



App Analytics

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What are Analytics?

- ✿ The data-driven evaluation of user patterns
 - ✿ Data points collected based on app usage
 - ✿ Data analyzed using statistics
 - ✿ Results visualized for human consideration
 - ✿ App patched to better serve market

iTunes Connect

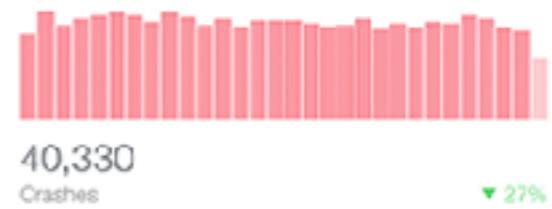
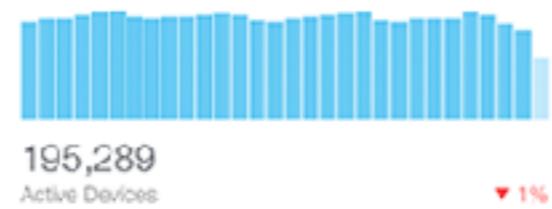
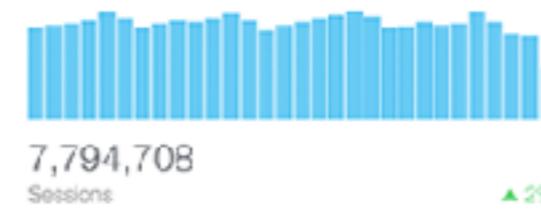
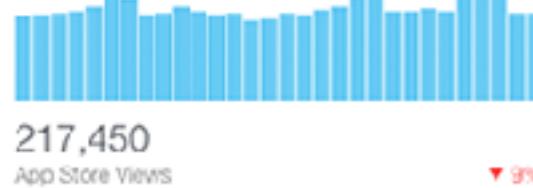
- ❖ iTunes Connect provides basic analytics for all apps
 - ❖ Store views
 - ❖ Units sold
 - ❖ Active devices
 - ❖ In-app purchases
 - ❖ Crashes
- ❖ Users must opt-in for some of this shared data

Apple's App Analytics

- ✿ Data organized by:
 - ✿ App
 - ✿ Specified time period
 - ✿ Country/Region

[Overview](#) [Metrics](#) [Sources](#) [Retention](#)[About App Analytics Data](#)

All Time

12,468,565
App Store Views**1,316,197**
App Units**\$8,582,874**
Sales**323,397,899**
Sessions
Opt-in Only [Last 30 Days](#)

App Units by Territory

United States

20.1K

Goals of Analytics

- ✿ Improve user experience
- ✿ Provide better marketability
- ✿ Increase profitability
- ✿ Two main metrics of success:
 - ✿ Conversion
 - ✿ Retention

Conversion

- ❖ How many people who know about the app decide to use the app?
- ❖ Analyzes user perception of app before purchase / download
 - ❖ Associated an app's "marketability"
- ❖ Marketing campaigns (paid advertisements or social media) can increase conversion

Conversion Metrics

- ✿ What data points might be associated with user conversion?
- ✿ Data points:
 - ✿ Product page views counts store page views
 - ✿ Impressions counts views for more than one second from any source (includes search results, featured apps etc)
 - ✿ App units sold / downloaded
 - ✿ Number of app installations

Retention

- ✿ Does the app's user base continue to use the app?
- ✿ More critical than the initial conversion!
 - ✿ “Word of mouth” is the best publicity
 - ✿ Defines reputation of both app and studio
- ✿ Good customer service, quickly addressing problems, and customer trust can increase retention

Retention Metrics

- ❖ What data points are associated with user retention?
- ❖ Data points:
 - ❖ Active devices
 - ❖ Active within last 30 days
 - ❖ Crashes
 - ❖ In-app purchases
 - ❖ Sessions

Additional Data

- ✿ General app data is only the start!
- ✿ Important to capture data related to app specific features
 - ✿ What features are most popular?
 - ✿ Where in the process are users stopping?
- ✿ Information often gathered from backend requests
 - ✿ API calls can log user data for internal analytics

Using Data

- ❖ Data doesn't say much about why — only what
- ❖ Humans use data to form hypotheses about why trends are happening
- ❖ Still necessary to test trends in some statistically reasonable way

A/B Testing

- ✿ Also called split-testing
- ✿ Compare two versions of a product across multiple users
- ✿ Formalizes design decisions using actual data
- ✿ Possible to test even after deployment
- ✿ Can test for conversion or retention

How to A/B Test

1. Form a hypothesis about how to improve an app feature or process
 - ✿ Potential changes might be cosmetic, interaction flow, or entire features
2. Create variation incorporating hypothesized changes to test against the control (current version)
3. Deploy app versions at random across user base
 - ✿ User does not know about the testing — only sees their “A” or “B” version of the app
4. Validate user interactions between two versions using statistical analysis



50 % visitors
see variation A



Variation A

23%
conversion



50 % visitors
see variation B



Variation B

11%
conversion

A/B Test Example: EA

The screenshot shows the official SIMCITY website homepage. At the top, the word "SIMCITY" is displayed in a large, stylized font with a red and white gradient. To its right, the text "AVAILABLE NOW!" is shown above a "BUY NOW >" button. Below this, a large banner features the Statue of Liberty against a city skyline with the text "PRE-ORDER AND GET \$20 OFF YOUR NEXT PURCHASE". The main content area displays two purchase options:

- SIMCITY™**: \$59.99. Options: PC Download (selected), PC Physical. Buttons: BUY NOW, Origin.
- SIMCITY™ DIGITAL DELUXE EDITION**: \$79.99. Option: PC Download. Buttons: BUY NOW, Origin.

A blue callout box below the Deluxe Edition section lists the included content: "DIGITAL DELUXE EDITION INCLUDES HEROES AND VILLAINS SET".

Control: 20% off future purchases

A/B Test Example: EA

The screenshot shows the EA SimCity product page. At the top, it says "SIMCITY™ AVAILABLE NOW!" and features a "BUY NOW" button. Below this, there are two main purchase options:

- SIMCITY™**: Priced at \$59.99. It offers PC Download or PC Physical options. A "BUY NOW" button is present.
- SIMCITY™ DIGITAL DELUXE EDITION**: Priced at \$79.99. It includes a PC Download option and a "BUY NOW" button. A separate box lists the "DIGITAL DELUXE EDITION INCLUDES":
 - HEROES AND VILLAINS SET
 - FRENCH CITY SET
 - GERMAN CITY SET
 - BRITISH CITY SET

At the bottom of the page, there is a section titled "Key Features".

Variation: No pre-order incentive

Variant or Control?

- ✿ Variant (no pre-order incentive) performed over 40% better than control (pre-order incentive)
- ✿ Why?

A/B Test Example: WallMonkeys

The image shows the original landing page for WallMonkeys. At the top, there's a navigation bar with links for 'CALL: 800-369-9255 | 9AM - 5PM EST | Contact', 'MY ACCOUNT', 'MY WISHLIST', 'LOG IN', and 'MY CART'. Below the navigation is a banner stating 'Free Shipping On All Orders Over \$50.00 Within The U.S.' A search bar allows users to 'Search over 20 million images for your decal'. The main menu includes 'CATALOG', 'BEST SELLERS', 'CUSTOM WALLMONKEYS', 'BUSINESS', and 'FAQ'. The central visual features a lamp on a shelf next to a wall mural of palm trees. A large orange button with the text 'SHOP NOW' is overlaid on the image. The bottom section shows a shelf with books and a stack of CDs.

Control: original landing page

A/B Test Example: WallMonkeys



Heatmap analysis of user interactions

A/B Test Example: WallMonkeys

The image shows the homepage of the WallMonkeys website. At the top, there is a navigation bar with links for 'MY ACCOUNT', 'MY WISHLIST', 'LOG IN', and a 'MY CART' button. Below the navigation bar, a banner states 'Free Shipping On All Orders Over \$50.00 Within The U.S.' A search bar allows users to 'Search over 20 million images for your decall'. The main menu includes links for 'CATALOG', 'BEST SELLERS', 'CUSTOM WALLMONKEYS', 'BUSINESS', and 'FAQ'. The background features a large image of a lamp on a shelf with several wall decal samples (cats) applied to the wall behind it. Below this, a call-to-action button says 'SHOP NOW'.

CALL: 888-369-9255 | 9AM - 5PM EST | [Contact](#)

MY ACCOUNT | MY WISHLIST | LOG IN

MY CART

Free Shipping On All Orders Over \$50.00 Within The U.S.

Search over 20 million images for your decall

Search

Wall Monkeys

CATALOG | BEST SELLERS | CUSTOM WALLMONKEYS | BUSINESS | FAQ

Choose From Our Vast Collection of Wall Decals and Murals

SHOP NOW

Variation 1: New background image

A/B Test Example: WallMonkeys

The screenshot shows the WallMonkeys website homepage. At the top, there is a navigation bar with links for 'MY ACCOUNT', 'MY WISHLIST', and 'LOG IN'. On the right side of the top bar is a 'MY CART' button with a shopping cart icon. Below the top bar, a banner states 'Free Shipping On All Orders Over \$50.00 Within The U.S.!'. The main menu includes 'CATALOG', 'BEST SELLERS' (which is highlighted in orange), 'BUSINESS', 'FAQ', and 'CREATE YOUR OWN'. The central image features the WallMonkeys logo (a stylized 'W' inside a circle) next to a lamp with a cat decal on its shade. Below the lamp, several cat-shaped wall decal designs are displayed. A search bar with the placeholder 'Search for Wall Decals, Murals and Removable Wallpaper' and a 'Search' button are visible. The overall layout is clean and modern.

Variation 2: Updated menus and search bar

WallMonkeys Results

- ✿ Variation 1 increased conversion rate over control by 27%
- ✿ Variation 2 increased conversion rate over Variation 1 by 550%

Typical Areas of A/B Testing

- ✿ Sign-up and login flow
- ✿ Tutorials
- ✿ Visual appearance (color, size, shape, etc)

A/B Testing on Mobile

- ❖ Many services available for performing tests and app updates without resubmitting to the App Store
 - ❖ Optimizely
 - ❖ Leanplum
 - ❖ Taplytics
 - ❖ Apptimize
- ❖ Note: these tools primarily target “standard” app features such as UI/UX decisions and push notification/messaging etc

Testing Other Features

- ✿ Ongoing A/B testing works well for many web/mobile apps
- ✿ Less feasible in products like games, where “fun” and engagement are harder to define
 - ✿ Scaling of level difficulty
 - ✿ Introduction of new mechanics
 - ✿ Level/puzzle/boss design

How Can We Test These Things?

- ✿ Early play tests essential for guiding design
- ✿ Data collection of player usage can guide where fixes are necessary
 - ✿ A too-hard boss fight will lead to drop off in player base for following level
 - ✿ Preferred levels will be selected more frequently
 - ✿ Crash reports can help find bugs in levels

Example: Borderlands



Fixing Bugs and Adding Features

- ✿ Player data helps determine priority and severity of bugs and priority of features
 - ✿ Priority: How essential it is to fix or add something
 - ✿ Severity: How damaging a bug is
- ✿ Helps programmers “rank” what they should be working on

Priority vs Severity

- ✿ What is a high-priority/high-severity issue?
- ✿ What is a low-priority/low-severity issue?
- ✿ What is a high-priority/low-severity issue?
- ✿ What is a low-priority/high-severity issue?

Is Profit the Point of Data?

- ❖ Companies use data to increase profits, which is not necessarily harmful...
 - ❖ ...but could result in treating customers as a means to an end
- ❖ Data goes beyond profits and consumerism
 - ❖ Drives safety, convenience, education, happiness etc
- ❖ Consider what your app is *giving* users
 - ❖ If it's giving something of value, you'll get something back

Quiz Question!

- ✿ True or False (A or B): Conversion metrics include data points like crash rate and number of user sessions.

References

- ✿ <<https://www.crazyegg.com/blog/ab-testing-examples/>>
- ✿ <<https://www.raywenderlich.com/215-firebase-tutorial-ios-a-b-testing>>