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# The Value of Behavioral Targeting

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# The Value of Behavioral Targeting

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by

Howard Beales<sup>1</sup>

*This study seeks to provide an initial understanding of the effect of behaviorally targeted advertising on advertising rates and revenues. A survey of twelve ad networks was conducted to obtain quarterly data on pricing (CPM data), conversion rates, and revenues across various types of ad segments (run of network advertising and behavioral advertising). The survey results reveal three key findings: (1) Advertising rates are significantly higher for behaviorally targeted ads. The average CPM for behaviorally targeted advertising is just over twice the average CPM for run-of-network advertising. On average across participating networks, the price of behaviorally targeted advertising in 2009 was 2.68 times the price of run of network advertising. (2) Advertising using behavioral targeting is more successful than standard run of network advertising, creating greater utility for consumers from more relevant advertisements and clear appeal for advertisers from increased ad conversion. (3) Finally, a majority of network advertising revenue is spent acquiring inventory from publishers, making behavioral targeting an important source of revenue for online content and services providers as well as third party ad networks.*

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This study was sponsored by the Network Advertising Initiative (NAI). The NAI is a coalition of more than 40 leading online marketing companies committed to building consumer awareness and reinforcing responsible business and data management practices and standards. For a description of the NAI and a list of its members, *see* <http://www.networkadvertising.org/index.asp> (last visited Mar. 3, 2010).

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## I. INTRODUCTION

In recent years, popular Internet content and services (such as online news, blogs, e-mail and social networking services) have been funded increasingly by advertising rather than through charges to consumers. Many providers of Internet content and services (“publishers”) depend on advertising revenue to develop and present their offerings to consumers. Web publishers range from large scale media websites and portals that sell advertising directly to potential advertisers to so-called “long tail” sites with smaller and more specialized audiences.

If advertising is to remain the primary means of financing Internet content, then advertising rates will be a critical determinant of the kind and quality of Internet content available. Unless publishers can effectively capture some of the value they create for viewers, they will not be able to provide as much content, or content of the same quality as viewers have come to expect. The fundamentals of online advertising markets and behavioral targeting are described in more detail in Appendix A.

One strategy widely used to increase the value of advertising is behavioral targeting. Using information about online behavior, including sites visited and interest in particular types of content, behavioral targeting seeks to serve advertisements that particular groups of consumers are more likely to find interesting. If advertising better matches consumer interests, consumers are more likely to respond to the message, and advertisers will be willing to pay more for ads delivered to such an audience.

Behavioral targeting is used in different ways. Large publishers with diverse content offerings can use behavioral targeting across their various sites to offer their users more targeted ads. Additionally, third party firms can specialize in parts of this process or can encompass all of it, offering targeting across a broad range of publisher content. For example, data exchanges specialize in data collection and analytics that they sell to advertisers. More comprehensive third party advertising networks (“ad networks”) can handle both the collection, analytics, and servicing of the

ads. This study focuses on transactions involving the final advertiser, because that is the market in which the value of advertising is determined.

Because behavioral targeting makes use of predictive data derived from users' online behavior, the practice has raised privacy concerns. To date, however, there has been no hard data about the effectiveness of third party behavioral targeting or its importance to content providers. This study seeks to fill that gap, providing data about advertising prices and revenues for a sample of advertising networks.

The study surveyed members of the NAI seeking data for different types of targeting. We obtained data from 12 ad networks, including nine of the top 15 ad networks by total unique visitors according to comScore's December 2009 rankings.<sup>2</sup> Our survey questions were designed to obtain quarterly data on pricing (CPM data), conversion rates, and revenues across the various types of ad segments (run of network advertising, behavioral targeting, and retargeting). Table 1 below summarizes the results of the survey. The data is presented in aggregate to protect participant confidentiality.

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2. Press Release, comScore Releases December 2009 Ranking of Top Ad Networks, *available at* [http://www.comscore.com/layout/set/popup/layout/set/popup/Press\\_Events/Press\\_Releases/2010/1/comScore\\_Releases\\_December\\_2009\\_Ranking\\_of\\_Top\\_Ad\\_Networks](http://www.comscore.com/layout/set/popup/layout/set/popup/Press_Events/Press_Releases/2010/1/comScore_Releases_December_2009_Ranking_of_Top_Ad_Networks) (last visited Mar. 1, 2010).

**TABLE 1**  
**SUMMARY OF KEY SURVEY RESULTS**

	<b>Q1 2009</b>	<b>Q2 2009</b>	<b>Q3 2009</b>	<b>Q4 2009</b>	<b>FULL YEAR 2009</b>
<b><u>AVERAGE CPM (WEIGHTED BY BT REVENUE)</u></b>					
Run of Network	\$1.94	\$1.98	\$1.89	\$2.06	\$1.98
BT	\$4.09	\$4.22	\$4.07	\$4.11	\$4.12
Retargeting	\$3.00	\$3.12	\$3.13	\$3.02	\$3.07
BT Avg. Relative Price Over RON Ads (X Greater)	2.77	2.71	2.79	2.46	2.68
Retargeting Avg. Relative Price Over RON Ads (X Greater)	1.98	1.84	2.11	1.59	1.88
<b><u>AVERAGE CONVERSION RATE</u></b>					
Run of Network	2.1%	3.6%	2.2%	3.1%	2.8%
BT	5.5%	8.8%	6.4%	6.6%	6.8%
<b><u>REVENUES</u></b>					
Total Ad Revenue (\$ Millions)	\$708	\$780	\$795	\$1,040	\$3,323
Percentage Attributable to BT (Aggregated Across Firms)	16.2%	17.2%	18.3%	19.4%	17.9%
Avg. % of Display Ad Revenue Used for Inventory Costs	54.7%	56.9%	53.0%	53.6%	54.6%
Avg. % of Display Ad Revenue Used for Data Costs	8.5%	8.8%	9.1%	9.4%	8.9%

The results lead to 3 major conclusions. *First*, advertising rates are significantly higher for behaviorally targeted (BT) ads. The average CPM for BT advertising is just over twice the average CPM for run of network (RON) advertising. On average across participating networks, the price of BT advertising in 2009 was 2.68 times the price of run of network advertising. *Second*, advertising using BT is more successful than standard run of network advertising, creating greater utility for consumers and clear appeal for advertisers. Conversion rates for BT advertising are more than twice the rate for RON advertising. *Third*, a majority of network advertising revenue is spent acquiring advertising inventory from Web content and services providers, making BT an important source of revenue for publishers as well as ad networks.

The rest of the report is organized as follows. The next section outlines the methodology of our survey. Section III presents the results in greater detail. Finally Section IV discusses the key conclusions from this work.

## II. METHODOLOGY OF STUDY

Over the course of two months, we spoke with representatives from a number of ad networks, all of whom were members of the Network Advertising Initiative (“NAI”). These networks graciously provided crucial background information on the role of BT. They also provided guidance in crafting a survey that was likely to be effective in obtaining data to assess the value of BT to networks and publishers. The survey had to be general enough to encompass the variety of business models seen in the industry, but specific enough to assess the primary research question: what is the effect of BT on advertising revenues and rates?

Twelve NAI member ad networks provided data in response to the survey.<sup>3</sup> Nine of the twelve participants appeared in the top 15 total unique visitors list according to comScore's December 2009 rankings.<sup>4</sup> These nine firms averaged 159 million unique visitors in December of 2009 and reached an average of 78 percent of the total U.S. online population.<sup>5</sup> The remaining three ad networks are not as large, but provide some representation for the smaller networks in the marketplace. Study participants had total ad revenues of over \$3 billion in 2009, accounting for approximately 40 percent of total Internet display advertising revenue.<sup>6</sup> Thus, the sample provides a reasonably accurate view of the overall marketplace for behavioral targeting.

The survey questions requested several key pieces of data that are essential to determining the value of behavioral targeting. The data were then compiled, and are presented in an aggregated form to protect participants' confidentiality. The survey requested the following:

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3. All current NAI members were eligible to participate in the survey.

4. *Id.*

5. *Id.*; Navigant Economics Calculations.

6. According to Business Week, advertisers spent \$8 billion on online display advertising in 2008. See Robert D. Hof, *Ad Networks are Transforming Online Advertising*, BUS. WK., Feb. 19, 2009, available at [http://www.businessweek.com/magazine/content/09\\_09/b4121048726676.htm?chan=technology\\_technology+index+page\\_top+stories](http://www.businessweek.com/magazine/content/09_09/b4121048726676.htm?chan=technology_technology+index+page_top+stories) (last visited Mar. 10, 2010)[hereinafter *Ad Networks Transforming Online Advertising*]; According to Price Waterhouse Coopers, display advertising revenue for the Q2 of 2009 was \$1.9 billion. Assuming that there was \$7.6 billion in display advertising for the full year, the sample in this study accounts for 39 percent of all online advertising. See Interactive Advertising Bureau, *2009 Second Quarter and First Six Month Results IAB/PricewaterhouseCoopers Internet Advertising Revenue Report* (Oct. 2009) at 8, available at <http://www.iab.net/media/file/IAB-Ad-Revenue-Six-month-2009.pdf> (last visited Mar. 3, 2010).

- Participants were asked to provide both total ad network revenues, and the percentage of ad network revenue attributable to BT to determine the importance of BT to ad network revenue.
- The percentage of display ad sales revenue spent on inventory and data costs was requested to assess the value of ad networks to publishers, and develop a better understanding of network costs.
- The average conversion rate for run of network, behavioral, and retargeted advertising was requested (if available at all) to assess the success of BT and evaluate the value of BT to advertisers. Conversions represent the percentage of ad clicks that result in sales.
- Advertising rates were determined by asking for the average CPM for run of network advertising, behavioral targeting, retargeting, contextual advertising, demographic targeting, and geographic targeting. Additionally, respondents were requested to provide the average CPM for a subset of their behavioral targeting verticals (i.e. automotive, business/finance, health & wellness, arts and entertainment, etc.).

Table 2 summarizes the questions asked in the survey and the number of firms that responded (twelve being the maximum), which is sufficiently representative of the value of BT to the networks and publishers.

**Table 2**  
**Survey Questions and Number of Respondents**

<b>Variable</b>	<b># of Respondents</b>
<b><u>Revenue</u></b>	
Total Ad Network Revenues	12
% of Network Revenue attributed to Behavioral Targeting	12
% of Ad Sales Revenue from Display Ads	10
<b><u>% of Display Ad Sales Revenue Derived from:</u></b>	
Inventory Acquisition	9
Data Costs	8
<b><u>Average Conversion Rate</u></b>	
Average Conversion Rate for Run of Network	5
Average Conversion Rate for Behavioral Targeting	5
<b><u>Average CPM</u></b>	
Run of Network	11
Behavioral Targeting	12
Retargeting	8
Average CPM for Major Verticals, Separately by Vertical	6

Notes: Additionally asked for (1) Ad Views Attributable to BT, (2) Average CPM's for Contextual Ads, Geographic Targeting, and Demographic Targeting. Data is not reported because of insufficient responses, or inability to classify answers.

A major complication in our survey was trying to generalize industry effects across the varied business models and data collection methods used by the ad networks. For instance, although every respondent provided ad revenues and the percentage of ad revenue attributable to BT, only five networks provided data on the conversion rates for Run of Network, and BT. The later questions provide for more complexity as networks have varying methods of calculating aggregate conversion rates: some did not produce data in the manner we requested (as the percentage of ad clicks resulting in sales), and others did not have such aggregate data at all. Similarly, other variables that would have been useful (such as revenue used on inventory by type of publisher) were difficult for the responding networks to produce, despite their best efforts, because it was not something they typically collected. Moreover, some of the participants offer specialized services and did not have data on a particular variable. For instance, not every participant engaged in retargeting. Although the survey captured a complete number of responses for most questions, in some cases it was simply not possible to obtain complete responses.

### III. RESULTS

This survey has three key findings. *First*, advertising rates are significantly higher when BT is used. *Second*, advertising using BT is more successful than standard RON advertising, creating greater utility for consumers and clear appeal for advertisers because of the increased conversion of ads into sales. *Third*, a majority of network advertisers' revenue is spent acquiring inventory, making BT an important source of revenue for publishers as well as ad networks. The following section outlines the specifics of these conclusions.

#### A. BT SIGNIFICANTLY INCREASES ADVERTISING RATES

The survey set out to determine if BT rates were actually higher than the rates of standard RON advertising, and if so, how much higher. The response from participants to this set of questions was strong (eleven participants provided average CPMs for RON advertising, all twelve provided data for BT advertising, and eight provided Retargeting data). The results are presented

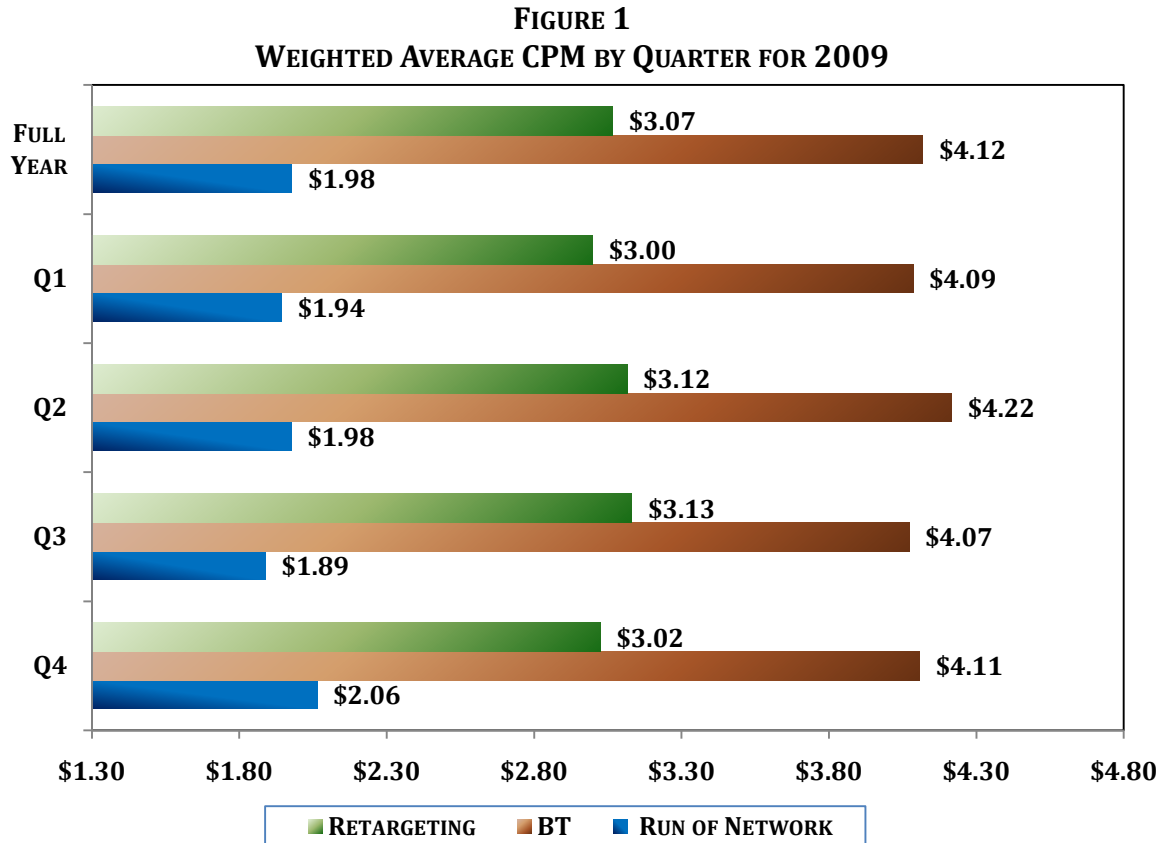


as a weighted average (by BT revenues). This approach gives an idea of the industry-wide value of BT, giving larger firms more value in the calculation. Larger firms, however, are more likely to be publishers in their own right, and derive significant advertising revenue through channels other than their ad network. The un-weighted approach that gives all firms equal importance, and presents the importance of BT to the average firm in the industry is presented in Appendix B. Note CPMs vary across companies, and even within a company depending on the targeted audience.<sup>7</sup> The results presented below are industry averages intended to present CPMs seen in the market.

Figure 1 presents the weighted average CPM among participants for each of the three ad types. The results clearly show that BT provides significantly higher rates on an industry wide basis. For the full year 2009, BT CPMs were about double RON CPMs, while Retargeting rates were about 1.5 times as large as RON CPMs. Table B-1 in Appendix B provides the simple (un-weighted) average CPM for comparison purposes.

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7. In particular, smaller, more tightly defined audiences are likely to command higher CPMs, because fewer consumers will meet the criteria. Because the audiences are smaller, however, they will have less influence on the average than larger audiences sold at lower CPMs.



Another way to assess the value of BT and retargeting is to examine the relative prices each firm charges compared to RON advertising. For each firm, we calculated the CPM for BT and retargeted advertising relative to the CPM for run of network. The average of the relative price ratio illustrates the magnitude of increase over standard RON advertising for BT and Retargeting. The results are presented in Table 3. For the full year 2009, prices for BT were on average 2.68 and for Retargeting 1.88 times greater than RON advertising. On a quarterly basis the results are fairly consistent throughout the year.

**TABLE 3**  
**AVERAGE RELATIVE PRICE OVER RUN OF NETWORK**  
**ADVERTISING**  
**(TIMES GREATER)**

<b>QUARTER</b>	<b>BT</b>	<b>RETARGETING</b>
<b><i>FULL YEAR 2009</i></b>	<b><i>2.68</i></b>	<b><i>1.88</i></b>
Q1 2009	2.77	1.98
Q2 2009	2.71	1.84
Q3 2009	2.79	2.11
Q4 2009	2.46	1.59

Price comparisons between behaviorally targeted and retargeted advertising are difficult to interpret, because the product being sold is not exactly the same. Typically, the advertising network acquires data and conducts the necessary analysis to use that data for behavioral targeting. Thus, the network is selling a package of advertising space, data, and data analysis. For retargeting, however, the original advertiser is often the source of much of the necessary data. For example, an advertiser may wish to retarget consumers who examined a particular product on the company's web site. The advertiser will provide the network with the data necessary to serve an ad to that consumer at other web sites, and the network merely delivers the advertisement when the consumer visits another site in the network.

Different audiences are likely to have different values in the marketplace, because of differences in supply and demand. To examine these differences, the survey requested data on the average CPM by BT vertical. These verticals identify broad categories of consumer interest, such as automotive products, financial information, or technology information, based on their browsing behavior. The survey asked for data for 19 different broadly defined verticals. Seven firms reported data for one or more of these verticals. A major issue in aggregating these data was that each firm has different definitions and levels of granularity for each vertical. We did our best to combine these verticals into several major categories. The responses are not weighted by BT

revenue, because the value of these verticals is likely best understood on an average firm basis.

Table 4 presents the results.<sup>8</sup>

**TABLE 4**  
**AVERAGE CPM'S BY BT VERTICAL**

QUARTER	AUTOS	ARTS & ENTERTAINMENT	HOME, FAMILY, & PARENTING	FINANCE & BUSINESS	HEALTH	SHOPPING	SPORTS	SCIENCE AND TECHNOLOGY	TRAVEL
<b>Full Year</b>	<b>\$4.99</b>	<b>\$3.06</b>	<b>\$2.52</b>	<b>\$2.73</b>	<b>\$3.18</b>	<b>\$2.58</b>	<b>\$2.90</b>	<b>\$2.87</b>	<b>\$3.43</b>
Q1	\$5.50	\$2.87	\$2.52	\$2.63	\$3.19	\$2.55	\$3.24	\$2.67	\$3.62
Q2	\$4.81	\$3.07	\$2.34	\$2.84	\$3.04	\$2.46	\$2.84	\$3.01	\$3.36
Q3	\$4.85	\$3.07	\$2.55	\$2.73	\$3.27	\$2.63	\$2.82	\$2.86	\$3.25
Q4	\$4.87	\$3.23	\$2.68	\$2.72	\$3.24	\$2.68	\$2.69	\$2.94	\$3.49

The key point from Table 4 is the variability in the CPMs among verticals, and thus among groups of viewers. The automotive grouping is clearly the most valued audience, fetching average CPMs of nearly \$5 for 2009. Travel audiences also seem to be valued by advertisers, with a CPM over \$3. Other less important verticals have CPMs ranging from \$2 to \$4. Thus, the averages for BT presented in the earlier figures are subject to significant variability based on the targeted group.

Across all the verticals, CPMs are still significantly larger relative to RON advertising. This fact is illustrated by Table 5, which replicates the methodology used in Table 3 for calculating the mark-up over RON advertising.

**TABLE 5**  
**AVERAGE MARK-UP OVER RUN OF NETWORK ADVERTISING**  
**(TIMES GREATER)**

QUARTER	AUTOS	ARTS & ENTERTAINMENT	HOME, FAMILY, & PARENTING	FINANCE & BUSINESS	HEALTH	SHOPPING	SPORTS	SCIENCE AND TECHNOLOGY	TRAVEL
<b>FULL YEAR</b>	<b>3.5</b>	<b>2.2</b>	<b>2.1</b>	<b>2.2</b>	<b>2.4</b>	<b>1.8</b>	<b>2.1</b>	<b>2.1</b>	<b>2.6</b>
Q1	4.2	2.1	2.4	2.3	2.6	1.9	2.6	2.0	3.1
Q2	3.5	2.3	1.9	2.3	2.3	1.8	2.0	2.3	2.6
Q3	3.3	2.1	2.0	2.1	2.3	1.8	2.0	2.0	2.4
Q4	3.2	2.2	2.0	2.0	2.2	1.8	1.8	2.0	2.4

8. The weighted average version can be seen in Table A-2 in Appendix A for comparison purposes.

Most verticals have CPMs that are on average double those of RON advertising. The automotive vertical leads the way with CPMs nearly 3.5 times as large as RON.

The data from the study show empirically that CPMs are significantly higher with BT than without it. Selling the same advertising space at RON prices would significantly reduce revenue for advertising networks and for publishers as well.

## **B. BT IMPROVES THE SUCCESS OF DISPLAY ADS**

Advertisers place ads in all media based on the likelihood they will sell their product. To this end, advertisers attempt to identify a target demographic or geography for their advertisements. Conventional media and large websites are able to obtain targeting data for their audiences through surveys and other tools (such as registration data), providing advertisers with an idea of the audience and increasing the chances of a successful advertising campaign. Smaller websites and standard ad networks (those that do not use targeting) do not have such mechanisms at their disposal. In theory, BT presents online media participants with such a tool. Recent empirical work backs this claim: a study showed that BT improves click through rates (ad clicks divided by impressions delivered) by as much as 670 percent over run of network advertising.<sup>9</sup> A click through, however, is not the same thing as a sale.

The survey sought to examine the conversion rates (the percentage of ad clicks resulting in sales)<sup>10</sup> offered by BT and run of network advertising. To the extent that such aggregate data was available, respondents were asked to provide their average conversion rates for the different types of advertising (RON and BT). The response rate for these questions was low (five firms responded

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9. See Jun Yan, Gang Wang, En Zhang, Yun Jiang, & Zheng Chen, *How Much Can Behavioral Targeting Help Online Advertising?*, WWW 2009 MADRID! (2009) at 262, available at <http://www2009.eprints.org> (last visited Mar. 3, 2010), (“Through studying ads CTR before and after user segmentation for ads delivery, we observe that ads CTR can be improved by as much as 670% over all the ads we collected. The t-test results, which are very close to zero, confirm the statistical significance of CTR improvements. In addition, we notice that if we can further design more advanced BT strategies, such as novel user representation approaches and novel user segmentation algorithms, ads CTR can be further improved beyond 1,000%.”).

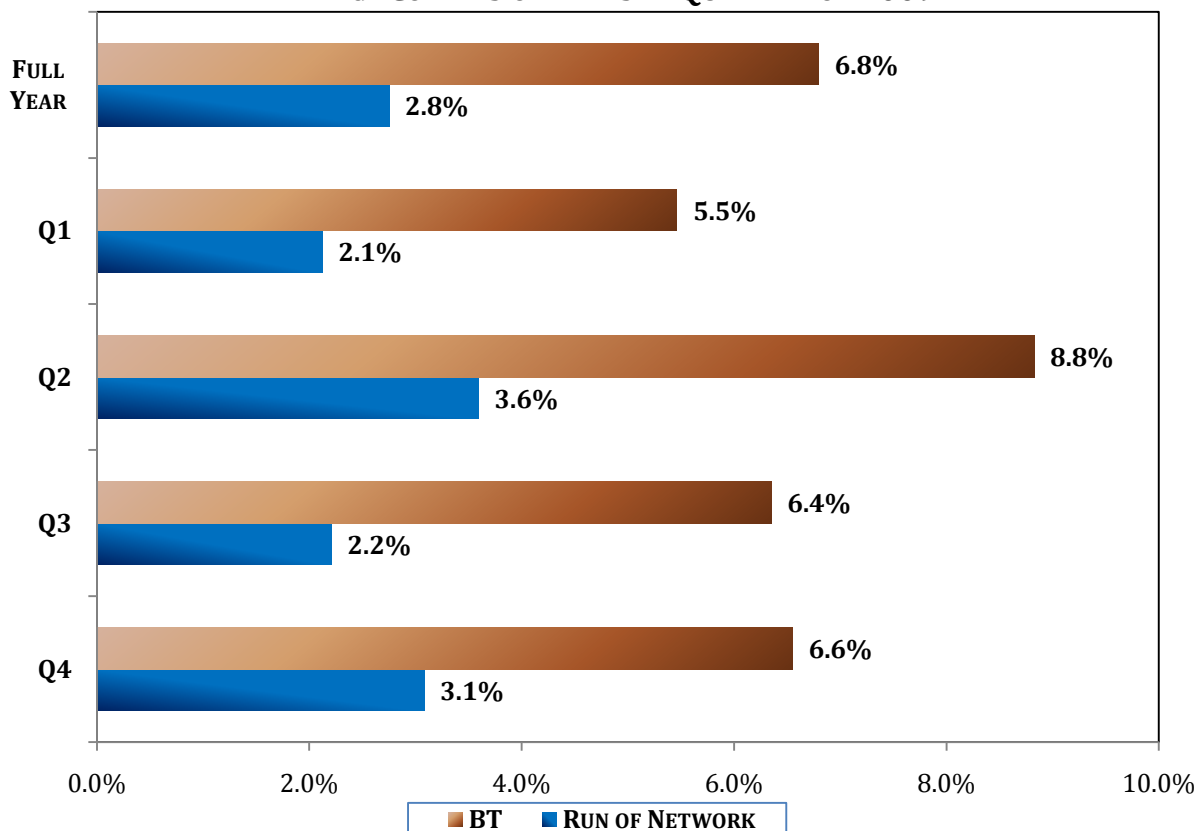
10. See Conversion Rate, available at [http://www.marketingterms.com/dictionary/conversion\\_rate/](http://www.marketingterms.com/dictionary/conversion_rate/) (last visited Mar. 6, 2010).

to the RON and BT request), perhaps in part because most networks do not have such data. Thus, these results must be interpreted cautiously. Given the small sample size only the simple average of the rates reported is presented, as a weighted average would give even more weight to the larger firms in the small sample. Still, the results have value in presenting evidence of the types of conversion rates seen in the marketplace.

The survey results indicate that conversion rates increase substantially with the use of BT vs. standard RON advertising. Figure 2 illustrates this point. BT rates are more than double run of network rates. These conversion rates imply behavioral advertising is more interesting to the consumer, and more likely to attract advertisers to the network. Although the sample is small, the differences in conversion rates for BT and RON advertising are consistent with the differences in pricing discussed above, increasing our confidence in the validity of the result.

Additionally, three respondents provided average CPMs for Retargeting. These rates are astonishingly high, with an average conversion rate of 23 percent in 2009. This result is difficult to interpret, both because of the smaller sample and because the survey did not request information on the division of tasks between the advertiser and the network for this type of advertising.

**FIGURE 2**  
**AVERAGE CONVERSION RATES BY QUARTER FOR 2009**



### C. MOST NETWORK AD REVENUE IS PAID TO PUBLISHERS

The results of the survey indicate that BT is essential for ad network and publishers, especially mid-to-long-tail publishers who most often rely on the ad networks. Table 6 presents the participant responses to queries regarding their total ad revenues, and the percentage of ad revenues associated with BT.

**TABLE 6**  
**SURVEY RESPONSE SUMMARY OF BT**  
**REVENUES 2009**

QUARTER	TOTAL AD REVENUE (\$ MILLIONS)	PERCENTAGE BT (AGGREGATE)
<i>FULL YEAR</i>	<i>3,323</i>	<i>17.9%</i>
Q1	708	16.2%
Q2	780	17.2%
Q3	795	18.3%
Q4	1,040	19.4%

The data regarding the percentage of BT associated with ad network revenues are presented aggregated across firms.<sup>11</sup> This approach gives an idea of the industry wide dependence on BT, giving larger firms more value in the calculation. The aggregate percentage of revenue attributable to BT in 2009 was about 18 percent.<sup>12</sup>

The simple average of responses is presented in Figure 3.<sup>13</sup> This approach gives all firms equal importance, and presents the importance of BT for an average firm in the industry. In Figure 3, the transparent red shading represents the simple average of the percentage of ad revenue attributable to behavioral targeting across respondents. The blue shading depicts the remaining revenues. The results suggest that the average network receives 40 percent of its revenue from BT. It is important to note that this result may over-state the value of BT because the sample could include firms that specialize exclusively in BT.

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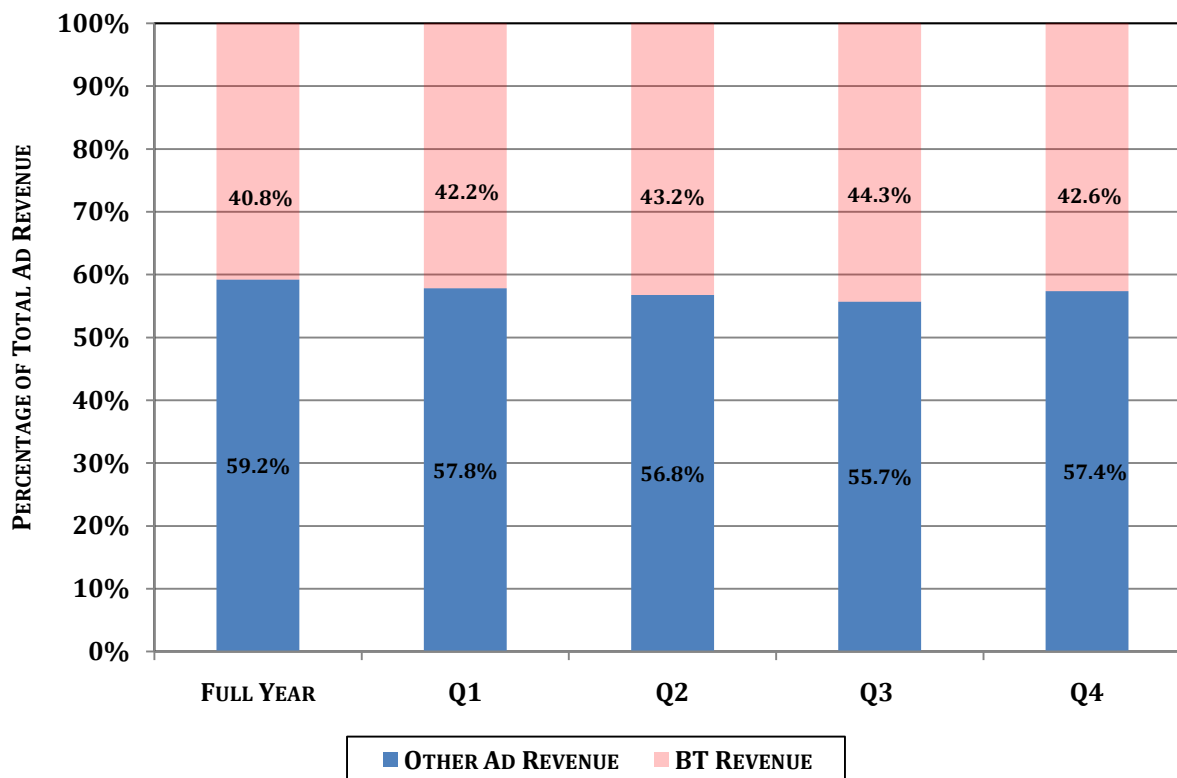
11. Total behavioral targeting revenues and total ad network revenues were summed for each quarter. Then total behavioral targeting revenues were divided by total ad network revenues. For example, assume that in Q1 of 2009 Firm X had \$50 of ad network revenues, with all \$50 attributable to BT. For the same period firm Y had \$100 of ad network revenue, with \$50 attributable to BT. Then the calculation would be  $(\$50+\$50)/(\$50+\$100) = 66.6\%$  attributable to BT.

12. Because the survey focused solely on ad networks, it does not allow conclusions about the fraction of ads a consumer receives that are behaviorally targeted. The percentages in the text relate to the networks, not to individual consumers.

13. Using the same example as footnote 11, this approach would result be 75% of revenues being attributable to BT.



**FIGURE 3**  
**THE VALUE OF BT TO INDIVIDUAL ADVERTISING NETWORK, 2009**



The survey also examined the way in which these revenues were used to establish the value of ad networks to publishers. Discussions with respondents indicated that a significant portion of display ad revenue is used in the purchase of publisher inventory.<sup>14</sup> Ad networks' purchases of inventory constitute a transfer of revenue from these networks to publishers. The influx of revenue helps publishers support free content without charging subscription fees. In competitive markets, one would expect advertising revenue to flow through to the publisher, because it is the publisher who is in fact providing the audience. In order to test this hypothesis, the survey asked what percentage of ad revenues from display advertising was used for the acquisition of inventory (nine responses) and data (eight responses).

14. Three quarters of (nine out of twelve) respondents indicated that 100 percent of their ad revenues came from display advertising –meaning revenues from other business segments were not being transferred to publishers in most cases. Two did not respond to the question, and another indicated that display advertising was less than 100 percent of total ad revenue.

The results indicate the majority of ad network display ad revenues are used in the acquisition of inventory. Figure 4 below presents the results, showing that in 2009 respondents spent 54.6 percent of their revenues on inventory. This is the simple un-weighted average, and thus an indication of importance of inventory acquisition costs to an individual firm. Moreover, it is less influenced by large networks that are also publishers, who are also selling inventory they already own. The survey responses show that publishers received an estimated \$1.8 billion from survey respondents in 2009. The results also indicate that the percentage of display revenue used on data costs was just under 10 percent, rising from 8.5 percent in Q1 2009 to 9.4 percent in Q4 2009 (see Table B-3 for quarterly results). The trend may indicate an increase in the importance of BT over that period, an increased use of data purchased from third parties, or simply the progress of the economic recovery over the year. The sample is too small, and the time period too short, to draw firm conclusions. The remaining portion of revenues, 36.5 percent, must cover the network's other costs, overhead, and profit.

**FIGURE 4**  
**USES FOR DISPLAY AD REVENUE**  
**2009**

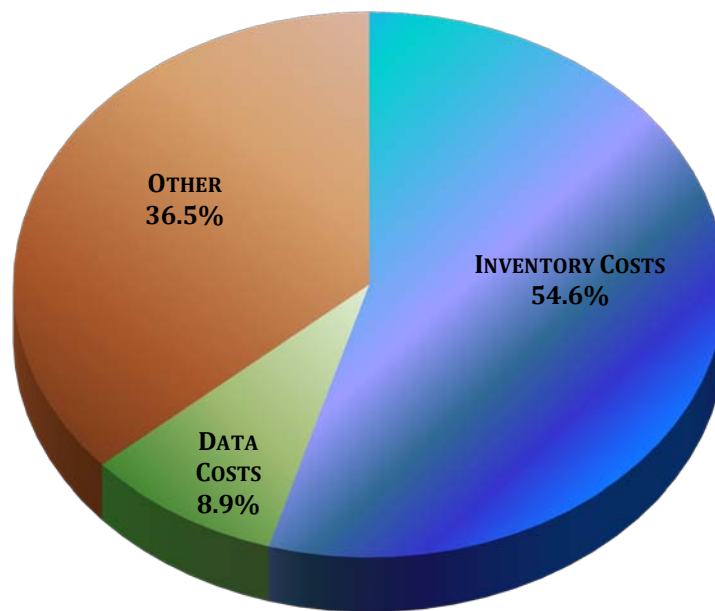


Figure 4 illustrates that ad network revenue streams, which are dependent on BT, are flowing through to publishers. Inventory acquisition is in essence a direct transfer from networks to publishers. The flow of data costs are more complicated to understand, but some of these revenues could also flow to publishers. For example, a publisher may sell more detailed data about which pages on its site consumers are actually visiting or how much time they spend on a particular page. Thus, at least 54.6 percent of revenues go to publishers, mostly directly via inventory purchases with some additional amount for sale of data. A reduction in the use of BT would likely reduce the size of the pie above, and therefore reduce the amount of money flowing to publishers.

#### IV. CONCLUSIONS

To date, there have not been reliable data on the significance of third party behavioral targeting in the advertising marketplace. Although this study is far from comprehensive, it provides the first systematic empirical assessment of the value of BT to ad networks, consumers, and publishers. Such data is crucial to making informed policy decisions about the costs and benefits of restrictions on BT. The hope of this study is to provide a launching point for further investigation into the benefits of BT.

This study set out to bridge the data gap limiting the empirical assessment of the value of behavioral targeting to ad network revenues and its effect on advertising rates. To this end, twelve ad networks were surveyed, including nine of the largest players in the market (based on the number of site visits). The survey was specifically designed to obtain data concerning networks' revenues, advertising success rates, and CPMs across the various advertising types (both targeted and untargeted).

The results indicate that BT is an essential part of ad network, publisher, and advertiser success. BT leads to advertising rates that are more than double the rates that run of network advertising commands. Consistent with the difference in rates, the results also indicate that BT advertising is more effective, with conversion rates more than double the rates for run of network

advertising. The higher conversion rates for BT and retargeted advertising indicate that such advertising is significantly more valuable to consumers, because it is more likely to tell them about a product they want to buy. For the typical network, BT accounted for just over 40 percent of total advertising revenue in 2009, with more than half of the total revenues going to publishers. Thus, higher rates for BT advertising, resulting in higher revenues for ad networks, also result in higher payments to publishers. Smaller content providers in particular, who cannot afford the expense of a direct sales force, are most likely to be dependent on networks for access to advertisers.

Advertiser supported content has long been an essential component of conventional media. Increasingly, advertising is the financing mechanism that makes online content and services possible as well. As content traditionally provided offline (such as newspapers) continues to move to the Internet, the link between online advertising and content is likely to become increasingly vital to the provision of information and services that we have long taken for granted.

## APPENDIX A: A PRIMER ON ONLINE ADVERTISING MARKETS AND BEHAVIORAL TARGETING

### A. THE ONLINE ADVERTISING MARKET

Advertising networks (“ad networks”) are intermediaries, connecting publishers with advertisers seeking to reach an online audience. Often referred to as “third party ad networks” because they serve a broad range of publisher partners, these networks purchase<sup>15</sup> available advertising space from publishers, and then resell it to the ultimate advertisers. The relationship is beneficial for both parties. Web publishers profit from advertising, enabling them to derive monetary value from their content without having to charge subscription fees. Network intermediaries are particularly important for small publishers that cannot afford a large advertising sales force or the search costs associated with finding potential advertisers.<sup>16</sup> Consequently, such publishers frequently rely on ad networks to monetize the value inherent in their content. Conversely, advertisers need ad networks to promote their products effectively to relevant audiences without the significant search costs of locating and negotiating directly with individual publishers.<sup>17</sup>

Most of the \$23.4 billion<sup>18</sup> spent for online advertising in 2008 falls in one of two categories: search advertising or display advertising. Search advertising (45 percent of the online market in 2008)<sup>19</sup> is usually sold on a “cost per click”<sup>20</sup> basis, with the advertiser paying each time a viewer

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15. This study uses “third party ad networks” and “ad networks” synonymously.

16. David S. Evans & Michael D. Noel, *Defining Markets That Involve Multi-Sided Platform Businesses: An Empirical Framework With an Application to Google’s Purchase of DoubleClick*, AEI-Brookings Joint Center for Regulator Studies Working Paper 07-18 (Nov. 2007), at 29 [hereinafter *Evans & Noel*].

17. *Evans & Noel, supra*, at 29; So-called “demand side platforms” are also an increasingly important feature of the online advertising ecosystem. Such platforms buy and optimize media on behalf of advertisers and advertising agencies, with impressions being acquired through auctions on exchanges or through real-time bidding.

18. Price Waterhouse Coopers, *IAB Internet Advertising Revenue Report*, Internet Advertising Bureau (2009) at 3, available at [http://www.iab.net/media/file/IAB\\_PwC\\_2008\\_full\\_year.pdf](http://www.iab.net/media/file/IAB_PwC_2008_full_year.pdf) (last visited Mar. 15, 2010) [Hereinafter *IAB Report 2008*].

19. *Id.* at 9.

20. See Cost-per-Click (CPC), available at [http://www.marketingterms.com/dictionary/cost\\_per\\_click/](http://www.marketingterms.com/dictionary/cost_per_click/) (last visited Mar. 3, 2010).

clicks on the advertisement. In this market, advertisers bid for keywords that consumers enter in a search engine. The search platform uses these prices and its own predictions of the likelihood that a consumer will click on a particular ad to determine which advertisement to display.<sup>21</sup> Display advertising, including banner ads, rich media, and digital video, accounted for 33 percent of online advertising in 2008.<sup>22</sup> Display advertising is typically sold on a cost-per-thousand (“CPM”) basis, with the advertiser paying based on the number of viewers who are served their advertisement.<sup>23</sup> Advertising may also be sold on a “Cost Per Action” basis, in which the seller is compensated for each time a customer purchases the advertised item or service.<sup>24</sup>

Ad networks use contextual, vertical, and behavioral strategies for matching advertisers with users of Internet content and services. Contextual networks allow the advertisers to bid on keywords on publisher websites within the network’s inventory.<sup>25</sup> The network then places ads across its inventory based on the keywords bid on by the advertiser.<sup>26</sup> Often, ad networks aggregate inventory, and then will offer to run ads for various advertisers within their inventory.<sup>27</sup> Ad networks can also let the advertiser choose what websites the ads are placed on, or place the ad across its entire inventory (known as “Run of Network” or “RON” advertising).<sup>28</sup> Vertical networks typically group together similar publishers within their inventory and offer them to advertisers. For example, automobile companies are likely to want to advertise in publications geared toward

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21. David S. Evans, *The Economics of the Online Advertising Industry*, 7 REV. NETWORK ECON. 38 (Sept. 2008) [hereinafter *Economics of Online Advertising*].

22. *IAB Report 2008*, *supra*, at 9.

23. Cost-per-thousand-impressions (CPM), available at <https://www.google.com/adsense/support/bin/answer.py?hl=en&answer=32726> (last visited Mar. 3, 2010).

24. Cost-per-Action (CPA), available at [http://www.marketingterms.com/dictionary/cost\\_per\\_action/](http://www.marketingterms.com/dictionary/cost_per_action/) (last visited Mar. 3, 2010).

25. *Economics of Online Advertising*, *supra*, at 38; Anindya Ghose & Sha Yang, *An Empirical Analysis of Search Engine Advertising: Sponsored Search in Electronic Markets*, NET Institute Working Paper (May 2009) at 1-2, available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1022467&download=yes](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1022467&download=yes) [hereinafter *Ghose & Yang*].

26. *Economics of Online Advertising*, *supra*, at 38; *Ghose & Yang*, *supra*, at 1-2

27. *Economics of Online Advertising*, *supra*, at 38.

28. Scott Anderson, Mike Silver, & Rich Gordon, *Online Ad Networks: Disruption-and Opportunity- for Media Business*, Media Management Center at the Kellogg School of Management (2009) at 40 [hereinafter *Kellogg Study*].

viewers interested in cars, so vertical networks will group together automotive websites to offer them.<sup>29</sup> Behavioral networks employ behavioral targeting ("BT") to direct specific ads to certain viewers by collecting and using data based on user browsing behavior across multiple web sites in order to categorize likely consumer interest segments for use in targeting.<sup>30</sup>

## B. BEHAVIORAL TARGETING

Ad networks and other participants in the advertising ecosystem are increasingly utilizing behavioral targeting to assemble audiences with particular characteristics. One variant of BT is retargeting, or reengaging a customer who was a potential sale. For instance, if someone clicked on an ad for a particular camera or a vacation package but did not buy, that person will be shown the same ad or similar ads.<sup>31</sup> Another variation is clustering, or grouping users into categories based on their web behavior. Examples of this type of BT include the use of audience groups such as "Technology Maven" or "Active Gamer."<sup>32</sup>

Behavioral targeting has become an attractive model for advertisers because of its effectiveness. In 2008, Collective Media reported that in a survey of 500 advertisers and agencies, nearly 69 percent used some form of BT.<sup>33</sup> Industry research service E-marketer reports that spending on behaviorally targeted online advertising reached \$775 million in 2008.<sup>34</sup> E-marketer also projects that by 2012, spending on behavioral advertising in the U.S. will approach \$4.4 billion,

29. Mitch Lowe, *Vertical Ad Networks: Do They Measure Up?*, IMEDIA CONNECTION, Apr. 17, 2006, available at <http://www.imediaconnection.com/content/9065.asp> (last visited Mar. 4, 2010).

30. For more background on behavioral targeting, see Lori Deschene, *What is Behavioral Targeting?*, BNET, Apr. 28, 2004, available at [http://www.bnet.com/2403-13237\\_23-199800.html](http://www.bnet.com/2403-13237_23-199800.html) (last visited Mar. 6, 2010); Emily Steel, *How Marketers Hone Their Aim Online*, WALL ST. J. (Jun. 19, 2007), available at <http://online.wsj.com/article/SB118221104155539813.html> (last visited Mar. 15, 2010); JOSEPH PLUMMER, STEVE RAPPAPORT, TADDY HALL, & ROBERT BAROCCI, *THE ONLINE ADVERTISING PLAYBOOK* 11-12 (Wiley 2007).

31. Ron Graham, *The Power of Retargeting*, CLICKZ (Dec. 16, 2009), available at <http://www.clickz.com/3635886> (last visited Mar. 15, 2010).

32. *Kellogg Study*, *supra*, at 17, ("Cluster: Targets users whom the network determine belong to a cluster or segment, based on behavior (think Hockey Moms, Technology Mavens, and Active Gamers), based on the sites or content that have been visited frequency and duration of visits, etc. Can be used in Combination with other strategies including demographic and geographic."); AOL, for example, offers such groupings, see <http://advertising.aol.com/audiences/tech-telecom> (last visited Mar. 20, 2010).

33. Sterling Research Group, *Ad Network Study 2009*, Collective Media (2009) at 4.

34. *Behavioral Marketing: Marketing Trends*, available at [http://www.emarketer.com/Reports/All/Emarketer\\_2000487.aspx](http://www.emarketer.com/Reports/All/Emarketer_2000487.aspx) (last visited Mar. 3, 2010).

or nearly 9 percent of total ad spending (up from 2 percent in 2006).<sup>35</sup> These trends demonstrate that advertisers are increasingly turning to ad networks that employ BT to disseminate their ads to online audiences.

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35. *Id.*



## Appendix B: Additional Tables

**Table B-1**  
**UN-WEIGHTED AVERAGE CPM BY TARGETING TYPE,**  
**2009**

QUARTER	RUN OF NETWORK	BT	RETARGETING
<b>FULL YEAR</b>	<b>\$1.56</b>	<b>\$3.54</b>	<b>\$2.28</b>
Q1	\$1.41	\$3.35	\$2.16
Q2	\$1.58	\$3.62	\$2.28
Q3	\$1.56	\$3.55	\$2.33
Q4	\$1.70	\$3.64	\$2.34

**TABLE B-2**  
**WEIGHTED AVERAGE CPM BY BT VERTICAL, 2009**

QUARTER	AUTOS	ARTS & ENTERTAINMENT	HOME, FAMILY, & PARENTING	FINANCE & BUSINESS	HEALTH	SHOPPING	SPORTS	SCIENCE AND TECHNOLOGY	TRAVEL
<b>FULL YEAR</b>	<b>\$8.05</b>	<b>\$4.84</b>	<b>\$3.66</b>	<b>\$3.14</b>	<b>\$4.57</b>	<b>\$3.86</b>	<b>\$4.07</b>	<b>\$4.28</b>	<b>\$4.58</b>
Q1	\$8.55	\$4.80	\$3.68	\$3.28	\$5.03	\$4.06	\$4.37	\$4.43	\$4.97
Q2	\$7.90	\$4.70	\$3.61	\$3.38	\$4.60	\$3.72	\$3.92	\$4.47	\$4.72
Q3	\$8.07	\$5.00	\$3.68	\$3.09	\$4.67	\$4.08	\$4.23	\$4.16	\$4.53
Q4	\$7.83	\$4.85	\$3.68	\$2.90	\$4.18	\$3.68	\$3.85	\$4.14	\$4.28

**TABLE B-3**  
**PERCENTAGE OF DISPLAY AD REVENUE USED FOR COSTS**

QUARTER	INVENTORY	DATA	OTHER (ADDITIONAL COSTS & OVERHEAD, PROFITS)
<b>FULL YEAR 2009</b>	<b>54.6%</b>	<b>8.9%</b>	<b>36.5%</b>
Q1 2009	54.7%	8.5%	36.8%
Q2 2009	56.9%	8.8%	34.3%
Q3 2009	53.0%	9.1%	37.9%
Q4 2009	53.6%	9.4%	37.0%

## About Howard Beales

Howard Beales teaches in the School of Business at the George Washington University, where he has been since 1988. His research interests include a wide variety of consumer protection regulatory issues, including privacy, law and economics, and the regulation of advertising. He has published numerous articles addressing these issues in academic journals.

From 2001 through 2004, Dr. Beales served as the Director of the Bureau of Consumer Protection at the Federal Trade Commission. In that capacity, he was instrumental in redirecting the FTC's privacy agenda to focus on the consequences of the use and misuse of consumer information. During his tenure, the Commission proposed, promulgated, and implemented the national Do Not Call Registry. He also worked with Congress and the Administration to develop and implement the Fair and Accurate Credit Transactions Act of 2003, and testified before Congress on numerous occasions. His aggressive law enforcement program produced the largest redress orders in FTC history and attacked high volume frauds promoted through heavy television advertising.

Dr. Beales also worked at the FTC from 1977 to 1987, as a staff economist, Assistant to the Director of the Bureau of Consumer Protection, Associate Director for Policy and Evaluation, and Acting Deputy Director. In 1987-88, he was the Chief of the Human Resources and Housing Branch of the Office of Information and Regulatory Affairs in the Office of Management and Budget.

Dr. Beales received his Ph.D. in economics from the University of Chicago in 1978. He graduated magna cum laude from Georgetown University with a B.A. in Economics in 1972.