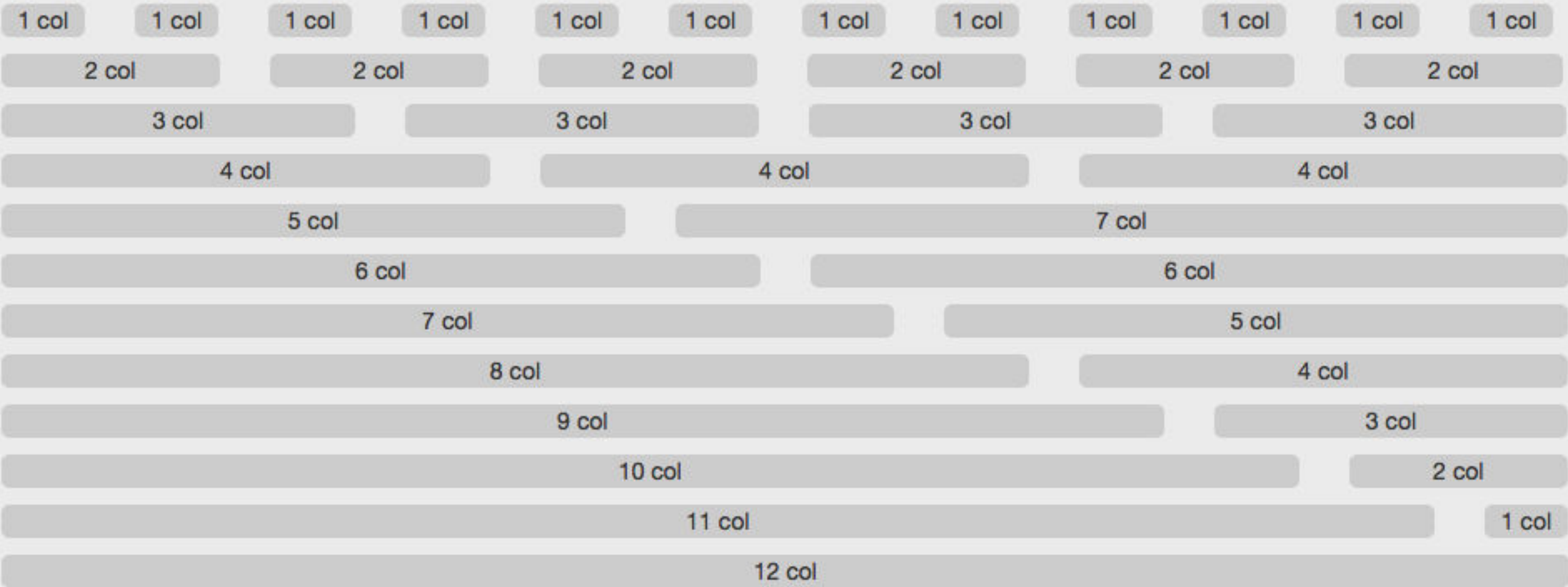
Large Bootstrap Grid

≥1200px viewport, fixed widths, 1170px container, 30px gutters



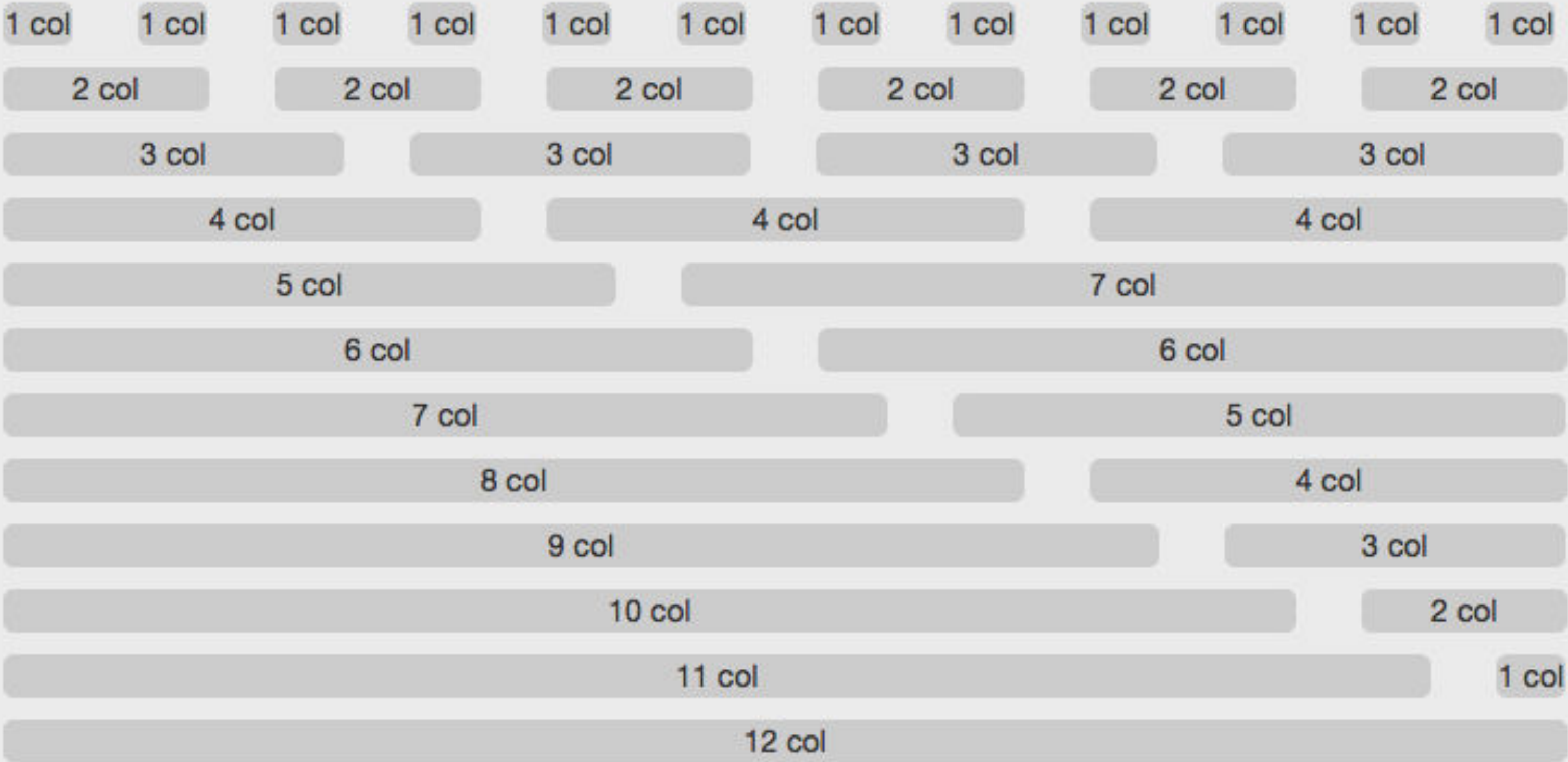
Medium Bootstrap Grid

992px to 1199px viewport, fixed widths, 970px container, 30px gutters



Small Bootstrap Grid

768px to 991px viewport, fixed widths, 750px container, 30px gutters



Extra Small Bootstrap Grid

<768px viewport, fluid widths, 30px gutters

3 col		9 col	
4 col		8 col	
5 col		7 col	
6 col		6 col	
7 col		5 col	
8 col		4 col	
9 col		3 col	
3 col	3 col	6 col	
3 col	4 col	5 col	
3 col	5 col	4 col	
3 col	6 col	3 col	
4 col	5 col	3 col	
5 col	4 col	3 col	
6 col	3 col	3 col	
3 col	3 col	3 col	3 col

Extra Small Bootstrap Grid

<768px viewport, fluid widths, 30px gutters

3 col	9 col		
4 col	8 col		
5 col	7 col		
6 col	6 col		
7 col	5 col		
8 col	4 col		
9 col	3 col		
3 col	3 col	6 col	
3 col	4 col	5 col	
3 col	5 col	4 col	
3 col	6 col	3 col	
4 col	5 col	3 col	
5 col	4 col	3 col	
6 col	3 col	3 col	
3 col	3 col	3 col	3 col

-XS

Restrictions

- » Limited number of breakpoints: 4 (Bootstrap 3) or 5 (Bootstrap 4)
- » Integration with 3rd party services can be problematic if they're not built to be responsive
- » More designs (so more money & time)

Before responsive design, websites normally needed designs for 2 templates*: the home page & every other page

Now we need at least 8: 4 for the home page & 4 for every other page, 1 for each breakpoint

*Sometimes a site required more; the Saint Louis Zoo, for instance, needed a template for *animal detail* pages

Before responsive design

Site Labeling

Alternative
NavigationAlternative
Navigation

Utility Navigation

Core Content Navigation

Directory

Banners

Featured Banner

News & Features

Brand Communication

Footer



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- October Book Club Features Famed Hemingway Author
- Our Deaf Education Major Could be for You!
- Fontbonne and St. Louis Community College Team Up on Transfer Program
- I-64/40 Traffic Updates
- More News...

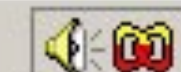


Start



WebSanity - Microsoft...

Internet



3:20 PM

Site Labeling

Alternative
NavigationAlternative
Navigation

Utility Navigation

Core Content Navigation

Brand Communication

Path Navigation

Page Labeling

Sub-page Navigaion (when needed)

Featured Images
(optional)

Page Content

Sidebar
(optional)

Footer



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Activities	Intramurals	Orientation	Student Affairs
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Campus Ministry	Multicultural Affairs	Personal Counseling	What's to Eat?
Career Services	Organizations	Residential Living	



You can't put a price on quality of life at college, but a rich learning environment is another reason that Fontbonne is a great value. Here you will find a close-knit community and plenty to do.

We offer a neighborhood environment where you can grow in self-discipline, organizational skills, effective study habits and independent living. The neighborhood atmosphere also provides the opportunity to develop study partners, support systems and lasting friendships with a diverse group of neighbors.

You go to your professors or academic advisors for questions about classes, grades and registration, but where do you go for everything else that goes along with the college experience?

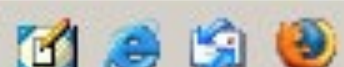
As the [Student Affairs Office](#), we're the people who help you with life outside of the classroom. Whether it's getting situated in [Residential Living](#), learning about [Student Activities](#) or [Student Organizations](#), participating in the [Study Abroad](#) program, or learning about diversity through [Multicultural Affairs](#), we will help you find your niche.



Alex



Start



WebSanity - Microsoft...

Internet

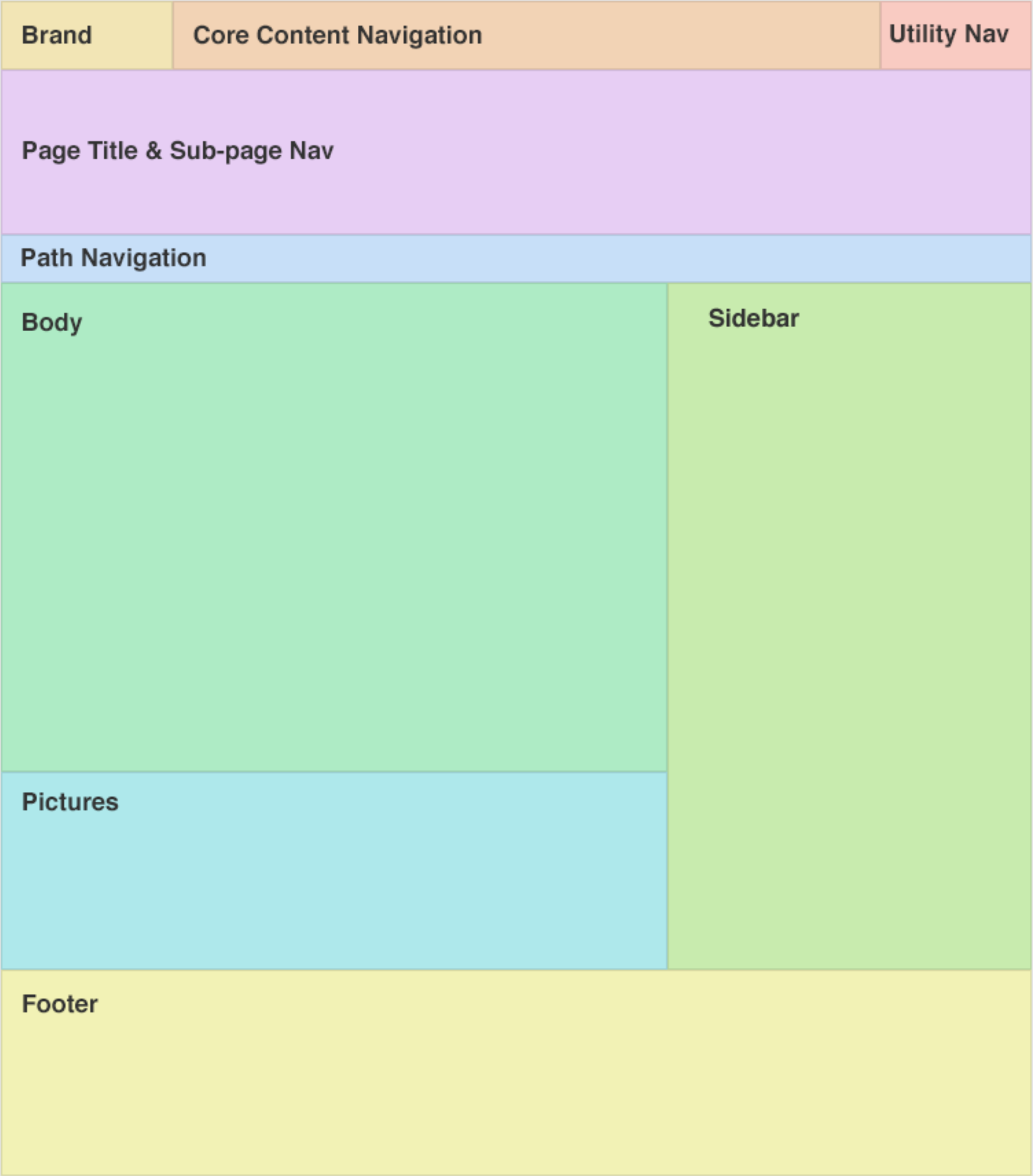


3:20 PM

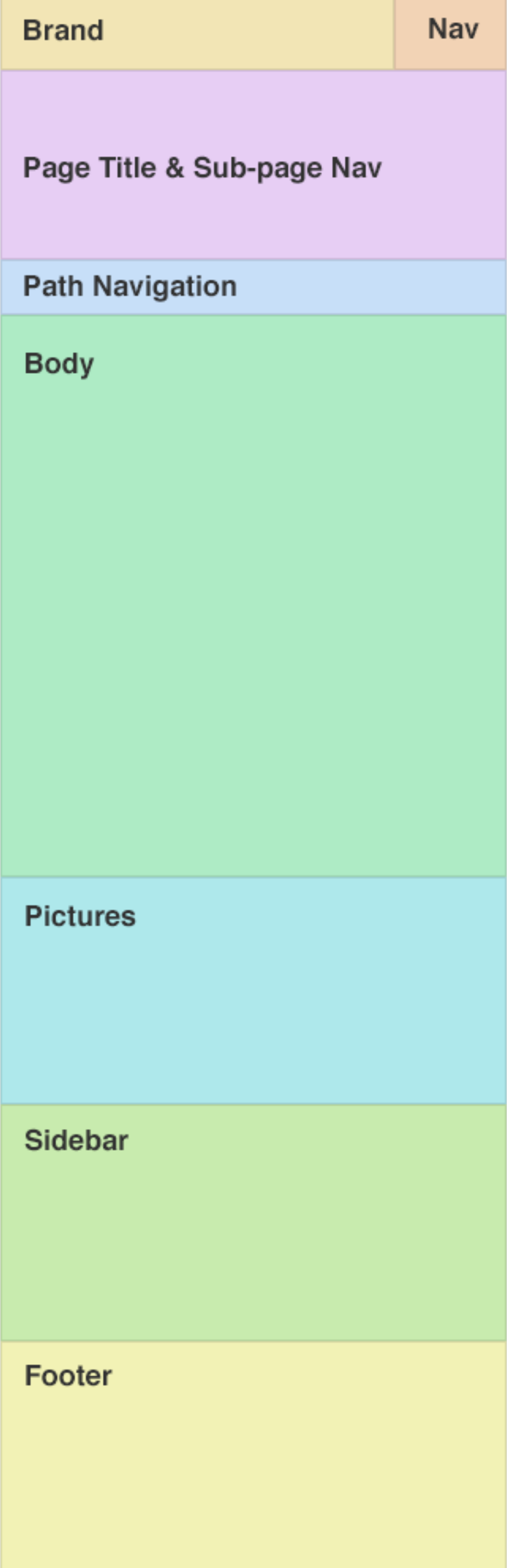
Responsive design



Brand	Core Content Navigation	Utility Navigation
Page Title & Sub-page Nav		
Path Navigation		
Pictures	Body	Sidebar
Footer		



sm



xs

Thank you!

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Fixed to Fluid to Responsive Grids in Design

R. Scott Granneman & Jans Carton

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Last updated 2020-07-17

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Changelog

2020-07-17 1.8: Updated breakpoints to Bootstrap 3, 4, & 5; removed URLs from slides since they're in Presenter Notes; added more Presenter Notes in a few places to help me 😊

Changelog

2018-12-03 1.8: Updated number of lines of CSS for Bootstrap for Skeleton; removed “Phablets”; added `spectre.css` under Skeleton; added code examples for fixed & fluid layouts; added slide defining frameworks

2018-05-07 1.7: Changed theme to Granneman 1.4; fixed minor formatting; added new breakpoints slide

2016-10-20 1.6: Improved slides re: number of designs needed for responsive design

Changelog

2016-10-20 1.5: Added explanation for 12 columns; fixed formatting errors that crept in; updated theme; removed Nathan Smith's grid frameworks; re-ordered Foundation to come before Bootstrap

2016-04-27 1.4: Added Zooming to Mobile Solutions, with video of Jobs introducing iPhone; fixed Adaptive Design; updated Foundation & moved it after Bootstrap; responsive based on columns; more detail re: additional designs needed for responsive

Changelog

2015-06-11 1.3: Switched theme to use Georgia Pro; added more examples of sites using Bootstrap; updated Wikipedia description of Bootstrap; added section on Mobile Solutions between Fluid & Responsive; removed Saint Louis Zoo slides & improved slides with Jans' Bootstrap grid images; made restrictions a list

Changelog

2015-01-16 1.2: Removed “Twitter” & added side note about Twitter; added Skeleton to frameworks

2014-05-20 1.1.2: Reorganized Zoo images & added Bootstrap grids

2014-05-19 1.1.1: Added animated GIFs showing the Saint Louis Zoo before & after responsive

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