

Internet Advertising

UW CSE454
11/5/09
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Agenda

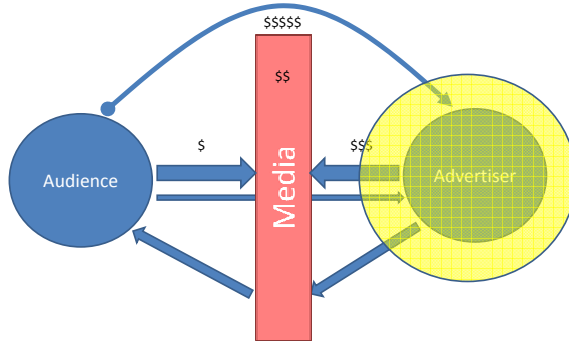
- Industry context
- Advertiser view
- Publisher view
- Audience view
- Testing/optimization

I know I'm wasting half of my ad budget. I just don't know which half.

2009 Global Ad Spend

**\$458
Billion**

Industry Structure



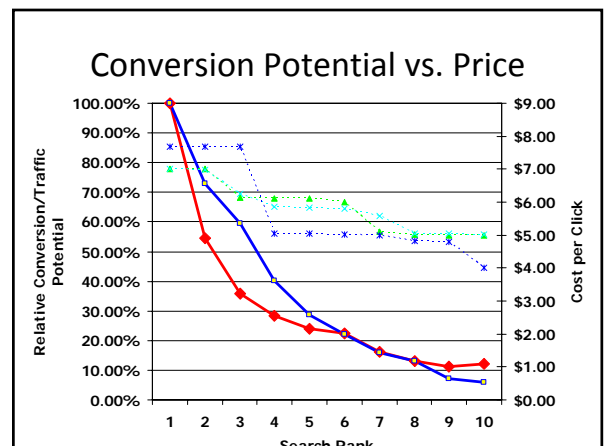
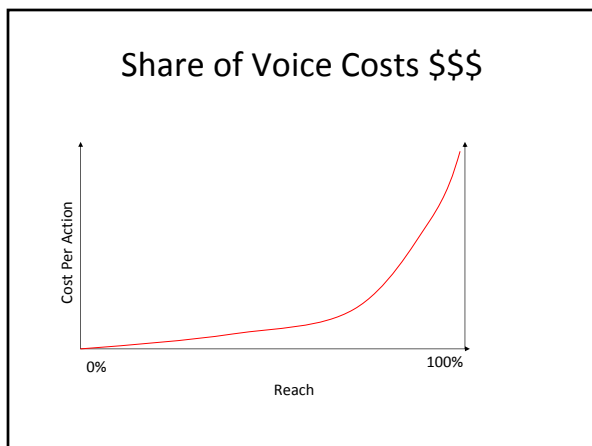
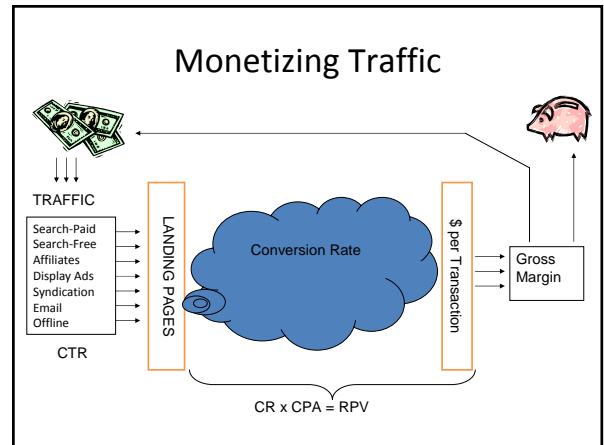
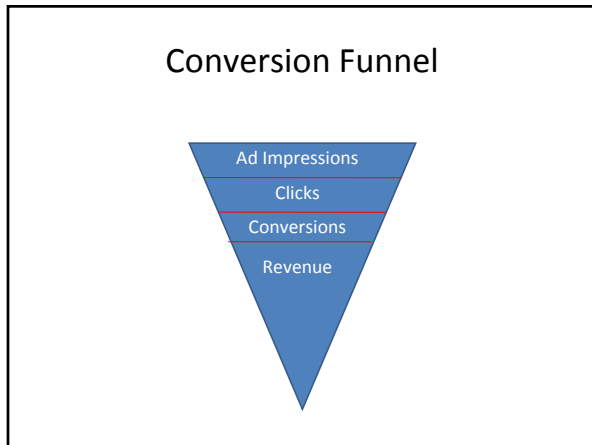
The Great Divide

Brand

- Emotions
- Indirect benefits
- Banners, TV, stadiums

Direct Response

- Transactions
- Gross profits
- Search, coupons, 1-800, radio, mail



Real World Example

Real World Example

- RefSrc on URL
- Drop cookie
- Pass RefSrc upon conversion
- Match with ad spend
- Calculate CPA

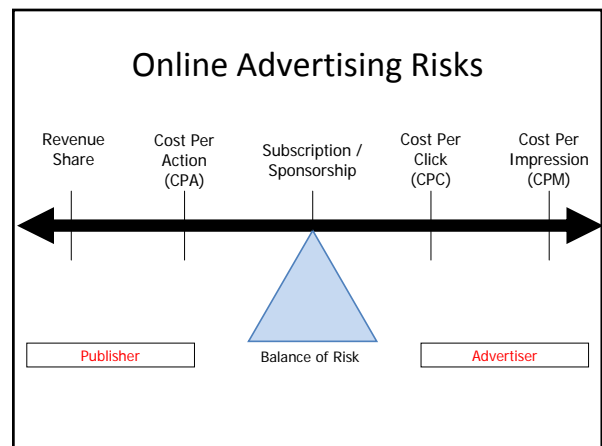
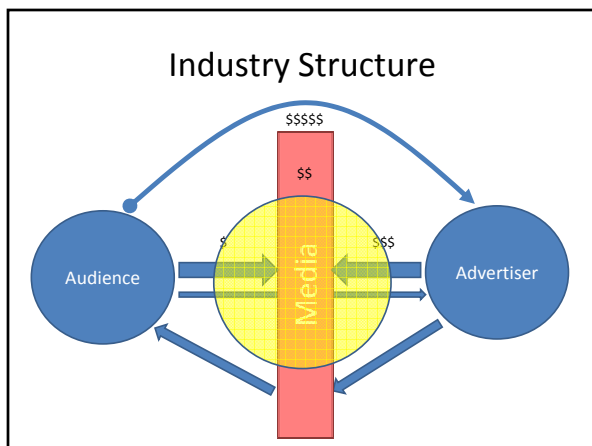
CTR=0.0469%
CPC=\$0.65
eCPM=\$0.31
CPMReg=\$19.69
CReg=\$46.76

Bid Management

Term	Clicks	CPC	Pos	CR	Leads	CPA	AvgPrice	Revenue	Spend	GM
Nursing School	5,000	\$1.00	1	5%	250	\$20.00	\$7.50	\$1,875	\$5,000	-63%
Nursing Schools	5,000	\$2.00	3	20%	1,000	\$10.00	\$30.00	\$30,000	\$10,000	200%
Total	10,000	\$1.50	2	12.5%	1,250	\$12.00	\$25.50	\$31,875	\$15,000	113%
Optimized	8,000	\$2.43	1	22%	1,760	\$11.05	\$30.00	\$52,800	\$19,440	172%

Bid Optimization

- Find shape of the volume, CR, and price curves as $f(pos)$
- Linear programming to maximize goal (e.g. LTV, gross profit, volume)
- Challenges
 - Sample size
 - Price changes
 - Seasonality



“Low-CPM” Innovation (circa 2001)

- CPC Marketplace Formation
- Advertiser Growth
 - Text-based ads
 - Self-serve ads
 - **RPV optimization**
 - Keyword suggestion
- Increased Bids
 - Max Bids
 - **Keyword opacity**
- Click Volume
 - Syndication
 - Text ad network
 - International
- Better Matches
 - **Landing page analysis**
 - Ad inhibition

RPV Optimization: Problems with Sort by CPC

Example Term: "mba"		
Ad Title	Univ. of Phx: Online MBA	Univ. of Washington MBA
Ad Body	100% online university. Fully accredited.	Foster School of business. Top 30 ranked.
CPC	\$10.00	\$0.50
CTR	0.01%	4%
Position	#1	#10
RPV	\$0.0010	\$0.0200

RPV Optimization

Sort by (CPC_Bid x CTR)

Google search results for 'sony dvd player'. The results are sorted by relevance. A red arrow points to a result for 'DVD Players at Target'.

Keyword Opacity

	Impr	CTR	Clicks	CPC	CR	Leads	CPA	Spend
Nursing School	100,000	5%	5,000	\$1.00	5%	250	\$20.00	\$5,000
Nursing Schools	10,000	50%	5,000	\$2.00	20%	1,000	\$10.00	\$10,000
Total	110,000	9%	10,000	\$1.50	12.5%	1,250	\$12.00	\$15,000
MatchDriver	110,000	9%	10,000	\$2.00	12.5%	1,250	\$16.00	\$20,000

Landing Page Analysis

What?? No "Christmas"

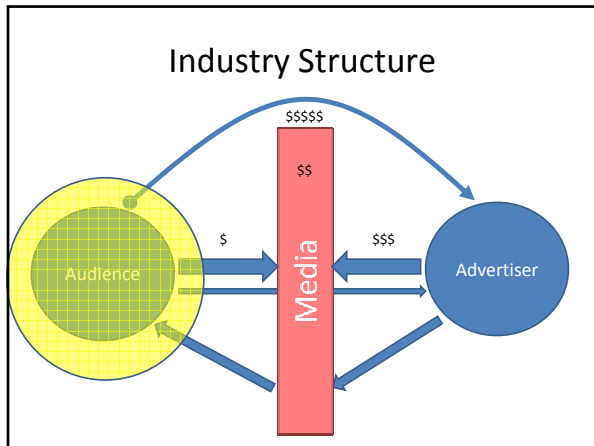
Google search results for 'christmas cakes'. The results are sorted by relevance. A red arrow points to a result for 'Nonnie Waller's Traditional Southern Christmas Cakes'.

No "Christmas" here either!

Landing Page Analysis

Nonnie Waller's Traditional Southern.
Making Memories One Gift at a Time™

The landing page features several gift baskets and products. The main focus is on 'Perks' and 'Christmas Cakes'. The page includes a navigation menu with links like 'Cakes', 'Flowers', 'Customer Care', and 'Contact Us'. There are also promotional banners for 'New for Mother's Day!' and 'Perks'.



End Users

Don't bug me

Unless I like what you have to offer

A screenshot of a Facebook news feed. The top part shows a search bar and navigation tabs. Below, there are several posts from friends and family, interspersed with advertisements for various products and services. The text 'Don't bug me Unless I like what you have to offer' is overlaid on the top half of the image.

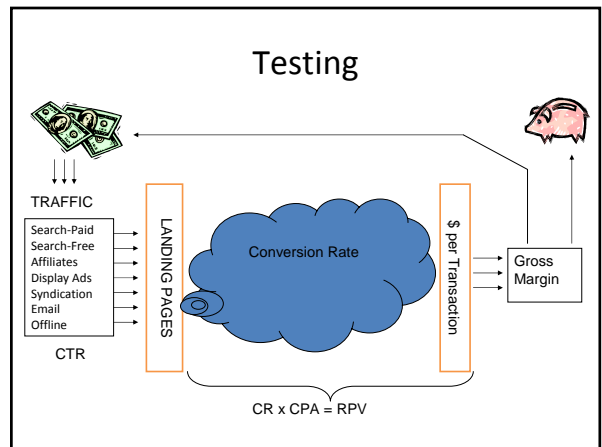
- ### Better Matching
- Context detection
 - GPS, location
 - App vs. content
 - Info seeker vs. transactor
 - Calendars/schedules/events
 - Social networks/status
 - Twitter - now
 - Behavioral – esp. w/knowledge of specific site behaviors
 - Contextual
 - Privacy
 - Google "AOL search data"

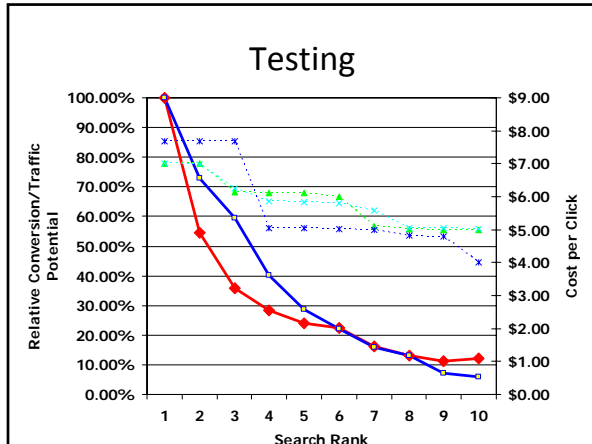
Context?

- Flowers
- Mentos gum
- Trial Prep
- Credit score
- Cosmetics
- Hampton Inns
- WeightWatchers
- Vacation Home Rentals
- Home Depot
- Web Hosting
- WebMD
- Colon Cleanse – Warning
- My Teeth Aren't Yellow
- Classmates.com

A screenshot of a search engine results page for the query 'flowers'. The top of the page shows the search bar and navigation options. Below, there are several search results, including a prominent advertisement for 'ProFlowers' and other related results. The text 'Context?' is overlaid on the top half of the image.

TESTING





Testing

Sample Size, margin of error, confidence

$$x = Z(\frac{c}{100})^2 r(100-r)$$

$$n = \frac{N \cdot x}{((N-1)E^2 + x)}$$

$$E = \text{Sqrt}[\frac{(N-n)x}{n(N-1)}]$$

Determine Sample Size

Confidence Level:

Confidence Interval:

Population:

Calculate

Sample size needed:

Find Confidence Interval

Confidence Level:

Sample Size:

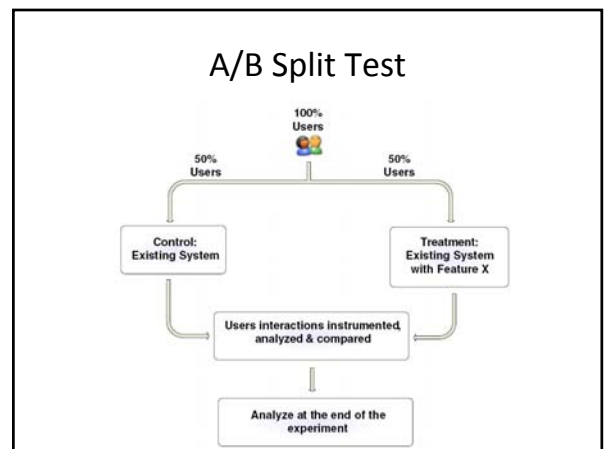
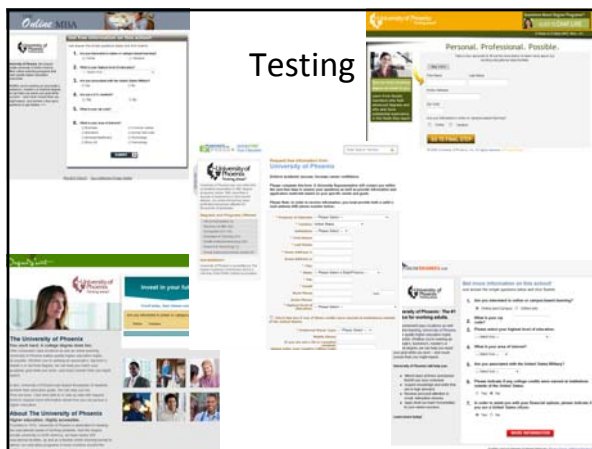
Population:

Percentage:

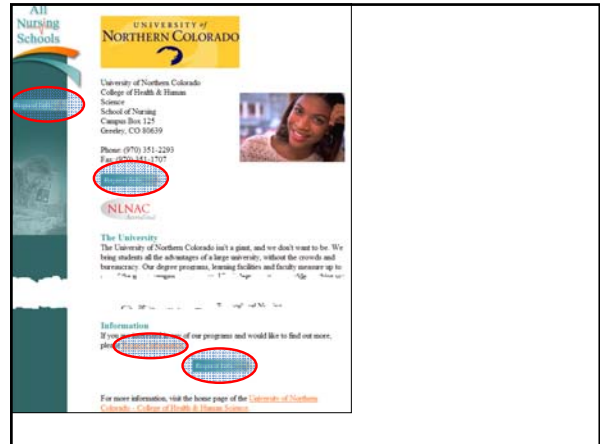
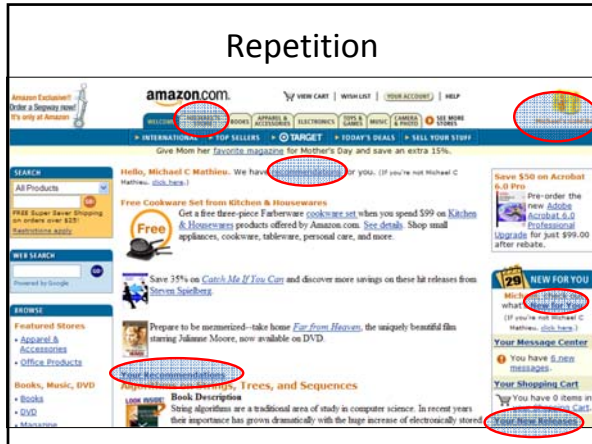
Calculate

Confidence Interval:

- ### Sample Size Problems
- So many ideas, so little to sample...
 - Disproportionate advantage to scale
 - Multivariate testing
 - Taguchi Method
 - Method for calculating signal-to-noise ratio of different parameters in an experimental design
 - Allows optimization with A/B test of each cross-product



Repetition



Professional Photos

Before



We observed an immediate 30% increase in conversion rates



After

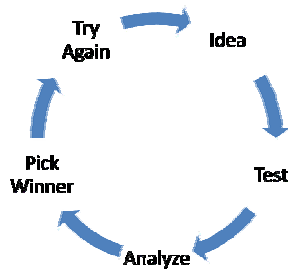


Fact Sheet Design

Existing Schools (n=1,428)	CR
Best	51.1%
Worst	0.4%
Average	11.6%

Test	# Schools	CR Lift
Professional photo	1	30%
More RFI buttons	3	21%
Marketing voice, more programs listed	1	28%
Photos + Marketing voice, more programs	1	50%

Analytics



Opportunities

- Advertisers
 - Low-RPV
 - Minimize waste
 - 10x simplicity
- Publishers / Search Engines / Ad Networks
 - Scaling local, hyperlocal
 - Other value judgments than rank
 - Under-monetized sites
 - Audience prediction
 - Duplicate detection
 - Google's path to lead gen
 - Advertiser behavioral tracking

Further Reading

- Sample size calculators
 - www.ezsurvey.com/samplesize.html
 - www.surveysystem.com/sscalc.htm
- Google Analytics – www.google.com/analytics
- Taguchi Method commercial products/whitepapers
 - www.vertster.com
 - www.omniture.com/en/products/conversion/testandtarget
- Online marketing sites
 - searchengineland.com
 - searchenginewatch.com
 - www.marketingsherpa.com
 - www.dmnews.com
 - www.imediaconnection.com
 - www.iab.net (industry group)