

Mobile Application Development  
Aileen Pierce

# **ANDROID APPLICATION DEVELOPMENT**

# Android Development

- Android development can be done on Windows, Mac OSX, or Linux systems
- Android Studio
  - Integrated Development Environment (IDE)
  - Android Software Developer's Kit (SDK)
  - Emulator to run, test, and debug your apps on different virtual devices
- Java programming language
- eXtensible Markup Language (XML)

# Android Setup

- Requires Java
  - Java Development Kit (JDK) 7
  - Java Runtime Environment (JRE)
    - Mac OSX requires JRE 6
- Download and install Android Studio
- Use the SDK Manager to download additional tools and components

# Android Releases

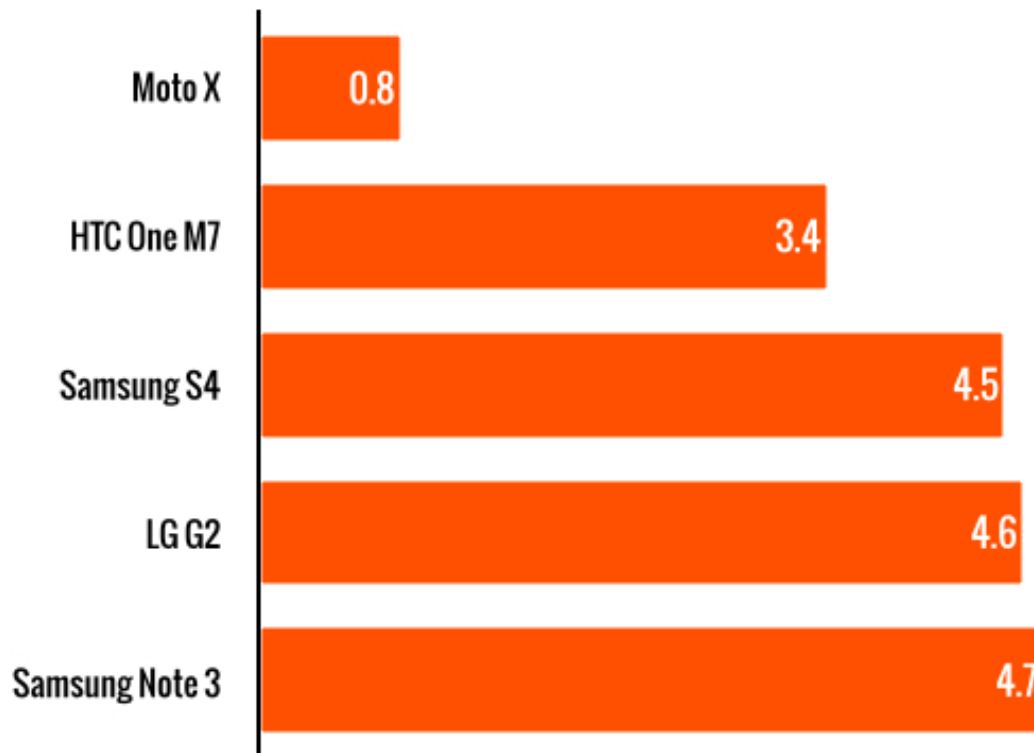
- Android releases
  - Google -> phone manufacturers (OEMs)
  - OEMS -> carriers
- When creating a new project you need to decide what Android versions to support
- Check out the latest stats on the Android Developer site dashboard
  - <http://developer.android.com/about/dashboards/index.html>

# Android Versions

Version	Codename	API	Distribution
2.2	Froyo	8	0.2%
2.3.3 - 2.3.7	Gingerbread	10	3.8%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	3.4%
4.1.x	Jelly Bean	16	11.4%
4.2.x		17	14.5%
4.3		18	4.3%
4.4	KitKat	19	38.9%
5.0	Lollipop	21	15.6%
5.1		22	7.9%

# OEMs

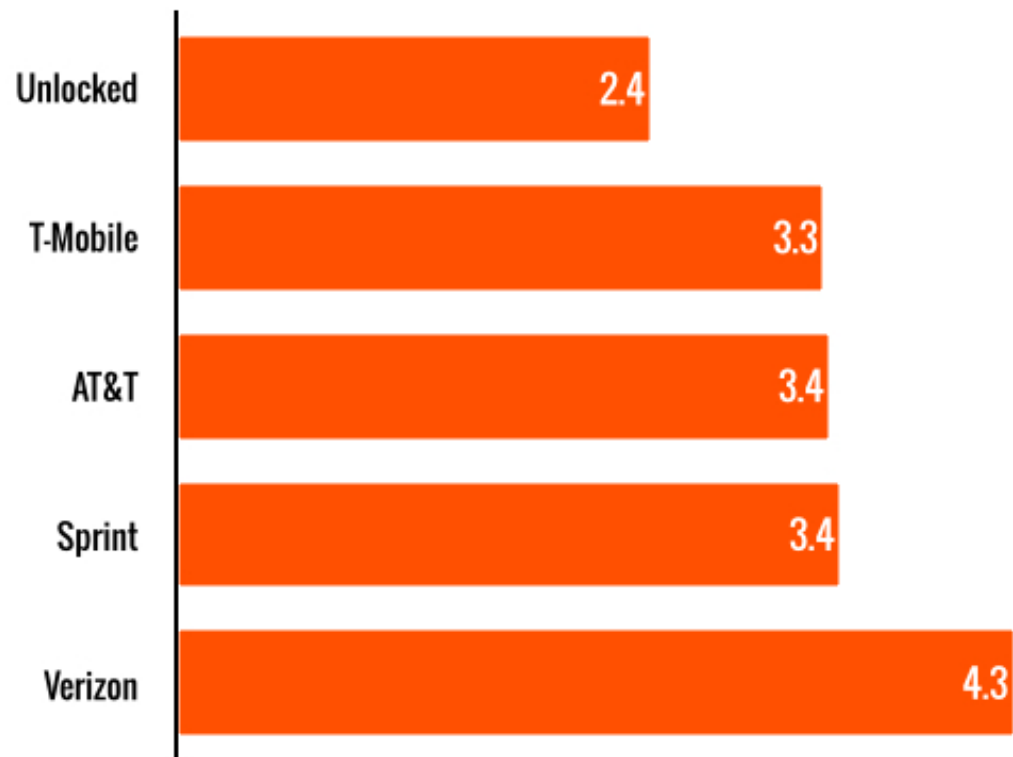
**HOW LONG IT TOOK TO GET KITKAT: ON-CONTRACT AVERAGE**  
Months from KitKat launch to device update



# Carriers

## HOW LONG IT TOOK TO GET KITKAT: FLAGSHIPS BY CARRIER

Months from KitKat launch to device update



# Android Devices

- Android runs on devices that are all different
  - Screen sizes
  - Processor speed
  - Screen density
  - The number of simultaneous touches the touch screen can register
  - The quantity and positioning of front and back cameras
  - Bluetooth



# Android Devices

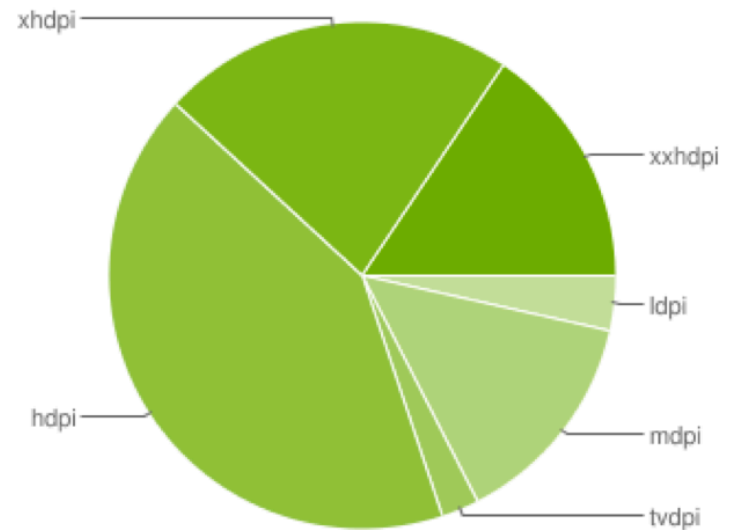
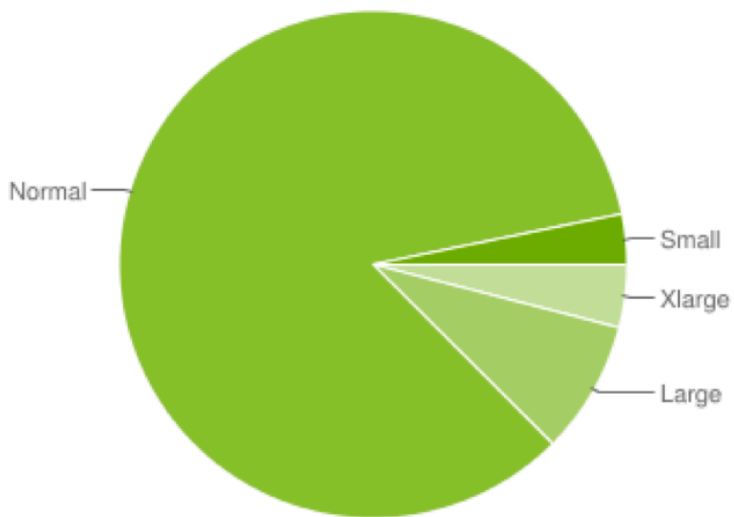
- Android screen sizes and pixel densities
- Density-independent pixel(dp)
  - Virtual pixel used in UI layout
- Screen size
  - Small (screens at least 426dp x 320dp)
  - Normal (screens at least 470dp x 320dp)
  - Large (screens at least 640dp x 480dp)
  - Extra-large (screens at least 960dp x 720dp)

# Android Devices

- Screen densities (dots per inch)
  - ldpi (low) ~120dpi
  - mdpi (medium) ~160dpi
  - hdpi (high) ~240dpi
  - xhdpi (extra-high) ~320dpi
  - xxhdpi (extra-extra-high) ~480dpi
  - xxxhdpi (extra-extra-extra-high) ~640dpi
- Orientation
  - Portrait
  - Landscape

# Android Devices

	ldpi	mdpi	tvdpi	hdpi	xhdpi	xxhdpi	Total
Small	3.2%						3.2%
Normal		6.2%	0.2%	41.0%	21.3%	15.6%	84.3%
Large	0.3%	4.8%	2.2%	0.6%	0.6%		8.5%
Xlarge		3.0%		0.3%	0.7%		4.0%
Total	3.5%	14.0%	2.4%	41.9%	22.6%	15.6%	



# Developing Android Apps

- An activity is a single, defined thing a user can do
  - Usually associated with one screen
  - Written in Java
  - Android Studio has activity templates
- A layout describes the appearance of the screen
  - Design view
  - Written in XML

# Android Studio Tour

Hello Android

# Emulator

- The emulator lets you define Android Virtual Devices(AVD)
  - A device configuration that models a specific device
- Simulators imitate the software environment of the device but not the hardware.
  - They have access to all the host(Mac) hardware's resources
- Emulators imitate the software AND hardware environments of the actual device
- And if you thought the Simulator was slow...