

Clickstream Analysis for Internet Marketing

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Objectives

- Principles behind Internet Marketing
- Defining Clickstream Data
- User Profiling
- Commercial Uses of Clickstream Data

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Are there any principles behind Internet Marketing?

Interactive Marketing/
1-to-1 Marketing/
Relationship Marketing/
Personalization

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Interactive Marketing

Blattberg and Deighton (Sloan Management Review 1991) discuss the differences between traditional mass marketing and interactive marketing:

- Use of actual behavior to identify customers/prospects
- Customized prices/product offers to the individual
- Customizing the advertising message via selected binding (split cable).
- Distribution: Direct links with the customer
- Sales force: Improved monitoring, less discretion, better data for the sales person

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Comparing Mass and 1to1 Marketing

Product manager sells one product at a time to as many customers as possible



Sell as many products as possible to one customer at a time

Differentiate his products



Differentiate his customer

Acquire a constant stream of new customers



Tries to get a constant stream of business from current customers

Concentrates on economies of scales



Concentrates on economies of scope

Peppers and Rogers, **The One to One Future**

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Customer Retention Arithmetic

Cost to acquire one new customer: \$20

Cost to retain one current customer: \$4

Acquisition Emphasis

Acquire 6 customers: \$120

Retain 5 customers: \$20

Total Cost: \$140

Total Customers: 11

Retention Emphasis

Acquire 3 customers: \$60

Retain 20 customers: \$80

Total Cost: \$140

Total Customers: 23

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The Web's Contribution

- Addressable marketing is not new
 - Mail and telephone have been around
 - For a long time the most valuable assets of companies like LL Bean, Fidelity Investments, American Express are their electronic customer transaction histories
- The difference between the web and these other technologies is that addressability and the collection of transaction histories is almost automatic

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Example: American Airlines

- Updated in late 1998, has the capability to build custom pages for each of the airline's 2 million registered users
- Prior to the web, there was no cost-efficient way to tell millions of customers about a special fare available only this weekend, to a destination you personally will find attractive

[Source](#)



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Interactive Marketing Requires...

- Ability to *identify* end-users
- Ability to *differentiate* customers based on their value and their needs
- Ability to *interact* with your customers
- Ability to *customize* your products and services based on knowledge about your customers

Peppers, Rogers, and Dorf (1999)

Information is key!

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Defining Clickstream Data

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What is clickstream data?

- A record of an individual's movement through time at a web site
- Contains information about:
 - Time
 - URL content
 - User's machine
 - Previous URL viewed
 - Browser type

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A clickstream example



Household ID: Female born 12Jul42

Demographics: Philadelphia Area, Male and Female Married (husband born: 27Sep46), 3 members in household, income: \$75,000-\$99,999, Graduated College, employed 35 or more hours, 1 child age 13 to 17 (daughter born: 5Jul80), own single family home, white collar, own car & truck, microwave, three dogs, five cats

| | | |
|------------------|-----|---|
| 18JUL97:18:55:57 | 47 | www.voicenet.com/ |
| 18JUL97:18:56:44 | 37 | www.weather.com/ |
| 18JUL97:18:57:25 | 105 | www.weather.com/weather/us/cities/MI_Traverse_City.html |
| 18JUL97:19:03:00 | 7 | www.weather.com/weather/us/cities/MI_Traverse_City.html |
| 18JUL97:19:03:56 | 2 | www.weather.com/weather/us/cities/MI_Traverse_City.html |
| 18JUL97:19:03:58 | 6 | www.weather.com/weather/us/cities/HI_Lahaina.html |
| 18JUL97:19:04:58 | 2 | www.weather.com/weather/us/cities/HI_Lahaina.html |
| 18JUL97:19:05:00 | 1 | www.weather.com/weather/us/cities/MI_Traverse_City.html |
| 18JUL97:19:15:24 | 39 | www.weather.com/weather/us/cities/MI_Traverse_City.html |
| 18JUL97:19:17:00 | 7 | www.weather.com/weather/us/cities/MI_Traverse_City.html |
| 18JUL97:19:17:07 | 13 | www.realastrology.com/ |
| 18JUL97:19:17:20 | 44 | www.realastrology.com/libra.html |

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What does the ISP see?

www.voicenet.com would see the following requests:

| | |
|------------------|---|
| 18JUL97:18:56:44 | www.voicenet.com/ |
| 18JUL97:18:57:25 | www.weather.com/weather/us/cities/HI_Lahaina.html |
| 18JUL97:19:17:07 | www.weather.com/weather/us/cities/MI_Traverse_City.html |
| 18JUL97:19:17:20 | www.realastrology.com/ |
| | www.realastrology.com/libra.html |

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What does the server see?

www.weather.com would see the following requests:

| | |
|------------------|---|
| 18JUL97:18:56:44 | www.weather.com/weather/us/cities/HI_Lahaina.html |
| 18JUL97:18:57:25 | www.weather.com/weather/us/cities/MI_Traverse_City.html |

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Sources of clickstream data

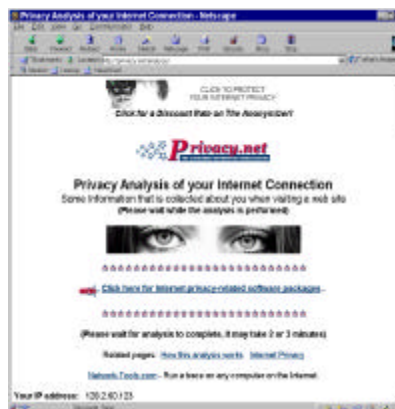
- Web Servers
 - Each hit is recorded in the web server log
- Media Service Providers
 - DoubleClick, Flycast
- ISP/Hosting Services
 - AOL, Juno, Bluelight.com
- Marketing Research Companies
 - Media Metrix, NetRatings, PCData

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The Raw Clickstream Data

All information sent by my web browser when requesting <http://www.privacy.net/analyze>:

Accept: image/gif, image/x-bitmap, image/jpeg, image/pjpeg, image/png, */*
Accept-Language: en Connection: Keep-Alive
Host: www.privacy.net
Referer: http://www.privacy.net/
User-Agent: Mozilla/4.75 [en] (WinNT; U)
Pragma: no-cache
Cookie: Date=10/18/00; Privacy.net=Privacy+Analysis
Accept-Encoding: gzip
Accept-Charset: iso-8859-1,*,utf-8



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Using Domain lookups

- If we match my domain, cmu.edu, with its registered zip code, "15213", we can think about geodemographic marketing
- The most likely visitor from the "15213" zip is the University USA segment
- What can we do with a ZIP Code?

[ENDS/MicroVision Lifestyle Game](#)



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User Profiling

What does 'where you go' say about 'who you are'?

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New Yorker, 5 July 1993, p. 61

Clickstream Example: Who is this web person?



| Session Number | Start Time | Seconds Actively Viewing | Seconds Elapsed between start and stop | URL |
|----------------|----------------------|--------------------------|--|--|
| 1 | 06.Jul.1995:20:49:31 | 4 | 109 | http://www.mserrysbe.anies.com/mserrysbe.anies/pokacksch.htm |
| 2 | 06.Jul.1995:20:51:11 | 52 | 132 | http://www.mserrysbe.anies.com/mserrysbe.anies/pokacksch.htm |
| 3 | 06.Jul.1995:20:53:23 | 51 | 85 | http://www.aol.com/netfind/kidshome.html |
| 4 | 06.Jul.1995:20:54:49 | 51 | 213 | http://www.mserrysbe.anies.com/mserrysbe.anies/pokacksch.htm |
| 5 | 06.Jul.1995:20:58:20 | 50 | 11765 | http://www.blueplanet.com/fun/packman/ |
| 6 | 07.Jul.1995:08:14:29 | 51 | 74 | http://find.web.aol.com/schaine/fin/malechamse/fin/?query=eric.tmc |
| 7 | 07.Jul.1995:08:15:42 | 50 | 162635 | http://www.lycos.com/network/ |
| 8 | 08.Jul.1995:21:26:17 | 4 | 113 | http://www.zvooorder.com/sd/ogon.asp |
| 9 | 08.Jul.1995:21:28:10 | 19 | 8 | http://www.zvooorder.com/sd/verificat/on.asp |
| 10 | 08.Jul.1995:21:28:29 | 4 | 43 | http://find.web.aol.com/schaine/fin/malechamse/fin/?query=stargate |
| 11 | 08.Jul.1995:21:29:12 | 1 | 601 | http://members.aol.com/maest |
| 12 | 08.Jul.1995:21:39:13 | 2 | 65 | http://members.aol.com/maest |
| 13 | 08.Jul.1995:21:40:10 | 36 | 8 | http://index.simplenet.com/sd/target/links.htm |
| 14 | 08.Jul.1995:21:40:54 | 132 | 172 | http://www.e-net.or.jp/usesoc/1701/dsf |
| 15 | 08.Jul.1995:21:43:46 | 1 | 29 | http://www.e-net.or.jp/usesoc/1701/dsb06/99sg1.html |
| 16 | 08.Jul.1995:21:44:06 | 1 | 5 | http://www.e-net.or.jp/usesoc/1701/dsf |
| 17 | 08.Jul.1995:21:44:11 | 1 | 15 | http://www.e-net.or.jp/usesoc/1701/dsb06/99sg1.html |
| 18 | 08.Jul.1995:21:44:26 | 6 | 6 | http://www.e-net.or.jp/usesoc/1701/dsb06/99sg1.html |
| 19 | 08.Jul.1995:21:44:32 | 1 | 15 | http://www.e-net.or.jp/usesoc/1701/dsf |
| 20 | 08.Jul.1995:21:44:47 | 1 | 16 | http://www.e-net.or.jp/usesoc/1701/awaso/smale.html |
| 21 | 08.Jul.1995:21:45:00 | 55 | 75 | http://www.e-net.or.jp/usesoc/1701/awaso/smale.html |

How much have you learned about this person?

- Gender
- Age
- Race
- Marital Status
- Geographic Location
- City Size
- Household Size
- Household Composition
- Household Income
- Rent or Own
- Education
- Age and presence of children
- Car or truck ownership
- Dog or cat ownership
- Female
- 34 years old
- White
- Single
- East South Central
- 250,000-499,999
- 2 household members
- Female head living with others related
- \$25,000-\$29,999
- Own
- Graduated High School
- No Children Under 18
- Two cars, no trucks
- No dogs or cats

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What is this user's gender?

Web sites visited during one month:

| | | | |
|-----|--------------------|-----|-------------------|
| 48% | aol.com | 63% | libertynet.org |
| 64% | astronet.com | 39% | lycos.com |
| 75% | avon.com | 27% | netradio.net |
| 52% | blue-planet.com | 57% | nick.com |
| 56% | cartoonnetwork.com | 59% | onhealth.com |
| 54% | cbs.com | 83% | onlinepsych.com |
| 76% | country-lane.com | 44% | simplenet.com |
| 47% | eplay.com | 76% | thriveonline.com |
| 41% | halcyon.com | 59% | valupage.com |
| 70% | homearts.com | 71% | virtualgarden.com |
| 66% | ivillage.com | 66% | womenswire.com |

Percentage of female viewers using PC Meter data₂₂

Bayesian Updating Formula

Application of Bayesian hypothesis updating.

$$\bar{p} = \frac{p \cdot \bar{p}}{p \cdot \bar{p} + (1 - p)(1 - \bar{p})}$$

New probability \bar{p}
 New information p
 Old probability \bar{p}

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Statistical Analysis

| | A | B | C | D | E | F | G |
|----|--------------------|-------------|--------------------------------------|--|--|---|-------------------------|
| | Domain | Ads | Probability a Female Visits the site | Probability visitor is Female given visits | Probability visitor is female for Ad Network | | |
| 2 | AvantAwards | | 45% | 45.00% | 45.00% | | |
| 3 | zol.com | AOL | 46% | 43.03% | 45.00% | | |
| 4 | astranet.com | X | 64% | 57.31% | 45.00% | | Ad Network: DoubleClick |
| 5 | zvon.com | None | 75% | 80.13% | 45.00% | | |
| 6 | bko-pianet.com | ? | 52% | 81.36% | 45.00% | | |
| 7 | carlsonnetwork.com | X | 58% | 84.74% | 45.00% | | |
| 8 | cbs.com | DoubleClick | 54% | 96.70% | 48.59% | | |
| 9 | country-salsa.com | None | 76% | 95.30% | 48.59% | | |
| 10 | epoxy.com | X | 47% | 94.82% | 48.59% | | |
| 11 | halcyon.com | ? | 41% | 92.71% | 48.59% | | |
| 12 | hormearts.com | X | 78% | 96.74% | 48.59% | | |
| 13 | ivillage.com | DoubleClick | 66% | 98.29% | 65.00% | | |
| 14 | iberlyn.org | DoubleClick | 63% | 98.99% | 76.05% | | |
| 15 | lycan.com | X | 39% | 98.43% | 76.05% | | |
| 16 | netradio.net | X | 27% | 95.07% | 76.05% | | |
| 17 | nick.com | DoubleClick | 57% | 96.05% | 80.00% | | |
| 18 | onhealth.com | X | 59% | 97.79% | 80.00% | | |
| 19 | onlinepsych.com | DoubleClick | 83% | 99.54% | 95.36% | | |
| 20 | simpleit.com | ? | 44% | 98.43% | 95.36% | | |
| 21 | threesonline.com | AOL | 76% | 99.03% | 95.36% | | |
| 22 | valupage.com | None | 59% | 99.07% | 95.36% | | |
| 23 | vj.com | X | 71% | 99.03% | 95.36% | | |
| 24 | womenwire.com | X | 66% | 99.97% | 95.36% | | |

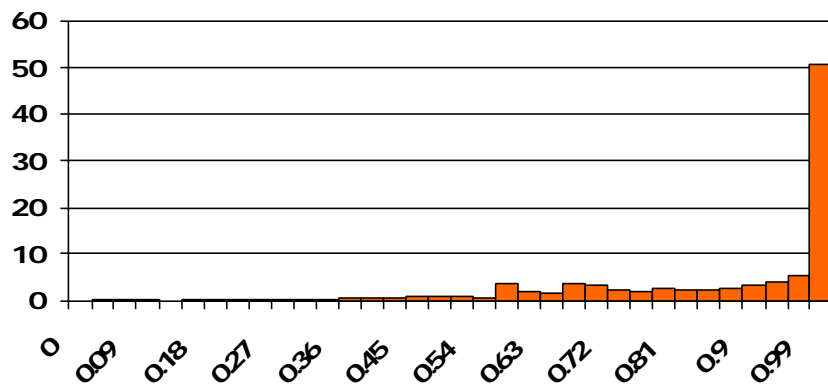
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Results

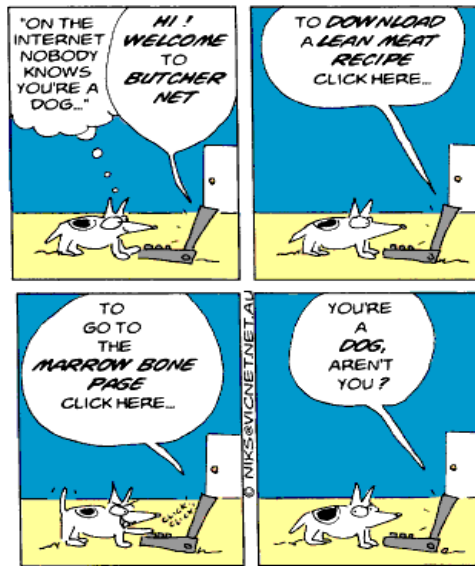
- Analysis shows that there is a >99% probability this user is female.
 - Using only DoubleClick sites the probability is 95%.
- Using all user data for one month:
 - 90% of men are predicted with >80% confidence (81% accuracy)
 - 25% of women are predicted with >80% confidence (96% accuracy)

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Probabilities of Predicting Male Users



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[Http://www.moreinfo.com/au.cranlerma/fol2.htm](http://www.moreinfo.com/au.cranlerma/fol2.htm)

Future Direction

- Instead of predicting gender, we could predict age, income, ethnicity, etc.
- Some statistical problems arise:
 - Simple models assume independence between visits
 - Revisitations are highly correlated
 - Transition probabilities are not exploited
- The quality and accuracy of these predictions can be improved dramatically, which would be very valuable to sites performing profiling

The Value of Targeted Marketing

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What is the value of profiling



Example

No targeting

| <i>Probability</i> | | <i>Truth</i> | |
|-----------------------|--------|--------------|---------|
| | | Male | Female |
| <i>Prediction</i> | Male | 40% | 10% |
| | Female | 25% | 25% |
| <i>Reward</i> | | <i>Truth</i> | |
| | | Male | Female |
| <i>Prediction</i> | Male | \$ 0.50 | \$ 0.50 |
| | Female | \$ 0.50 | \$ 0.50 |
| <i>Expected Value</i> | | \$ 0.50 | |

Targeting

| <i>Probability</i> | | <i>Truth</i> | |
|-----------------------|--------|--------------|---------|
| | | Male | Female |
| <i>Prediction</i> | Male | 40% | 10% |
| | Female | 25% | 25% |
| <i>Reward</i> | | <i>Truth</i> | |
| | | Male | Female |
| <i>Prediction</i> | Male | \$ 1.00 | \$ 0.20 |
| | Female | \$ 0.20 | \$ 0.50 |
| <i>Expected Value</i> | | \$ 0.60 | |

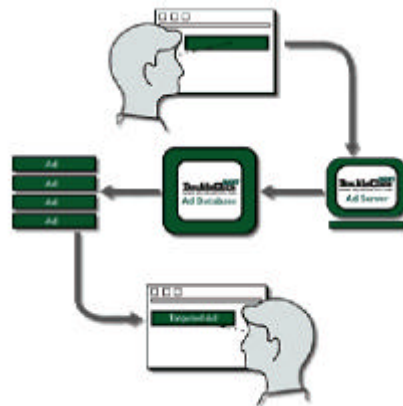
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Personalization

The use of cookies by DoubleClick

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Banner Ad Generation by DoubleClick



Source: http://www.doubleclick.com/publishers/service/how_it_works.htm 32

Using Cookies for Advertising

Objective:
To drive potential customers to the Datek site and promote online trading.

Campaign Description:
Category buy on the DoubleClick Finance sites, including StockMaster, Big Charts, Clear Station, Individual Investor Online, Fast Company

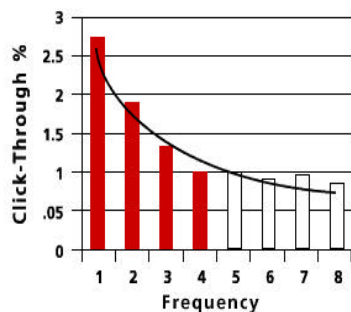
"We can look on a daily basis and see how well"

- Check your browser's cookie list for "DoubleClick"
- DoubleClick inserts ads into other people's web sites
 - Track users across sites
 - Limits number of exposures to ads
 - Target ads to certain types of individuals
- User remains "anonymous"

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What has DoubleClick learned?

Frequency and Banner Burn-out



Source: DoubleClick, 7/96.

- After studying millions of impressions they concluded that after the fourth impression, response rates dropped from 2.7% to under 1%.

Banner burnout

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Advertising Case Study



- Introduce Datek to potential online investors through banners and sponsor buttons on
- DoubleClick Business & Finance sites (StockMaster, Big Charts, ClearStation, Individual Investor Online, Fast Company and EDGAR Online).
- Integrate ads with major brand DoubleClick Select Sites including U.S. News, PBS, the Dilbert Zone and Travelocity.
- Keyword banners on AltaVista during user searches for specific topics like "stock", "online trading," "investments," "brokerage" and "broker."

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"Online Brokerage" Banner Ads



- If we were to go to each of these search engines and type in "online brokerage" what banner ads would be displayed
- This service is performed by www.bannerstake.com

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Results



- Response rates for keywords ranged as high as 15% - 19%. Through sponsorships on DoubleClick Finance sites, the Datek brand is reinforced to 550,000 potential customers every month.
- Since the inception of their DoubleClick campaign, Datek has succeeded in establishing a loyal audience, now exceeding over 32,000 trades a day.
- Over the past two years, DoubleClick has been an integral part of Datek's online budget, helping Datek to generate in excess of \$320,000 a day from online trading

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Is it worth it?

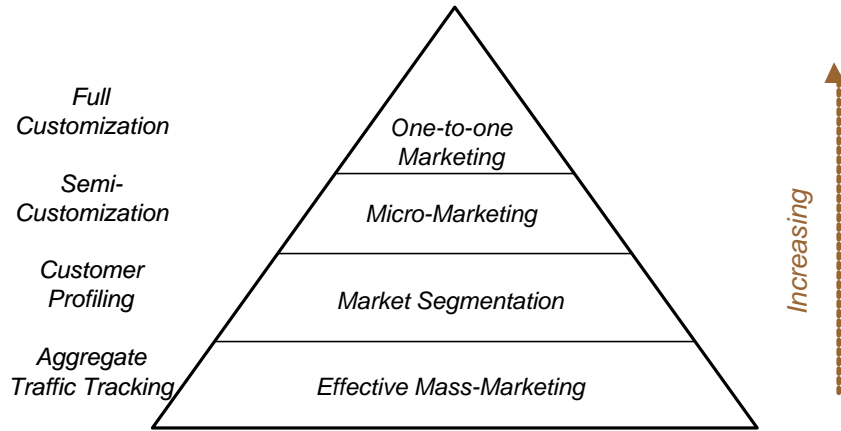
| Key Word Category | Keyword Rate |
|---------------------|--------------|
| Premium & Exclusive | \$95 |
| Standard Words | \$70 |
| Rem of \$/hr* | \$20 |

- Currently 250,000 customers, 70,000 trades/day, \$9.95/trade

| | |
|------------------|----------|
| Exposures | 550,000 |
| CPM | \$85 |
| Cost | \$46,750 |
| Clickthrough | 15% |
| Conversion Rate | 7% |
| New Customers | 5,775 |
| Cost/Acquisition | \$8.10 |
| LTV | ? |

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A conceptual framework



Where should your company fit?

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Commercial Sources of Clickstream Data

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Collecting the Clickstream Using the PC Meter

- Media Metrix: the PC Meter Company
- Has been collecting web data since July 1995
- Originally subsidiary of the NPD Group, Inc., merged with Relevant Knowledge, and most recently Jupiter
- Provides syndicated data to more than 900 clients
- Business model organized around traditional advertising measures: reach and frequency



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How does the PCMeter work?

1. Randomly Recruit A Panel of PC and Internet Users

Household # 324404

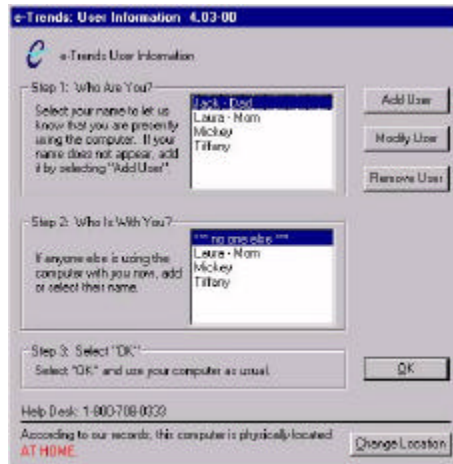
Male, 45 PC #1: IBM Desktop, Pentium 200Mhz
 Female, 42 Location: At Home
 Male, 17 PC #2: Compaq Presario, 350 Mhz
 Female, 14 Location: At Home
 PC #3: Dell Latitude Notebook
 Location: Mobile/Work
 Income: \$85,000
 Geography: Boston, MA
 HHSize: 4
 Home: Own Single Family Dwelling
 MH Occ: White Collar/Administrative
 FH Occ: White Collar/Administrative

Household# 908363

Male, 61 PC #1: Gateway, PIII 400Mhz
 Female, 60 Location: At Home
 Income: \$35,000
 Geography: Madison, WI
 HHSize: 2
 Home: Rent, Multi-Family Dwelling
 MH Occ: Retired
 FH Occ: Retired

How does the PCMeter work?

2. Install Tracking Software on Panelists' Home & Work PCs



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How does the PCMeter work?

3. Software Gathers Data On Personal "Clickstreams" As Panelists Use Their PCs

| TIME | WEB SITE & PAGE | TOM S., Age 39 |
|------------|--|----------------|
| 6:42:07 pm | America Online - Login | |
| 6:42:54 pm | America Online - Email | |
| 6:53:12 pm | America Online - Today's Headlines | |
| 6:56:44 pm | www.cnn.com/news | |
| 6:57:25 pm | www.cnn.com/news-chicago | |
| 7:03:00 pm | www.yahoo.com | |
| 7:03:56 pm | www.yahoo.com/travel/recreation | |
| 7:03:58 pm | www.yahoo.com/travel/SanFrancisco | |
| 7:04:58 pm | www.sfgate.com | |
| 7:05:00 pm | www.sfgate.com/entertainment | |
| 7:15:24 pm | www.sfgate.com/entertainment/restaurants | |
| 7:20:45 pm | microsoft word application | |

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How does the PCMeter work?

4. Data is Processed and Provided to Clients Online and/or in Hard Copy

| Rank | Reach | Circulation | % Reach | Average Spots | Average Spots per Second | Average Spots per Minute | Average Spots per Hour | Average Cost |
|------|-------|-------------|---------|---------------|--------------------------|--------------------------|------------------------|--------------|
| 1 | 4128 | 4128 | 100% | 100 | 1.67 | 100 | 600 | 10.00 |
| 2 | 4070 | 4070 | 100% | 100 | 1.67 | 100 | 600 | 9.90 |
| 3 | 4036 | 4036 | 100% | 100 | 1.67 | 100 | 600 | 9.84 |
| 4 | 3948 | 3948 | 100% | 100 | 1.67 | 100 | 600 | 9.68 |
| 5 | 3908 | 3908 | 100% | 100 | 1.67 | 100 | 600 | 9.64 |
| 6 | 3892 | 3892 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |
| 7 | 3888 | 3888 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |
| 8 | 3888 | 3888 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |
| 9 | 3888 | 3888 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |
| 10 | 3888 | 3888 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |

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How does the PCMeter work?

Example profile report for Yahoo (July 2000)

| Rank | Reach | Circulation | % Reach | Average Spots | Average Spots per Second | Average Spots per Minute | Average Spots per Hour | Average Cost |
|------|-------|-------------|---------|---------------|--------------------------|--------------------------|------------------------|--------------|
| 1 | 4128 | 4128 | 100% | 100 | 1.67 | 100 | 600 | 10.00 |
| 2 | 4070 | 4070 | 100% | 100 | 1.67 | 100 | 600 | 9.90 |
| 3 | 4036 | 4036 | 100% | 100 | 1.67 | 100 | 600 | 9.84 |
| 4 | 3948 | 3948 | 100% | 100 | 1.67 | 100 | 600 | 9.68 |
| 5 | 3908 | 3908 | 100% | 100 | 1.67 | 100 | 600 | 9.64 |
| 6 | 3892 | 3892 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |
| 7 | 3888 | 3888 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |
| 8 | 3888 | 3888 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |
| 9 | 3888 | 3888 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |
| 10 | 3888 | 3888 | 100% | 100 | 1.67 | 100 | 600 | 9.63 |

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Example Media Metrix Clients




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Applications of Clickstream Data

- Clients are Using Media Metrix Services to:
 - Plan, Buy & Sell Digital Media Advertising
 - Understand Consumer Behavior
 - Gain Marketplace & Competitive Intelligence
 - Support Product, Marketing & Advertising Strategy Development
 - Corporate Benchmarking
 - Basis for Partnership Alliance Decisions
 - Use With The Financial Community

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What do we learn from
clickstream data about the
digital landscape



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The Internet: Then & Now

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Top Fifteen WWW Sites

January 1996

AOL.COM
WEBCRAWLER.COM
NETSCAPE.COM
YAHOO.COM
INFOSEEK.COM

PRODIGY.COM
COMPUSERVE.COM
UMICH.EDU
PRIMENET.COM
WELL.COM

CMU.EDU
GNN.COM
MCOM.COM
MIT.EDU
TELEPORT.COM

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Top Fifteen WWW Sites

January 1996

AOL.COM
WEBCRAWLER.COM
NETSCAPE.COM
YAHOO.COM
INFOSEEK.COM

PRODIGY.COM
COMPUSERVE.COM
UMICH.EDU
PRIMENET.COM
WELL.COM

CMU.EDU
GNN.COM
MCOM.COM
MIT.EDU
TELEPORT.COM

July 2000

YAHOO.COM
MSN.COM
AOL.COM
MICROSOFT.COM
LYCOS.COM

PASSPORT.COM
HOTMAIL.COM
GO.COM (Disney/Infoseek)
NETSCAPE.COM
EXCITE.COM

ALTAVISTA.COM
AMAZON.COM
REAL.COM
EBAY.COM
ANGELFIRE.COM

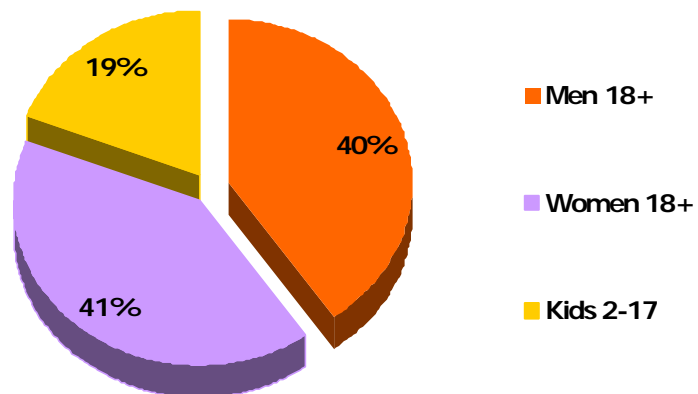
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The Net Has Gone "Mass"

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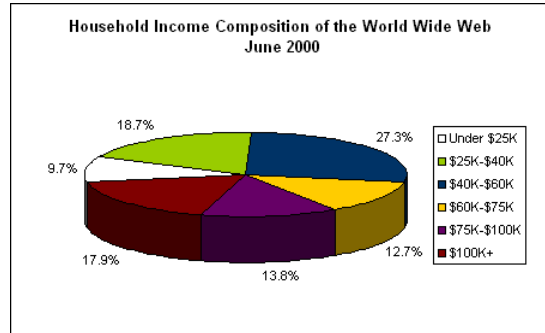
The Gender Gap Has Narrowed



Source: Media Metrix Share of Total Users - U.S. July 2000

54

Last Digital Divide: Income



- High income individuals still overrepresented
- 50% growth in Web usage for under \$25k, yet still represent <10% of Internet-using population
- In the U.S. population, lower income brackets (<\$25k) represent 32%, while highest income bracket (>\$100k) comprise 11% of U.S. households

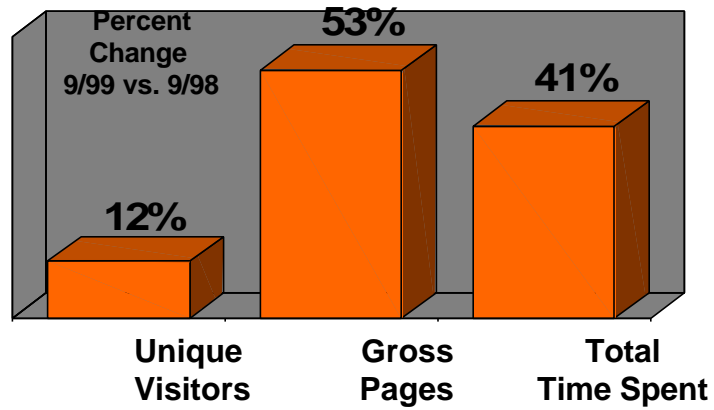
55

#3

Growing Beyond Reach

56

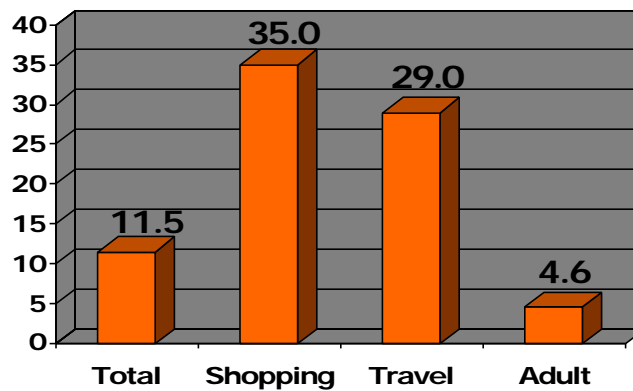
Source of Internet Growth



57

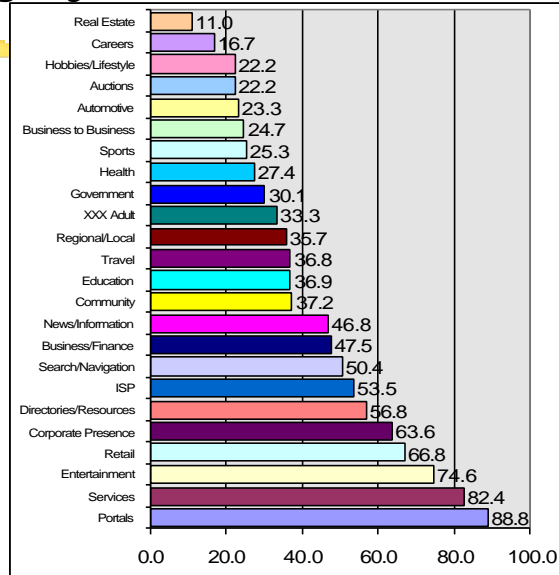
Category % Growth

9/98 to 9/99



58

Category Penetration % Audience Reach



Source: Media Metrix Web Report - U.S. July 2000

59

#4

Stickiness Counts

60

The *Stickiest* Sites

Average Time Per Visitor Per Day

| | |
|-------------------|--------------|
| 1. AOL NETWORK | 48.8 Minutes |
| 2. LYCOSCHAT.COM | 36.5 Minutes |
| 3. POGO NETWORK | 32.1 Minutes |
| 4. GAMESVILLE.COM | 27.3 Minutes |
| 5. MPLAYER.COM | 26.4 Minutes |
| 6. PRIZEPOINT.COM | 22.6 Minutes |
| 7. EBAY.COM | 22.5 Minutes |
| 8. UPROAR.COM | 20.4 Minutes |
| 9. VOYEURWEB.COM | 19.8 Minutes |
| 10. FREERIDE.COM | 19.2 Minutes |

Source: Media Metrix WWW Audience Ratings Report
Average Minutes Per Month Per Person 8/99

61

5

The World Is Dominated By
U.S. Multi-Nationals

62

Consolidated Landscape Of Global Brands (alphabetical)

| FRANCE TOP 25 | GERMANY TOP 25 | UNITED KINGDOM TOP 25 | UNITED STATES TOP 25 |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | | | About.com |
| Altavista Search | Altavista Search | Altavista Search | Altavista Search |
| | Amazon | Amazon | Amazon |
| AOL Services | AOL Services | AOL Services | AOL Services |
| Chez.com | Bahn.hafas.de | BBC.co.uk | Ebay.com |
| Citeweb.net | Comdirect.de | Demon.co.uk | |
| Club-Internet.fr | Fireball.de | | |
| Free.fr | GMX.de | | |
| | | Excite | Excite |
| Ifrance.com | Kostenlos.de | Freerve.net | Go.com |
| Infonie.fr | | Lineone.net | Hotbot.com |
| Libertysurf.fr | | | Looksmart.com |
| | Lycos | Lycos | Lycos |
| Microsoft Sites | Microsoft Sites | Microsoft Sites | Microsoft Sites |
| Multimania.com | Puretec.de | | |
| Nomade.fr | 01019Freenet.de | | |
| Pagesjaunes.fr | | | |
| Real.com | Real.com | | Real.com |
| Voila.fr | T-Online Services | Ukplus.co.uk | Snap Services |
| Wanadoo.fr | | Virgin.net | |
| Xoom | Xoom | Xoom | Xoom |
| Yahoo Sites | Yahoo Sites | Yahoo Sites | Yahoo Sites |

Conclusions

Today's Lecture...



- The transformation of direct marketing into database marketing and relationship marketing
- The potential for using data to implement 1to1 Marketing is huge!
 - Scores of firms using collaborative filtering to offer customized sites
 - Consumers appear willing to make the tradeoff right now to give up data if they get something in return
 - Information is critical, the most valuable information is purchase history
 - New and better measures of the information content of clickstream data and customer acquisition costs are needed

It is not a panacea and can be costly to implement fully ⁶⁵