Online Advertising Survival: Combating Click Fraud

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Click Fraud is the biggest threat to the Internet economy

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1. Introduction

There have always been financial incentives to commit fraud in the advertising industry. Magazines and newspapers routinely overcharged advertisers by exaggerating circulation numbers. Television ratings are manipulated to boost rates for 30 second commercial spots. Radio ratings are performed by surveys and are easily massaged. These same types of fraud schemes that have victimized traditional advertisers for years are now affecting the online advertiser.

The internet is very advantageous to conducting business. The growth of the internet over the past 10 years has now resulted in electronic commerce worth $136 billion in the US alone. Unfortunately, the growth of the internet has resulted in the proliferation of internet frauds. Fraudsters have now taken aim at the internet with new schemes to exploit the internet's unique capabilities of speed and anonymity. Unfortunately, these strengths are also the internet's weaknesses as frauds can spread across the world overnight.

With the advent of electronic commerce, comes the online advertising business model. Pay per click advertising was established early as the preferred revenue model of the search engines and advertisers. While pay per click is considered to be the most efficient and effective revenue model, it also has its disadvantages. Its biggest flaw is its susceptibility to click fraud.

In 2008, online advertisers expect to lose more than $1.6 billion dollars to click fraud[1]. This figure is debatable, depending on the source of the information. There has always been great disparity in the estimates between the search engines, advertisers and third party auditing firms. The major obstacle facing the industry is also the most obvious - how to define and measure click fraud. Regardless, after much bickering, click fraud is now at least acknowledged by all parties concerned to be a problem that has to be dealt with urgently.

It is ultimately the advertisers own responsibility for the prevention and detection of click frauds but the industry is doing its part to protect the victims. There are unique dynamics in the industry in that those entities who are supposed to be protecting the advertiser are also the one's who are financially benefiting from the click fraud - namely the large search engines like Google and Yahoo. This research paper will examine the early origins of click fraud and the current click fraud schemes being committed and what can be done to protect the advertisers. The pay per click advertising model will be presented and shown why it is so easily vulnerable to fraud. The legal aspect of click fraud will be presented which will show just how difficult it will be to use the courts to resolve disputes. Finally, while it is not possible to completely eliminate click fraud, recommendations will be presented as to possible solutions to alleviate the problem.

While there are numerous search engines in existence, my focus will be on Google and to a lesser extent, Yahoo, as these search engines control the majority of the internet

[1] http://www.clickrisk.com/, Retrieved April 20, 2008

advertising industry. In addition, unless Canadian statistics are readily available, the market will be the reference point in much of the discussion.

2. Advent of E-Commerce

Electronic commerce, or more commonly known as, e-commerce, consists of buying and selling of products or services over electronic systems such as the internet and other computer networks[2]. The amount of trade conducted electronically has grown tremendously, taking away from the brick and mortar business world and old fashion catalog sales. E-Commerce offers advantages to retailers and consumers that the traditional retailer cannot, that of convenience, 24 hour availability, and a global reach.

Total actual US retail sales from E-Commerce in 2007 are $127.7 billion, a 19.8% increase from the previous year (Appendix A). The top 500 largest e-tailing companies grew 22% in 2007 for total sales of $102 billion[3]. In comparison, total non E-Commerce retail sales increased only 4.0% in 2007[4]. Sales are projected to increase to $218.4 billion by 2012, a five year increase of 71%. A study as to factors which would influence increased online expenditures in 2008 noted convenience as the top factor (Appendix B). Surprisingly, 54% of the respondents would purchase more online to save gas. With the outrageous gas prices today, that percentage may well be understated.

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[3] Top 500 Guide on Internet Retailer, http://internetretailer.resultspage.com/retailing/top%20500%20guide, Retrieved June 8, 2008

[4] US Census Bureau, US Department of Commerce http://www.census.gov/mrts/www/data/html/07Q4.html, Retrieved May 31, 2008

Almost any goods or services can be purchased over the internet. The first major online retailer launched in 1995 was Amazon.com. The auction giant Ebay.com followed shortly thereafter. Travel leads the pack of product and services sold online. In 2007, 25% of all electronics and 37% of all office supplies were sold online[5]. Apparel web sites grew 24%. The online auction giant eBay sells everything imaginable and according to a Compete.com study, will attract 902 million visitors in 2008. In what was believed to be the largest e-commerce transaction in history, digital imaging company Interactive Picture Corporation and Gulfstream Aerospace Corporation sold the first corporate jet over the internet, a transaction worth $22.9 million[6]. Michael Dell has been quoted as saying one day he expects automobiles to be configured and sold over the internet much like his computers.

Cyber Monday, which is the first day back at the office after the Thanksgiving break in the US, is poised to rival Black Friday, traditionally the biggest shopping day registered by offline retailers. What started off as a marketing gimmick just a three years ago to attract shoppers online, Cyber Monday now had sales exceeding $733 million in 2007, a 21% increase from 2006[7]. According to a study conducted by accounting firm BDO Seidman, Cyber Monday sales accounts for approximately 12.3% of the expected $39 billion in online revenue for the 2007 holiday season. This rivals the 15.1% of holiday

[5] IAB Internet Advertising Revenue Report, PDF

[6] Andy Wang, "Jet Sold in Record Online Transaction", http://www.ecommercetimes.com/story/1454.html?welcome=1207173195&welcome=1213483712, Retrieved April 10, 2008

[7] "Cyber Monday Online Retail Spending Hits Record $733 Million , Up 21 Percent Versus Last Year, Comscore.com, http://www.comscore.com/press/release.asp?press=1921, Retrieved April 11, 2008

sales recorded by the offline retailers[8]. Green Monday (green as in cash), coined by Ebay to describe the second Monday in December lived up to its name as the heaviest online spending of the season, with sales exceeding $881 million, a 33% increase over the prior year[9].

The profile of the typical online shopper is that of college educated, and above average household income, married and employed full-time (Appendix C). Although the survey is not scientific, it gives a good indication of the continued strength of e-commerce. An AC Nielson Worldwide Consumer Panel Services study came to the same conclusion[10]. The demographics suggest that online shopping should continue in its momentous growth regardless of any declines in the economy.

3. Billion Dollar Online Advertising Industry

Total US advertising revenues totaled $21.4 billion in 2007, an increase of 26% from previous year (Appendix D). Sales from advertiser based search results in the US amounted to $8.6 billion in 2007 and are projected to almost double to $16.6 billion by 2011[11]. An Interactive Advertising Bureau (IAB) study suggests that Canadian online

[8] BDO Seidman Retail Compass Survey of CMOs, December 2007

[9] http://www.marketingcharts.com/direct/green-monday-sets-new-record-with-881mm-in-holiday-online-sales-2753/comscore-top-5-online-spending-days-holiday-season-as-of-dec-11jpg/, Retrieved June 14, 2008

[10] Elliot, Stuart, "Advertising; Statistics show that cyberpitches aid in sales to upscale, highly educated mainstream families", The New York Times, June 14, 2008

[11] www.emarketer.com, Retrieved May 20, 2008

advertising revenues exceeded $1 billion in 2006. The forecast for 2007 is projecting a 32% increase to $1.38 billion.

Contrast that to the traditional television, radio, magazine and newspaper, which have been steadily losing market to the internet. While Internet advertising still represents a small proportion of total advertising spending, expenditures have surpassed radio and cable television in 2007 (Appendix F). As of February 2008, Nielsen Online showed internet advertising accounting for 7.3% of all advertising spending, trailing only television and national magazines (Appendix E). A thirteen year growth comparison against cable and broadcast television clearly shows internet far outpacing the growth of both (Appendix F). Online advertising can be directly attributed to the decline or newspaper and television advertising. A Canadian Radio-television and Telecommunications Commission report has voiced concerns of the trend and the amount of Canadian advertising that is migrating to the internet, so much so that the trend has the "potential for considerable impact" on their ability to meet their regulatory obligations down the road[12].

Surprisingly, Microsoft is a small player in the search market and online advertisement industry. In a conference for large online advertisers in May 2007, Bill Gates realizes the fundamental shift to digital media that is in progress proclaiming "yellow page(s) usage among people below 50 will drop to zero in the next five years"[13]. Similarly, television

[12] Rita Trichur, "Losing ads to Net worries TV, radio", Toronto Star, May 16, 2008

[13] Ina Fried, "Gates makes case for Microsoft's ad business", ZDNetAsia, http://www.zdnetasia.com/news/internet/0,39044908,62011576,00.htm, Retrieved June 14, 2008

and newspaper circulation will see a significant decline. Microsoft's recent unsuccessful $40 billion bid for Yahoo was an attempt to compete with Google and underlines the highly lucrative long term prospects of the online advertising industry.

Meanwhile, the largest player Google earned over $16 billion in ad revenue in fiscal 2007, a 39% increase over 2006. Total ad revenues for 2008 Q1 exceeded $5 billion[14]. Google's recent acquisition of the online display advertising company DoubleClick for $3.1 billion should further grow ad revenues for 2008 and beyond. As an aside, Google was a surprising benefactor of the current US Presidential elections, with Barack Obama's campaign spending nearly $3 million on online advertising between January and April 2008[15]. Hillary Clinton largely neglected online displays until March 2008 and even then, was mainly aimed at fundraising. It is unclear what effect online advertising had on Obama winning the Democratic nomination, although it has been suggested that his internet ads may have aided in the win.

The top three categories of online advertising are retail (e-commerce), financial services and automotive (Appendix G). A study conducted by Dealix Corporation as a business case for the automotive industry to utilize internet advertising, states those dealers that utilize the internet to sell cars, sold 22% and 33% more vehicles over the two year period 2000 to 2002[16]. JP Power and Associates found that of the 64% of new car buyers that

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[14] Google , Investor Relations, http://investor.google.com/fin_data.html, Retrieved June 13, 2008

[15] Kaye, Kate, "Obama Spent Most of 43 Million This Year on Google", http://www.clickz.com/showPage.html?page=3629705, Retrieved June 1, 2008

[16] Dealix Corporation, "Why Should Auto Dealers Use the Internet to Sell More Cars", January 2004, PDF

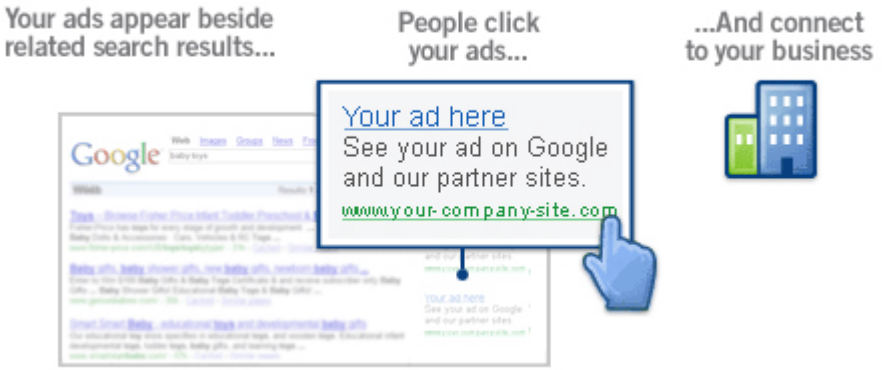
use the internet while shopping for a car, 88% will visit an average of seven automotive Web sites before making a purchase. At the same time, their return on investment is greater with internet advertising, with an average cost of $200 per car sold versus $550 for traditional advertising. In short, internet advertising works and is becoming big a business.

4. How Does Pay Per Click Advertising Work?

Pay per click advertising is the most popular way for online advertisers to reach potential customers. It is estimated that more than 90% of consumers use the internet to research before making purchasing decisions and 85% of all visits to Web sites originate through search engines[17]. The search engines in turn bring visitors to their sites for a price. Search engines like Google and Yahoo offer advertisers pay per click plans, which cost advertisers anywhere from as low as a penny per click on a text link. Popular keywords will cost an advertiser much more as bidders drive the cost up.

When you run a search on any of the major search engines, along with the usual list of results, there will appear "sponsored links" which are the paid advertisements. The ranking of these sponsored links are based upon how much the advertiser is willing to pay or "bid" for each phrase or word. Obviously the higher the bid, the higher up upon the list you are and the greater visibility you will have. You effectively buy your way to the top of the search engine ratings.

[17] dda, dynamic digital advertising LLC, http://www.zeroonezero.com/Services/search-engine-service.html, Retrieved June 13, 2008



[18]

Pay per click advertising in theory is an effective marketing tool and a win-win situation for search engines, consumers and advertisers alike. Pay per click works because the visitor is likely to be actively looking for the product or service. It is the lowest form of advertising with the highest success rate. Cost per click advertising allows companies to market on a web site and pay only when people are interested in the product or service and click on their ads. Pay per click advertising has the ability to pick and choose viewers as they are targeted to potential buyers. This is in contrast to radio and television which attempts to market to the masses.

The two core measures of the effectiveness of pay per click advertising are the click through and conversion rates. These concepts will factor in later discussions of click fraud schemes. A click through is when a search engine user clicks on an advertiser's advertisement and they are directed through to the advertiser's Web site. The click through rate therefore, is defined as the percentage of people that actually clicked on the advertisement and measures the effectiveness of the advertisement itself. The number of valid clicks a business receives also affects how high in the search rankings the advertisement appears. Conversion rate is defined as the percentage of search engine

[18] Google Adsense, https://www.google.com/adsense/login/en_US/, Retrieved June 7, 2008

users who performed the advertiser's desired action, such as places order, and measures the quality of the product or service being promoted.

While there are the obvious benefits of pay per click advertising, there is also the negative aspect, the manipulation of traffic through click fraud.

5. What is Click Fraud?

Click fraud is a scheme that takes advantage of the pay per click advertising programs like those offered by Google, Yahoo and others. It is defined as the practice of surfing websites and willfully clicking on the advertisements with the intention of falsely increasing clicks to defraud advertisers or Web sites that provide venues for the advertisers. Each click on an advertisement costs the retailer money. While the cost per click is small, the numbers can add up quickly. Click fraud can be perpetrated using either manual or automated processes via a clickbot. The irony is, despite its name, click fraud is not considered illegal as there are no specific laws against it. At least, there are no laws yet.

What constitutes a fraudulent click? Yahoo! Search Marketing looks at the identifiable behavior that may indicate bad faith. They define click fraud as detected illegitimate bots and certain repetitive clicks. Others define a fraudulent click as a click on an ad with no genuine interest or intention of providing any value to the advertiser. Google does not make reference to "click fraud" and only distinguishes between "valid or invalid" clicks.

Search engine marketing companies view click fraud as clicks that convert or does not convert.

As evidenced by the varying terminology, the problem is defining what a good click versus bad click is. There is no one agreed upon definition of what constitutes click fraud. Google and Yahoo's determination of click fraud differ from other involved parties. This largely accounts for the wide disparity of click fraud estimates between the high end of the advertisers and third party auditing firms and the consistently lower estimate of the search engines. The other reason is the search engines have been reluctant to admit to the actual known extent of click fraud. The bottom line is the vast majority of clicks and impressions cannot easily be determined to be good or bad. Clicks are not black or white and each side determines their own arbitrary definition of what constitutes click fraud. This debate between each of the parties presents the fundamental challenge for the online advertising industry to deal with click fraud and this will be evident within the legal context.

The estimates of click fraud have ranged from approximately 10% up to 40% of all clicks. If we even use the conservative estimate of 10%, that amounts to $ billions in fraudulent clicks. EMarketer analyzed US online spending by format and the estimated cost of click fraud (Appendix H). The study showed pay per click advertising growing at the fastest rate among all other types of internet advertising. The incidence of projected click fraud increases at a similar pace and is projected to reach an astounding high of $3.5

billion by 2008. While the parties cannot agree on what constitutes click fraud, they do all agree that click fraud is a problem and it needs to be addressed now.

6. The History of Click Fraud

Prior to pay per click advertising, click fraud as we know it today never existed. However, similar techniques to click fraud were being used to inflate page views since advertisers paid by page views or readership. Click fraud began as online advertising fraud in the early days of the internet, whereby unscrupulous publishers devised a scheme of artificially inflating impressions and click throughs to advertisers' websites.

Pay per click advertising was thought to begin with pay per click banner and text link advertising programs in the adult market in the late 1990's. Adult entertainment companies built huge affiliate networks based upon the pay per click business model. Banner and text link revenue was a major stream of revenue for the adult sites before click fraud completely wiped it out and resulted in the closure of many of the sites[19]. The click fraud techniques evolved with the introduction of pay per click advertising.

7. Click Fraud Schemes

There are considered to be two key groups of click fraud architects. The first are traffic affiliate partners of pay per click search engines. They earn commissions on paid clicks generated by their Web site visitors. The second are competitors who benefit from making your advertising expensive and in some cases, even prohibitive. Perpetrators of

[19] Holcomb, Joe, Pay Per Click Fraud – The Inside Story, http://www.searchenginejournal.com/pay-per-click-fraud-the-inside-story/1566/, Retrieved May 13, 2008

click fraud try to imitate legitimate visitors in the attempt to disguise the fraudulent actions. In general, the higher the key word bid price, the more rampant the click fraud.

7.1 Clickbots and Botnets

A Clickbot is a software robot that automatically clicks on ads to conduct click fraud. This software routes traffic all over the internet through anonymous proxy servers scattered all over the world, thereby creating the illusion that visitors are logging in from different locations, thereby masking the traffics true origin. Clickbots can be purchased, while others are malware that spread as such and are part of larger network or botnet of clickbots. Malware-type clickbots can receive instructions from a botmaster server as to what ads to click and how often and when to click them[20]. Malware clickbots infect computers and sabotage them to continuously click on ads. A Trojan drops several files and a browser helper object on to an unsuspecting PC. Most often the owners of these computers are not even aware. Periodically, the browser helper object opens URLs tied to affiliate IDs at search engines or performs searches for certain keywords. Either way, the Trojan helps the affiliate earn clicks. Malware can be readily purchased online and are sometimes marketed as "traffic simulators" to improve site profits[21].

According to the 2008 Q1 press release from ClickForensics, despite a decline in the overall click fraud rate, click fraud traffic from botnets was 8% higher, implying that

[20] Daswani, Neil and Stoppelman, Michael, "The Anatomy of Click.botA", http://usenix.org/event/hotbots07/tech/full_papers/daswani, Retrieved May 13, 2008

[21]Helm, Burt, "Click Fraud Gets Smarter", Business Week http://www.businessweek.com/technology/content/feb2006/tc20060227_930506.htm?campaign_id=search, Retrieved May 2, 2008

fraudsters are turning to automated and more sophisticated means of committing click fraud.

These methods attempt to hide click fraud attacks through IP diversity. IP diversity is varying your IP address to disguise that the click is coming from the same computer or IP address. IP addresses identify the source location for traffic. Examining the IP address shows which ISP that person is using. While it is easy to obtain a new IP address by simply rebooting a modem, it will still be associated with the same ISP.

7.2 Low Cost Workers

Certain regions of the world contribute to the majority of click fraud. Companies in these countries hire people who are paid to continuously click on ads. Click for pay sites are freely advertised on the internet (Appendix I). Most of the people are located in India, China, Pakistan, Nigeria or Russia. India is oft rumored to be rife with click farms, whereby rooms of dozens of employees literally click on advertisements all day to earn income. These professional clickers are paid a nominal sum and will browse around your websites and click on ads every few minutes. To make the appearance of legitimacy, they occasionally click a link or two on the advertiser sites. As the clicks are widespread, from different computers across many regions and without any discernable pattern, they are difficult to detect.

Many of the people involved in click fraud do not understand exactly what they are doing as generally they are not well educated. The irony is some of the people committing the

click fraud did so in the belief they were helping the very same people whose advertising dollars they were depleting, because clicking on their ads made their Web sites more popular.

To show how prevalent this practice is, type in “earn money” + “click” in Google and 679,000 results are found. Research has shown that click fraud originating from foreign countries such as China, Turkey and India are on the decline due to better filtering of traffic by the search engines. At the same time, the perpetrators have become more creative to cheat the system closer to home with Paid to Read schemes.

7.3 Paid to Read

The growing trend in click fraud is in the form of Paid to Read that targets both pay per click and impression based advertising. The scam usually targets stay at home workers and low income individuals. The perpetrators aggressively entice these individuals to view and click ads sent to them by email. Workers make very nominal sums of money and in many cases, often go unpaid. Not only are the advertisers victims of click fraud, so are the unsuspecting public.

7.4 Competitor Sabotage

Some unethical companies click on the pay per click ads of competitors to drive up their advertising costs. The intention is to max out the competitor’s advertising budget. Advertisers usually set daily limits on how much they will spend and search engines will drop their advertisements once they hit that limit. Once the competitor’s budget is

exhausted, the attackers benefit by receiving all the legitimate advertising clicks that the competitors may have obtained. This is more of a problem for small business owners without the funds for the unbudgeted expenditures. The longer term goal is to make pay per click advertising too expensive for the competitor and thus completely removing the competitor from the search engine results.

Impression fraud is a form of click fraud also against competitors. Ad impressions are the number of times an advertisement is rendered for viewing by the search engine and impacts the advertisers click through rate. Impression fraud manipulates the number of page impressions for a given search term to drive down a competitors click through rate. When an advertiser's relative click through rate decreases, his search term can be suspended because of low click through rate performance. Google suspends advertisements once the click through rate hits 0.5%. By sabotaging the competitor and eliminating their advertisements, the perpetrator can then take advantage to obtain higher search rankings at lower costs.

7.5 Personal / Political Agenda

Some click fraud is motivated not by greed but malicious intent, personal or political vendettas. Competitors click on advertisements to make it look as though the Web site operator or affiliate network itself has been perpetrating the click fraud. This is akin to

framing the operator or network[22]. Alternatively, click fraud could be used to deplete the advertising budget as protestations against a company.

Lastly, there is the web site Enturbulation.org, whose sole purpose is to collect and distribute sourced information and facilitate the organization and planning of worldwide protest actions concerning the Scientology Organization[23]. These adversaries of Scientology have come up with means aimed to destroy the huge cash reserves of the Scientologists. Click fraud is primary among them. It is not known whether a click fraud campaign was ever launched or the impact it had on the Scientology organization. This just highlights that financial gain is not always the motivating factor in a click fraud scheme.

7.6 Affiliate Programs

Corrupt affiliate advertisement networks are thought to account for 85% of all click fraud[24]. It is thought that the proliferation of lower tier level affiliates is the cause. As the major search engines strive to further meet targets and generate new sources of revenue, control is lost with each additional level of advertisement networks[25].

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[22] World Intellectual Property Organization, "Detecting and Adjudicating Click Fraud", http://www.wipo.int/pctdb/en/wo.jsp?wo=2008030670&IA=WO2008030670&DISPLAY=DESC, Retrieved May 30, 2008

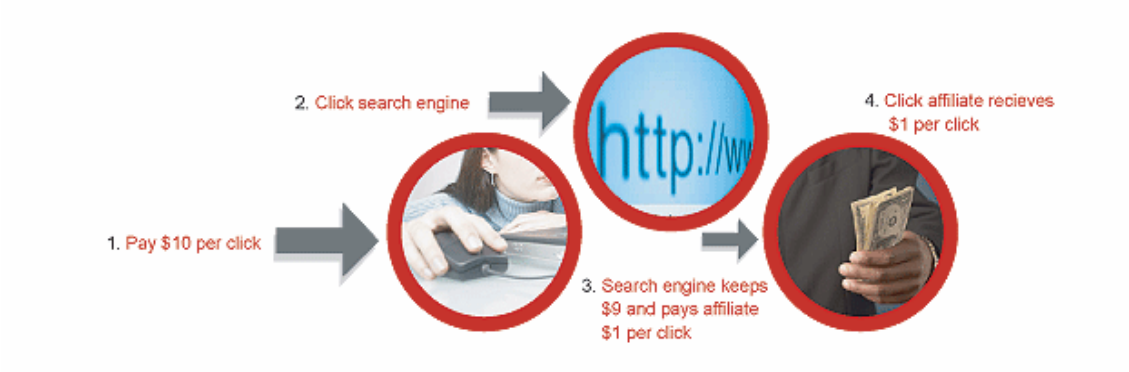
[23] Enturbulation.org, A Source For Information on Dianetics and the Scientology Organization, http://forums.enturbulation.org/7-general-discussion/operation-deplete-16711/, Retrieved May 14, 2008

[24] www.clickrisk.com, Retrieved May 11, 2008

[25] Weinstein, Jerry, "Either We Kill Click Fraud or Click Fraud is Going to Kill the Online Ad Business",http://www.jackmyers.com/commentary/media-business-report/18037949.html, Retrieved June 1, 2008

Affiliate programs are popular methods for online businesses to generate advertising revenues. Search engine affiliates are Web sites that implement results from a search engine onto their own Web sites. Agreements are generally made with the major search engines like Google and Yahoo to recycle advertisements to these affiliate Web sites (Appendix J). As part of the advertising agreements with Google and Yahoo, the advertiser either consents or opts out. These affiliates receive a share of each click. Typically, the affiliates will target search terms with high bids on their Web site using a low cost bid to direct traffic to their site. Anyone can startup an affiliate site and start directing traffic to your site in a matter of minutes.

For instance, the affiliate creates a Web site using a generic search term “shoes”. The search term “shoes” will likely have a low bid cost of $.01 given its broad and generic meaning. Their affiliate site contains unique advertisements with individual search phrases, such as “Cole-Haan”, which likely garners a high bid cost. If the Cole Haan advertisement is clicked on, the affiliate network, along with the search engine, will receive a portion of the click revenue. Using simple math, if the affiliate receives more than $.01 from the Cole Haan advertisement, they make a profit.



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An example of the relationships with less than respectable affiliates involves Yahoo and Oemji.com[27]. Yahoo recycles advertisements to Oemji just like any other affiliate. The difference is the Oemji site's owner is also known to distribute click fraud software. Yahoo was aware of the controversy but continued on with the agreement regardless offering Oemji 55% of all click revenue generated on the site. In the year following the agreement, many customers complained of fraudulent clicks, most coming from Oemji itself.

7.7 Arbitrage

Advertising arbitrage occurs when a site buys search advertisements and sends unsuspecting searchers to another page full of advertisements where the only purpose is hosting high cost advertising. Similar to affiliate advertising networks, the arbitrager is paid when searchers click on another advertisement on the site. The difference between what the arbitrager paid per click and what they get paid per click is profit. Advertisers generally do not know where their advertisements are being placed on these partner sites.

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[26] IGeryon.com, "Keeping an Eye on Internet Fraud", http://www.igeryon.com/fraud.php, Retrieved May 1, 2008

[27] Grow, Brian, "Doing Business With A Controversial Partner", BusinessWeek online, http://www.businessweek.com/magazine/content/06_40/b4003012.htm, Retrieved June 1, 2008

Most advertisers accidentally find their own advertisements on these arbitrage sites by clicking on an advertisement and being directed to these sites. Since the arbitrager makes money by his ability to convert low cost traffic into high value traffic, he will pay for inexpensive keywords and send searchers to these paid sites with much more expensive click costs. Often the redirected site is about an entirely different keyword.

For illustration purposes, type in rateyourcompany.com and you would expect job hunting or employer review sites. Instead, ads are displayed for loan refinancing, talent sites and doctor reviews (Appendix K). Unlike affiliate advertising networks, the advertisers do not receive added value from these arbitrage sites or so called middlemen and often feel that these arbitragers are simply stealing from their advertising budgets. Arbitrage inflates keyword prices while making these crooks rich.

7.8 Referrals

One website pays another website for sending traffic to their site. Often this "traffic trading" is done through automatic scripts using click bots. A user will click on a link and is automatically redirected to another site. Somewhere within the traffic trading network, clicks are inflated.

On a more grassroots level, the blogger culture has developed a growing trend in click fraud. In a simple example, a blogger signs up on any blog service, sets up an Adsense account with Google and starts displaying advertisements. Fellow bloggers as a praise of

each others work will “donate” a click to each other. There are no repetitive clicks and therefore, difficult to detect.

7.9 Self Promotion

This is the simplest example of click fraud. Self promotion consists of Web site operators who click on the advertisements on their own sites to earn a little extra income.

7.10 Pay per Click Hijacking

Big name companies who advertise on legitimate advertising networks are being hijacked by rogue affiliates who divert traffic to their sites in order to drive up their traffic and hence revenue. Information security firm, SecureWorks attempted to investigate one particular well publicized hijacking in order to identify the ultimate entity behind the hijacking[28]. The investigation revealed that advertisements from companies such as Mercedes Benz and Travelocity were being hijacked and redirected through a series of servers and scripts before ultimately reaching the intended page of the original advertisement. Each successive click earned the hijackers revenue.

7.11 Scraper Pages

These are phony Web sites that automatically generate content by “scraping” content with popular keywords from other Web sites to form multiple new sites which are then

[28] Stewart, Joe, “Pay-per-Click Hijacking”, http://www.secureworks.com/research/threats/ppc-hijack/, Retrieved, May 15, 2008

enrolled as affiliate sites[29]. Software repeatedly links these sites to legitimate sites. This generates traffic, and in turn, clicks from unsuspecting visitors. The content on these sites are generally sparse and serve no purpose other than re-direct traffic.

7.12 Blogger Communities

This is another form of profit sharing for the search engines. Online communities are setup whereby bloggers get paid to write. Advertisements are targeted towards the article. One such site is called Xomba which is affiliated with Google Adsense. All that is required of the blogger is to setup a Xomba and Adsense account, post a blog and choose specific keywords. Adsense will place targeted advertisements to the blog based upon the keywords chosen. Click revenue is shared 50/50 between Google Adsense and the blogger. Similar to the schemes described above, fraudsters click on the advertisements on their own blog or donate clicks to fellow bloggers.

8. Conflicts of Interest

8.1 Google and Yahoo

When a visitor clicks on an advertisement, the search engine profits and hopefully, so does the advertiser. The biggest search engine is Google. Google has 75% of the US paid search market share while the next largest, Yahoo has only about 9%[30]. Google, like all the search engines, has a financial interest to promote click fraud, at least in the short run. Google's profits from online advertising in 2007 are estimated at $16 billion

[29] Esparza, Susan, "Eliminating Click Fraud", http://www.bruceclay.com/articles/eliminateclickfraud.htm, Retrieved May 11, 2008

[30] www.emarketer.com, Retrieved May 11, 2008

with 99% coming from search advertisement and partner publisher sites[31]. If click fraud were to be completely eliminated, revenues and in turn share price of Google and the major search engines, would be severely impacted. In fact, in January 2006, Standard & Poors actually downgraded Google stock from hold to sell in part because click fraud was considered a "notable risk", which may prevent companies from placing future advertisements on Google[32].

Conversely, it has been suggested that the share price of the small search engine public companies can be positively impacted by their promotion of click fraud[33]. This was highlighted in a court case Miva Inc. Securities Litigation, 2007 WL 809686 (M.D. Fla Mar 15, 2007). In it, the stockholders of Miva (formerly FindWhat) sued Miva alleging that Miva had inflated its stock price by making false public statements. At the center of the allegations was the illegal inflation of revenues through the use of spyware, browser hijacking software, and non-human (bots) traffic. The end result was advertisers eventually refused to place high bid ads with FindWhat, causing revenues to drop further. The lawsuit was dismissed, illustrating the difficulty for plaintiffs to succeed in proving click fraud types of lawsuits against search engines[34].

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[31] Mills, Elinor, "Google Settlement or Not, Click Fraud Won't Go Away", http://news.cnet.com/Google-settlement-or-not,-click-fraud-wont-go-away/2100-1024_3-6059181.html, Retrieved May 21, 2008

[32] BusinessWeek Online, "S&P Downgrades Google to Sell", http://www.businessweek.com/investor/content/jan2006/pi20060117_9999_pi010.htm, Retrieved May 11, 2008

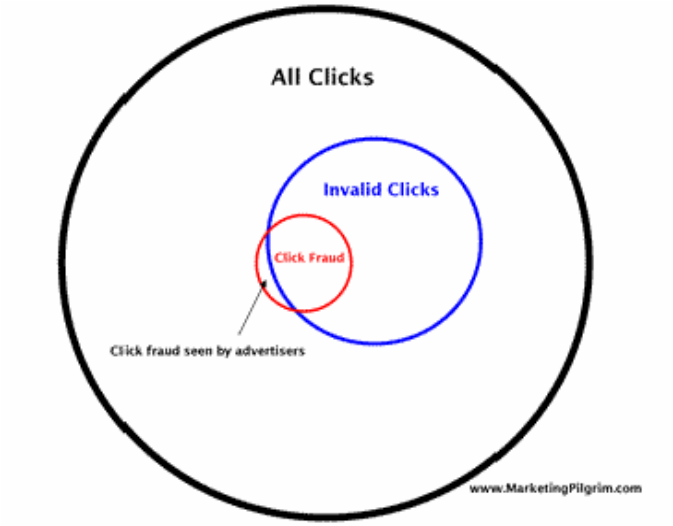
[33] Click Fraud Report, "Clicking to Steal", http://www.clickfraudreport.com/archives/2006/03/index.html, Retrieved April 15, 2008

[34] Goldman, Eric, "Click Fraud", Santa Clara University School of Law, PDF

Search engines have been accused of being too lax in warning advertisers about the risks of click fraud. In addition, they do not do enough to protect advertisers. Lastly, they have been slow to remedy the problem. Do the pay per click search engines care about click fraud? In a blog posted in December 2006 by Google Product Manager Shuman Ghosemajumder, he states its top priority is to protect advertisers. It is for this reason Google does not disclose any proprietary method which would allow click fraud perpetrators to reverse-engineer their systems. It is this lack of transparency that has caused mistrust between Google and its advertisers. The search engines do not release any information as to the actual instances of click fraud either. There is no accurate way for advertisers to determine the extent of the problem because search engines refuse to disclose such data. They simply state that they have the appropriate systems in place to detect the majority of click fraud and advertisers are reimbursed accordingly for the bad clicks.

A company like Google monitors hundreds of thousands if not millions of sites currently using Adsense. Third party auditing companies cite click fraud levels as high as 30 to 40% of all clicks and that search engines are not doing a proper job in preventing click fraud. Google claims they do not have access to vital web log data that the advertiser maintains and if they did, it would it be practical for them to analyze given the sheer volume of data. Regardless, Google stated in February 2007 that the percentage of actual click fraud is .02%, with ”invalid” clicks at just 10%[35]. This statement was loudly criticized in the media.

[35] CBC.ca, “Google says it loses $1 billion a year to false ad clicks”, http://www.cbc.ca/news/story/2007/03/02/tech-googleclickfraud-20070302.html, Retrieved May 13, 2008



[36]

Google argues that virtually all attacks from fraudsters are detected. Invalid clicks such as when consumers click on an advertisement and instantly click the back button, are also discounted.

Back in August of 2006, Google's Click Quality Team issued a 17 page report titled "How Fictitious Clicks Occur in Third-Party Click Fraud Reports". In it, they proclaim that these third party click fraud auditing firms significantly overstate the number of clicks on an advertiser's account and even more significantly overestimate the amount of "click fraud" detected. The reasoning given by Google lies within basic engineering and accounting issues – problems unrelated from the actual issue of click fraud detection. As well, the source must be considered. Those throwing around these overstated figures are doing so as part of marketing efforts to sell their claims of detecting click fraud.

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[36] Beal , Andy, "Exclusive: Google's Click Fraud Rate is Less Than 2%", http://www.marketingpilgrim.com/2006/12/google-click-fraud-rate-two-percent.html, Retrieved June 1, 2008

According to a study performed by Stanford University and Google, their conclusion is that letting fraud go unchecked is suboptimal and that the advertising networks that can filter the most invalid clicks have the competitive advantage[37]. John Slade, Sr Director, Product Management at Yahoo! Search Marketing agrees in that tolerating click fraud is not the path to their "long term success as a search engine". "Customers will lower their bids or reduce their spend with us".

In the long run however, these same search engines need to work closely with the advertisers to ensure the survival of the industry. While acknowledging third party auditing firms have a place within the industry, Google has stated they have not yet "discovered a single legitimate vulnerability as a result of a third party click fraud auditing report"[38]. Nonetheless, Google has stated their willingness to work with third party auditing firms to address their engineering and accounting issues. As well, work with industry groups such as IAB Click Measurement Working Group to establish standards, especially with respect to the format of reports submitted to Google. Lastly, they will continue to invest heavily into invalid click detection technology, and keep the industry informed of new click fraud developments as they arise. It has been widely reported that Q1 2008 click fraud is down from the previous quarter[39]. It is unclear whether this is due to better detection methods by the search engines, more accurate

[37] Mungamura, Bob, Weis Stephen, "Competition and Fraud in Online Advertising Markets", PDF

[38] Google, "How Fictitious Clicks Occur in Third-Party Click Fraud Audit Reports", PDF

[39] Search engine watch, "Q1 2008 Click Fraud Down from Last Quarter, Up from Last Year", http://blog.searchenginewatch.com/blog/080425-114525, Retrieved April 30, 2008

reporting by the third party auditing firms or whether the fraudsters have gone onto their next scam.

9. The Need for Regulation

The internet operates in an unregulated and global environment. Rules in one country will not be enforceable in another. Involving the courts will not serve the industry well. As with any professional organization, the choice is either self regulation or government regulation. I am confident that given the magnitude of revenues generated, the online advertising industry will not want judges and lawyers making decisions on their behalf. That leaves the onus on the industry to self regulate. The industry must take steps to protect the public interest and maintaining the reputation of the industry is essential.

9.1 Lack of Standards

Search engines have not been motivated to establish standards. They consider there to be too many obstacles to standardization arguing the industry is too fragmented and each company was too different in their services offered. However, if the industry is to move forward, standards are required. Standards as it relates to click fraud include a determination of a consistent measurement of click fraud. The problem is in defining what a fraudulent click is? There have been many occasions where I have clicked on the same ad numerous times, while browsing and comparing companies for home repair services. Or I simply could have clicked on the wrong advertisement. If the click did not convert into a sales or phone call, under the advertisers' definition, my clicks would

likely constitute click fraud. The search engines would likely not consider this fraud. The correct answer would likely be somewhere between the two extremes.

As mentioned earlier, every party defines click fraud differently. In determining click fraud, each party is essentially setting their own internal standards. There is no consistency or comparability. From this, it is abundantly clear that one's measurement of click fraud is not likely to correspond to the other. That is a major dilemma facing the industry.

The common characteristics of click fraud are frequency and location. How many clicks must there be before it is considered fraud and where (geographically and IP address specific) are the clicks originating from. There are many reasons why someone might click on an advertisement more than once. What then is the appropriate measurement of click fraud? In a study performed by Authenticlick, data reveals that in many cases, conversion happens after multiple clicks[40]. Multiple clicks in this case do not imply fraud. Similarly as Authenticlick has noted, that a traveler in a foreign country may have legitimate interest in advertisements in another country halfway around the world. These clicks are legitimate and do not constitute click fraud.

Organizations have already proposed standards. Search Engine Marketing Professional Organization (SEMPO) is a global non-profit organization serving the search engine marketing industry and marketing professionals engaged in it. Their purpose is to

[40] Authenticlick, "Traffic Research: Beyond Click Fraud", http://www.authenticlick.net/traffic_fraud.php, Retrieved June 13, 2008

provide a foundation for industry growth through building stronger relationships, fostering awareness, providing education, promoting the industry, generating research, and creating a better understanding of search and its role in marketing[41].

When SEMPO was first founded in 2002, no other organization existed to serve the needs of the community. Membership is open to individuals and companies worldwide, and consists mainly of search engine marketing firms and consultants, in-house marketing professionals, web developers, and advertising agencies.

SEMPO created the Metrics and Standards Task Force, whose mission is to "develop a set of standards and guidelines specific to search marketing. By creating a common vernacular, measurement, and protocols, the industry will be more efficient in its ability to audit and measure the effectiveness of search marketing." Additionally, this group is given the responsibility with ensuring industry adoption and education. One of the task force's primary mandates is to define what a click is and what it is not, rollout guidelines to publishers and work with 3rd party auditing companies, and work with publishers on enforcement. SEMPO maintains though that they are not a standards body.

The Interactive Advertising Bureau (IAB) was founded in 1996 and represents over 375 leading interactive companies that actively engage in and support the sale of interactive advertising. IAB members are responsible for selling over 86% of online advertising in the United States. The IAB is dedicated to the continuing growth of the interactive advertising marketplace, of interactive advertising's share of total marketing spend, and

[41] SEMPO, http://www.sempo.org/home, Retrieved June 1, 2008

of its members' share of total marketing spend. The IAB evaluates and recommends standards and practices, fields interactive effectiveness research, and educates marketers, agencies, and media companies, as well as the wider business community, about the value of interactive advertising[42].

It has been argued that standards will not be helpful for the reason that all advertisers are different. The critics argue that standards are only useful when dealing with an industry that is not dynamic unlike the internet[43]. The industry appears ripe for standards however[44]. The industry is maturing as evidenced by its projected slowing growth for 2008. The number of training programs and certification programs are growing. Guidelines and best practices have already been proposed by a number of organizations, of which the IAB's is already supported by Google, Yahoo and Microsoft. Once standards are implemented, the real underlying causes of click fraud can then be tackled head on.

9.2 Lack of Independent Auditing

Concrete numbers for how much money is lost to click fraud is hard to come by because there is no official group that tracks the figures. Currently the search engines count the clicks and reimburse advertisers for clicks deemed invalid. As previously noted in 8.1, the search engines assessments of magnitude of click fraud are much lower than

[42] Interactive Advertising Bureau, http://www.iab.net/about_the_iab, Retrieved, June 12, 2008

[43] "Click Fraud: Mitigating the Risk", http://articles.directorym.ca/Click_Fraud_Mitigating_the_Risk_Lindsay_ON-r867580-Lindsay_ON.html, Retrieved June 4, 2008

[44] Search Engine Roundtable, "Is It Time For Search Marketing Standards?", http://www.seroundtable.com/archives/016372.html, Retrieved June 1, 2008

advertisers. In turn, the third party auditing companies have been accused of reporting fictitious fraudulent clicks in order to sell their services. Advertisers are not always knowledgeable or technologically savvy. There is mutual distrust between advertisers, third parties and the search engines. Therefore, there is a need for an independent body to police the online advertising industry in order to provide verifiable results to advertisers.

The Audit Bureau of Circulations (ABC) may be such organization. ABC is the independent group charged with policing circulation for newspapers and magazines. ABC issued a survey in February 2007, Online Accountability: Gauging the Growing Demand for Audited Web Metrics. Their key findings are as follows:

- Eighty-three percent of respondents plan to increase online ad spending in 2007; more than half expected double digit budget increases,
- Only Forty-seven percent of advertising agencies and thirty-three percent of advertisers are confident that their online ad impressions are measured and reported accurately,
- Sixty-eight percent said they would prefer to advertise on Web sites audited by an independent third party.

9.3 Certified Identification Technologies

Each third party has their own techniques and proprietary software likely based upon the same general principles and standards. In order for the click fraud measurement to be verifiable, consistent, comparable and objective, there needs to be an agreed upon

technology which is used industry wide or standardized methodology upon which to perform the investigations.

9.4 Regulatory Body

In 2006, the CEO of Click Forensics, an independent click fraud reporting service, formed a trade group called the Click Quality Counsel. The group consists of 20 advertisers who meet monthly and press web publishers with recommendations for combating click fraud. Some groups would like to see similar advertising monitoring agencies such as Nielson ratings for television and Arbitron ratings for radio.

9.5 Lack of Enforcement

With the absence of a single body to oversee the industry, it is unlikely that the industry will regulate in the near future. Hence, to enforce the rules and regulations, it is in the best interests of the search engines to …to protect the public interest, maintain the reputation of the industry and self regulate.

10. Advertiser Responsibilities to Protect Themselves from Click Fraud

According to a survey prepared by Search Engine Marketing Professional Organization (SEMCO), many advertisers do not recognize click fraud as a significant problem[45]. Further, of those who recognize click fraud as significant, only 25% actually tracked click fraud. To some advertisers, the complexity and financial cost to identify, investigate and resolve is of minimal value given the cost of each instance of click fraud. Others do not want to complain too loudly, for fear of jeopardizing their relationship with

[45] http://www.semco.org/press/click-fraud.php, Retrieved May 25, 2008

the powerful advertising networks. To most advertisers, an acceptable level of click fraud is simply a cost of doing business. While the search engines claim to have the problem well in hand, the burden rests squarely on the advertisers to be proactive in detecting and preventing click fraud.

10.1 IP Address Duplication

Although there may be legitimate reasons, repeated clicks from the same IP address may be a possible sign of click fraud and is most often the first step in the fraud identification process.

10.2 Review Performance Data

Large amounts of traffic with no new sales or leads may be an indication of click fraud. Rapid drops in conversion with corresponding increases in search traffic should be monitored. Alternatively, there may be unexplained influxes in traffic for no specific reason. Perform return on investment trend analysis on a comparative daily, weekly or monthly basis. Budgets should be developed for each advertising campaign to document expected results. Actual results should be compared to the baseline budgets. Optimize your keywords only to those producing a return on investment.

10.3 Out of Country Clicks

Monitor your clicks by country of origin. If there is significant traffic from countries outside of your market, it may be an indication of click fraud. A simple and effective

way to reduce the risk of click fraud is to restrict access to your advertisement to the countries that commit the most fraud.

10.4 Monitor Site Traffic

If a repeated visitor generates only one page view per visit, this may be suspicious. Compare the logs of these repeat visitors to a typical visitor session. Sophisticated bots complicate the matter by their ability to generate multiple page views in a session. To counter multiple page views by bots, measure the time spent on the site by the repeat visitors. Although a bot may be able to generate multiple page views, it does so in too short of time. Compare the time to the time a typical visitor spends on your site. Zedo, an advertising technology firm, determined that if a webpage is turned every 1.8 seconds over an extended period of time, the traffic is flagged as suspicious[46].

Clicks at unusual hours of day or night may be suspicious. These may be click farms operating in foreign countries or automated bots clicking on your ads at all hours of the day or night.

10.5 Click Fraud Detection Tools

Technologies have been developed that incorporate sophisticated statistical models that can analyze site activity and irregular patterns in click traffic and predict potential click fraud behavior. Most click fraud detection software are based upon algorithms, which uses information about navigational behavior of users to try and distinguish between

[46] Olsen, Stefanie, "Exposing click fraud", CNet news.com, http://news.cnet.com/Exposing-click-fraud/2100-1024_3-5273078.html, Retrieved April 13, 2008

human and bot generated clicks in order to try and predict suspicious traffic. The most sophisticated and difficult type if click fraud is perpetrated randomly because audit trails are hidden and takes place gradually over a sustained period of time[47]. It is virtually impossible for algorithms to detect this type of click fraud.

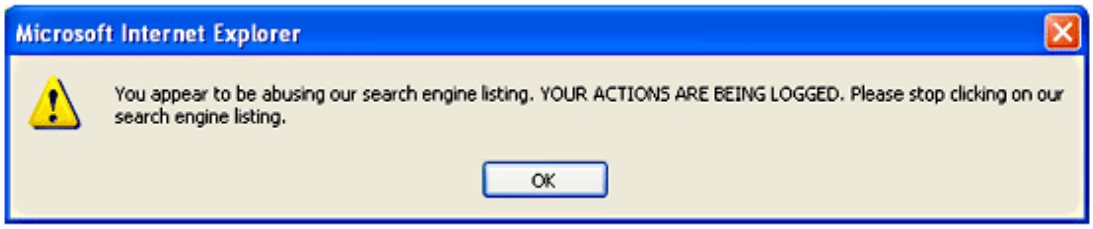
Google utilizes technology that analyzes clicks and impressions to find patterns. They aim to identify invalid clicks and filter them out before the customer is actually billed for them. Some of the items Google looks for to determine validity of the click are IP address, the time of the click and duplicate clicks[48].

Yahoo has a "click protection system" to protect customers from paying for invalid clicks. They look at over 100 criteria including IP address, session information, cookies, networks, browser information, and time of the click.

The original and one of the top combat tools available to advertisers is called "Whos Clicking Who. It claims to do what no other software advertises the ability to do. After five clicks reveal the clicker to be a suspected fraudster, this annoying message will appear on screen:

[47] ClickRisk LLC, Media Kit 2.9E

[48] Monster Small Business, Resource & Tools, "Understanding Click Fraud", http://www.monstersmallbusiness.com/ecommerce-marketing/understanding-click-fraud.asp, Retrieved May 11, 2008



[49]

It has reportedly been very effective in deterring future click fraud.

10.6 Third Party Auditing Companies

These professional services companies will audit the performance of your pay per click programs. These services are comprehensive and provide a definitive method of identifying click fraud. Most have proprietary software that detects and monitors suspicious activity. One such firm, Anchor Intelligence claims a real time click scoring tool called ClearMark, which can "literally score clicks and impression in a matter of milliseconds"[50]. Success was claimed in detecting suspiciously high levels of collusion among clickers from over 150,000 IP addresses. They claim over 1,000 websites were suspended or rejected from their networks and a major fraud ring was stopped.

Fair Isaac, the credit card fraud detection specialist launched a major study into click fraud in 2006 and is angling to provide similar services to the search firms and advertisers.

11. Legal Actions

[49] WHO'sclickingWHO?.com, http://www.whosclickingwho.com/clickminder.html, Retrieved June 19, 2008

[50]Weinstein, Jerry, "Either We Kill Click Fraud or Click Fraud is Going to Kill the Online Ad Business", http://www.jackmyers.com/commentary/media-business-report/18037949.html, Retrieved May 2, 2008

There is currently few state or federal laws against click fraud. Although marketing lobbyists have been seeking to have federal anti-click fraud laws passed, the primary roadblock is that the global scope of e-commerce makes it difficult to determine jurisdiction for local governments to enforce laws. California's criminal code does contain a section, (Penal Code 502) which deals with computer crimes, but thus far has not been applied in a case of click fraud. The US Federal Trade Commission, which oversees consumer protection, such as misleading advertising, does not consider click fraud a consumer protection issue. The United States Department of Justice established its Internet Fraud Initiative in February 1999 with the goal of criminal prosecution to combat internet fraud. Federal criminal charges have been successful in other internet frauds such as auction and retail schemes, investment schemes, and credit card fraud but not click fraud. A search of the Commercial Crimes division of the RCMP does not make any reference to click fraud.

As a result of the class action suit filed against Google in 2006, click fraud caught the attention of the Federal Bureau of Investigations, US Postal Service and the Securities Exchange Commission, who examined whether federal laws were being violated. The FBI has an ongoing cyber crime investigation called Operation Bot Roast, where it has identified more than 1 million potential victims of botnet cyber crime[51]. Among the crimes identified as being committed by the botnet operation, was click fraud. An advantage of the involvement of the FBI is their international reach. They closely

[51] Federal Bureau of Investigations, Press Release, "Over 1 Million Potential Victims of Botnet Cyber Crime", http://search.fbi.gov/search?site=my_collection&output=xml_no_dtd&client=my_collection&proxystylesheet=my_collection&q=click+fraud, Retrieved June 2, 2008

collaborate with their counterparts in Russia, Europe and Asia to combat crimes of a global nature, which is befitting of internet crime.

However, the authorities should not be counted on to do anything about it just yet. While it falls under the bigger umbrella on online fraud, cyber espionage and computer intrusions, click fraud itself does not appear to be illegal at this time. To date, there are been no specific convictions due to click fraud.

11.1 Victims of Click Fraud

Click fraud may appear to be a victimless crime because of the anonymity of the internet but it is not. Aside from the advertiser, there are many victims of click fraud. The consumer will pay as costs will eventually be passed on in the form of higher prices. Alternatively, if retailers get priced out of online advertising, choices will be more limited for the consumer when searching for a particular good or service. Search engine marketers may see the rate of return on client marketing programs decline not as a result of an ineffective program, but because of click fraud. As a result of delivering sub-optimal programs, they risk jeopardizing relationships with their clients. A study conducted in 2006 by OutSell Inc., a market research company, found that 27% of advertisers reduced or stopped spending on pay per click advertising because of the proliferation of click fraud[52]. An additional 10% said they intend to curtail spending. Ultimately, the search engine and search engine affiliates network will pay the price as advertisers will find it economically unfeasible to advertise online.

[52] Kopytoff, Verne, "Click fraud a huge problem", San Francisco Chronicle, http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2006/07/05/BUGL6JOQPA1.DTL, Retrieved May 15, 2008

11.2 Class Action Lawsuits

Google and Yahoo have been the targets of numerous class action lawsuits as a result of overbilling for click fraud. In 2006 alone, Google was subject to three proposed class action suits, including one settled for $90 million. The lawsuit was filed in Texarkana, Arkansas by Lane's Gifts and Collectibles and Caulfield Investigations against Google, Yahoo, Time Warner and its America Online and Netscape subsidiaries, Lycos, FindWhat.com, Buena Vista Internet Group, LookSmart and Ask Jeeves.

Google's settlement was in the form of $60 million in advertising credits to purchase new advertising with Google (Appendix L) and $30 million for legal fees. There was no cash value to the advertisers and represented on a per dollar basis, less than a cent in benefit to each plaintiff. Many plaintiffs opted out given what was considered a ridiculously unfair settlement with highly restrictive terms and conditions and fails to address the real issue of overbilling for fraudulent clicks.

A debate surrounds the question of exactly how to compensate the victims. In Yahoo's 2006 class action settlement with Checkmate Strategic Group, they allowed advertisers to file claims for cash rebates and credits on a case by case basis. In addition, Yahoo agreed to work with its advertisers to come up with a solution for the detection and measurement of fraud. Third party consultants say, while they like the direction Yahoo has taken, neither is right and argue that the internet advertising industry needs an independent third

party service that can objectively evaluate how many clicks are legitimate and what advertisers should be charged[53].

In 2008, Bigreds.com Inc, a Web site that sells collectible toys and memorabilia sued Yahoo for more than $1 million for inflation of advertising fees due to click fraud. The contention was Yahoo knew the fraud existed and had the ability to ascertain which clicks were fraudulent but concealed the facts. Yahoo has yet to respond to the charges.

The legal basis for all the lawsuits was breach of contract, negligence, misrepresentation, unjust enrichment and unfair business practices. These legal concepts have been analyzed by Kursad Asdemir and Moin A. Yahya, in the July 2006 paper, "Legal and Strategic Perspectives on Click Measurement". In each of the class action suits, it is contended that the search engines breached the contracts with the advertisers by billing them for fraudulent clicks. In the same context, Google is negligent in not doing enough to stop click fraud when they have knowledge it is occurring. Google was deceptive in their business practices by billing advertisers for fraudulent clicks and therefore, followed unfair business practices. Lastly, it is argued that Google is enriched at the expense of the advertisers due to the billing of fraudulent clicks. Unjust enrichment occurs when one party gains from another without legal reason[54]. The remedy for unjust enrichment is always restitution and Google should reimburse the advertisers for the moneys earned through fraud.

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[53] Holahan, Catherine, "Compensating Click Fraud's Victims", Business Week, http://www.businessweek.com/technology/content/jul2006/tc20060725_788437.htm

[54] Common Law Separation Canada.com, http://www.common-law-separation-canada.com/unjust-enrichment.htm, Retrieved May 31, 2008

The problem facing the plaintiffs is determining what a "fraudulent click" is. Google's contracts with the advertisers do not define an invalid click. Google contends that they only charge for valid clicks and that is difficult for plaintiffs to dispute if they cannot even define what an invalid click is.

Regardless, all the settlements combined are a drop in the bucket compared to the advertising revenues generated by the search engines. With Google's advertising revenue estimated in the $10 billions and click fraud estimated conservatively in the range of 10% of all clicks, a $90 million settlement is not even close to what the advertisers claim to be lost as a result of click fraud.

11.3 Perpetrator Lawsuits

11.3.1 "Google Clique"

Google filed a lawsuit in 2004 against Michael Anthony Bradley, a programmer accused of developing an auto click program called "Google Clique". The programmer was not arrested for click fraud, but rather extortion and mail fraud for demanding $100,000 otherwise, he would widely distribute his spammer software over the internet which would cost Google millions. The charges were dismissed and the lawsuit did not proceed as Google was unwilling to cooperate with prosecutors because they did not want to divulge any trade secrets. Legal experts say that Google's silence will make prosecutors'

jobs harder to prove charges from click fraud[55]. Alternatively, prosecutors may be less willing to press charges in the future.

11.3.2 Auction Experts International

Google filed the first click fraud lawsuit in 2004 charging an affiliate website and its owners of generating fraudulent clicks on ads in Google's Adsense program. It was alleged that Auction Experts International and its founders clicked on Adsense ads and paid up to 50 individuals to do the same. Google won by default as the principles of Auction Experts failed to appear in court.

11.3.3 FreeRide

A grand jury in San Francisco indicted Allen Tam in 2006 with conspiracy, mail fraud and wire fraud for a click fraud scheme whereby he allegedly used source code to develop a robot program to fraudulently generate and accumulate FreeRide points by automatically completing surveys and viewing banner ads[56]. Tam then redeemed the FreeRide points for products offered for sale by other internet retailers. While the charges do not directly stem from click fraud, it has put click fraud on the FBI's radar.

The two major search engines, Google and Yahoo understand its customers and the industry as a whole have concerns about click fraud. Google and Yahoo have both

[55] Elgin, Ben, "The Vanishing Click-Fraud Case", Business Week, http://www.businessweek.com/technology/content/dec2006/tc20061204_923336.htm, Retrieved May 2, 2008

[56] Department of Justice, "Daly City Man Indicted in "Click Fraud" Scheme", http://search.fbi.gov/search?site=my_collection&output=xml_no_dtd&client=my_collection&proxystylesheet=my_collection&q=click+fraud, Retrieved June 2, 2008

reluctantly acknowledged the click fraud problem but have been criticized for not doing enough to police it. Google's secrecy is viewed as an impediment to prosecution of fraudsters while Yahoo has been applauded for its cooperative efforts. Unfortunately, settlements do not prevent the issue of click frauds, what constitutes click fraud and when the search engines should be responsible for it.

12. Industry Actions

In reaction to the negative publicity that click fraud has generated in recent years and the mounting pressure against the search engines, the industry has responded with many developments in the fight against click fraud.

12.1 Fraud Squad's

Both Google and Yahoo employ fraud squads dedicated to fighting click schemes. Google has implemented an Ad Traffic Quality team which investigates suspicious traffic to determine if invalid click activity has occurred. A separate team deals strictly with updating and revising the automated software detection system. The other team is comprised of individuals manually looking at cases of suspected fraud brought forward by individual advertisers. Google has gone so far as terminating relationships with partner sites that encourage invalid click activity.

In August 2007, Google created a new Web site to serve as the single source for all click fraud and ad traffic quality related information. It features what click fraud is and what Google is doing what about it, a Help Center and multimedia presentations and a section

called Tech Talk, which features articles written by Google engineers and other experts. Following numerous class action lawsuits, Google's stance towards fighting click fraud appears to be changing.

12.2 Fraud Detection Technologies

Most search engines have systems in place to identify click fraud. For instance, Google is able to detect rapid, successive clicking from the same IP address. The problem occurs when more advanced technologies are put in place to cloak IP addresses in order to circumvent these systems. Both Google and Yahoo employ layers of filters to detect patterns that could signal possible click fraud and have the ability to determine the source of the dubious clicks. They claim to be able to detect the majority of invalid clicks regardless of techniques used by the fraudsters.

12.3 Blocked IP Address

This is a filtering technique whereby an incoming click's IP address is compared with a list of blocked IP's. If the click is found to be originating from the same IP address as one flagged on the list, it is deemed as invalid and is logged as a fraudulent click.
As a test of the search engines filtering techniques, a Marketing Experiments Journal research brief attempted click fraud on certain Google Adwords. The brief showed that the higher cost per click campaigns were more susceptible to fraud and that Google's filtering was ineffective in filtering out invalid clicks, resulting in a click fraud rate of 29.5%[57].

[57] Marketing Experiments Journal, Click Fraud – Our Research, http://www.marketingexperiments.com/ppc-seo-optimization/click-fraud.html, Retrieved May 11, 2008

12.4 User Location

In general terms, user location is an attempt to identify the actual physical location of internet users. The common method is to take someone's IP address and perform a search at Whois information at ARIN (the American Registry for Internet Numbers). The primary purpose of the ARIN Whois database is to maintain information about networks allocated by ARIN, as well as to maintain information about how those networks have been partitioned by ISP's[58]. ARIN uses this information to keep track of who owns which network on the internet. If you cannot locate the IP address on ARIN, the IP address may be assigned outside the Americas, in which case RIPE Network Coordination Center for all Russian, European, and Middle Eastern registries, or the Asia Pacific Network Information Center may be helpful.

The simplest application of user location is for preventing credit card fraud through a matching of the IP address of the online user to the physical owner address of the cardholder. However, it has relevance to click fraud as well. For the purposes of click fraud detection, user location is used to filter out invalid clicks or fraudulent clicks on products or services only available in one country but clicks coming from another where the product or service is not available. This is most often associated with the low cost workers or click farms as described in 7.2.

The problem with user location technology is the issue of error rates involved in the ability to pinpoint web users. The example quoted most often involves a large internet

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[58] Whois Databases, http://www.yourdictionary.com/whois-databases, Retrieved June 2, 2008

provider which provides web access across the world but the block of their users' IP addresses are all associated with the ISP's corporate headquarters in one location[59]. A search of users would locate them all in one location when in fact they are spread out in many areas.

Errors can be caused for other reasons but are highly technical in nature and not discussed in this paper. The above is simply an example of the complexities in developing effective click fraud detection technology.

12.5 Third Party Auditing

Yahoo recently teamed up with Click Forensics to offer an independent third party analysis of Yahoo Search Marketing (YSM) click quality. Click Forensics is one of the leading firms fighting against click fraud. Click Forensics monitors and reports fraudulent activity. Up until then, advertisers had to rely on data provided directly from the ad networks themselves. Historically, the search engines have kept very secretive about click fraud and downplayed published reports who have reported far higher numbers than the search engines themselves. The question is the extent of access to information that will be given to Click Forensics by Yahoo. Regardless, this is a step forward and at the very least, gives the appearance of transparency.

12.6 Advertising Fee Reimbursements

[59] search engine land "Geolocation: Core To The Local Space and Key to Click-Fraud Detection, http://searchengineland.com/070813-082025.php, Retrieved June 12, 2008

There is a difference between legitimate click fraud and traffic that does simply does not result in a sale. Some pay per click advertisers think that traffic that does not convert into a sale as bad traffic, while others consider that click fraud. Fee reimbursements do not prevent or eliminate the risk of click fraud. To the search engines, it may simply be the cost of doing business. Google and Yahoo argue that they have proactively and regularly identify suspicious activity and remove these clicks from their billing system. Any invalid clicks that actually get past their sophisticated filters are routinely reimbursed to advertisers. This is a financial recourse to the advertisers but does not address the issue of click fraud.

12.7 Interactive Advertising Bureau

The IAB formed an industry wide Click Measurement Working Group to establish guidelines for measuring clicks on online ads. The Working Group boasts members from all industry groups, including Ad Networks, Business Consultants, Publishers, Search Marketing, E-Commerce, Third Party Auditors and search engines Google and Yahoo.

The task of this working group is to develop a set of Click Measurement Guidelines. The Guidelines, which is a joint effort with the Media Rating Council, will provide the detailed definition of a "click" and the standard against which clicks are measured and counted, including invalid clicks and/or fraudulent clicks[60].

12.8 Pay Per Action Basis

[60] Interactive Advertising Bureau, http://www.iab.net/member_center/, Retrieved May 3, 2008

Pay Per Action is a new advertising pricing model where the advertiser only pays for a desired action – placing an order, making a call, requesting information, that is linked to the advertisement. This model is considered superior to the pay per click model as it better measures the effectiveness of advertising and is less susceptible to click fraud. Google introduced this new advertising system in March 2007 on a beta test basis as a means of mitigating the risks of click fraud. Google has not said much about its pay per action beta test since June 2007 causing some industry insiders to suggest that the "testing isn't going all that well"[61].

12.9 Pay Per Percentage of Impressions

The original pay per impression model was as susceptible to fraud as pay per click. It has been proposed that the pay per percentage of impressions model is immune to both click and impression fraud[62]. The methodology is complex and beyond the scope of this paper. It is presented for illustration purposes only to highlight the need to think outside the box and come up with alternatives to the pay per click model.

13. Conclusion

There is clearly no way to eliminate click fraud completely. As long as pay per click advertising exists, click fraud will continue to be a significant problem. Click fraud is pervasive for a number of reasons. There is tremendous financial incentive for the search

[61] Claburn, Thomas, "Microsoft Spends to Undermine Google's Pay Per Click Gold Mine", http://www.informationweek.com/blog/main/archives/2008/05/microsoft_spend.html, Retrieved June 14, 2008

[62] Goodman, Joshua, "Pay-Per-Percentage of Impressions: An Advertising Method that is Highly Robust to Fraud", Microsoft Research, PDF

engines not to crack down on it. The legal precedents are not favorable - lawsuits have not deterred fraudsters from perpetrating click fraud as the risk of getting caught is slim. Judgments against the search engines have not been encouraging for advertisers. The lack of federal or state laws and the global environment that electronic commerce operates in further exacerbates the problem. The industry is largely unregulated and lacks a governing body. If there were a governing body, they would likely have little or no authority to enforce. While the concept of click fraud is simple, the mechanics behind it are complex. Advertisers are largely unsophisticated and the fraudsters are technically savvy. There is so much mistrust within the industry and it does not help when Google and Yahoo are indirectly aiding in the fraud. Click fraud is a very lucrative business and open to almost anyone with a computer.

Currently, all that can be done by advertisers is to reduce the chances of becoming a victim of click fraud by determining which clicks are invalid, so billings are appropriate. However, this does not prevent click fraud.

In order to protect the industry from click fraud, the industry must become more vigilant. Advertisers must shoulder the responsibility to protect themselves. Better technologies must be developed to make it more and more difficult for the fraudsters to exploit the system. Search engines like Google and Yahoo need to work closely with advertisers. Standard definitions of what a fraudulent click is and an agreed upon audit process must be established in order to verify the authenticity of clicks. Finally, the entire process must be open to independent third party verification. Transparency is the key.

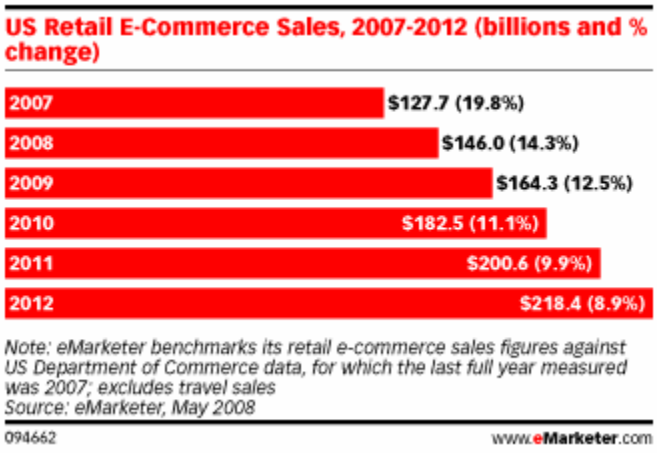
Until a new and improved advertising medium evolves, this is likely the best we can hope for. Even then, there is little doubt fraudsters will develop innovative and sophisticated schemes to cheat the new system.

Bibliography

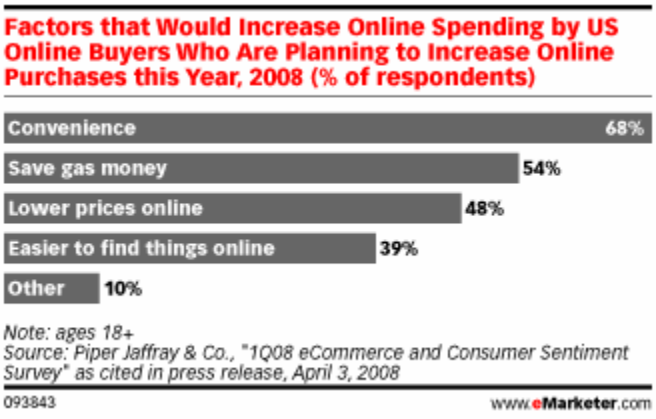
McCollam, Douglas, Bad Circulation: How often do newspapers and magazines goose their numbers?, Columbia Journalism Review Publication, May 1, 2004.

Rich, Jason R.**,** the Unofficial Guide to Starting a Business Online, Wiley Publishing, Inc., 2006.

Appendix A


US Retail E-Commerce Sales, 2007-2012 (billions and % change)
2007
$127.7 (19.8%)
2008
$146.0 (14.3%)
2009
$164.3 (12.5%)
2010
$182.5 (11.1%)
2011
$200.6 (9.9%)
2012
$218.4 (8.9%)
Note: eMarketer benchmarks its retail e-commerce sales figures against US Department of Commerce data, for which the last full year measured was 2007; excludes travel sales
Source: eMarketer, May 2008
094662
www.eMarketer.com

Appendix B


Factors that Would Increase Online Spending by US Online Buyers Who Are Planning to Increase Online Purchases this Year, 2008 (% of respondents)
Convenience 68%
Save gas money 54%
Lower prices online 48%
Easier to find things online 39%
Other 10%
Note: ages 18+
Source: Piper Jaffray & Co., "1Q08 eCommerce and Consumer Sentiment Survey" as cited in press release, April 3, 2008
093843
www.eMarketer.com

Appendix C

2-1 A Profile Of Online Shoppers

	Early Adopters	Mainstream Consumers	Sidelined Citizens
Percentage of online shoppers	53%	38%	9%
Female	45%	56%	65%
Mean age	43	42	43
Mean household income (US$)	$100,300	$65,500	$30,600
College degree	64%	44%	24%
Married	66%	61%	62%
Children younger than 18	62%	67%	71%
Employed full-time	83%	72%	62%
Mean online tenure (years)	9.6	8.1	7.0
Mean eCommerce tenure (years)	5.6	4.4	3.6
Mean online spend	$660	$446	$261
Broadband at home	81%	68%	53%
Mobile phone	90%	84%	76%

Base: 21,932 US adults who shop online

[63]

[63] http://www.researchrecap.com/index.php/2007/09/19/online-shopping-growth-dominated-by-early-adopters/

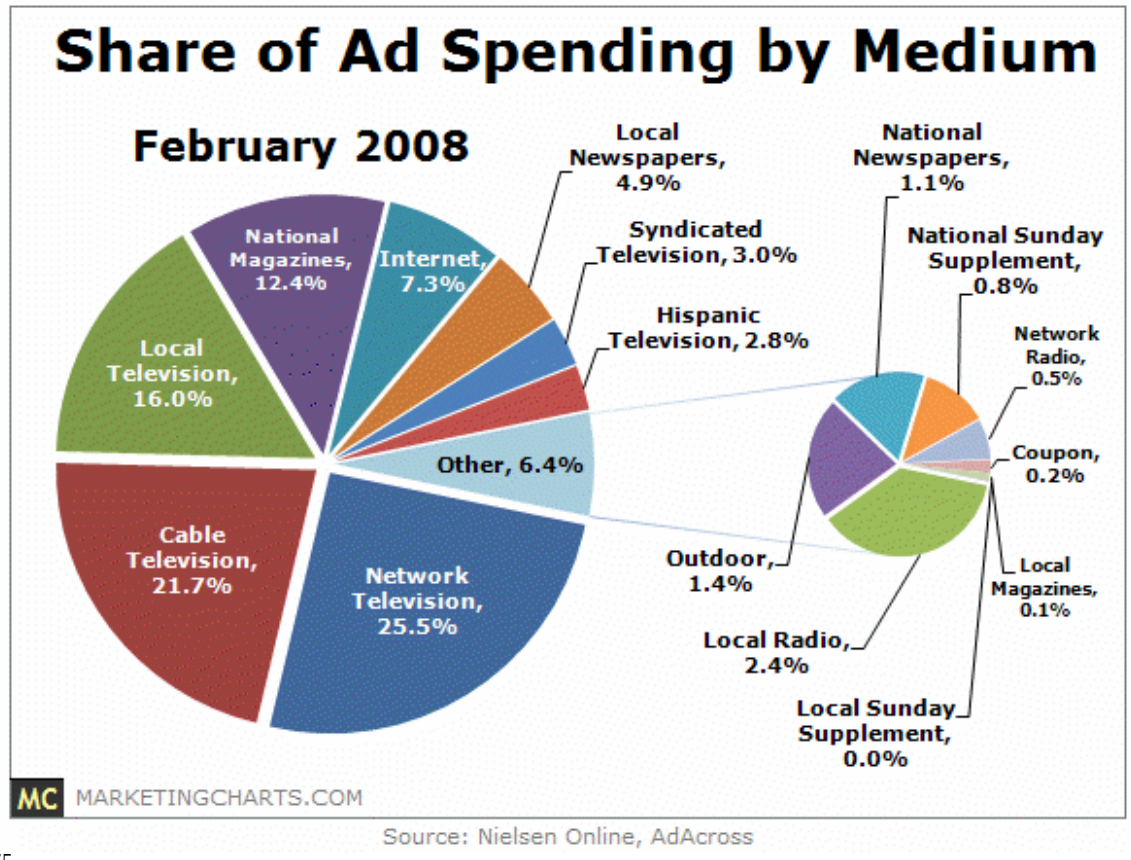
Appendix D

64

[64] http://www.marketingcharts.com/direct/ten-key-online-predictions-for-2008-2924/emarketer-prediction-us-online-ad-spend-2001-2011jpg/

Appendix E

Share of Ad Spending by Medium - February 2008



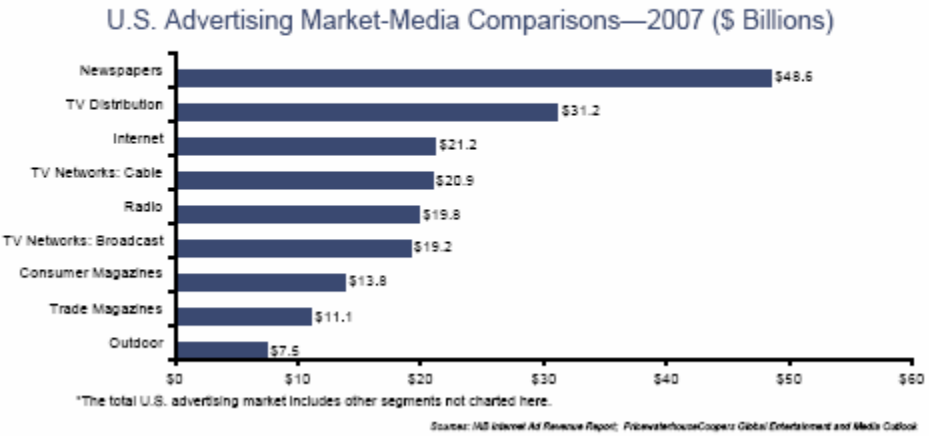
[65]

[65] http://www.marketingcharts.com/television/share-of-ad-spending-by-medium-february-2008-4580/, Retrieved June 14, 2008

Appendix F

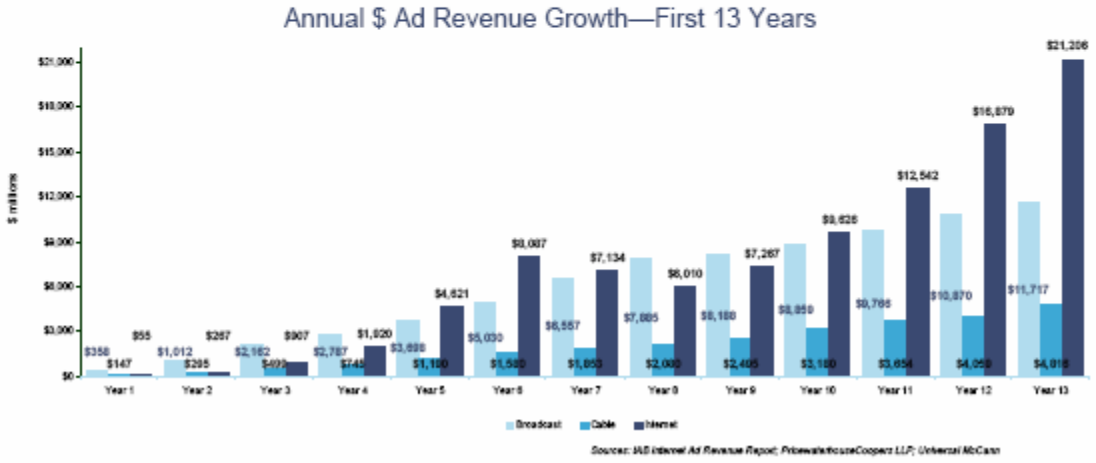
U.S Advertising Marketshare

- Internet advertising revenues surpassed Radio advertising & Cable Television advertising in total U.S. ad spending* in 2007.



Initial Year Growth Comparisons–Internet Advertising vs. Broadcast and Cable Television

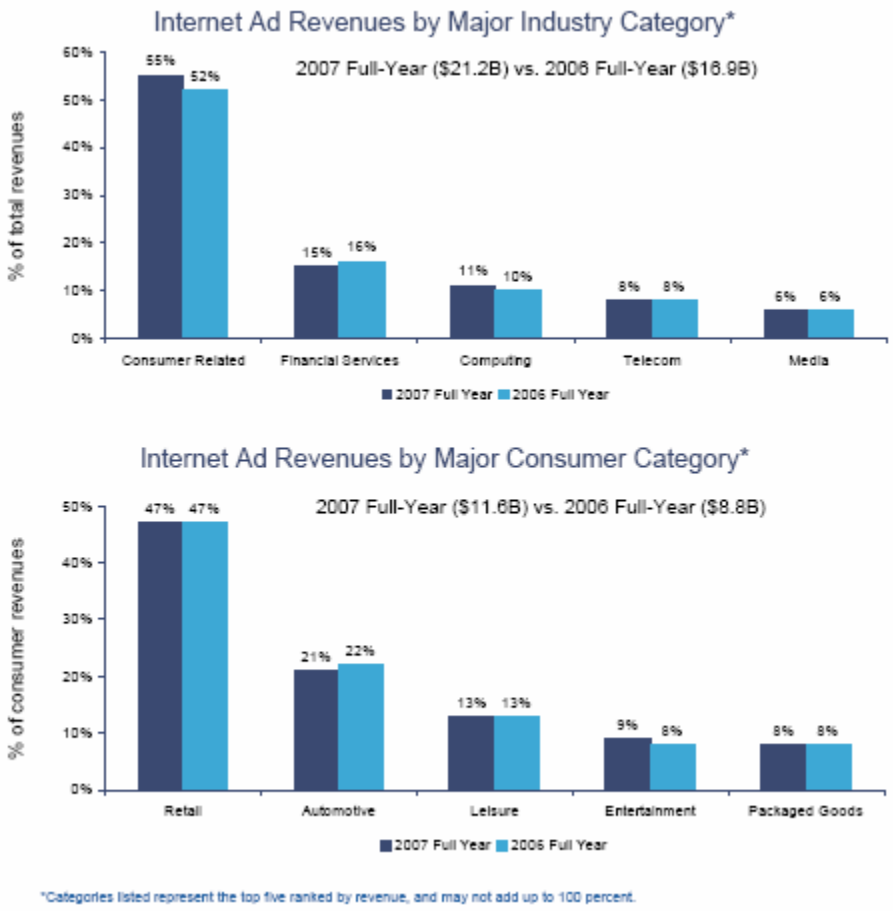
- The first 13 years of Internet Advertising (1995-2007) were charted against broadcast television (1949-1961) and cable television (1980-1992), presented in current inflation-adjusted dollars.
- Internet Advertising revenues continue to far outpace the growth of Cable Television and Broadcast Television during each of their first 13 years.



66

[66] IAB Internet Advertising Revenue Report, May 2008

Appendix G



[67]

[67] IAB Internet Advertising Revenue Report, May 2008

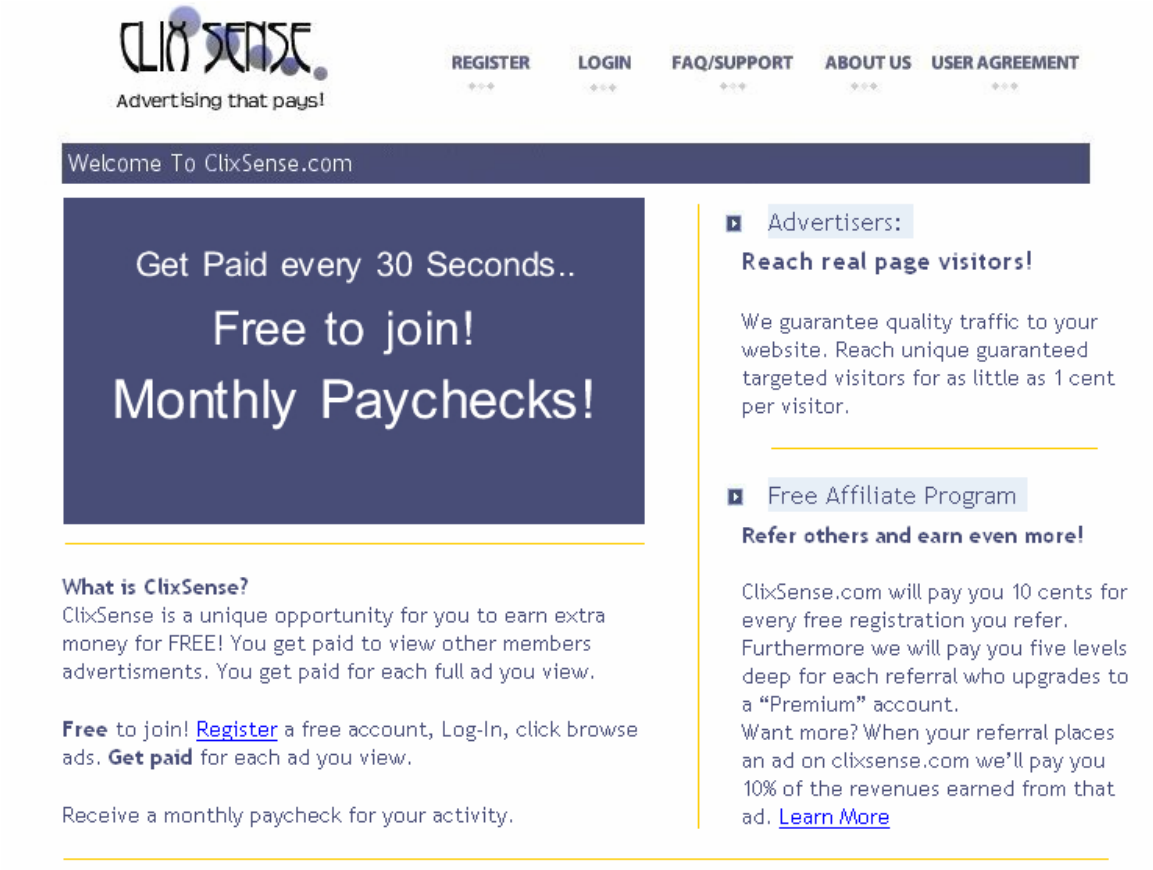
Appendix H

US Online Advertising Spending, By Format, 2002-2008 (in millions)

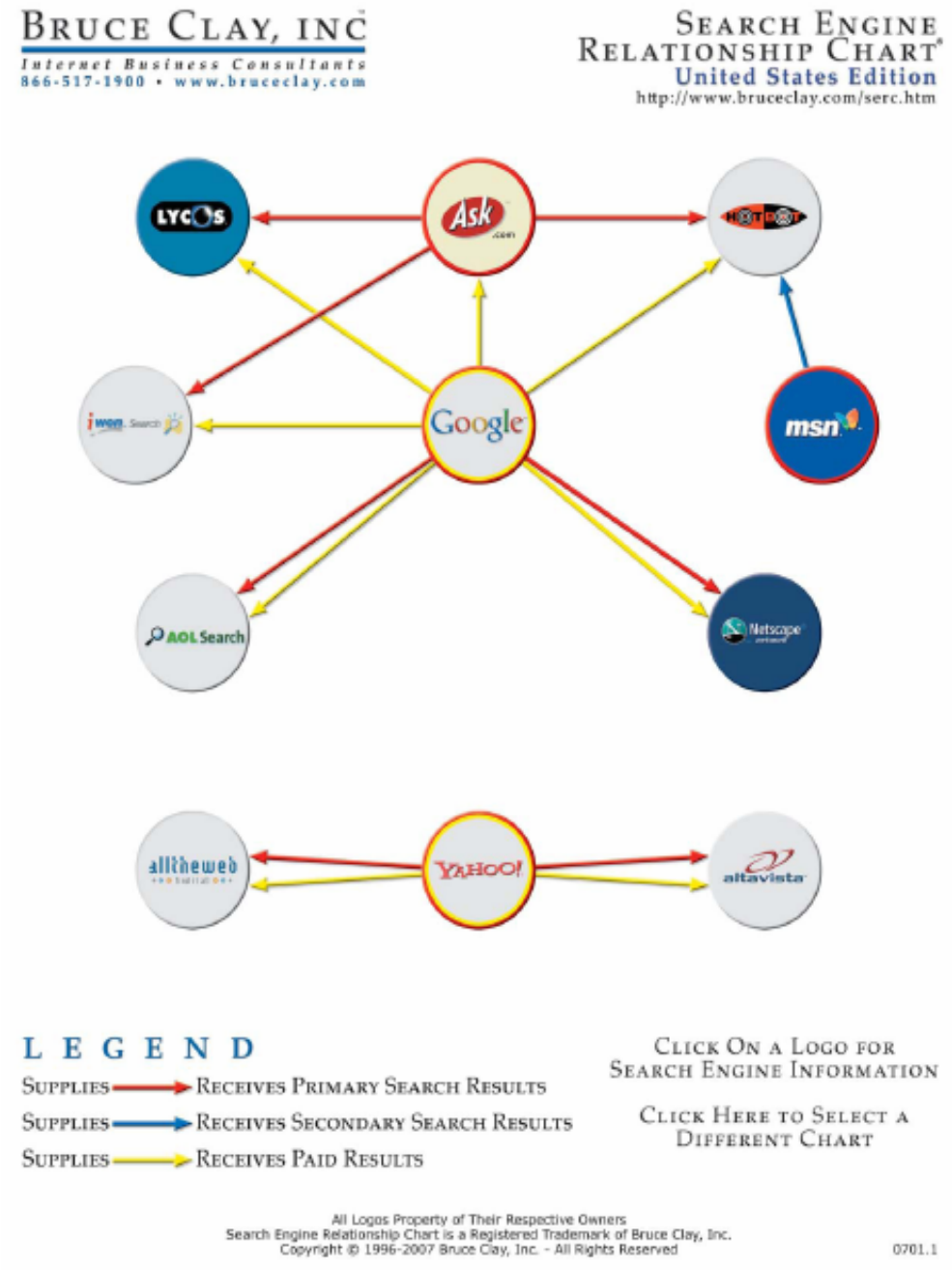
Format	2002	2003	2004	2005E	2006E	2007E	2008E
Paid Search	**$927**	**$2,543**	**$3,931**	**$4,690**	**$5,387**	**$6,045**	**$6,738**
Display Ads	1,754	1,526	1,685	1,978	2,195	2,480	2,625
Classified	902	2,543	1,591	1,921	2,394	2,868	3,325
Rich Media	301	581	796	1,017	1,330	1,783	2,275
Sponsorships	1,093	727	796	961	1,197	1,550	1,750
Slotting Fees	481	218	187	283	266	155	175
Referrals	60	73	187	226	266	310	350
E-mail	240	218	187	226	266	310	263
Interstitials	240	145	-	-	-	-	-
Total (in billions)	**6.0**	**7.3**	**9.4**	**11.3**	**13.3**	**15.5**	**17.5**
Est. cost of click fraud (millions/billions)	$300M to $1.2B	$370M to $1.4B	$470M to $1.9B	$570M to $2.26B	$670M to $2.86B	$780M to $3.10B	$880M to $3.5B

Source: eMarketer, November 2004

Appendix I


Advertising that pays!
REGISTER
LOGIN
FAQ/SUPPORT
ABOUT US
USER AGREEMENT
Welcome To ClixSense.com
Get Paid every 30 Seconds..
Free to join!
Monthly Paychecks!
What is ClixSense?
ClixSense is a unique opportunity for you to earn extra money for FREE! You get paid to view other members advertisments. You get paid for each full ad you view.
Free to join! Register a free account, Log-In, click browse ads. Get paid for each ad you view.
Receive a monthly paycheck for your activity.
Advertisers:
Reach real page visitors!
We guarantee quality traffic to your website. Reach unique guaranteed targeted visitors for as little as 1 cent per visitor.
Free Affiliate Program
Refer others and earn even more!
ClixSense.com will pay you 10 cents for every free registration you refer. Furthermore we will pay you five levels deep for each referral who upgrades to a "Premium" account.
Want more? When your referral places an ad on clixsense.com we'll pay you 10% of the revenues earned from that ad. Learn More

Appendix J


BRUCE CLAY, INC
Internet Business Consultants
866-517-1900 • www.bruceclay.com
SEARCH ENGINE RELATIONSHIP CHART
United States Edition
http://www.bruceclay.com/serc.htm
LYCOS
ASK
HOTBOT
iwon
Google
msn
AOL Search
Netscape
alltheweb
YAHOO!
altavista
LEGEND
SUPPLIES RECEIVES PRIMARY SEARCH RESULTS
SUPPLIES RECEIVES SECONDARY SEARCH RESULTS
SUPPLIES RECEIVES PAID RESULTS
CLICK ON A LOGO FOR SEARCH ENGINE INFORMATION
CLICK HERE TO SELECT A DIFFERENT CHART
All Logos Property of Their Respective Owners
Search Engine Relationship Chart is a Registered Trademark of Bruce Clay, Inc.
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0701.1

Appendix K

RateYourCompany.com

Related Searches:

- Rate Teachers
- Rate My Photo
- WWW Rate My Body Com
- Rate A Body
- Rate Hot Or Not
- Ratemybody Com
- Professor Teacher
- Professor Ratings

Related Searches:

- Rate Your Students
- Body Composition Calculator
- BMI Body Mass Index Calculator
- Auto Shipping Rate

Sponsored Listings

Avoid these doctors

Read about and rate your doctor in Canada, UK, and Australia. Free!

ratemds.com/

Doctors Rated by Patients

Directory of plastic surgeons rated by patients, dermatologists, spas

www.makemeheal.com/

Rate Refinancing

Your lending and loan guide. Find rate refinancing info!

freedomlending.com/

Got Talent? Stage it

Join the Showatalent community Free membership and web page

www.showatalent.com/

We rate your looks

www.ourlooks.com/

Appendix L

Clickrisk LLC – Advisory Notice to Advertisers

Google $90M Click Fraud Settlement: What It Means, and Its Impact on Advertisers

The recent settlement offer by Google for $90M to advertisers is fraught with terms and conditions which, in our view, are highly inequitable and fail to solve the larger click fraud and billing integrity issue. None of the real issues surrounding click fraud were addressed with the proposed settlement. The preliminary settlement has been approved by the Court, and all members of the class are being notified about the settlement as of May 19, 2006. This notice is being sent out to all online advertisers who purchased advertising from Google from January 1, 2002 to present.

What is this case about?

In 2005, plaintiffs Lane's Gifts and Collectibles and Max Caufield Investigations alleged that Google breached its contract with class members and violated the law by failing to detect and mitigate click fraud or other invalid or improper clicks on online advertisements.

Google has argued that all payments received from class members were legally and properly charged, and that it has not breached its contract with class members nor violated any other laws through the actions alleged.

Based on our independent research in speaking to various advertisers, top litigation lawyers, and others closely following the case, we have compiled a fact sheet and information grid to help guide advertisers in deciding whether or not to opt-out of the settlement.

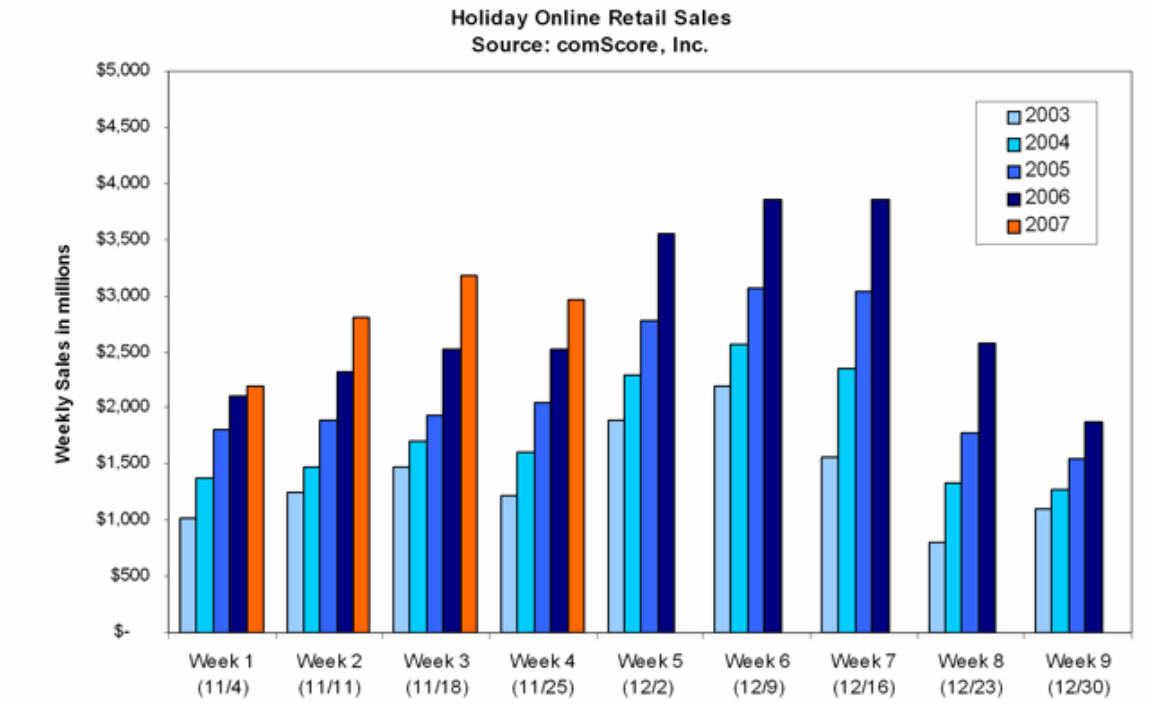
We are strongly recommending to our clients to opt-out of this settlement proposal as we view it as unfair to advertisers and fails to resolve the larger issue and risk of Google client overbillings where evidence of click fraud is proven to be pervasive.

Google Settlement and Impact for Advertisers: Summary Outline

Settlement Term	What It Means	How it Affects Advertisers
Any approved refunds are only made by way of **advertising credits only**, not cash.	If you are not an existing Google client, or have switched to another search engine, you are not entitled to any refund. You must also fit the definition of the class as defined by the Court (see below).	There will be **no cash payments** made to advertisers but strictly online advertising credits. However, the lawyers representing the class are entitled to a maximum of $30M in cash payments, at the discretion of the judge. Refund claims submitted for the period before January 1, 2002 are not part of this settlement. You are entirely on your own for pre-January 1, 2002 claims.
The $90M settlement is split in two ways: $30M for lawyers (maximum), and $60M for advertisers.	The $60M allocated for advertisers is **the maximum amount** advertisers are entitled to, regardless of the severity of the proven click fraud or invalid clicks.	With an estimated universe of over 110,000 online advertisers of Google and growing every month, this doesn't allow much on a per-advertiser basis. Industry figures put click fraud at an estimated 10-35% of PPC revenue—that amounts to an estimated $1.3B - $4.7B of Google's revenue since 2002. The $90M represents a mere 2-7%

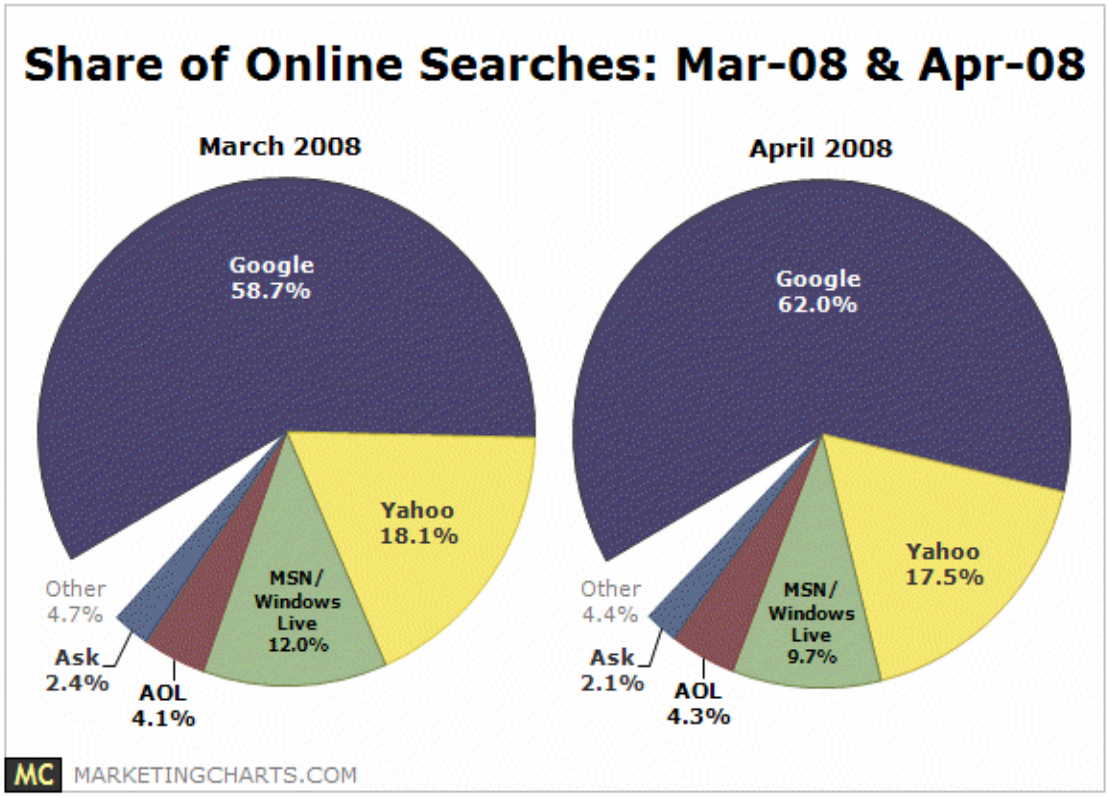
Appendix

Weekly Online Holiday Retail Sales



Appendix

Share of Online Searches by Engine, April 2008

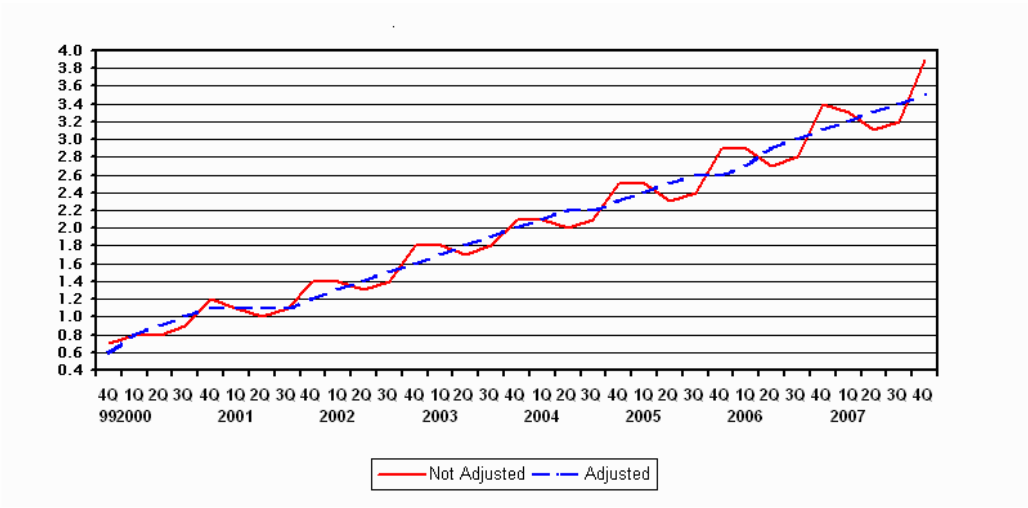


Source: Nielsen Online, MegaView Search [68]

[68] http://www.marketingcharts.com/interactive/share-of-online-searches-by-engine-april-2008-4668/, Retrieved June 14, 2008

Appendix

Estimated Quarterly U.S. Retail E-commerce Sales as a Percent of Total Quarterly Retail Sales: 4th Quarter 1999-4th Quarter 2007



[69]

[69] http://www.census.gov/mrts/www/data/html/07Q4.html