

# WEEK 9 | DESIGN RESPONSIVE WEB DESIGN

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# Announcements

- Homework 6 is due next Thursday!
  - Longer than usual – start early!
- Grades will be available this Sunday
  - If you have below 80, you will get a warning email from us!
- Final Project Check-in next Sunday @ FSM!
  - Signup for a slot via Wejoinin
- Please fill out the survey for Extra Topic Lecture (April 24<sup>th</sup>)
  - Intro to Backend
  - Deploying your website
  - CSS3 Tricks from Iris
  - Writing scalable code with SASS
  - Designing Tumblr Blogs



# Today

- How do I make sure my websites work in all devices?
- Browser Compatibility
- CSS Media Queries
- Designing for Mobile

# State of Internet: 1999 vs 2014

- 1999: Only use huge computers with CRT monitors
  - Typical screen resolution: 640x480 ~ 800x600
  - Typical screen size: 17" ~ 21"
- 2014: Access Internet from multiple devices!
  - Laptops
    - Screen resolution: 1280x800 ~ 2800x1800
    - Screen size: 11" ~ 15"
  - Tablets
    - Screen resolution: 1024x768 ~ 2048x1536
    - Screen size: 7" ~ 10"
  - Smartphones
    - Screen resolution: 800x600 ~ 1920x1200
    - Screen size: 3.5" ~ 5.5"



# What does this mean for designers?

*Need to make sure your website work for all devices & browsers*

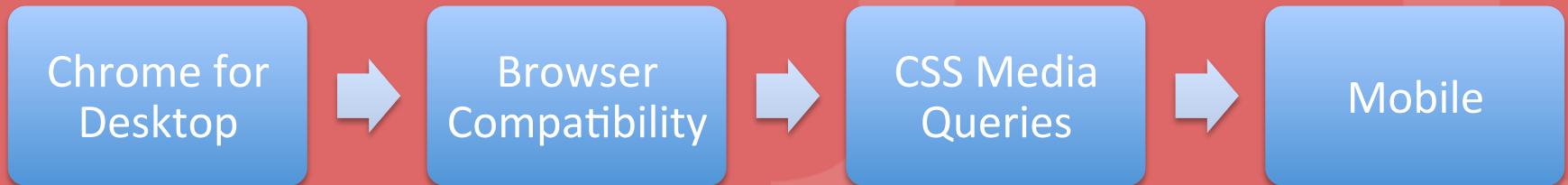
# Responsive Web Design

- Designing websites for multiple screen sizes and devices, so that there is an optimal experience for every user at every possible size.
- Responsive Web Design does not focus on the device
- Focus on the content and choose your presentation according to the device.
- To make your website responsive, you need to worry about...
  - Browser Compatibility
  - Screen Resolutions: CSS Media Query
  - Accessing from Mobile Devices

# Design process for the Responsive

- Method 1: Mobile-up
  - Think about the mobile design first, and then move up to the desktop version
  - Allows you to really think about the core features and take out unnecessary features
- Method 2: Desktop-down
  - Think about the desktop design first, and then move down to the mobile version.
  - Allows you to be more creative and experimental with your design with more screen estate

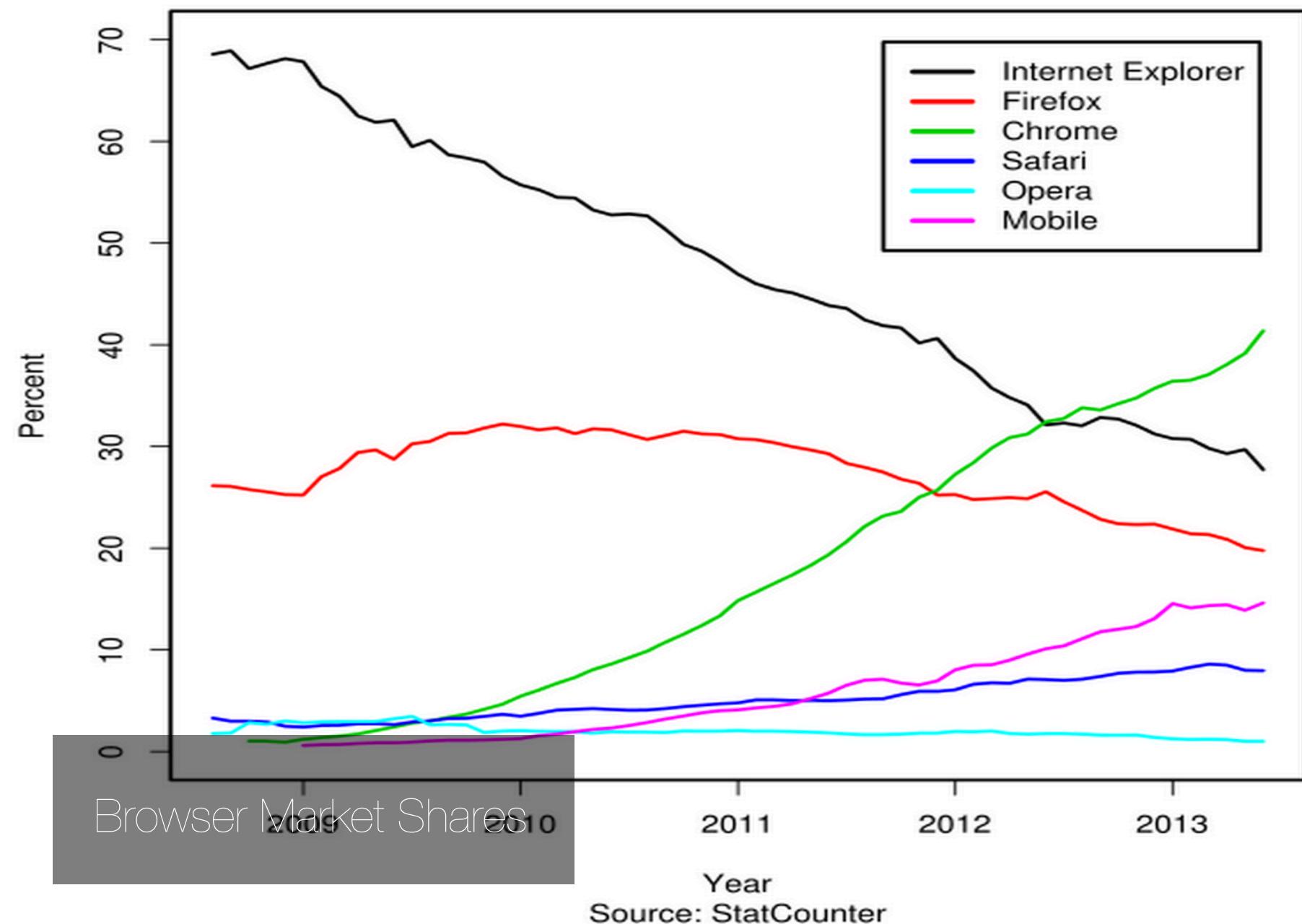
# Desktop-down Design Process



# Browser Compatibility

- Always check for other browsers when testing your website!
- Each browser has different *rendering engines*, meaning they might interpret your code differently.
- A recommended approach is to develop on Chrome, then test on Safari, Firefox, IE in order.
- You should also test for different operating systems if possible!
- Ex.: Scrollbar on Mac vs. Windows

## Usage share of web browsers



# Webkit: Chrome & Safari (+ Opera)

- Chrome and Safari uses a rendering engine called WebKit.
  - Opera also switched to WebKit fairly recently.
- Since they share the same engine, if you develop for Chrome, it will most likely work well on Safari.
- Difference between Chrome and Safari is mostly in performance.

# Mozilla Firefox

- Firefox uses its own rendering engine called Gecko.
- In terms of rendering HTML, Firefox does the same as Webkit browsers. (no need to worry!)
- However, Firefox has its own rules for CSS:
  - (Webkit) `-webkit-transition: linear 0.2s;`
  - (Firefox) `-moz-transition: linear 0.2s;`
- For Mac, Firefox does not have a transparent scrollbar.
  - Need to account for the width of a scrollbar for your div!

# Internet Explorer (Oh-no!)

- Internet Explorer causes the most of the browser compatibility issues.
- IE 10 & IE 11
  - HTML rendering is usually the same as Webkit browsers.
  - Some issues with CSS3. Not all CSS3 properties are supported, but most are.
- IE 9
  - HTML5 File & Drag and Drop API not supported
  - CSS3 3D effects and gradients, as well as media query not supported

# Internet Explorer (Oh-no!)

- Internet Explorer causes the most of the browser compatibility issues.
- IE 8
  - SVG image file is not supported.
  - HTML5 & CSS3 not supported.
- < IE 7
  - Lots of things go wrong.

# Conditional comments

- Microsoft knows IE has problems, so they provide developers with a feature called “Conditional comments.”
- Conditional comments are blocks that execute only for a particular browser.
- `<!--[if IE 7]>`  
*Add code that will only execute for IE 7*  
`<![endif]-->`
- Other examples
  - `[if IE]`: All Internet Explorer
  - `[if lte IE 9]`: Less than or equal to IE 9

# Screen Resolutions

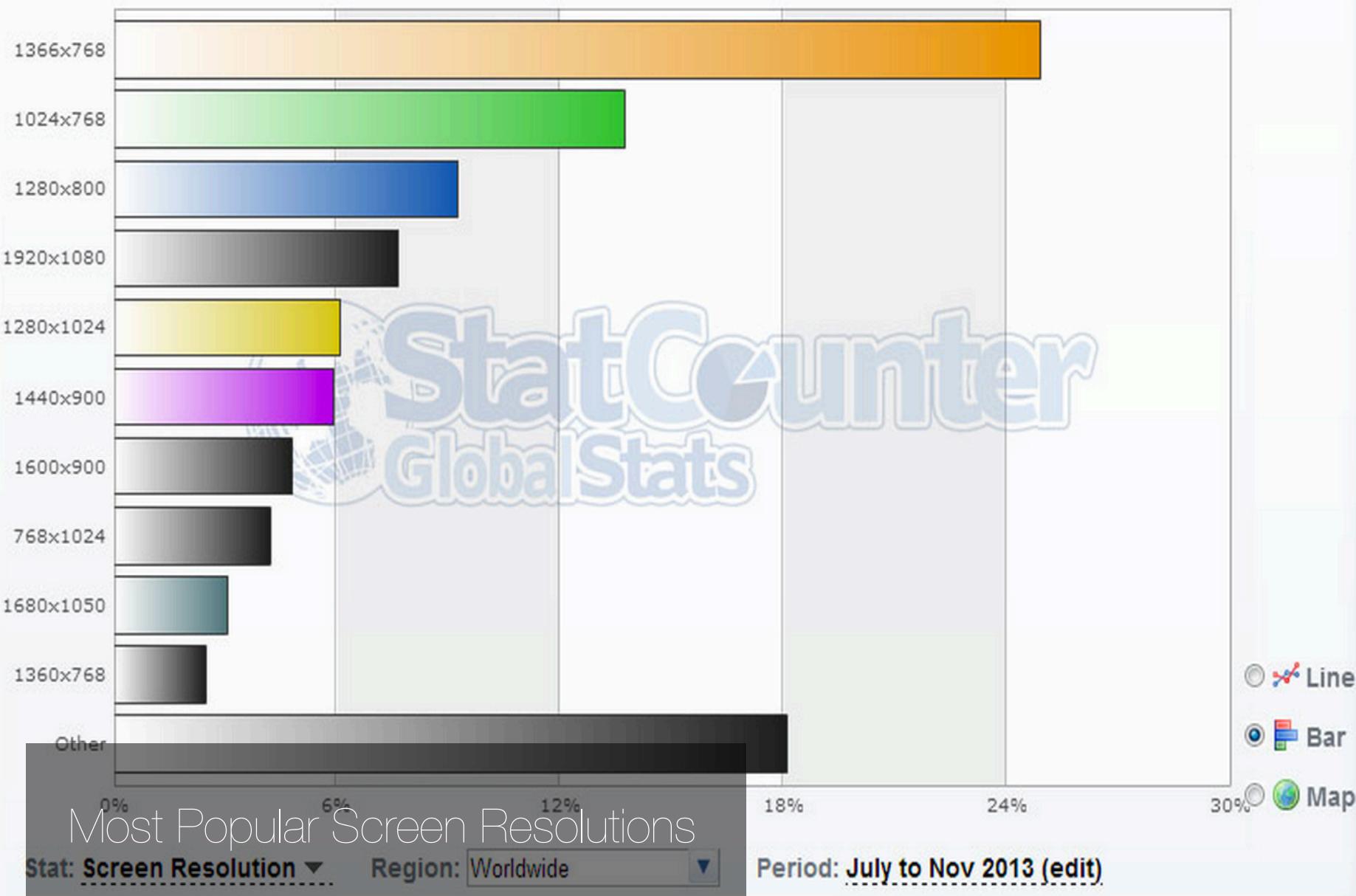
- Not all users will view your web browser in the same screen resolution.
  - Ex.: 1280x800 (13" MBP), 1440x900 (15" MBP, 13" MBA)
- Screen resolutions also come into play when you *change the size of your window*.
- **Every time you create a website, check how your website would look in smaller window sizes.**

# Screen Resolutions

- Containers are very helpful for addressing screen resolutions
  - 1024x768 container, centered: All users with screen resolutions higher than or equal to 1024x768 will be okay.
- Generally, aim for 1024x768 as your minimum screen resolution.
- But what about users with lower screen resolutions?

# StatCounter Global Stats

Top 10 Screen Resolutions from July to Nov 2013



# CSS Media Query

- CSS Media Query allows you to use different stylesheets for different screen sizes.
- @media (max-width: 1024px) {  
*Add CSS code here*  
}
- For example, you can use display: none CSS property to hide certain elements when a user's browser width is less than 1024px.
- Generally, you cannot change your HTML for different browser width. **You should change your CSS for different browser width instead!**

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Medium: 1000 px &lt;

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## Coming Out as the Mother of a Lesbian

My mother's coming out story.

Trending · Tanya Barrios in *This Happened to Me* · 4 min read



## If You Want To Raise Prices, Tell a Better Story

Ask a CEO if they want to spend a pile of money on an analysis of their company's story, and they'll probably throw you out of their office...

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It had been twelve years, and I swore I would never work retail again.

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**Coming Out as the Mother of a Lesbian**

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*Demo*

# Retina Display

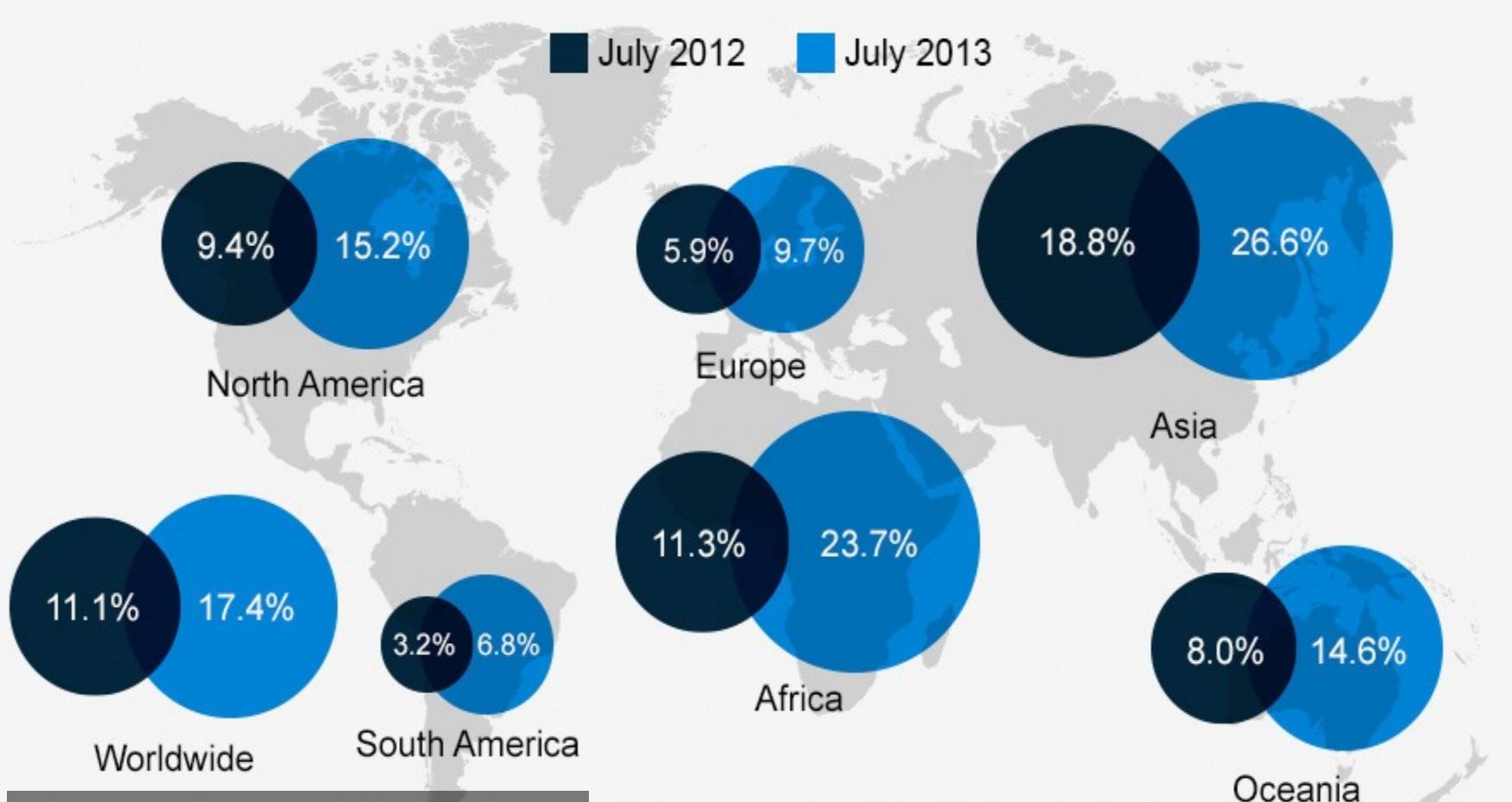
- Retina Display (or High-res display in general) is a screen with twice the pixels in the same screen resolution.
- Your website layout does not change for devices with Retina Display, since the effective screen resolution does not change.
- What changes are your icons and images
  - Ex.: If you set your image tag with width 200px and height 200px, the browser will render image to be 400px width and height for Retina Display.
- To accommodate devices with Retina Display, your images need to be high-res, usually 2x the size.

# Designing for Mobile

- User Interface for mobile devices are quite different from those for desktop.
- If designed well, HTML5 powered “websites” can be as useful as native applications.
  - Ex.: Naver
- However, designing well for mobile devices is difficult and requires an entire class on its own.

# Mobile Phones Account for 17% of Global Web Usage

Percentage of page views coming from mobile devices\*



\* StatCounter defines mobile as a pocket-sized computing device, excluding tablets

Mobile Internet Usage

**statista**  
The Statistics Portal

**Mashable**

Source: StatCounter

# Mobile vs. Desktop

## Screen Size

- Mobile: 3.5 ~ 5.5"
- Desktop: 11" ~ 30"

## Input Method

- Mobile: Touchscreen
- Desktop: Mouse or Trackpad

## Performance

- Mobile: 395.9ms (Sunspider)
- Desktop: 172.4ms (Sunspider)

# Issue 1: Screen Size

- On a mobile device, screen size is much, much smaller than on a desktop device.
- You really need to focus on the content and tuck in everything else away.
- Position: fixed elements hurts on mobile.
  - You don't have enough room to have a lot of position: fixed elements take up space on a small display
- On a mobile devices, most elements stack vertically, full width.
  - Exception: Grid

# Issue 2: Touchscreen

- On a mobile device, you don't have the precision of a mouse cursor for clicks
- Buttons need to accommodate for the size of people's thumb!
  - = You need more padding.
- Each keyboard activity is a cost for the user
  - Try to minimize keyboard inputs – autocomplete very helpful.

# Issue 3: Performance

- Rendering performance on a mobile device is half that of desktop.
- Try to minimize heavy front-end manipulation using Jquery.
- Mobile browsers (Safari, Chrome) render differently compared to desktop browsers
- As a result, mobile websites tend to be slow.
  - Try to reduce ajax calls and in-page manipulations
  - Use links instead.



뉴스

연예

스포츠

라이프

FUN

쇼핑

NOW



'응답' 삼천포, 추사랑 닮은 꼴



꾸밈없이 섹시해서 미쓰에이다



'기황후' 1분도 눈 뗄 수 없다

'열애설' 김유미, 오늘 '블랙가스펠' 일정 취소

수지 "첫 열애설…잊지 못할 스무 살의 생일선물"

가요계, 표절 논란에 몸살… "결론없이 의혹만"

최희, 주사 고백 "비번 대신 前남친 번호 눌러"

'심장' 외로워 119 전화한 부산 할매, 미안합니더!

스타캐스트

드라마

방송/TV

연예홀



이준, 셀카 '진지한데 웃겨'



'예체능' 줄리엔 강, 열혈 캐나다형



미래 정용화, '윤은혜 포기 안해'

'예체능' 선주인 아름다운 면모에 감동

Mobile Webdesign: Naver

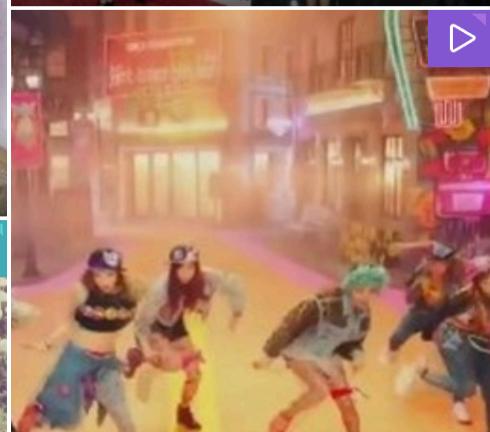
me, 메일, 카페, 전체서비스는  
메뉴 버튼을 눌러 확인하세요!



뉴욕을 녹인 티파니의 눈웃음



Three rounds in the music...



소녀시대, 유튜브 뮤직어워드 '올...



Yu-ri shares how she feels...



special 18

SPECIAL

YTMA 'Video of the Year' Winner



# Review

- Responsive Design
  - Browser Compatibility
    - Chrome & Safari -> Firefox -> IE
  - Screen Resolutions
    - 1280x800 ~ 1440x900 most popular
    - Use CSS Media Queries
  - Mobile Web Design
    - Design for smaller screen size
    - Design for touchscreen
    - Design for lower performance