HCI and Design

SPRING 2016

Before we start…

- Project midway reports and presentations due in class on Thursday April 7th
- 2-minute presentation (practice to make sure of the timing!)
- I WILL cut you off!

- Take 5 minutes NOW and give us feedback on the Design classes taught by Heather, Adam, and Matt
  - http://goo.gl/forms/028FLiK967

Topics for today

- Quantitative data
  - Instrumentation and logging
  - Quantitative surveys
- AB testing
- Analytics tools
  - Google Analytics
- Activity

Quantitative vs. Qualitative

1. Explanation through numbers
2. Objective
3. Deductive reasoning
4. Predefined variables and measurement
5. Data collection before analysis
6. Cause and effect relationships

1. Explanation through words
2. Subjective
3. Inductive reasoning
4. Creativity, extraneous variables
5. Data collection and analysis intertwined
6. Description, meaning

Instrumentation / logging

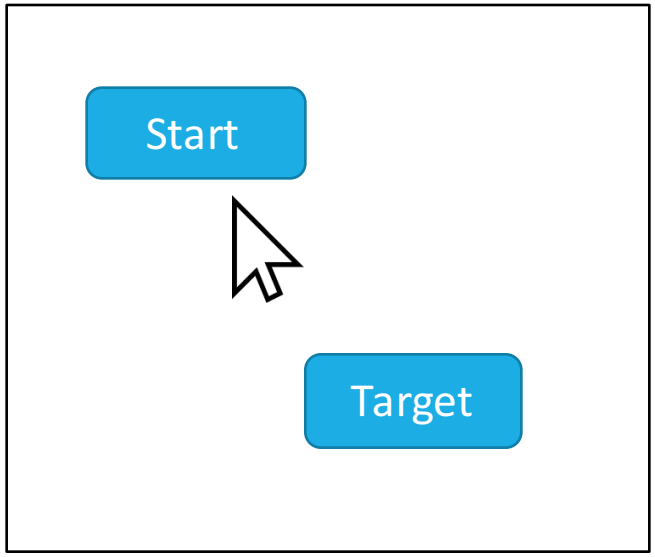
Instrument the software to record all interactions of the participant with the system

- key presses
- mouse movements
- screen touches / clicks
- reading time
- eye tracking
- etc.

The details of each interaction are recorded in a log and time stamped

Data can be analyzed to understand performance, cognitive load, user behavior, reactions to variations in task, system usage over time, and more.

Example: Log for clicking UI targets




```
----------------History-------------
---Click!---
At 1352079613888: START Button is hit.
---Click!---
---Click!---
At 1352079660558: HI Button is hit.
It takes 46670 to click the button.

---Click!---
At 1352079666294: START Button is hit.
---Click!---
At 1352079666941: HI Button is hit.
It takes 647 to click the button.

--------------------Data analysis:----------------
For Button 1
Distance 228
Size 50
Time 46670 ms

For Button 6
Distance 907
Size 110
Time 647 ms
```

Instrumentation / logging

- Useful for understanding interaction.
- Useful for web studies.
- Testing layouts, displays, GUI interfaces etc.
- Understanding users' reactions to variations in tasks and layout combinations.
- Testing the efficiency of the interface and its ease of use.
- Measuring levels completed in games, time to fill out forms, time to complete tasks, etc.
- Measuring features most used, most clicked on, etc.
- Measuring speed and performance, etc.

Quantitative surveys

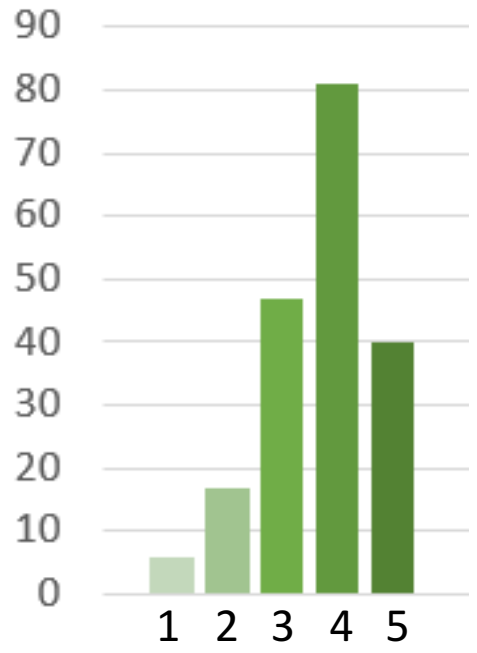
Numeric survey responses (e.g., how many times you bought a product)

Likert scale responses

- Odd (neutrality allowed) or even (forced choice) number of choices allowed

Statistics calculated for each question

- Mean, median, standard deviation, N-per-answer, etc.
- We will cover statistical significance in a future class.



Descriptive Statistics

	Household income in thousands
Mean	59.59
Std. Deviation	67.130
N	1500
Median	40.00
Minimum	12
Maximum	1,079

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What is AB Testing?

A practical way to test different designs ☺

Also called “split testing” or “bucket testing”

A/B testing splits live traffic into two (or more) parts:

- Some users see the standard design ("A")
- Some users see an alternative design ("B")
- After collecting enough data, the one with the better performance “wins”

Multivariate testing

- More than 2 variations
- A/B/C/D…

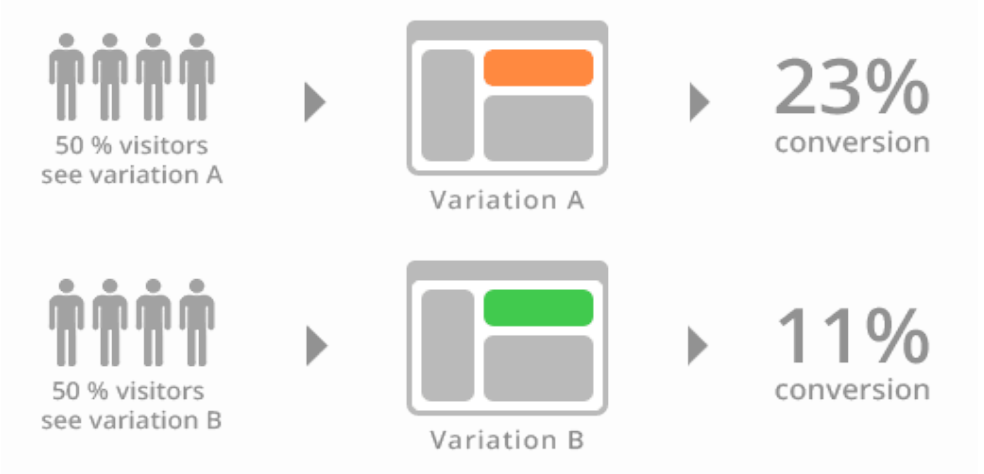
What is AB Testing?

Empirical, data-driven method
- Real site, authentic users

Controlled experiment
- Split users into (at least) two groups: Control and test(s)

Cookies can ensure an individual gets consistent version.

A metric
- Overall evaluation criteria (OEC) or key performance indicator (KPI)
- e.g., click-through rate, purchases



Process

Come up with a driving question:

- e.g. Can I increase click through rates from my home page

Formulate a hypothesis:

- e.g. Underlined links will outperform my current links

Calculate time to run test:

- Tools available to help you do this, e.g. A/B Test Duration Calculator.

Run the test:

- X% of users get underlined links
- How to decide X?

Review results

Some examples…

Example 1: Sponsor a Child website

https://whichtestwon.com/test/with-sliders-or-without/

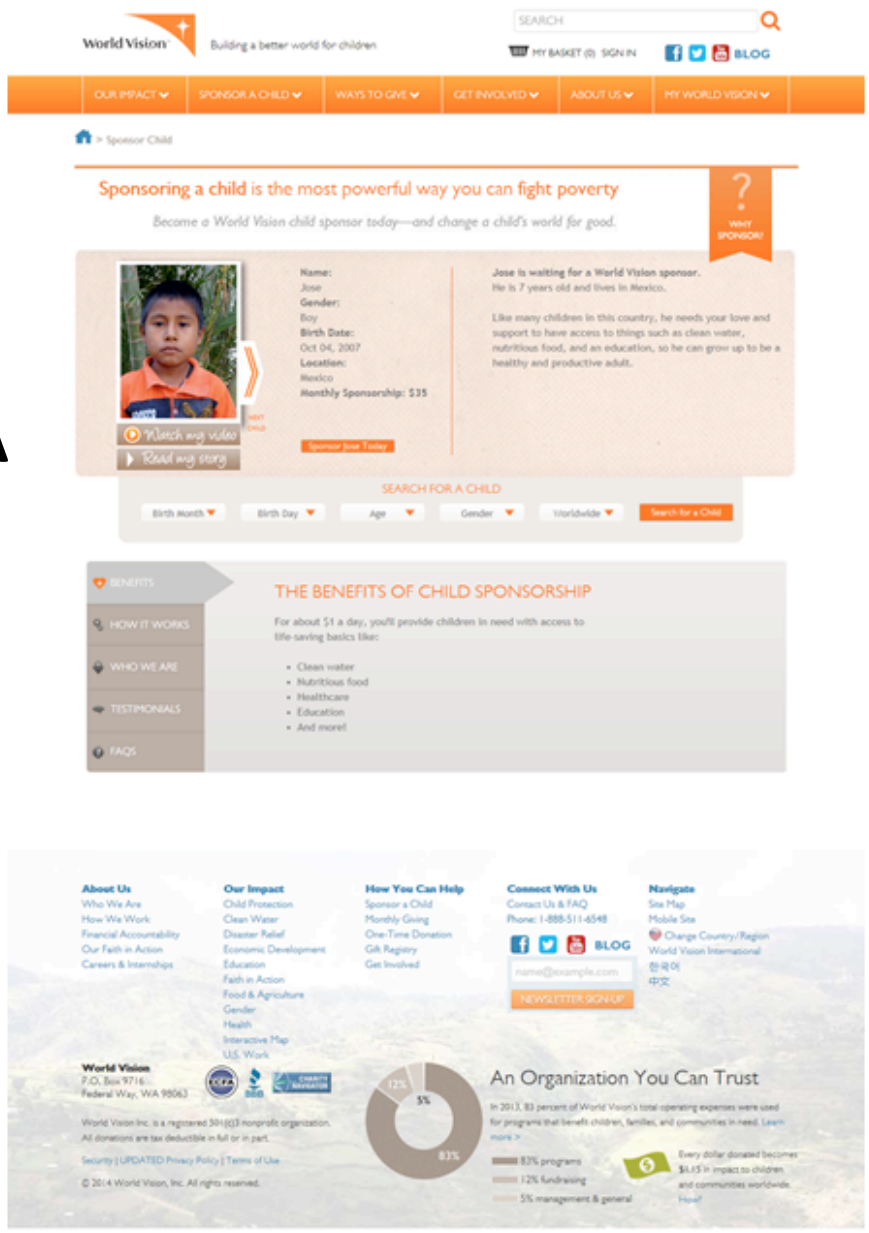
Key Performance Indicator (KPI):

- clicks on the sponsorship “Call To Action” button

Difference between versions:

- Version A: Sponsor a child page formatted with sliders
- Version B: Radically redesigned page without sliders

A


World Vision
Building a better world for children
SEARCH
MY BASKET (0) SIGN IN
BLOG
OUR IMPACT
SPONSOR A CHILD
WAYS TO GIVE
GET INVOLVED
ABOUT US
MY WORLD VISION
Sponsor Child
Sponsoring a child is the most powerful way you can fight poverty
Become a World Vision child sponsor today—and change a child's world for good.
WHY SPONSOR?
Name:
Jose
Gender:
Boy
Birth Date:
Oct 04, 2007
Location:
Mexico
Monthly Sponsorship: $35
Jose is waiting for a World Vision sponsor.
He is 7 years old and lives in Mexico.
Like many children in this country, he needs your love and support to have access to things such as clean water, nutritious food, and an education, so he can grow up to be a healthy and productive adult.
Watch my video
Read my story
Sponsor Jose Today
SEARCH FOR A CHILD
Birth Month
Birth Day
Age
Gender
Worldwide
Search for a Child
BENEFITS
HOW IT WORKS
WHO WE ARE
TESTIMONIALS
FAQS
THE BENEFITS OF CHILD SPONSORSHIP
For about $1 a day, you'll provide children in need with access to life-saving basics like:
Clean water
Nutritious food
Healthcare
Education
And more!
About Us
Who We Are
How We Work
Financial Accountability
Our Faith in Action
Careers & Internships
Our Impact
Child Protection
Clean Water
Disaster Relief
Economic Development
Education
Faith in Action
Food & Agriculture
Gender
Health
Interactive Map
U.S. Work
How You Can Help
Sponsor a Child
Monthly Giving
One-Time Donation
Gift Registry
Get Involved
Connect With Us
Contact Us & FAQ
Phone: 1-888-511-6548
BLOG
name@example.com
NEWSLETTER SIGN UP
Navigate
Site Map
Mobile Site
Change Country/Region
World Vision International
한국어
中文
World Vision
P.O. Box 9716
Federal Way, WA 98063
World Vision Inc. is a registered 501(c)3 nonprofit organization. All donations are tax deductible in full or in part.
Security | UPDATED Privacy Policy | Terms of Use
© 2014 World Vision, Inc. All rights reserved.
An Organization You Can Trust
In 2013, 83 percent of World Vision's total operating expenses were used for programs that benefit children, families, and communities in need. Learn more >
83% programs
12% fundraising
5% management & general
Every dollar donated becomes $4.15 in impact to children and communities worldwide.
How?

B


My name is Leangheng
I'm a 10-year-old boy from Cambodia, and you can change my world for good!
Become My Sponsor
Find a Child
Watch my video!
This is my world in Cambodia
I speak Khmer, Central.
I am in primary school and my favorite subject is mathematics.
My parents struggle to provide for my family
I really like toys.
Sponsorship is the most effective way to change my world
When you sponsor me for $35 a month, you'll join with other sponsors, grants, product donations, and other donors to address challenges in my community so we can have:
Have questions? Learn more about how sponsorship works. >
What if Leangheng was your child?
Watch Megan's Sponsorship Story
"There's this part of me that wonders what it must be like to be a mom in 'those places' [...] and yet at the core, we want the exact same thing for our kids."
I'd love to be part of your family
Help change my world in Cambodia by choosing to be my sponsor and my friend!
Become My Sponsor
An Organization You Can Trust

And the winner is...

Version B

- 60.4% increase in clicks on the sponsorship button!

Used:

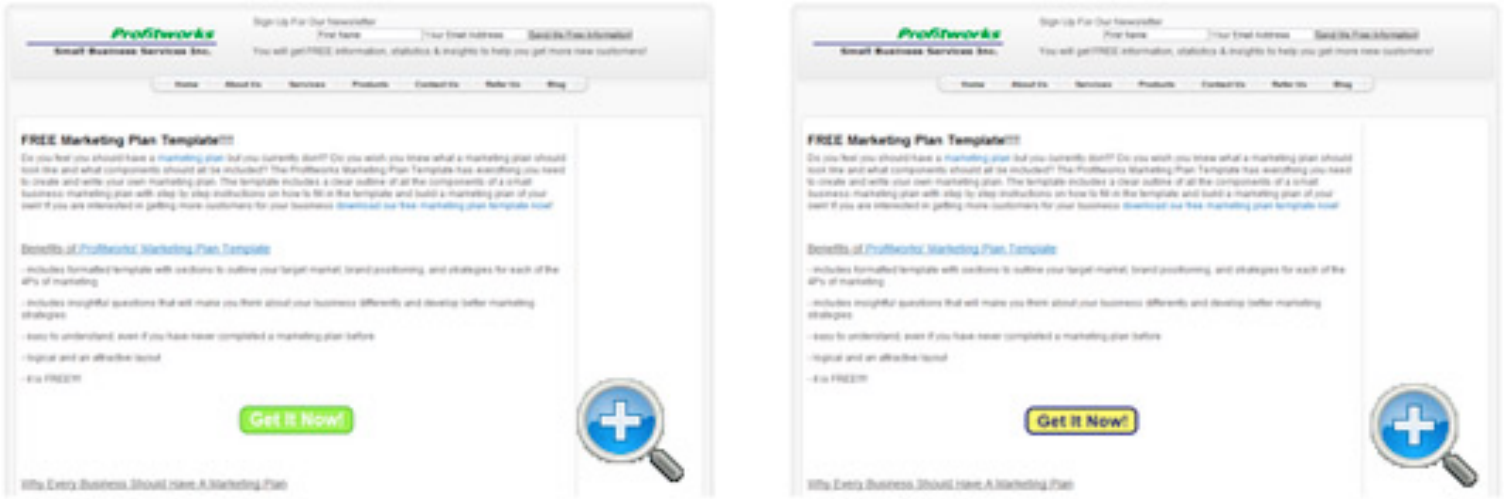
- Optimizely used
- 14 days 8,600 visitors.

Post-hoc rationalization

- story narrative
- updated visual flow
- clickable colored boxes were interactive

Example 2: Button Color Test Which Page Drove More Clicks?

VERSION A vs. VERSION B



Green is an affirming color that signifies positive action. BUT… it's been used with white text which completely washes the button out.

Version B's yellow and black button may be ugly but it is clear and led to a 14.5% increase in conversions."

Example 3: Final Page in a 4 Step Sequence

A

B

Example 3: Final Page in a 4 Step Sequence

Both pages are well-designed and both, seemingly, doing a good job

Version B

- video center piece, well-structured; it should convert

Version A had 439% higher performance.

Post-hoc rationalization

- text within the image brings focus
- form has fewer fields and looks shorter
- images give the page a more authentic and trustworthy feel

Benefits of AB testing

Compared with other methods, A/B testing has a few huge benefits:

1. It measures the actual behavior of customers in real-world conditions.

2. It can measure very small performance differences with high statistical significance because you can throw tons of traffic at each design.

3. It can resolve trade-offs between conflicting designs, guidelines, or qualitative usability findings.

4. It's cheap: once you've created the design alternatives you simply put both of them on the server and employ a tiny bit of software to randomly serve each new user one version or the other.

5. It’s low risk: if one of the alternatives performs badly, you can simply turn it off or try again.

Limitations of AB testing

1. A/B testing can only be used for projects that have one clear, all-important goal (KPI).
2. The goal must be measurable by computer through user actions.
3. A/B testing provides data only on the element you're testing.
4. A/B testing only works for fully implemented designs. It's cheap to test a design once it's up and running, but implementation can take a long time.
5. Encourages a focus on short-term (and short-sighted) improvements.
6. No Behavioral Insights: you don't necessarily know ***why*** you get the measured results.

Final Page in a 4 Step Sequence

Post-hoc rationalization: text within the image brings focus, form has fewer fields, looks shorter, images give the page a more authentic/trustworthy feel.

Don't actually know why!

Take-aways

A/B testing can be useful and it definitely has its place

- Easy, cheap, fast, can lead to significant results.

Don't EVER rely solely on A/B testing

It's ALWAYS a good idea to combine methods

- Qualitative methods
- Other quantitative methods
  - Logging / instrumentation
- More…

Resources for doing AB testing

There are dozens of A/B consultants, tools, tips and tricks. Here are a few links:

Robin Johnson, writing in Optimizely, gives you 71 different ideas on things to test, including website copy, visual elements and just plain common sense things such as whether you have a positive or negative spin on what you are trying to sell.

Uri Bar-Joseph, writing in SearchEngineWatch, has eight rules for A/B testing, including focusing on one variable, choosing your groups randomly and measuring the results carefully.

Visual Website Optimizer (vwo.com) is testing software for marketers (i.e. if you don't want to do it yourself).

For some fun, take a look at these 12 results that were somewhat counter-intuitive from WhichTestWon.com, a commercial A/B testing provider.

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Web Analytics

Web analytics is the measurement, collection, analysis, and reporting of quantitative web data to understand and optimize usage.

Web analytics can be useful for UX in several ways:

- Understanding demographics
- Understanding geography / language
- Understanding return vs. new visitors
- Understanding flow through the site
- Understanding time spent on each page
- Etc.

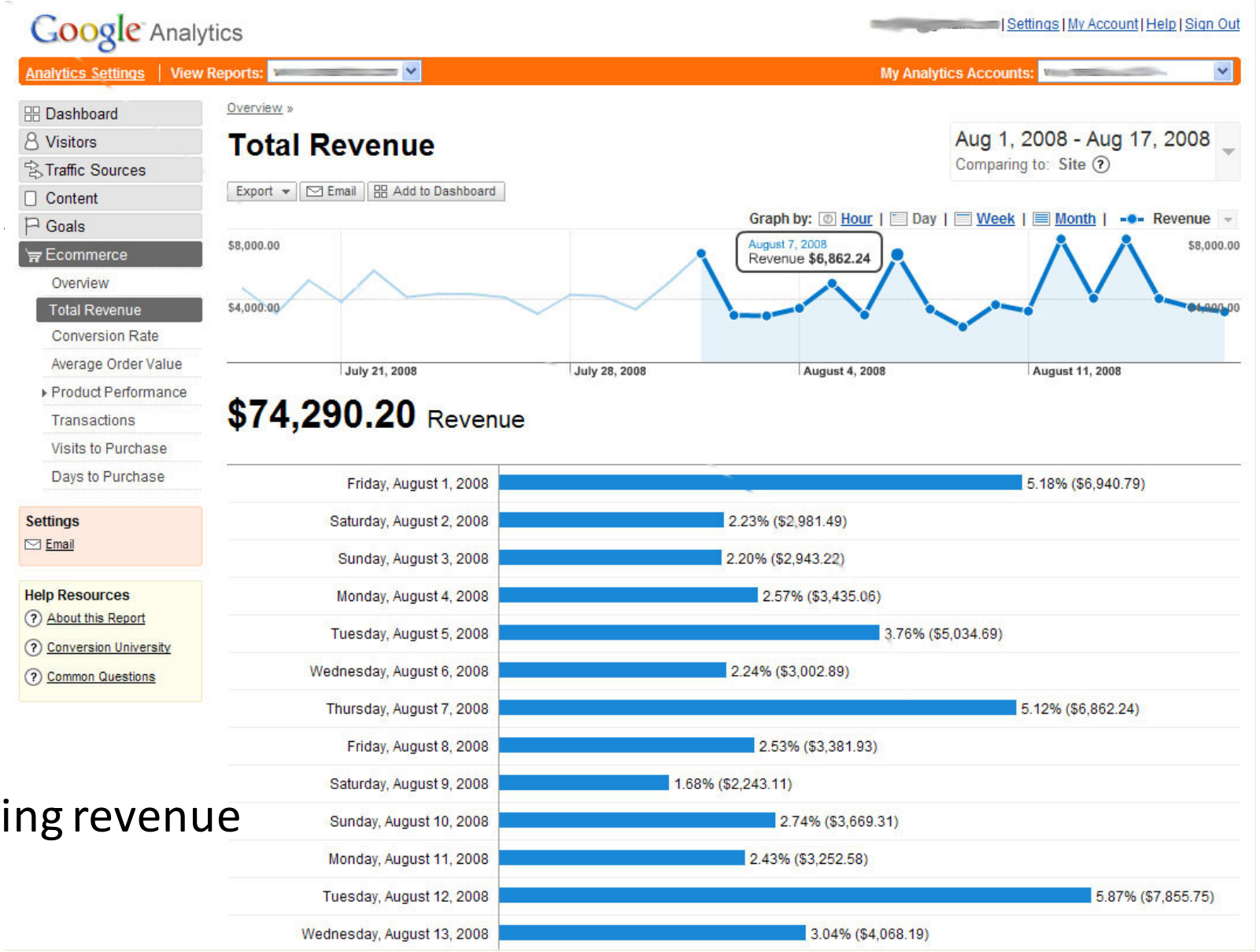
Example: Google Analytics

Free web analytics tool

Copy/paste a small amount of code to your website to enable analytics

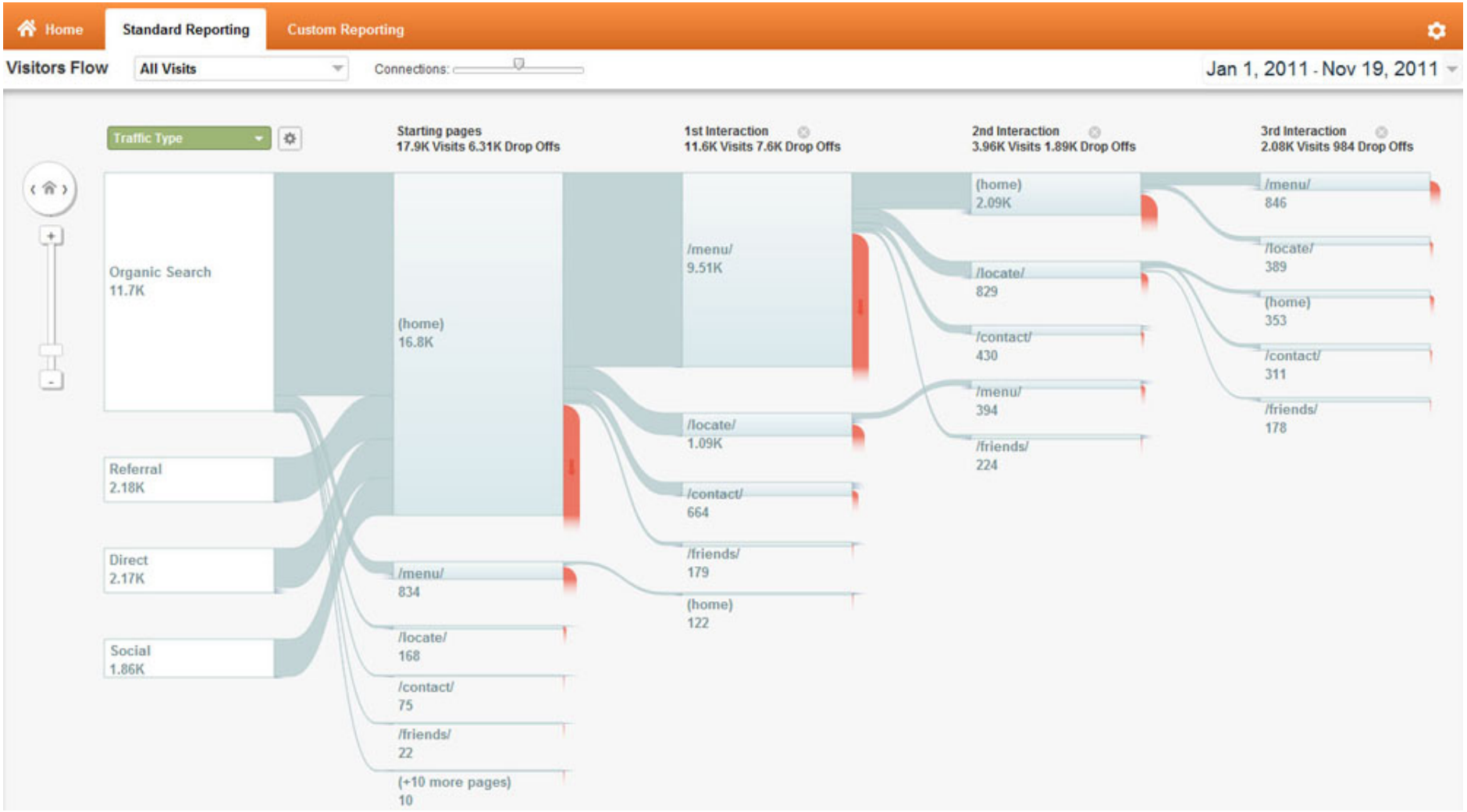
Watch all the data!


Google Analytics
My Account | Help | Contact Us | Sign Out
Dashboard
Saved Reports
Visitors
Traffic Sources
Content
Goals
Settings
Email
Help Resources
About this Report
Conversion University
Common Questions
Report Finder
Beta Feedback
Dashboard
Export
Email
Apr 1, 2007 - Apr 30, 2007
Avg. Time on Site
Avg. Time on Site: 00:02:27
00:01:40
April 2, 2007
April 9, 2007
April 16, 2007
April 23, 2007
Site Usage
16,635 Visits
28,827 Pageviews
1.73 Pages/Visit
00:02:05 Avg. Time on Site
69.56% Bounce Rate
65.52% % New Visits
Visitors Overview
11,916 Visitors
view report
Traffic Sources Overview
Referring Sites
Search Engines
Direct
Other
7 (0.04%)
view report
Goals Overview
709 Goal Conversions
view report
Map Overlay
view report



Tracking revenue

Understanding how people navigate your site



Understanding demographics

Be careful…

- Web analytics can quickly become a black hole of “interesting” data without any actionable insight.
  - Go in with concrete questions that can be answered
  - e.g. We’re creating a tool that targets elderly users. Is it actually being used by the elderly?
    - If so, on what devices?
    - If not, who IS using it?
- Even a “free” analytics service can end up costing a lot if it redirects resources from more productive uses.

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Activity

1. Work individually on a piece of paper.

2. Create an A/B experiment for your project
   - Come up with a driving question – write it down
   - Formulate a hypothesis – write it down
   - Design an experiment to test your hypothesis (e.g. draw different variants)
   - Explain your choices: why did you pick these variants?
   - How long would you run your experiment for and why?
   - What results would you hope to see?

3. (If you're done) Discuss your AB experiment with the person sitting next to you. Critique!

4. Write your name on your paper and turn it in.

Next time…

- Project midway presentations
  - Reports due before class!
- Next week
  - Experiment design
  - Statistical analysis