INTERNET SITE MEASUREMENT DEVELOPMENTS AND PRINT

Dr. Scott McDonald, Condé Nast Publications, USA
Dr. James Collins, Mediamark Research, Inc

Introduction

At the 1999 WRRS in Florence, McDonald explored the tripartite topology of internet site metrics – Site-Centric, Ad-Centric and User-Centric – broadly identifying the means, strengths and vulnerabilities of each. At the time it was reasonable for print to assume an interested, but nevertheless somewhat detached orientation with respect to the "battle about how best to measure opportunities to see ads on online media…" [McDonald, 1999]

Disinterested interest is no longer a viable orientation for most print publishers, at least in the United States. Print media are aggressively pursuing internet strategies designed to complement and enhance their hardcopy products the better to sustain and develop their "total" audiences. Increasingly traditional print media companies are re-imagining and repositioning themselves as media brands for which hardcopy and the internet are two primary (but not necessarily exclusive) channels through which their products are distributed.

As such, the traditional print media have become acutely sensitive to developments in internet measurement - both as they bear on the assessment of their own sites' audiences and as they point the way toward establishing total brand audiences across both hardcopy and digital delivery platforms.

However, it is just here that audience measurement – internet and hardcopy - begins to encounter its greatest challenges.

First, while some progress has been made with respect to addressing some of the more vivid issues of internet audience measurement (e.g., auditing of site server logs) much of the most difficult work remains undone, or at best, incomplete. (Indeed, the landscape McDonald described in prior WRRS papers remains essentially in tact.) The varying metrics – site centric, ad server centric and user centric – are fundamentally quite different and their reconciliation is neither self-evident nor (probably) without potential controversy.

Secondly, while certain advances in internet-related technology potentially serve audience measurement, inevitably they also presents new audience measurement challenges (e.g. AJAX technology).

Third, even assuming a fair reconciliation of varying internet audience measures, the fundamental currency metrics for print and online are themselves quite different, and thus the integration of one with the other is itself not simply apparent.

Hence, the foci of the work at hand are inevitably diverse:

1) Discuss the continuing development of the Site Centric and User-Centric measurement methodologies and their relative advantages (and disadvantages) in the service of internet audience measurement.
2) Briefly review a efforts to account for the substantially different levels these diverse internet audience measurements offer, as suggestive of a broader reconciliation strategy.
3) Note how certain critical aspects of internet audience measurement are undergoing transition in response to the increasing deployment of Web 2.0 technology.
4) Consider the impact of these measurement changes on print-brand site audience levels
5) Explore a fairly traditional but nevertheless robust strategy for better integrating print hardcopy and internet site audience measures, the better to assess total brand audience delivery.

Part 1: User-Centric Vs. Site Centric: The Digital Measurement Divide After a Decade

At the 1999 WRSS in Florence and again at the 2001 WRSS in Venice, Scott McDonald reported on the contentious arguments about the best way to count the audiences for internet websites. While we won't recapitulate those arguments in detail here, it is worthwhile to summarize the key features of the two alternative approaches before describing developments since 200

Site-centric measurement approaches tend to be favored strongly by website owners, not least because the resulting audience counts are larger.   Site-centric measurement relies upon tiny bits of Javascript that are tagged to a website's pages and that report whenever a page is requested by a browser. In effect, it is a tabulation of the number of web pages that are requested and sent from a website's servers. Since advertisers generally want to know not just the number of pages sent, but also the number of "unique users" who request those pages, the site-centric measurement systems usually also "cookie" the browsers that are requesting pages, in order to be able to recognize them upon subsequent visits. The management of these site-centric measurement systems tends to be done by specialized third-parties; leading exponents of this approach in the United States include Omniture, WebTrends and Visual Sciences.

The site-centric approach has several advantages, prominent among which are:

- Inclusion of all page requests, regardless of whether from a work-based or a home-based computer
- Inclusion of page requests from international sources
- Inclusion of requests from all types of devices, including computers of course, but also PDAs, televisions, mobile phones, etc.

In effect, it is a census of all page requests regardless of their provenance; as such, it is not subject to sampling variation and it provides a high level of data granularity. Because of this high level of granularity, site-centric data are universally used by the websites themselves to optimize their offerings, analyze what is working and what is not, and modify their content. However advertisers tend to deprecate the use of site-centric data for media planning or post-campaign evaluation as:

- The measurement isn't undertaken by neutral third parties
- The data lack demographic profile information
- Small differences in definition yield big differences in counts, thereby making cross-site comparisons problematic at best and impossible at worst
- Pages sent from web servers are not necessarily received, as when a user aborts the download
- The reliance on cookies to derive estimates of the number of unduplicated or "unique" users is fraught with problems because many users refuse or delete cookies. Such users get counted as "uniques" by server-centric systems when, in fact, they are returning visitors.
- Though some sites have systems to screen out "bots" and "spiders" and not count their page requests, it is not clear how well these filters work. As a consequence, there is a risk that some of the requested pages in these server-centric counts are not person/audience-related, but merely machine-to-machine transactions.
- Internet service providers often use proxy servers to speed the delivery of popular web pages; when pages come from these proxy servers (or from local cache in a user's browser), the request is not counted by the originating website.

Today, as in 1999 and 2001, these factors combine to make server-centric measurement systems highly problematic for media planning or post-campaign evaluation. Indeed, most post-campaign evaluation is presently done by directly counting up the number of ads rather than the web pages served, relying on the tabulations of the 3rd party ad serving companies (e.g. DoubleClick) who manage this process for advertisers. As such, to the frustration of many website owners, the principal use of server-centric data remains internal diagnostics rather than media planning.

By contrast, the user-centric measurement systems in place today more closely resemble those used to measure television and in some cases radio audiences. Panels are recruited, using conventional survey sampling techniques. Panel members are given computer software that records their online activities and reports that information to the user-centric measurement service which, in turn, uses those data to project the audiences for various websites. The similarity of user-centric methods to those used in TV measurement is not coincidental: the individuals who started these systems came from backgrounds in television audience measurement. At present in the U.S. the leading exponents of the user-centric approach remain comScore/MediaMetrix and Nielsen//NetRatings. User-centric methods have some key advantages, including:

- Panel members must identify themselves as individuals so that the online activity can be associated with them specifically; thus, user-centric systems provide demographic profiles for comparison of websites – a key asset for media planning.
- User-centric systems do not rely upon (delete-able) cookies for derivation of estimates of unique users
- User-centric systems only count pages received (and actual time spent at the page/site).
- User-centric systems count pages that are delivered from proxy servers and local cache
- User-centric systems count all sites according to the same definitions and metrics, thereby enabling cross-site comparisons
- User-centric systems are independent and thus have no inherent conflict of interest in the context of media planning

However user-centric measurement systems also have problems many of which have been the subject of loud lamentation over the past decade. Among these problems:

- As sample-based systems, they provide less granularity than server-centric approaches. This is a big problem for a medium as fragmented as the internet.
- The sampling methods used to build some of the panels appear to fall short of the Gaussian standards typical for other media. One of the leading companies openly uses convenience sampling techniques to recruit panelists, claiming that it could correct for any biases through post-sample weighting. However the fundamental projectability of non-random samples remains controversial at best.
- Transparency and disclosure have been far from exemplary, with neither of the leading user-centric companies having yet completed an MRC audit (though progress on this front has been apparent in 2007).
- User-centric systems have great difficulty getting access to workplace computers, even when panelists are happy to install the monitoring software on their home machines. In particular, most large companies have strict firewalls, security systems and policies prohibiting site measurement software from being installed. As significant use of the internet takes place during the workday from work-based computers, this represents a significant challenge with respect to sample coverage for user-centric systems.

This accounting of the merits and demerits of the two alternative measurement approaches – the site-centric and the user-centric – was described in greater detail in the 1999 and 2001 McDonald papers. At that time, it was clear that the two approaches generated radically different counts of both page views and unique users of websites – discrepancies ranging from 35% to 350%. These discrepancies have been regarded as a scandal by the buyers and sellers of online display advertising, and by the trade press that covers the industry.

So what has changed in the intervening years? Regrettably, not enough. The two sides still tend to fulminate against each other or, alternatively, to ignore each other. Yet, with very few exceptions (to be described shortly), there has been little effort to illuminate the reasons for the discrepant counts or to devise methods for their reconciliation. In the meantime, the web itself has developed in ways that make it ever harder to measure. Among the newer developments that challenge effective measurement:

- Advertising dollars have shifted from display advertising to paid search, thereby reducing the incentive to solve these measurement problems. According to Veronis and Suhler, display advertising (e.g. banners) captured 47% of the consumer internet advertising spend in 2000, but by 2006 it waas down to 22%. Conversely, keyword search's share went from 1% in 2000 to 40% in 2006 – witness Google's extraordinary success during that period. Because paid search invoices on the basis of clickthrough rather than media exposure or OTS, the urgency of settling the issue of how to count those exposures has diminished.
- Broadband has increased its penetration smartly with now **74%** of at-home users accessing the internet through a broadband connection [MRI, Spring, 2007]. This has enabled the growth of rich media and video streaming – processes which engage the users and induce them to spend longer time on given web pages. Thus the basic metric of "page views" – fundamental to both the user-centric and site-centric approaches – has come to be viewed as flawed and biased against video-based sites. (More on this in later sections.)
- Websites increasingly use technologies to update content on an ongoing basis. These "auto-refresh" technologies have a benefit for the user in that the site is kept up-to-the minutes. However they bedevil measurement systems because the call to the server for the update was not user-generated. At this point, it is not clear whether these technologies affect user-centric and site-centric systems equally, or whether they will serve to exacerbate the discrepancies between them.
- As paid search has grown, so has the use of "bots" and "spiders" to scour websites and index content for the search engines. Google estimates that, at present, about 30% of all internet traffic is machine-to-machine or bot-related. If this estimate is true, this development surely will cause the site-centric numbers to rise (spuriously), but not the user-centric.
- The difficulty that user-centric systems have in gaining access to workplaces, while not getting worse, may be having a more deleterious effect on measurement accuracy over time. Not only does workplace access to the internet continue to expand – with 65 million Americans using the internet at work according to recent Nielsen/NetRatings estimates – but the level of usage among that population continues to rise. Whereas many businesses might have regarded personal internet use as "goofing off" in 2000, there are indications that it has become more accepted as a more normal part of balancing work/life in recent years. Workplace use of the internet probably disproportionataely challenges the accurate measurement of upmarket and magazine-affiliated websites because their audiences are more apt to have workplace internet access. Indeed, the Conde Nast websites have long observed their peak usage occur in the middle of the workday, with spikes particularly apparent at lunch breaks. Moreover, about 50% of the IP addresses recorded by Conde Nast's server-side measurements come from identifiable workplaces.

Part 2: User-Centric Vs. Site Centric: Reconciliation Efforts

Though the discrepancies between site-centric and user-centric approaches have occasioned much ferocious debate in the past decade, there have been relatively few efforts to completely understand the reasons for and magnitudes of the differences. Moreover, and perhaps most importantly, only sporadic attempts have been undertaken to develop an integrated, "reconciled" approach to internet audience measurement; an approach leveraging the granularity offered by site-centric methods and the dimensionality and independence from cookies of panel-based approaches.

Broadly, the efforts undertaken to date have involved some combination of common strategic elements:

1) Attempt to collect demographic (and other relevant) information about a site's visitors through the site server
2) Employ a user-centric panel to estimate levels of cookie deletion and other behaviors affecting site-centric measures
3) Obviate the problem of cookie deletion by more effective site tagging and registration

One early systematic reconciliation effort was presented at the 2000 ESOMAR/ARF WAM meeting by Yahoo's Bruce MacEvoy and University of Santa Clara Professor Kerry Kalyanam. The paper used a decomposition of difference approach to try to make server-side counts align with panel-based user-centric counts for Yahoo!. Moreover, it demonstrated the "coverage issues of panel-based…research", acknowledging the value of census-like measurement to internet audience assessment. Though it led the way forward, it was not adopted by other sites nor replicated elsewhere in the U.S.

At the 2003 ESOMAR/ARF WAM meeting, Webb, Long and Caldwell described a project from New Zealand involving a partnership between publishers and Red Sheriff, a site-centric tagging company. This effort used site-intercepts to ascertain demographics of site visitors, but relied entirely upon site-centric methods to estimate page views and unique visitors – thereby sidestepping the central debate with user-centric approaches.

At ESOMAR/ARF WAM 2004, a team from the Netherlands (R. Molenaar, E. Verhulst, M. Appel) reported on an effort to integrate panel and site census approaches. In particular, by using an "online portal system" users were registered (capturing demographic and related measures) and enabling the monitoring/measurement of cookie placement and deletion to better estimate unique audience.

The most recent significant, concerted work in this area perhaps comes from Nielsen//NetRatings and as it involves both user-centric/panel and site server components it deserves more detailed discussion.

Beginning with research conducted in Italy in 2005 – where Nielsen//NetRatings has both user-centric and a site-centric services operating in market – Nielsen//NetRatings' Mainak Mazumdar developed an approach that picks up where the MacEvoy-Kalyanam work left off in 2001.

Broadly, the Nielsen//NetRatings' approach involves a decomposition of difference strategy typically employed by demographers in decomposing changes in populations over time. The decomposition of difference approach designed by Mazumdar involves the following:

1)   For the Nielsen//NetViews panel determine the number of unique visits to a defined number of sites for each panel member over a number of months.
2)   From those same sites over a coincident time period determine the number of unique NetViews panelist browsers as measured by the site's cookie placement
3)   Comparison of the panel and browser counts allows for a reasonably accurate assessment of the impact of cookie deletion on the site-centric measures thereby initially reconciling these separate counts.
4)   Further, the site-centric measures are adjusted to discount international and "bot"/"spider" traffic based on known search and foreign IP addresses
5)   Much of the (modest) difference remaining after reconciliation is due to access from non-computer based devices (e.g. PDA, cell-phones, etc.) and locations not covered by the panel design (e.g., public-place access, group quarters, etc.)

By way of some perspective, the emerging interest and investigation into the use of digital set-top boxes as a source of information for television audience measurement may complement internet measurement reconciliation efforts. The use of digital set-top boxes to collect "census-level" household set viewing in conjunction with panel-based person-level measurement offering demographic as well as viewing measures presents challenges quite similar to those confronting internet measurement reconciliation – integrating the granularity of a census measure with the audience profiling available by means of a panel. It should be hoped that promising reconciliation strategies developed in the context of one medium will offer inspiration and application in the other.

Come what may with television measurement, it is to be hoped that other internet measurement reconciliation efforts will follow and it is encouraging that in the United States the Internet Advertising Bureau has adopted such as one of its paramount research priorities. Hopefully this important issue will again receive diligent research investigation, rather than the rhetorical exchanges that have been more characteristic during the past few years.

Part 3: Web 2.0 and Internet Audience Measurement

The use of page views by user-centric and site-centric online measurement is coming under increasing challenge with the advent of a variety of technologies generally categorized as Rich Internet Application (RIA). As defined by the Internet Advertising Bureau in the United States, RIA is:

"…any type of website, stand alone application, game, widget, etc. that can dynamically load content and/or advertising without reloading the entire application. For example, web sites that move to a Rich Internet Application experience might make subsequent advertising calls after the first page load without an additional full page load." [Internet Advertising Bureau, 2007]

A consequence of RIA for page view based measurement is that such measurement will inevitably undercount, and in some cases severely so, the display of changing content, including advertising, in the absence of a new page display.

To address this challenge, the NetView user-centric online measurement service of Nielsen//NetRatings in the United States has revised certain of its site reporting to incorporate the time spent metric. Their rationale is that duration of exposure to a site more reasonably embodies the "engagement" of the user with the site than simply the number of site pages viewed. In a press statement accompanying this service change Nielsen//NetRatings states:

"'Total Minutes' is the best engagement metric in this initial stage of Web 2.0 development, not only because it ensures fair measurement of Web sites using RIA and streaming media, but also of Web environments that have never been well-served by the page view, such as online gaming and Internet applications" [Nielsen//NetRatings, July, 2007]

The impact of this sort of change in online measurement metric can be substantial for individual sites both relative to other internet sites generally and within their genre. In announcing this service enhancement Nielsen//NetRatings presented the following data:

Table #1
Time vs. Page View Ratio for May 2007 (U.S., Home and Work)

Site(s)	Total Minutes (mil)	Web Page Views (mill)	Seconds per Page
Google Search	2,557	7,623	20
Yahoo! Search	764	2,451	19
Google Search/Yahoo! Search Ratio	3.3 to 1	3.1 to 1	NA
Myspace.com	7,535	28,672	16
YouTube	2,117	2,762	46
Myspace.com/YouTube Ratio	3.6 to 1	10.4 to 1	NA

[Nielsen//NetRatings, July, 2007]

Clearly, with respect to the search genre the two metrics – page views and time spent – offer minimal advantage/disadvantage to the two players mentioned. However, for the two social networking sites there are very material advantages and disadvantages offered by the two metrics with time spent benefiting Youtube and page views benefiting Myspace.com.

The transition from a page view metric to a time spent one also has implications for the site-centric / user-centric audience measurement dilemma. For sites utilizing RIA/Web 2.0 technology the persistent connection between the browser and the site server allows for some general measure by the site's server of the time a site is active on the user's browser. However, sites using static pages and having no persistent connections have no way to reasonably estimate the time the page is displayed. In contrast, and almost from their inception, panel-centric internet audience measurement readily counts not only the pages viewed, but the duration of each viewing and thus has a natural advantage in offering site/technology neutral time-based site measurement.

Part 4: From Page Views to Time Spent – Implications for Print

Print publishers with allied internet properties should not be sanguine in the face of these evolving site metrics. On average print media related sites are advantaged by the time spent metric. Using Nielsen//NetRatings NetView Brand and Channel data for July 2007, among adults (Age 18+) the average time spent per page across the approximately 2,400 site entities reported is approximately 33 seconds. In comparison, for the approximately ninety magazine related sites within this pool the average time spent rises to approximately 47 seconds, a 42% higher level. Using a slightly different NetView dataset (June, 2007) including measures of approximately 300 magazine related internet sites, a number of which are too small to meet Nielsen//NetRatings' individual site reporting standards, for persons two years of age or older this number is inconsequentially different at 45 second per page view.

While these differences are not as dramatic as the ones Nielsen//NetRatings reports with respect to YouTube and Myspace.com, their analysis is worth noting by print:

"While Myspace may be able to serve more ads because of its number of page refreshes, the time spent ratio is an important comparison of audience engagement on the two sites."
[Nielsen//NetRatings, July, 2007]

From a competitive perspective as more sites develop "stickier" content using RIA technologies, it will be important for print-related sites to similarly adapt. Historically, one reason print sites have attracted visitors for more extended periods is the extensive nature of their site's editorial content. As important as that content remains, it will almost inevitably be necessary to supplement it with more interactive, real-time and visual content to more fully engage visitors into extended viewing.

Perhaps ironically for print, while engagement with the hardcopy product is the subject of continuing debate with only modest resolution, time spent may become the de facto engagement standard for online.

Part 5: Integrating Publishers Hardcopy and Internet Site Audience Measures

Towards the conclusion of McDonald's 1999 work, in a discussion of continuing efforts to resolve internet measurement issues and the potential impact of such efforts on print measurement, he comments:

> "…one noteworthy attempt [is] to develop an empirical basis for adjusting audience estimates…Should such a solution be embraced by the online media, it could spur interest in fusion techniques that, to date, have failed to raise much support in the United States" [McDonald, 1999]

Perhaps ironically, in the United States fusion has emerged not so much to reconcile different internet measures one with the other, but rather to integrate internet measures with other media currencies.   In particular, in the United States, Nielsen//NetRatings' NetView internet panel site database is being separately fused with Nielsen Media Research's *National Television Index* (NTI) and Mediamark Research Inc.'s *National Media and Marketing Survey*.

Motivating both of these fusion initiatives is the developing need of media researchers for more comprehensive measures of multi-channel media delivery – television/internet and print/internet.   As noted in the introduction, increasingly media companies are developing their properties as brands whose value is best realized through deployment across multiple delivery channels – editorial, television programs, and unique branded content etc. available through the internet as well as their primary channels. Concomitantly, to reach their consumer targets more efficiently, advertisers and their agencies are seeking to more fully understand and account for cross-media, multi-channel audience behaviors in their media planning and buying.

Moreover, the increasing recognition of the import of behavioral and even attitudinal measures, in addition to demographics, to efficacious media planning and buying reaffirms the value of such measures as traditionally included in print audience research. Hence, the fusion of the NetView internet user-centric panel data with that from the MRI magazine currency survey offers behavioral/attitudinal targeting for internet site planning.

While the challenges related to the actual fusion processes themselves are substantial, the results from even the initial efforts are generally encouraging – the media and agencies are actively employing these fused databases in the planning process and recognizing value from the exercise.   However, the evolving use of these fused databases identifies a fundamental tension between internet measurement on the one hand, and print and to a lessening degree television audience measurements on the other. Referencing this tension, McDonald comments:

> "…in the online world, there is a weaker correspondence between the audience for the media vehicle and the audience for any given advertisement."
> [McDonald, 1999]

and later:

> "Virtually everyone involved in the development of online media measurement agrees that our assessment of the medium should not stop at mere assessment of OTS, at the raw tonnage of CPM…"
> [McDonald, 1999]

In short, in internet inclusive multi-channel/multi-media planning the internet metric is more tightly related to the advertisement – be it through click-through or even page views – whereas for print the current metric is fundamentally an OTS related one. In a rough-and-ready sense we could characterize the media-to-advertisement relationship as being strongly linked in print measurement and relatively weakly linked in the online sphere.

Over the course of time print measurement may evolve as television currently is, wherein OTS oriented average-quarter-hour ratings are giving way to minute-by-minute and advertising specific ones. Until such time though the question remains - how to best employ integrated measurement sources given the very different underlying media specific metrics? At a very practical level the question becomes one of how integrated print and internet planning can be performed when the measurement units for print hardcopy and internet are quite different - issue insertions for the former, ads served, pages viewed or time spent for the latter.

Seen from a slightly different perspective the notion of total audience in the context of a media brand with hardcopy and online components is somewhat naïve. The more robust conception is grounded in a media brand's audience delivery given varying levels of advertising placement across hardcopy and online within a particular time frame.

This notion of audience delivery suggests that one productive strategy for planning print and online jointly from an integrated data source is through reach/frequency. In particular, personal probability reach/frequency is an attractive option insofar as most media measurements allow for the development of exposure probabilities at the respondent level. While not necessarily a complete answer, with such a system the planning denominations of the respective media types – issue insertions for print, page views or time spent (either explicitly or as surrogates for ad exposures) for online – drive the respondent-level exposure probabilities from which aggregate schedule reach is derived. In short, this strategy accommodates the strongly linked OTS oriented print measurement and the more weakly linked ad/page specific measurement of online.

To begin to see how this reach/frequency based strategy works consider a single sports oriented media brand with print (strongly linked) and internet (more weakly linked) components. Referring to Chart #1, the average-issue audience for the hardcopy vehicle is approximately 5.5% of the total adult (Age 18+) population, the reach for the internet site ranges from 0% to approximately 4.7% for page view levels of 0 through 100,000,000 with total reach ranging from 0% through approximately 9.7% depending on page view levels and whether or not there is an insertion in the hardcopy vehicle.

A somewhat more realistic case wherein there are ad insertions in multiple issues of the media brand's hardcopy vehicle in conjunction with varying levels of page views is shown in Chart #2.

Chart #1
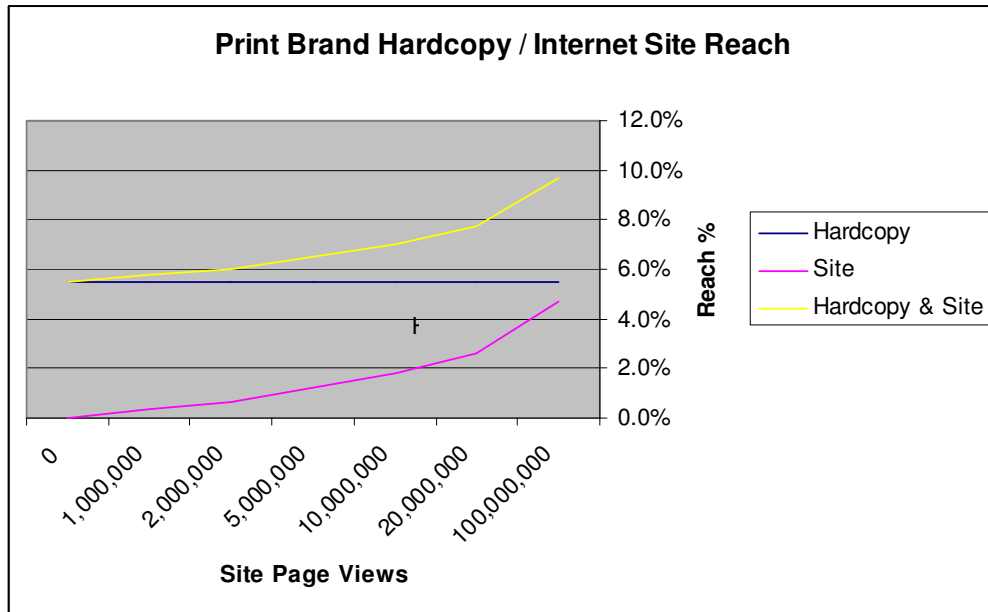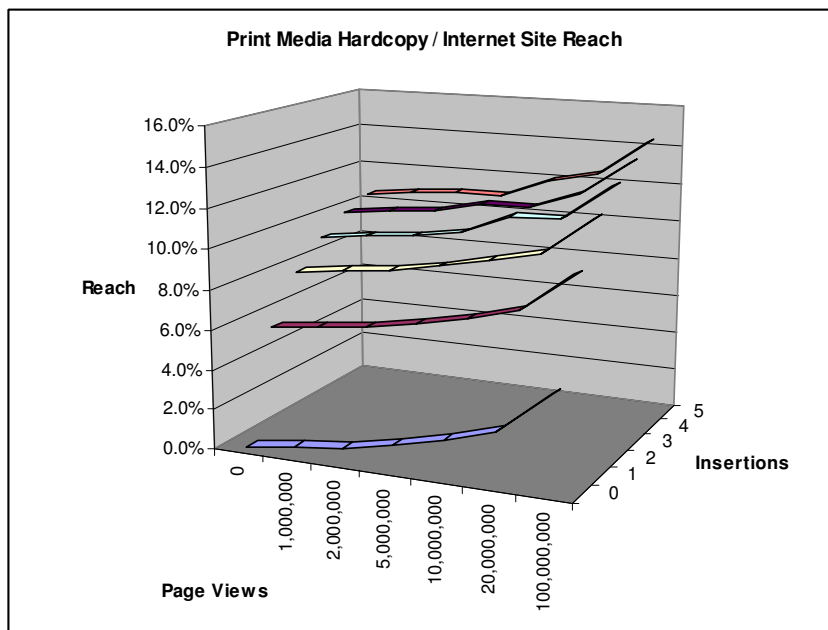**Print Media Hardcopy / Internet Site Reach**

Chart #2
Print Media Hardcopy / Internet Site Reach

Evident from both of these reach/frequency analyses is that the audience development for the media brand is characterized by high levels of duplication/frequency within each of these channels and high levels of incremental reach across them. While the relationship between the print and online channels will inevitably vary among different media brands the ability to assess these relationships is one of the primary benefits of integrated multi-channel media measurement sources.

Moreover, from a tactical perspective the ability of a print media brand to deliver audience within a particular time frame is crucial. In the absence of an online channel a hardcopy title reaches only so many people within its issue interval (acknowledging variation in issue-specific audience levels). To reach more people more insertions in more issues over a longer time period is required. However, the combination of an online component with a hardcopy title affords the media brand the opportunity of offering increased reach within more constrained time period. A tactical offering competitive with television and other media which have long had the ability to promptly deliver reach.

Clearly, much more work needs to be done to understand and exploit the relationships among a print media brand's offerings across multiple channels, but with that said, the ability to analyze a brand's dynamics among multiple channels is a worthwhile precursor.

Conclusions

The opportunities afforded to media brands by rapid technological innovation continue to challenge audience measurement in fundamental ways. As we have observed with respect to online the variety of measurement techniques and metrics – each offering unique strengths, but also possessed of distinct vulnerabilities – prove difficult to unify.

While to date, the growth in online advertising spending has been substantial even in the absence of a coherent audience measurement standard, it is unlikely that these rates can persist in the absence of a coherent metric. It is precisely this last point – the economic one – that may prove the most compelling with respect to resolving the dilemma of internet audience measurement.

But online does not stand alone with respect to this dilemma – to have more precise, more encompassing and more granular information to better support media planning and buying decisions. Most other media are experiencing increased pressures on their audience measurement methods and developing and enhancing their techniques and strategies to accommodate these demands:

1) Television
   a. Movement toward commercial/minute-by-minute ratings
   b. Utilizing census-like digital set-top box data
2) Radio is increasingly moving from diaries towards electronic measurement
3) Outdoor
   a. Integration of multiple traffic/travel data sources
   b. Electronic/GPS-based tracking
   c. More general measurement of public-place advertising, e.g. malls, transit hubs, etc.
4) Print
   a. Initial research into use of RFID technology to "passively" measure print exposure.
   b. Electronic scanning of print titles to record reading
   c. Issue specific audience measurement
5) The increasing need for all media audience measurements to support cross-media/multi-media planning and buying

What is perhaps most remarkable about this is that the strategies being developed across these media incorporate many of the same themes:

1) Integrate census measures with a panel/user ones
   a. Television – Digital set-top box data with metered panel measures
   b. Online – Reconcile user panel information with server page delivery data
   c. Outdoor – Integrate survey data, panel-based GPS data and aggregate traffic data
2) Electronic Measurement
   a. Radio – Arbitron's PPM and GfL's RadioWatch
   b. Outdoor – GPS-based data collection, electronic counting of automotive and person traffic data
   c. Print - RFID
3) Cross-Media data integration
   a. Television/Internet - Nielsen NTI / Nielsen//NetRatings NetView fusion
   b. Television/Print – Nielsen NTI / KMR's MARS
   c. Internet/Print – Nielsen//NetRatings / MRI
   d. Proprietary data integration systems

In short, while the audience measurement challenges confronting any individual medium may have their own distinguishing aspects, it is their resemblance and the similarity of the strategies they are employing to begin to address the issues that are the most remarkable.

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