

BETTER TELEVISION AUDIENCE MEASUREMENT THROUGH THE RESEARCH INTEGRATION OF SET-TOP BOX DATA

Phase Two

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This paper is primarily the report of two different major applications of set-top box data. One application involves the full-time measurement of all 300+ channels over a 12-week period in 8,700 set-top boxes in 6,292 homes in one U.S. market. The other application involves the measurement of selected commercials and programs on 28 broadcast and cable networks in over five million set-top boxes in an average of 3,909,965 million homes connected to a backpath over a three year period across the entire U.S. In both cases, set-top box based audience measurement was a side effect of the studying of the phenomenon of interactive television, in one case focusing on its targetability aspect and in the other case focusing on its interactive aspect. This provides insight both into the main subject of this paper, set-top box based television audience measurement, and the secondary subjects of this paper, the performance characteristics of interactive and addressable television.

BACKGROUND

In June 2002, the author, with co-authors of the previous paper in this series Tony Jarvis, Senior Vice President and Research Director, Grey/Mediacom and Executive Vice President, New Technologies Russ Booth, Grey/Mediacom, presented data to the 2002 session of WAM in support of using set-top box data to help improve television audience measurement, principally in terms of sample sizes for U.S. local market measurements.

That data had been collected from the first experiment in the world to attempt to turn set-top box data into useful media research across all channels. The data had been collected from about 500 homes in Atlanta in July - August 1997 by Next Century Media in conjunction with BellSouth, on behalf of ten top advertisers and their agencies. (Next Century Media is, incidentally, the research company the writer founded and ran prior to joining OpenTV to form OpenTV Research.)

One of the main conclusions of that study had been that the Homes Using Television (HUT) pattern by hour of day from the set-top boxes had closely replicated the pattern from the approximately 300 Nielsen metered homes in the market during the same months.

The argument of that first paper had been that through the use of modeling, it would be possible to integrate larger samples of set-top boxes with meter data in each of the currently metered markets (about 40 of the approximately 225 U.S. markets) so as to increase the reliability of the data, now based on about 300 homes per market, and with set-top box data likely to reflect over 100,000 homes per market in each of the top 40 markets.

In the remaining U.S. markets (about 185 of them) where diary data is the sole tool for regular television audience measurement, the existing problem is more than that of just sample size. The diary is an instrument that worked acceptably well during the period when the average home could receive fewer than a dozen channels and three of those channels commanded a 90% share of audience. Today the average U.S. home receives 120 channels (according to Nielsen), and the diary is hopelessly outclassed by the challenge of measuring that environment effectively. In these 185 or so smaller markets the promise of set-top box data is to regularly gather meter level data in such markets for the first time.

As an additional reason for use of set-top box data, the set-top box sample size in these smaller markets will be over 5,000 homes per market, about the same sample size per market as the single sample Nielsen uses to measure the entire national television audience.

The purpose of this second paper in a projected ongoing series is to report the results of additional more ambitious experiments and commercial applications in the use of set-top box data conducted by OpenTV Research.

OpenTV Research is the new arms-length division of OpenTV, the software supplier to much of the interactive television industry. OpenTV is currently deployed in over 40 million set-top boxes, of 35 different manufacturers, in over 90 countries. OpenTV Research, formed in July 2003, has the mission of collecting television audience data in those and all future boxes and turning it into useful research, operating independently as an impartial third party research company. OpenTV Research is also free to work with any competitors of its parent company OpenTV, thereby potentially enlarging the number of set-top boxes available for aggregation by OpenTV Research.

This paper is primarily the report of two different major applications of set-top box data. One application involves the full-time measurement of all 300+ channels over a 12-week period in 8,700 set-top boxes in 6,292 homes in one U.S. market. The other application involves the measurement of selected commercials and programs on 28 broadcast and cable networks in over five million set-top boxes in an average of 3,909,965 million homes connected to a backpath over a three year period across the entire U.S.

Both of these applications, although significant in their own right, were actually side effects of something else. In the one-market case, this was a test of addressable commercials, and the audience measurements were taken in order to a) enable the targeting of commercials to homes that were actually tuned to the channels used for delivery at the specific relevant moments in time; and b) measure the relative target audience delivery efficiencies of addressable versus non-addressable commercials.

In the national case, this was the former Wink interactive TV platform being used by advertisers and programmers to make commercials and programs interactive by means of graphic overlays superimposed over normal commercials and programs in the homes with enabled set-top boxes. (Wink is now part of OpenTV and its name has been changed to ProSync, short for program synchronous.) The audience measurements were used to measure the number and percentage of homes: a) exposed to the interactive overlays; b) interacting with those overlays; and c) in a subset of cases, taking the offers made in those overlays. These are known respectively as impressions, interactions, and takes.

In both cases, then, set-top box based audience measurement was a side effect of the studying of the phenomenon of interactive television, in one case focusing on its targetability aspect and in the other case focusing on its interactive aspect. Therefore as we go through the results we will be gaining

insight both into the main subject of this paper, set-top box based television audience measurement, and the secondary subjects of this paper, the performance characteristics of interactive and addressable television.

As the industry moves forward in the use of set-top box based television audience measurement this concentration on studying interactive and addressable television will shrink to becoming only one subject worthy of study by means of these new measurements. To an ever-increasing extent these new set-top box measurements will gradually come to be used to measure all of television, including its non-interactive and non-addressable aspects.

We will in the balance of this paper cover in turn the one-market and the national cases, followed by a discussion of implications and the probable shape of things to come.

For the benefit of the sponsors of this research, identities of advertisers, programmers, and market shall be suppressed.

THE ONE-MARKET EXPERIMENT

This study was executed in July-September 2003 in 8,700 set-top boxes in 6,292 homes in one of the top 20 markets in the United States. This is, of course, more than ten times the sample size of the initial landmark Atlanta experiment conducted by Next Century Media and BellSouth six years earlier and reported at WAM in 2002.

Other aspects of the new study which extend knowledge beyond the initial Atlanta study include:

1. Addressable commercials (addressable by individual household and set-top box) were actually delivered in this study for the first time in history. The audience measurements therefore are more granular than in the Atlanta study since the commercial audiences reported are for precisely defined fragments of a commercial's audience not for its total combined audience. This study proved that set-top box based audience measurements of addressable commercials are indeed practical. One might imagine how difficult it would be to measure the addressable commercial audience subsets using a meter panel.
2. Unlike the situation in Atlanta in 1997, today the average home has multiple set-top boxes and so netting out the household audience data from the multiple set-top boxes within many of the households adds a degree of sophistication not embodied in the Atlanta work.

ADDRESSABLE COMMERCIAL FINDINGS

One of the interesting and important findings of the study is that addressable commercials in fact perform as they had been hypothesized to perform, i.e. addressable commercials increase Target Reach and Target Rating Points (Opportunities To See, or OTS, among the target audience) at the same budget.

For the four advertisers aggregately testing fourteen differently-targeted creative executions, the average TRP was increased by the use of OpenTV SpotOn (OpenTV's addressable commercial system) +72%, while average four-week Target Reach was increased +44%. These latter results were achieved by splitting one brand's audience by different creative with different targets within the same 30 seconds of one channel's airtime. Using a multibrand approach, where each 30 seconds of one channel's airtime was split across multiple creative for multiple brands, these lifts were +140% on TRP and +67% on average four-week Target Reach.

The reason that a multibrand approach results in larger increases of TRP and Target Reach is that the more brands involved, the less audience left over that is not in some spot's target audience.

Use of multibrand spot splitting has not yet been commercially practiced in television, whereas the multibrand approach has been used for years in the serving of ads on the Internet, where the approach was first introduced by DoubleClick and has now become the standard operating procedure. However, despite the aggressive claims originally made by Internet media sellers, the data available on the characteristics of the user tends to be extremely sparse in the Internet space except in the case of sites viewable only by registered users. Therefore the targeting of ads on the Internet is sophisticated in terms of use of the multibrand approach, however the documentable gains in Target Reach and TRP and/or clickthroughs or offer takers per dollar have not been readily forthcoming from the Internet space.

In sharp contrast, in television set-top box based audience measurement, it is possible for the cable or satellite operator to name/address match subscriber homes to thousands of lists used for direct mail purposes and sold by such companies as Experian, Acxiom, EMSi, and others, thereby appending demographic and buyergraphic details to each household's record. Virtually every household in the U.S. appears on these lists.

Returning to the economic implications of addressable commercials, the data cited above suggest that there is a considerable increase in cost efficiency for the buyer, on the order of +140% (i.e. more than a doubling) of TRP, which again, in the terminology of many other countries, means OTS among the target audience.

In the real world, however, some of these increases will go to the seller and some will go to the buyer, e.g. a +140% increase might wind up being a +70% increase for the buyer in terms of TRP or OTS among Targets per dollar and a concurrent +70% increase in terms of revenue per spot for the seller.

Simulations conducted by Next Century Media on empirical data (Atlanta, also Scarborough Seattle) suggest that having more than four brands involved in such a process will cause even larger increases.

Further analyses by OpenTV Research suggest that the bandwidth required for a cable or satellite operator to deliver addressable commercials is more than justified by the higher revenue per spot.

ADDRESSABLE COMMERCIAL RETURN ON BANDWIDTH

The real question – since the use of addressable commercials involves use of scarce resource, namely bandwidth to carry the simultaneous alternative commercials via feeder channels – is “How does the Return On Bandwidth (ROB) of addressable commercials relate to the ROB of other common uses of cable bandwidth?”

To establish a framework for answering that question, OpenTV engineers created the following set of estimates based on Kagan data and inputs from cable operators. This indicates that the average ROB across all uses of cable plant is 16 cents per Hertz per subscriber per month. Highspeed access and VOD are the leaders in high ROB at an estimated 36 cents and 34 cents respectively. (See table 1.)

What about addressable commercials? Assume a cable operator used 6MHz for feeder channels to make six basic cable channels addressable, and those six cable channels averaged a half rating point in audience size across the whole broadcast month, 24 hours per day. Assume further that each of these channels currently sells out 90% of its locally-insertable spot inventory consisting of four spots per hour per channel, at an average \$15 CPM, and that addressable commercials can lift the effective CPM to \$35 leaving the sellthrough rate at 90%. A \$15 CPM equates to 1.5 cents per exposure, and a \$35 CPM equates to 3.5 cents per exposure. \$35 CPM to reach one's true targets is conservative if for example the system allows an advertiser to target the 8% of his/her customers who account for 60% of profits. The average advertiser today buying mass audience at a \$10 CPM is actually paying \$120 to reach his/her own brand's customers (assuming average brand has 8% penetration), and to reach the 8% of the brand's buyers who account for 60% of the brand's profits, the advertiser is actually paying a CPM of \$1440 today. This is close to the \$1,500 which is the average CPM of direct mail,¹⁾ a medium which has of late

been growing in advertising revenues faster than television as a result of advertiser interest in targeting.²⁾

Table 1
ESTIMATED TYPICAL CABLE OPERATOR RETURN ON BANDWIDTH

<i>Use of bandwidth</i>	<i>MHz</i>	<i>Revenue per sub per month</i>	<i>Note</i>	<i>Return per hertz ("Revehertz") \$/hz/month</i>
<i>Basic</i>	432	\$36.61	1	\$0.08
<i>Pay</i>	36	\$5.78		\$0.16
<i>Digital Tier</i>	120	\$13.27	2	\$0.11
<i>Highspeed Access</i>	18	\$6.40		\$0.36
<i>Cable-To-Business</i>	6	\$1.17		\$0.20
<i>ITV, games, digital music, Nav Guides, TV Internet Access, ISP, etc.</i>	6	\$0.01		\$0.00
<i>Home Shopping Commissions</i>	12	\$0.34		\$0.03
<i>Telephony</i>	12	\$3.54		\$0.30
<i>Digital Cable VOD/SVOD</i>	30	\$10.29	2	\$0.34
<i>Nondigital cable PPV/NVOD/Adult</i>	30	\$1.92	3	\$0.06
<i>Satellite PPV/NVOD/Adult</i>	42	\$6.72	4	\$0.16
<i>Average (Unweighted)</i>				\$0.16

1- \$32.85 subscriber fees + \$3.76 advertising

2- Of digital subs = 26.6 million

3- Of Nondigital cable subs = 43.9 million

4- Of Satellite subs = 20.4 million

All other stats are against total cable subs = 70.5 million

Sources: Kagan, *Media Trends 2002*, page 294; and Kagan, *The State of Digital TV 2002*, pages 149-151

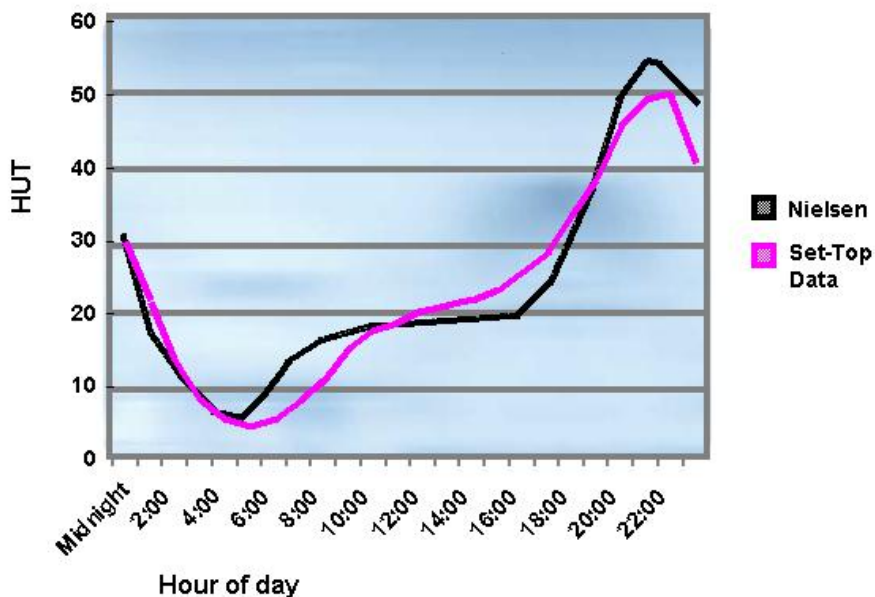
Assuming a lift only to \$35 CPM, the increment is two cents for each spot in inventory on those six channels (less 10% not sold). Six channels times four spots per hour times 24 hours times 30.5 days per month=17,568 spots, factored down 10%=15,811 spots. Only one in 200 of these spots is exposed in the average household (this is what "a half rating point" means, that exposure

is 0.5% or 1 in 200). Thus the average subscriber home gets 79 of these spots, and 2 cents for each of these=\$1.58. This took 6MHz of feeder channels to achieve, thus we divide by 6 to get ROB on a per-Hertz basis. That calculates to 26.352 cents as the addressable commercial predicted ROB on the same basis as in the table above, per sub, per Hz, per month. Not as good as Highspeed Access or VOD but 65% higher than the current average use of cable bandwidth ROB. We anticipate that the real ROB for addressable commercials will actually be far higher than this as a result of optimization, multiple advertisers per spot, more advertisers on the system making it more efficient, and better (household-level) buyer graphic targeting.

VALIDATION OF SET-TOP DATA AGAINST CONVENTIONAL METERS

At WAM in 2002 we presented the following comparison of the Atlanta Homes Using Television or HUT pattern between set-top box data and local Nielsen data in July - September 2003.

Figure 1
PROPER STB MEASUREMENT AGREES WITH METER



At the time we made the observation that these curves would not have agreed closely at all had Next Century Media simply been a data processing company doing a straight tabulation of the clickstream logs coming out of the set-top boxes. In that case the apparent HUT curve would have been greatly inflated,

since many people leave their set-top boxes on when their TVs are off, making it appear to the clickstream that the household is using TV all that time. We refer to this as the classic set-top box false positives problem.

In the Atlanta study, NCM used a simple editing rule to correct for these overages. That simple rule was mirrored in the small number of set-top box measurements that were attempted in the years that followed. The rule involved cutting off the apparent TV usage record after a given number of hours had passed without a click on the remote. In Atlanta this was four hours and in the cases since the range has been from three to five hours. The foregoing graph shows that the simplistic four-hour rule produced a HUT pattern quite close to that of Nielsen meters in the same market at the same time.

We might for a moment address the question of why we are seeking to validate set-top box data against Nielsen meter panels of much smaller sample size, and with much greater nonresponse bias (about which subject, see below). The practical reason is that Nielsen has become the established currency on which to base buyer-seller transactions in the U.S. and so if there were any large deviations from Nielsen it would be discomfoting to the buyer and seller communities. It is conversely reassuring that there do not seem to be any large deviations.

Let us also pause to address the question of why we are only looking at HUT when we seek to make these comparisons with the established currency. It is because only the HUT pattern can be expected to be directly comparable, since the set-top box data will be coming from a subuniverse of digital set-top box (DSTB) homes with greater number of channel choices, as compared to U.S. Nielsen meter homes which are today comprised of digital set-top box homes at about a third of all homes, remaining cable homes with fewer channels at about half of all homes, and the rest noncable/nonsatellite homes with extremely limited channel choice.

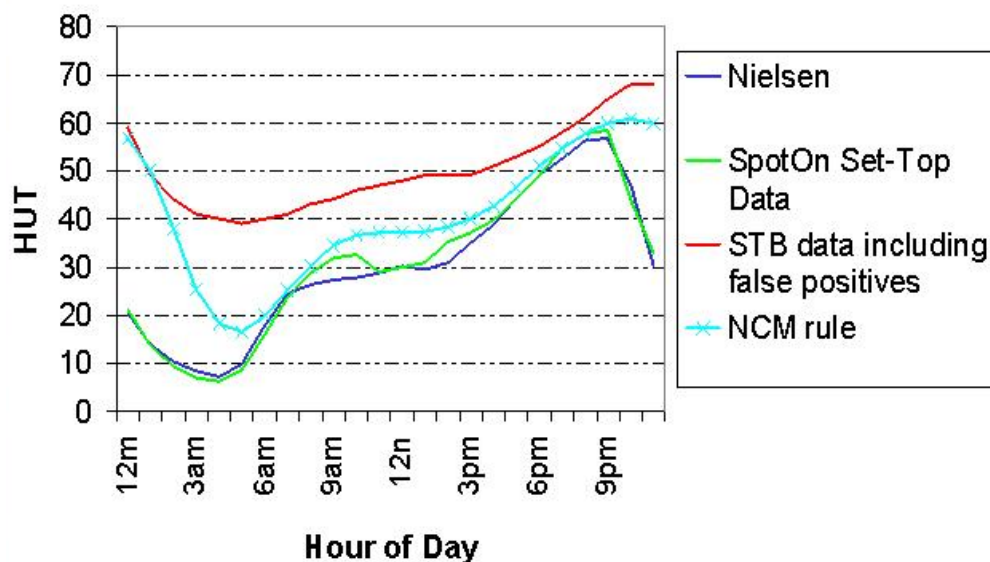
If one wanted to use digital set-top box homes as a basis for making projections to all homes, therefore, it would be necessary to use fusion or another such algorithmic approach to adjust for the greater channel choice of DSTB homes.

Returning to the subject of false positives, in the OpenTV Research one-market study it was decided to attempt a refinement of the simplistic editing rule established by NCM. This was suggested by leading media researchers such as Jonathan Sims, formerly of the Cabletelevision Advertising Bureau and today the VP of Research at Comcast, who pointed out that different homes have different viewing patterns and it should be possible to devise more complex rules which respected the differences among households.

The new rule developed by OpenTV Research therefore is sensitive not only to individual household tuning patterns but also to the ways that those patterns themselves differ within the same household at different times of day.

The performance of the new OpenTV Research methodology for the correction of the false positives effect in set-top box data is shown in figure 2 in comparison with the earlier rule and with no rule at all, all in comparison with the Nielsen pattern.

Figure 2
OPEN RESEARCH STB DATA VALIDATED AGAINST NIELSEN



As the figure shows, the new OpenTV Research rule is virtually identical to the Nielsen pattern, while the old rule pattern is further off, and the raw set-top box data pattern is quite far off. Therefore the new rule has been adopted for commercial use in processing set-top box data for commercial purposes until such time as an even better methodology might be devised.

NONRESPONSE BIAS

Much has been said so far about the value of set-top box data in terms of sample size as compared with conventional meter panels. Other advantages of set-top box data over conventional methods that have been cited this far also include the ability to measure addressable commercials, and the value of using affordable (because built-in) set-top box data to replace diary data in markets that have never been able to afford meter panels.

Another advantage of set-top box data that has been mentioned in passing is that such data tend to involve far less nonresponse bias as compared with conventional meter and diary (and in fact all survey) methods.

Years ago before the use of telephone answering machines became commonplace, during an era when most households contained non-working housewives, and before the advent of telemarketing created an environment hostile to telephone interviewing for direct data gathering and/or recruitment of meter and/or diary panels, it was not unusual for media research surveys to achieve response rates in the 60% - 80% range. In fact, the telephone coincidental method, because of its unique ability at the time to validly assume that 99% of households not answering their telephones were currently unoccupied and therefore not watching television, regularly achieved response rates in the 90% - 95% range.

This era has long since passed. Today, as a result of all of these and other factors, no survey technique regularly achieves response rates much higher than 50%, which today is considered excellent, whereas in the 1960s that response rate was considered barely acceptable.

Today's Nielsen meter panels achieve something under 25% response, i.e. intab sample as a percent of original predesignated sample.

What this means is that the types of people whose behavior is supposed to represent 100% of the population, in fact is skewed to less than a quarter of the population, and this skew involves psychological differences that are likely to impinge upon the accuracy of the behaviors being measured in ways that can only be guessed at.

In 1968 the writer conducted a coincidental study in the New York market in which a final question was added that pretended to seek to recruit the household in a TV meter panel. The TV audience data were tabulated based on the full coincidental sample and also on the subsample who indicated a willingness to join such a meter panel. Then the two sets of coincidental results were compared to the New York Nielsen and Arbitron meter panels. These comparisons indicated a far greater agreement between the coincidental results obtained from the meter-agreers with the meter results, than between the total coincidental sample results and the meter results.³⁾

At the time the meter-agreers within the coincidental sample were about 75% of the total coincidental sample. Today they would be about 25% of the total coincidental sample. We would therefore expect that the 1968 study if repeated today would show far more dramatic results, with the total coincidental sample showing quite different patterns from today's Nielsen meter panels, yet the two sets of data coming into close alignment once the non-meter-agreer homes in the coincidental sample were thrown out.

What this means is that today's meter panels are less representative than they used to be of the total population, i.e. the bias on nonresponse has become egregious.

By comparison, in the one-market OpenTV Research study, a response rate of 97% was achieved, better than even the coincidentals of the early 1960s.

The way that such a high response rate was achieved was a) postcards were sent to cable subscribers indicating that set-top box data was about to be collected in an anonymous manner, and offering the option of opting out of such measurement; and b) only 3% of the subscribers opted out.

In the NCM Atlanta study an opt-in method was used and achieved 79% opt-in. Such a high opt-in rate was achieved by use of a well-designed psychological incentive, guarantee of anonymity, and by a specially-timed approach.

These two studies clearly demonstrate that the set-top box method can provide far more representative samples than conventional methods, along with the advantage of far larger sample sizes, along with the other advantages cited herein.

GEOGRAPHIC TARGETING VS. INDIVIDUAL HOUSEHOLD TARGETING

In the United States, advertiser/agency interest in addressable commercials has been keen since the late 1990s. To take advantage of this, purveyors of systems for zone targeting have taken to using the term "addressable commercials" to apply to their systems, even though advertisers/agencies are really talking about the ability to target on an individual household basis.

In zone targeting, the same commercial is sent to all households within the same zone. For example, in Los Angeles, the average zone contains 35,000 cable households. When the present writer coined the term "addressable commercials" in the late 1970s it was defined to mean the targeting of individual households aggregated along demographic or buyergraphic lines, not geographic ones. Obviously there will be a degree of agreement between the two methods, and a degree of disagreement.

The zone method and the individual household method will tend to be in agreement to the extent that the adage "birds of a feather flock together" is true in reality of human beings. To the extent that neighborhoods contain diversity in terms of the characteristics that an advertiser might wish to target e.g. purchasers of disposable diapers, the zone method will not reproduce the results of individual household targeting.

The one-market study provided an opportunity to look at this question using actual empirical data. The original study design had involved the use of the Claritas PRIZM system for identifying target households. In this approach, all households in a given zip+4 (a geographic unit averaging about 50 households) were either all targeted or all not targeted by a given piece of creative.

Subsequently, individual household demographic and buyergraphic data were acquired from Experian and Acxiom, and matched on an individual household basis by the cable operator. This provided an opportunity to do two things: a) to compare how well the PRIZM geographic data predicted the individual household data based targets for each of the commercials specified by the advertiser/agency and b) to compare how well the media schedules developed based upon the PRIZM geographic data performed against the true individual household level targets.

Looking first at the question of how well the geographic data sorted the households into their proper classifications using the individual household data as the standard of truth, note from figure 3 that, for the average of the fourteen differently-targeted commercials of the four advertisers, the geographic data correctly predicted 4% of the sample to be true targets, and correctly identified 62% of the sample to be true non-targets. However, the geographic data mis-identified 17% of the sample who were actually non-targets to be targets, and mis-identified 15% of the actual targets to be non-targets.

Figure 3
ALL BRANDS TRUE AVERAGE VS. PRIZM PSEUDO AVERAGE

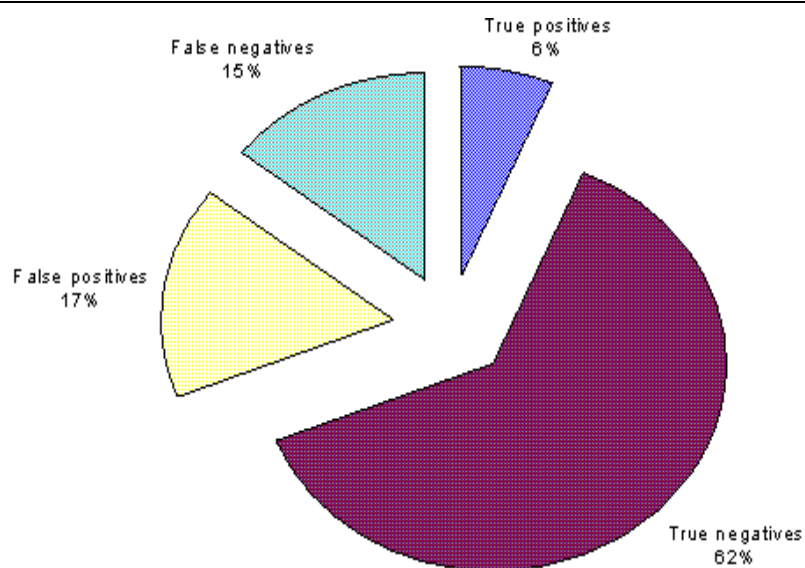


Figure 4
AVERAGE REACH

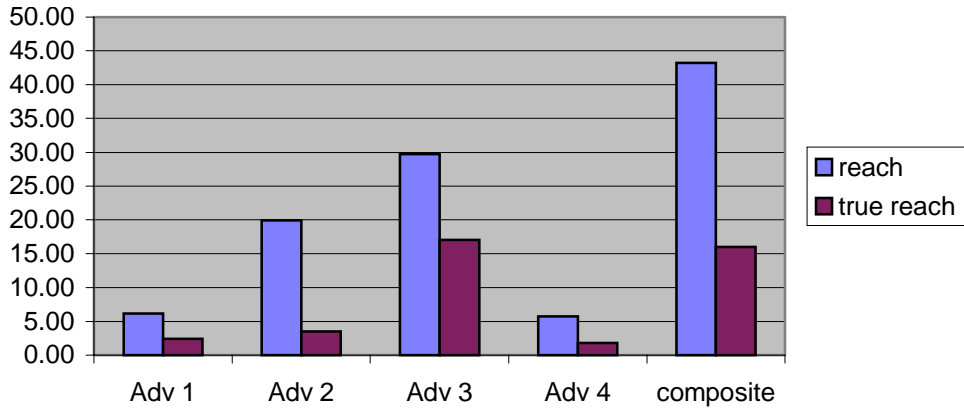


Figure 5
AVERAGE CPM TARGETS

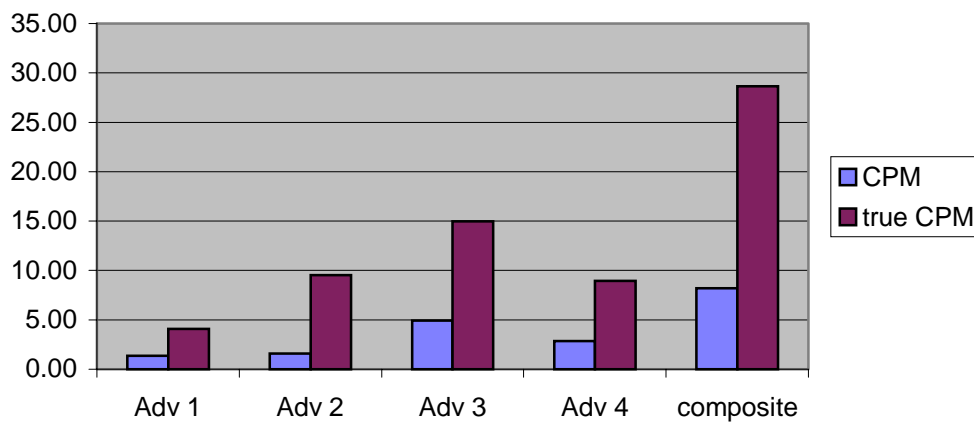
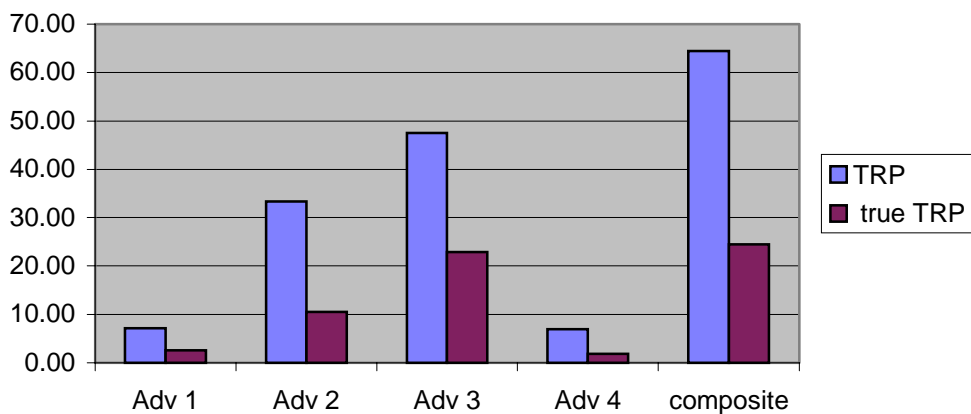


Figure 6
AVERAGE TRP



Turning to the second question of how well did the media schedules developed based upon the geographic targeting scheme perform against true targets:

1. When these schedules were analyzed against the geographic data used to guide their development, it appeared that the composite of the four advertiser schedules had reached 43.2% of its targets. However, when analyzed against the true targets the composite only reached 16.0% of its targets.
2. TRP appeared to be 65 against geo targets but against the real targets the composite delivered only 24 real TRP.
3. The CPM against targets appeared to be \$8.21 based on the geo targets but against the real targets CPM averaged \$28.65. (These CPMs sound low to be CPMs against targets of any kind; that is the effect of using addressable commercials.)

One might easily conclude from these findings that geographic targeting is a poor substitute for individual household targeting. Many readers will have discovered this for themselves already.

Note that the geo targeting scheme tested in this work is based on very small pieces of geography i.e. zip+4 areas which average 50 households per unit. It is to be expected that in terms of predictivity of true targets, geo schemes using larger pieces of geography would perform even less well.

COMMERCIAL AUDIENCE

In many countries advertisers and agencies are used to making commercial placement decisions based on real measures of commercial audience. However in the U.S. we continue to be stuck in the mode of making commercial placement decisions based on program audiences and the assumption of *mutata mutandis* i.e. that if we had the commercial audience data it would not change the decisions that we make.

The question resolving from this situation is how differently do commercials maintain the program's level of audience in different program environments? Of course, this question's answer is likely to be different for different pieces of creative. For example, in our 2002 WAM paper we reported results from the Atlanta study indicating that commercials placed in program environments that had higher degrees of compatibility on a judgment basis with the commercial, tended to hold audience better.

As of this writing we have not yet launched into the kind of exhaustive content coding and analysis that would be required to cast real light on this important question. However, it might be relevant to share the kinds of analysis of

commercial audience data that we collected in the one-market study, in order to give other researchers ideas as to the potential for set-top box data to help illuminate the domain of commercial audience.

For each of the 1500+ commercial positions measured for the test advertisers, the following, mostly new with this study, metrics were tabulated against total audience and target audience, and cross-analyzed by daypart, network, program, and so on:

1. Switchers-away %
2. Jump-ins % (set-top boxes tuning in after the commercial began)
3. Sound down % (cases where the sound was muted or lowered)
4. Average seconds of commercial exposure among switchers-away
5. Average seconds of commercial exposure among jump-ins

Figures 7 and 8 illustrate some of the high-level findings:

Figure 7
PERFECT PLAY BY NETWORK

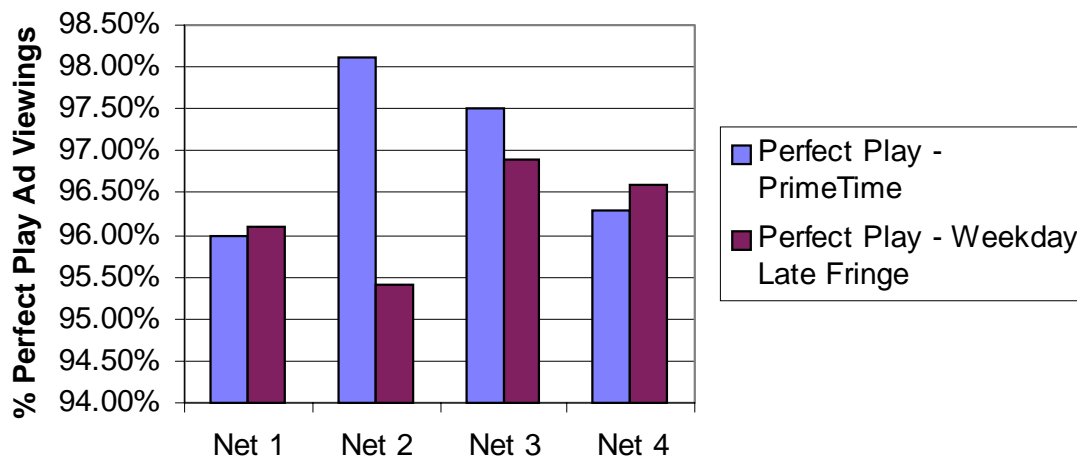
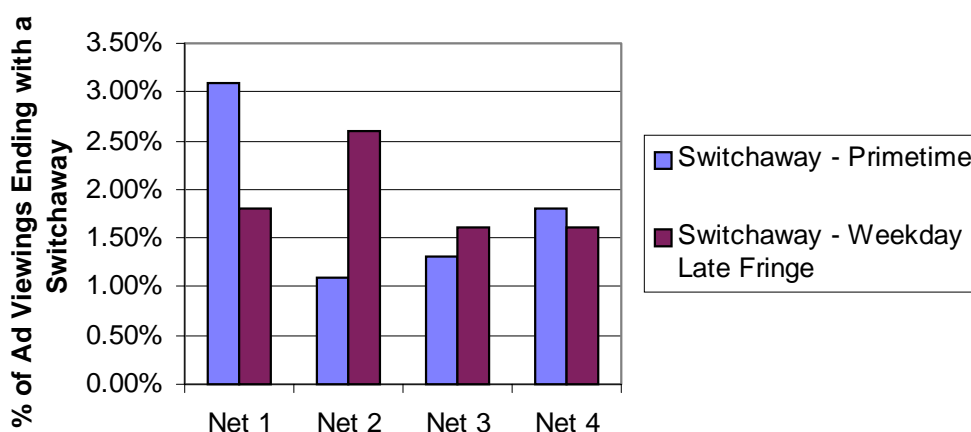


Figure 8
SWITCHAWAY BY NETWORK



THE NATIONAL U.S. STUDY

As mentioned earlier, the second set-top box audience database we have begun to analyze for relevant learnings consists of the OpenTV ProSync (formerly Wink) database covering 2001, 2002, and 2003 in the U.S. Unlike the one-market test which measured all channels all the time, the OpenTV ProSync measurements were taken only during programs and commercials that were interactively enhanced.

As of this writing, the interactive ads tested during this period have been assembled into a definitive database, while this process is not yet completed for the interactive programs. We will in this paper seek to report only a few examples of the data types collected as an illustration of the utility of set-top box based audience data. Because the ad database has been completed we shall quote overall statistics for the interactive ads rather than the interactive programs.

However, there is one statistic regarding interactive programs that has been recently compiled that is worth citing. In the three year period the total number of interactions with interactive television programs that were measured by OpenTV ProSync through set top box data collected via backpath were 612,691,774.

Over this three-year period, 65 advertisers tested 454 interactive TV commercials across 28 broadcast and cable networks. There were a total of 28,480 airings. In the 3,909,965 households where data were collected (these being homes with connected telephone or cable backpaths), a total of 392,659,102 household impressions were measured.

Set-top data are also capable of measuring interactions including that special type of interaction where a viewer accepts an offer. In order to illustrate that we shall cite a couple of cases where we have been given permission to publish.

For example, last year we were invited to co-present at the DMA Annual Conference, with Ford and its agency J. Walter Thompson, the results of a Ford interactive television ad campaign that was more than just a test, it was a success in terms of actual sales.

What this case illustrates is that set-top box data can be valuable in tracking the number of homes that are exposed to a commercial, and if the commercial is interactive, how many of those interact with the commercial, and if there is an offer, how many homes interact to take the offer. Then, once the offer is fulfilled (in this case by mailing a brochure), the subsequent purchase behavior of the home can be tracked by the advertiser and related back to the cost of the spot. This can deliver ROI statistics that can be compared with direct mail, Internet, telemarketing, and other precisely trackable marketing methods. Without the set-top box data, of course, television would not be as precisely trackable as these other media; the advertiser would know how many people took the offer via an 800 number for example, but the number who had seen the offer would have to be imputed from sample-based conventional sources, and this has proved to be imprecise and unsatisfactory to many advertisers/agencies.

Figure 8 ADVERTISER SUCCESS STORY – FORD EXPLORER



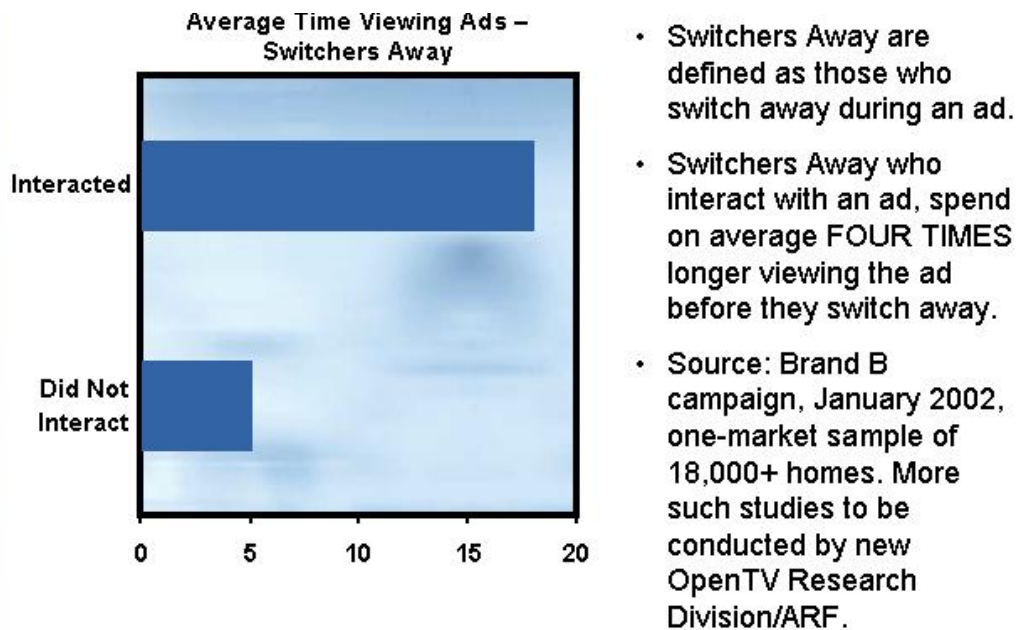
The Ford Geyser ProSync-enhanced ad continued the brand experience for ProSync viewers.

- **Approximately 2/3 of all viewers** who interacted with the ad requested the brochure.
- **Lower average cost** per lead than any other medium used in the campaign.
- **Produced more quality leads** than a web front-page rich media ad video clip running concurrently.

Similarly, set-top box data can also be valuable in analyzing interactive programs.

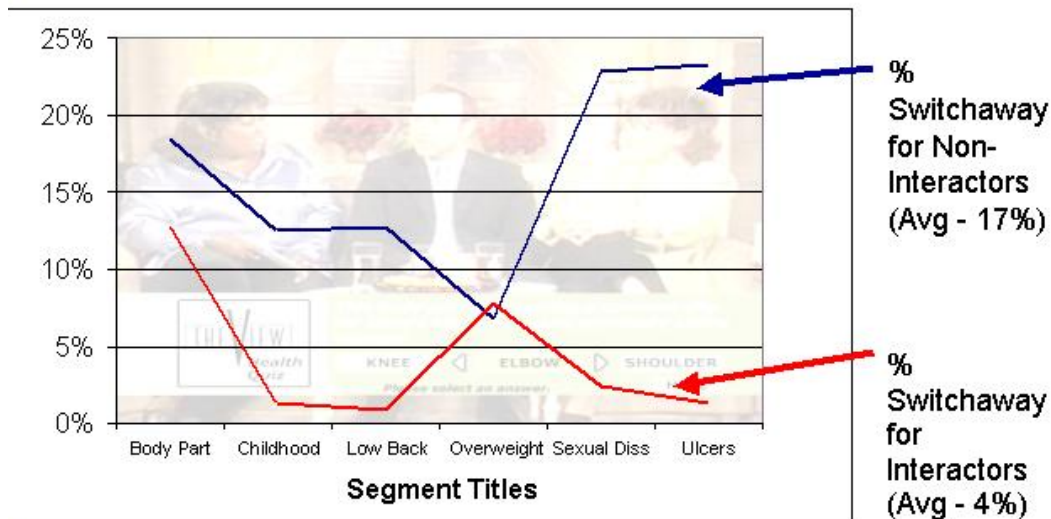
Beyond these fairly obvious applications of set-top box data for interactive ads and programs, more subtle use of the set-top box data can also be made. For example, here is a case in which we were able to study the effect of interactivity upon how many seconds of a commercial were exposed in households that switched away from the commercial. What this showed was that the homes that had interacted with the commercial and then switched away were exposed to four times as much of the commercial as the homes that did not interact before they switched away. (See figure 9.)

Figure 9
INTERACTIVE VIEWERS SWITCH AWAY LESS



Here's a case where set-top box data tracked switchaway from an interactive program, and found that the homes interacting with the show had only a quarter of the switchaway rate of the homes who did not interact.

Figure 10
INTERACTIVITY RAISES RATES



Interactive viewers are four times more likely to stay tuned.
Source: Broadcast Network TV Health Special, 2003

Set-top data can also be used to characterize households based on the way they use their remotes. In this case, homes were divided into tertiles based on how often they tended to interact with ads and programs. This showed that the heavier interactors tended to churn out of their cable subscription at lower rates than those who did not interact.

Figure 11
INTERACTIVITY REDUCES CHURN

Subscribers using enhanced-broadcast and virtual channel interactive services were segmented by usage volume

Above-average interactors churned 13.2% less than below-average interactors in a Northeast cable system.

Sample size: 22,445 households study completed in June, 2002

Those are a few examples of the ways that set-top box data can be used. In the one-market study we showed that set-top box data, in addition to providing the familiar measurements derivable from meter panels, can also do some more difficult things, such as parsing out the commercial audiences to addressable

commercials sharing the same air time in different subsegments of the population. In the national study we showed that set-top box data is a convenient common source for both audience data and interaction data, something becoming ever more relevant as television evolves into a medium more like the Internet every day. Although meter panels might be adapted to cover some of these functions, the splitting of audiences into finer groups by means of addressability and interactivity adds to the already-existing strain on sample size and the attendant problematic economics of meter panels.

UPCOMING STUDIES

In 2004 we are continuing these and other kinds of studies utilizing set-top box data in the U.S. and in other countries. This year we are launching an ambitious ongoing service in the U.S. called the Television ROI Audit or TRA, which will use a sample of hundreds of thousands of homes to allow advertisers to match their own customer lists, real product purchasers linked by frequent shopper cards, and other valuable target lists to program and commercial exposure data, on a longitudinal basis so as to not only better select programs to increase TRP per dollar but also to look back and measure the sales response of different types of TV buys. We hope to report some of these findings to you in upcoming WAM Conferences.

IN SUMMARY

This paper was submitted for the topic “Return path data: does it compete with or complement traditional meter measurement?” We believe set-top data complement rather than compete. Together with existing and other new methods such as PPM and wristwatch meters, we believe set-top data reduce the imperfection of today’s system. (We also believe that a perfect system shall never be achieved, at least in our lifetimes.)

REFERENCES

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