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**TITLE**

# **Evaluating Return On Investment of Multi-Media Advertising: A Retail Case Study**

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**ABSTRACT**

A major challenge for marketers is understanding the return on investment of radio and television media advertising campaigns. In the retail industry, understanding the extent to which radio, television and cable television advertising campaigns drive visits to retail stores would be a major breakthrough in evaluating the return on media investment. What influence do broadcast and cable advertising have on retail store visits? Can the impact of the advertising campaign on retail store visits be empirically measured?

This paper presents results from pilot research studies conducted by Arbitron in 2003. The research foundation for the pilot studies is Arbitron's Portable People Meter (PPM) system.

This initial pilot research indicates that, because store visit behaviors are electronically and continuously measured using PPM, marketers have the ability to segment customers into meaningful behavior-based marketing target groups. Further, electronic measurement of retail store visits and media exposure from a single-source research panel gives marketers the unique ability to correlate media advertising exposure to an important driver of retailer financial results: retail store visits. This case study found that retail store visit behaviors were associated with exposure to advertising, as shoppers who were exposed to more advertising visited the retail stores more frequently.

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### **INTRODUCTION**

Until now, sophisticated modeling techniques have to be used to associate advertising campaigns and advertising levels with store visits and product sales. Marketers typically track advertising levels and separately track product sales. Attempt is made to combine these two data sources in order to estimate the impact of advertising levels on retail store visits and product sales.

For the first time, the Portable People Meter (PPM) research technology enables marketers to associate advertising levels with retail store visits because both the media exposure data and retail store visit data can be collected from the same single source panel. PPM is a research technology that enables breakthroughs in market research and understanding the impact of advertising that were previously unattainable.

### **MAIN BODY**

#### **Background on the PPM**

The Portable People Meter (PPM) is a research technology that enables multiple media to be measured electronically, passively and simultaneously from the same survey respondent. The PPM “hears” an inaudible code that is embedded in the audio stream of audio and video programming, including television programming, radio programming, and cable network programming. Similarly, an inaudible code can be placed in the audio component of the audio and/or video content that is broadcast by retailers (such as grocery and department store chains) in their stores. This enables the PPM to detect when the survey respondent entered the store and how long he or she visited. The information is time-stamped as it is collected by the PPM.

The PPM system is mailed to panelists, is self-installed, and works with existing household wiring. Survey participants carry a Portable People Meter (PPM), which is a pager-sized device that senses the codes as survey participants are exposed to media and visit retailers that encode. Participants are asked to carry the meter with them while they’re awake. The meter is equipped with a motion sensor that allows Arbitron to monitor when the meter has been carried by the respondent. Participants return the meter to a docking station to recharge it when they go to bed. The codes are transmitted daily to an Arbitron central processing system for tabulation.

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**Beyond Media Measurement: The National Marketing Panel**

Two PPM Marketing Panel pilot studies were conducted in the Philadelphia DMA<sup>®</sup> for a period of eight months starting from May 2003. The purpose of the pilot studies was to assess the feasibility of combining basic PPM radio and television multimedia audience measurement with the collection of other valuable media and marketing information, from a "single-source" panel of consumers. Data collected from the PPM Marketing Panel pilot studies was designed to include:

*Passive Panelist Activities*

Television viewing, both in and out of home  
Radio listening, both in and out of home  
Internet use at home  
Shopping at select retail chains  
Data integration of "rich" sales databases

*Active Panelist Activities*

Print readership, including magazines, national and local newspapers, and FSIs  
Consumer surveys  
Scanning product purchases

Two panels were established to prototype a national marketing service: the PPM/National Marketing panel and the PPM/Product Purchase panel. Media audiences and retail store traffic was collected electronically from both panels using the PPM. Additionally, the PPM/National Marketing panel respondents filled out periodic print media and consumer behavior questionnaires. The PPM/Product Purchase panel respondents scanned their product purchases.

This paper uses the combined media audience and retail store visit results from the two pilot research studies to explore the potential for this type of research to directly measure the correlation between media advertising campaigns and retail store visit behavior.

**Sampling**

The sample size for each of the PPM Marketing panels pilot studies was 500 persons age 6 and older in roughly 250 households in each panel. Panel homes for the PPM/National Marketing Panel pilot were selected at random from the existing panel homes in the 1,500-person PPM demonstration panel installed in the Philadelphia DMA. Subsamples from the existing panel were selected in three random-sample replicates using stratification controls based on county, race/ethnicity and employment status. Panel homes for the PPM/Product Purchase Panel were selected at random from households installed in the Information Resources Plus Consumer Insights<sup>™</sup> panel. The results are panels that are projectable to the Philadelphia DMA universe.

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### **Recruitment**

The selected PPM households were notified by mail and telephone and invited to join the new PPM panels. Each sampled home also received a written description of the new research tasks and objectives for the research and what would be asked of them if they chose to join the new panel.

### **Data Collection**

#### *Radio, Local TV, Cable*

TV viewing and radio listening data come from the PPM system. The radio and TV data are continuous, not limited to current ratings periods or “sweeps.”

#### *Print*

Readership data were collected through a self-completed questionnaire from PPM/National marketing Panelists age 12 and older. The initial print questionnaire covered more than 100 national and local magazine titles plus local and national daily and Sunday newspapers, as well as Sunday supplements. A follow-up print questionnaire covered specific-issue magazines and retailer-specific FSIs.

#### *Visits to Retail Stores*

In-store audio broadcasts of participating retailers have been encoded using the same type of inaudible code used for the media outlets. Encoding takes place at a central site, such as the satellite uplink. It is not necessary for individual stores to encode their audio systems. When panelists visit a store with encoded audio, the retailer's code is detected and the store visit is automatically logged into the PPM database. The PPM is able to identify the number of store visits, the time of the visits, and their duration. Identification of specific retail locations is theoretically possible but is not part of the test at this time.

#### *Other Shopping Behavior*

A modified, reduced-in-size Scarborough Research questionnaire was used to collect additional shopping and lifestyle information from the PPM/National Marketing Panel panelists. An additional consumer survey questionnaire was also sent to panelists to include product categories not covered in the first consumer questionnaire. The surveys were sent to all panelists age 12 and over. Scarborough Research is a local-market research company that provides detailed shopping, lifestyle, media and demographics usage information for 75 top markets. Scarborough Research is a joint venture of Arbitron Inc. and VNU, Inc.

#### *Product Purchase Behavior*

Product purchase information was obtained from the PPM/Product Purchase Panel in conjunction with Information Resources, Inc. (IRI). Information Resources Inc. is a leading global provider of market content, analytic services and business performance solutions to the consumer package goods and retail industries.

**Incentives**

Each panelist receives a basic monthly cash incentive for participating. There are also “bonus” incentives in the form of weekly prize drawings for larger cash awards.

**Informed Consent**

All households joining the PPM panels have been informed, both orally and in writing, about the specific procedures, research objectives and respondent tasks involved. Participating households receive a detailed “Privacy Pledge” outlining the steps Arbitron takes to protect the confidentiality of information collected for the pilot. They are also informed of the incentive plan, including the requirements for earning bonus incentives and the opportunities of winning cash prizes.

**Panelist Compliance**

Compliance with the PPM system continues to be high among research panelists. Figure 1 shows the average of median first undock time, last dock time, out-of-dock time and time in motion for intab panelists in the PPM panels. Panelists are asked to “dock” their PPMs in a recharging unit before they go to bed at night. Intab panelists in the PPM/National Marketing Panel “dock” their PPMs in the recharging unit at 11:29PM on average. Panelists undock their meters at 7:19AM on average. Intab panelists in the PPM/National Marketing panel have their PPMs ‘out of dock’ approximately 16 hours and 7 minutes per day. The PPMs are “in motion” approximately 15 hours and 30 minutes per day.

**Figure 1: Panelist Compliance**

*Average of median monthly first undock time, last dock time, time out of dock, and time in motion*

|                                     | <b>First Undock</b> | <b>Last Dock</b> | <b>Time Out of Dock Per Day Hr:Min</b> | <b>Time in Motion Per Day Hr:Min</b> |
|-------------------------------------|---------------------|------------------|--|--------------------------------------|
| <b>PPM/National Marketing Panel</b> | 7:19AM              | 11:29PM          | 16:07                                  | 15:30                                |
| <b>PPM/Product Purchase Panel</b>   | 7:32AM              | 11:29PM          | 15:53                                  | 15:09                                |

Philadelphia DMA®, Persons 6+, Sept-Dec 2003

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### **Identifying Shopping Behaviors: A Retail Case Study**

The PPM enables several breakthroughs in marketing research for the benefit of media companies and retailers. The first is a more thorough understanding of store visit behaviors than is possible today. Today retailers use a combination of electronic store traffic monitoring systems, customer database analysis, internal consumer surveys and syndicated research to help them understand the behaviors of customers in their stores. Today's electronic store traffic monitoring systems, for retailers which use these systems, count people as they walk through the stores; however, understanding visit frequency, repeat visit behavior or demographics of the visitors is not possible with this method.

The PPM enables detail understanding of retail customers from a behavioral perspective. Because retail store visits can be tracked by PPM on a continuous basis, new breakthroughs in understanding are possible, helping explore when shoppers are visiting the stores and how best to reach them with advertising.

The following are examples taken from a case-study of a participating retailer's results from the PPM pilot research studies. The retailer "encoded" its in-store audio programming enabling the PPM to "hear" when a research panelist was in the store. The preliminary results shown here use store visits tracked between September 2003 and December 2003. The PPM enables continuous tracking of shopper behaviors, including when the visitor entered the store, how long he or she stayed and how frequently he or she visited.

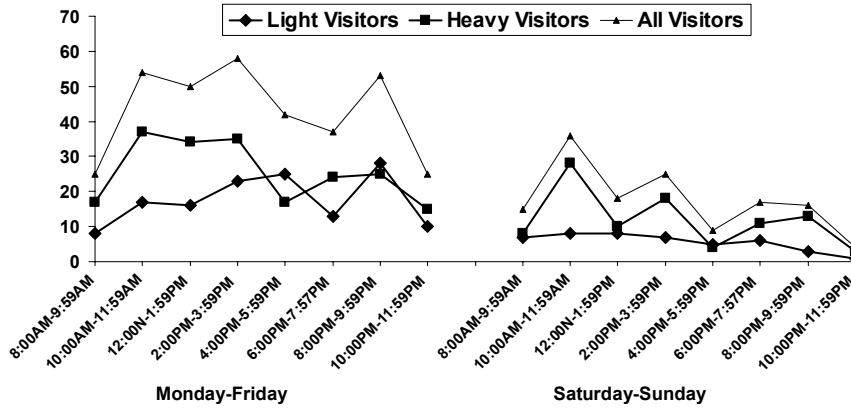
### **Retail store shopping patterns by heavy and light visitors**

Figure 2 illustrates the time the research panelists spent in the retailer stores within each of eight two-hour time segments for weekdays (Monday-Friday) and weekends (Saturday-Sunday).

Even in the relatively short timeframe for the research pilot studies used here, patterns begin to emerge. Figure 1 shows peak visit hours for this retailer are between 10:00AM and 4:00PM on weekdays with an additional peak between 8:00PM and 10:00PM on weekdays. On weekends the heaviest store visits occur between 10:00am-2:00PM. When comparing light and heavy visitors, the graph shows that light visitors have relatively steady visit behavior throughout the weekday and weekend day. Heavy visitors show higher visit levels during the weekday but also comprise the bulk of weekend visits to this retailer.

## Figure 2: Heavy vs Light Visitor Patterns

*Heavy visitors are more likely to visit weekdays between 10am and 4pm and on weekends*

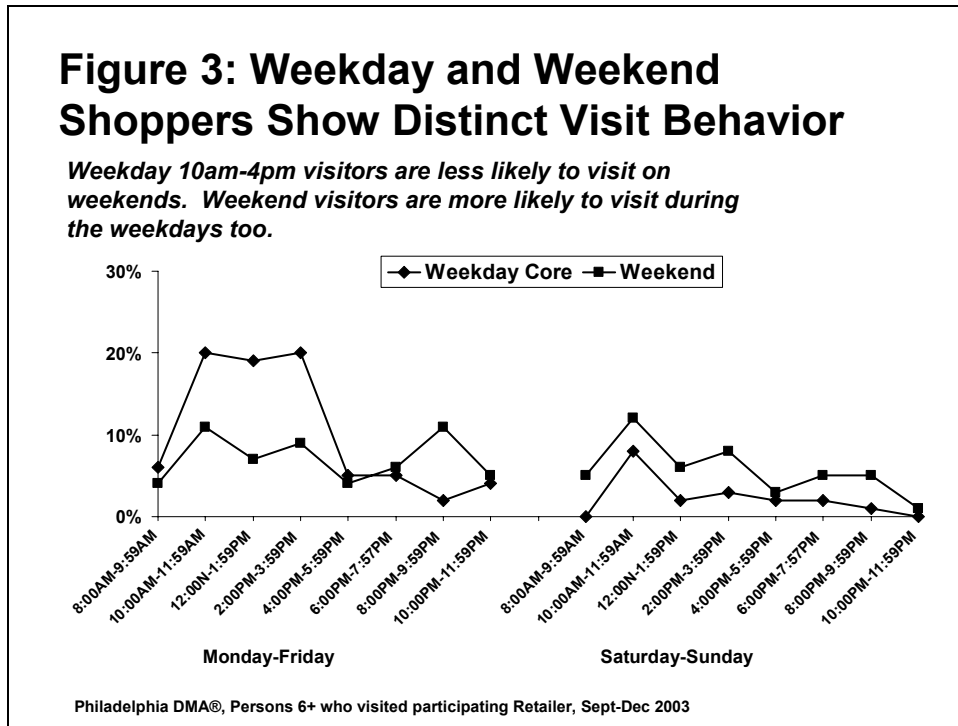


Philadelphia DMA®, Persons 6+ who visited participating Retailer, Sept-Dec 2003

### Weekday “core” vs weekend visitors

Looking more closely at shoppers who visit the store between 10:00AM and 2:00PM on weekdays, Figure 3 shows that the bulk of their visits occur during this time period with much lower levels of weekend store visits. Additional high visit levels occur between 8:00PM and 10:00PM on weekdays and then between 10:00AM and 12:00PM on weekends, but overall weekend shopping at this retailer is substantially lower than weekday shopping.

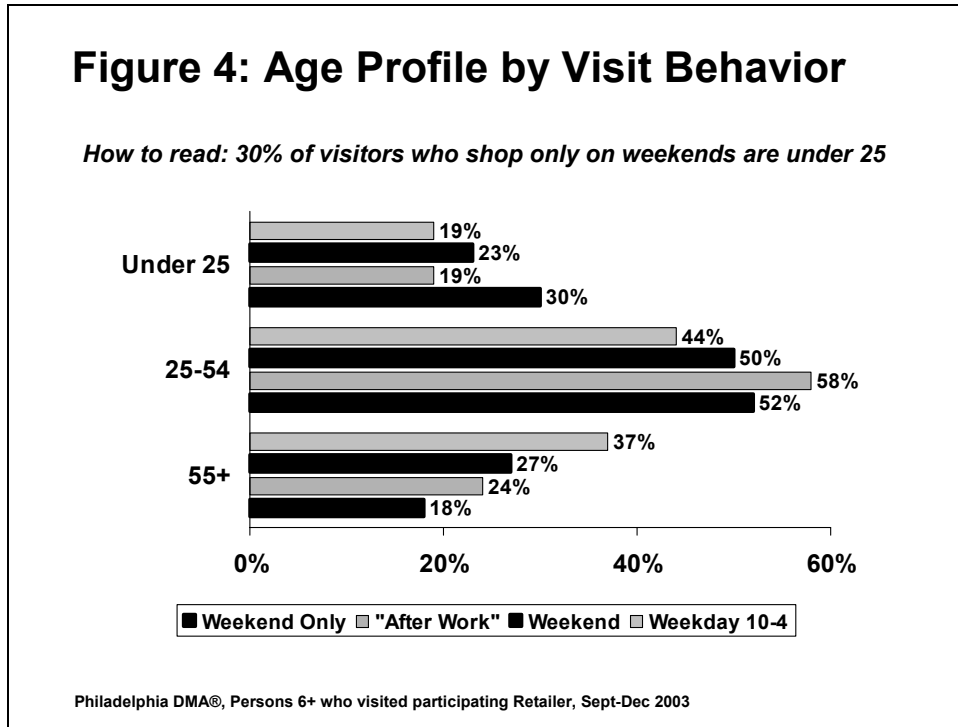
Weekend visitors show a markedly different shopping pattern. Weekend shoppers are almost as likely to visit the retailer on weekends as on weekdays. Weekend shopping peaks between 10:00AM and 12:00PM, with relatively high visit levels throughout the weekend. When weekend shoppers visit during the weekday, their store visits peak from 8:00PM -10:00PM but remain at fairly consistent levels throughout the weekday.



**Demographic profile by store visit behavior segment**

The PPM data can be used to identify distinct behavioral differences between shoppers who visit the stores at different times of the day and days of the week. These behavioral differences manifest themselves in distinct demographic profiles as well. Figure 4 illustrates the demographic profile of shoppers with four visit behavior profiles: shoppers who visit between 10:00AM and 4:00PM on weekdays (“Weekday Core”), shoppers who visit on weekends (“Weekend”), shoppers who visit before 9:00AM or after 4:00PM on weekdays (“After Work”) and shoppers who only visit on the weekend (“Weekend Only”).

From Figure 4, Weekday Core visitors more likely to be aged 55 and older. Weekend shoppers fit the overall demographic profile of this retailer’s shoppers. Looking at other behavioral breakouts, we find that “After Work” shoppers are more likely to be in the 25-54 age group. Shoppers who visit only on weekends (and not during the weekday) show a much younger profile than the typical shopper, 36% more likely to be under the age of 25.

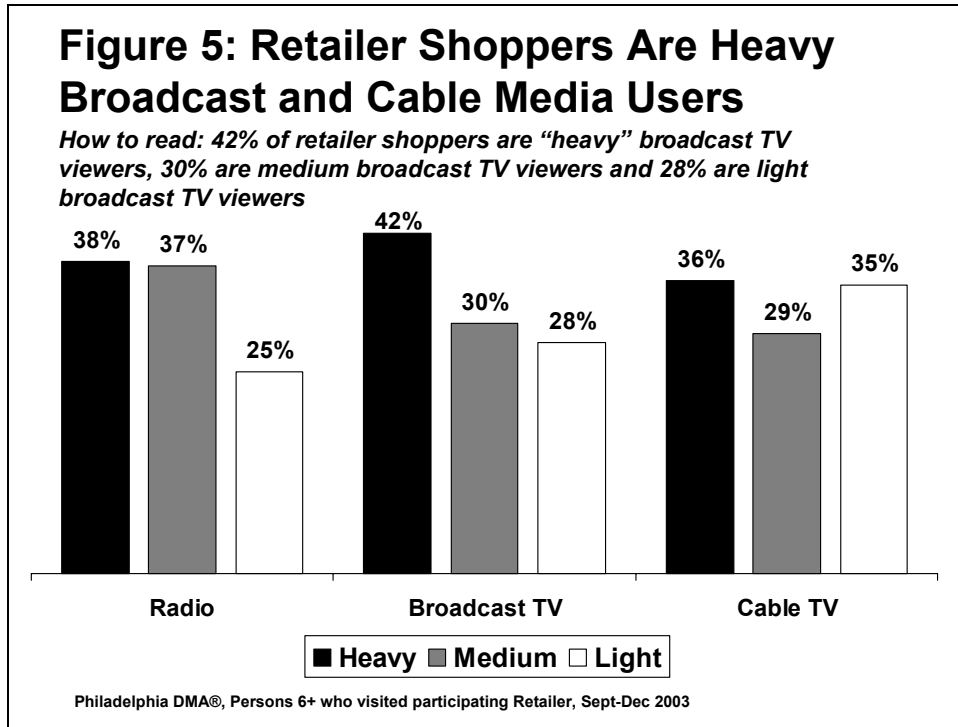


### Investigating New Media Opportunities

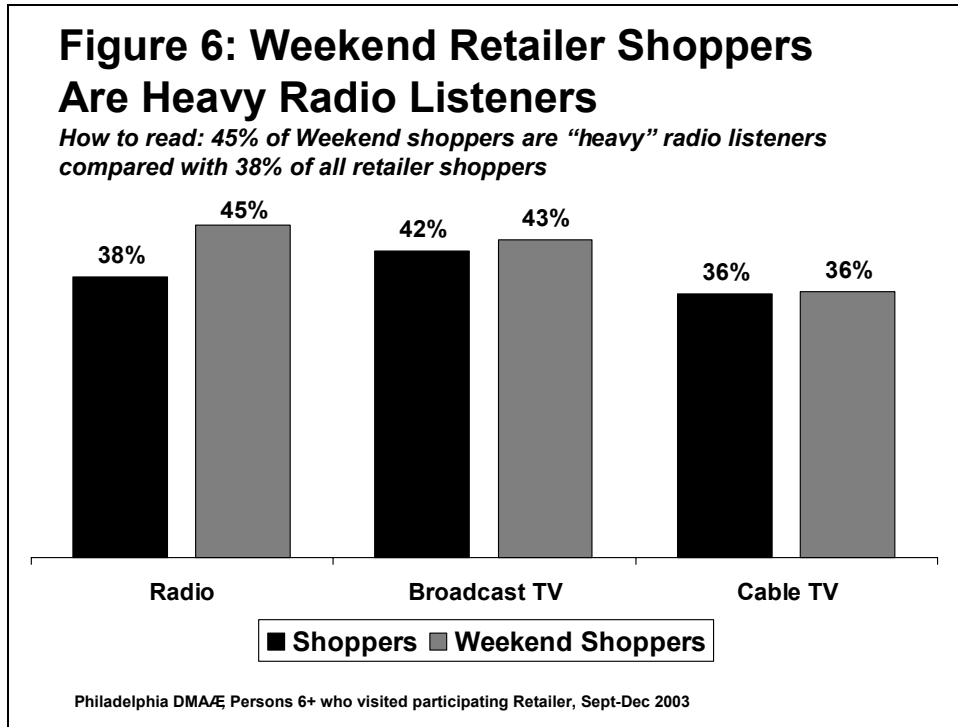
The store visit behavioral data suggest that Weekend shoppers are more likely to visit the stores throughout the week and have a younger skewing demographic profile. This case study will explore ways to reach this customer segment with a media campaign. Combining store visit information collected by PPM with the media (radio, television and cable) data collected by PPM from the same panelists, new opportunities to reach shopping targets with media begin to emerge.

### Multi-Media Profile of Weekend Shoppers

The broadcast and cable media data obtained from the PPM can be used to first evaluate overall media patterns among shoppers. Figure 5 shows that shoppers are generally heavy media users, with 38% of shoppers classified as heavy radio listeners, 42% heavy broadcast television viewers and 36% heavy cable television viewers. In the general population approximately 33% are classified as 'heavy' in each media category .



The marketers can use inter-media comparisons to investigate the best media opportunities to reach Weekend shoppers. Figure 6 compares the extent to which Weekend shoppers are “heavy” media users compared with the average shopper at this retailer. Weekend shoppers show an even higher tendency to be heavy radio listeners with 45% of weekend shoppers classified as “heavy” radio listeners compared with 38% of retailer shoppers overall. Heavy broadcast television viewers and heavy cable television viewers comprise 43% and 36% respectively of weekend shoppers.



### What Time Periods Are Best to Reach Weekend Shoppers?

Going beyond overall media analysis, the marketer can use multi-media data to identify media time periods that might be most effective in reaching Weekend retail shoppers or any customer segment. There are ample opportunities to reach Weekend shoppers at the retailer with a mix of time periods. Figures 7, 8, and 9 compare viewing and listening levels by Weekend retailer shoppers for various time periods to viewing and listening by Persons 25-54, a demographic often used by marketers to plan their media buys.

Figure 7 illustrates the heavy broadcast TV use by retailer shoppers found earlier, illustrating the many time periods where broadcast television reaches Weekend shoppers effectively. During the Monday-Friday 4:00PM to 7:30PM time period and the Saturday-Sunday 4:00PM-8:00PM time period, advertising is 31% and 24% more likely to reach Weekend shoppers than persons aged 25-54.

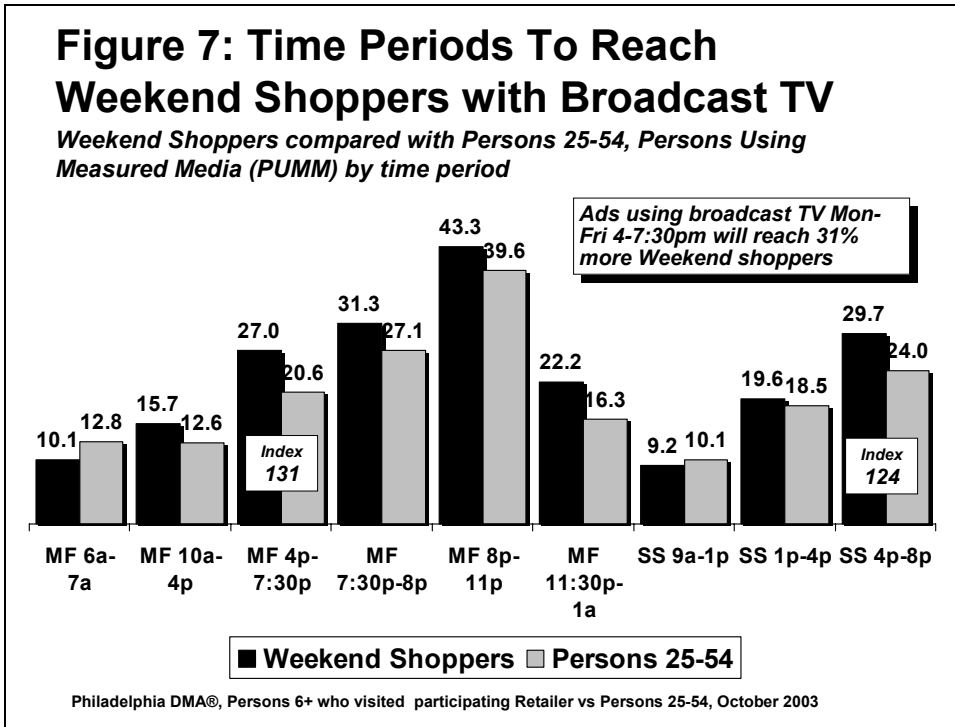
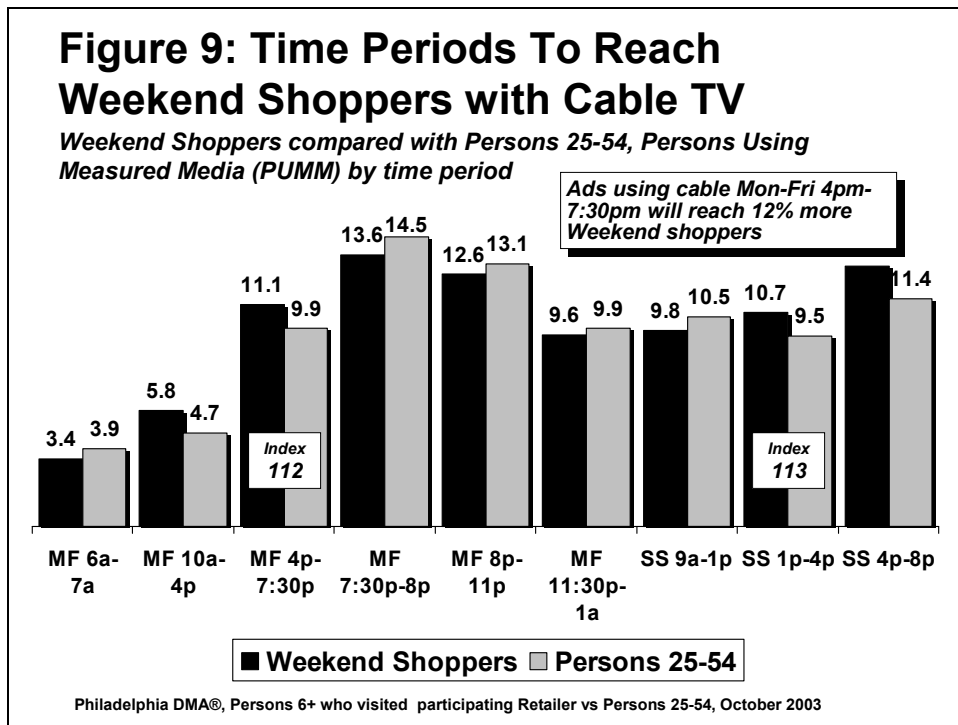
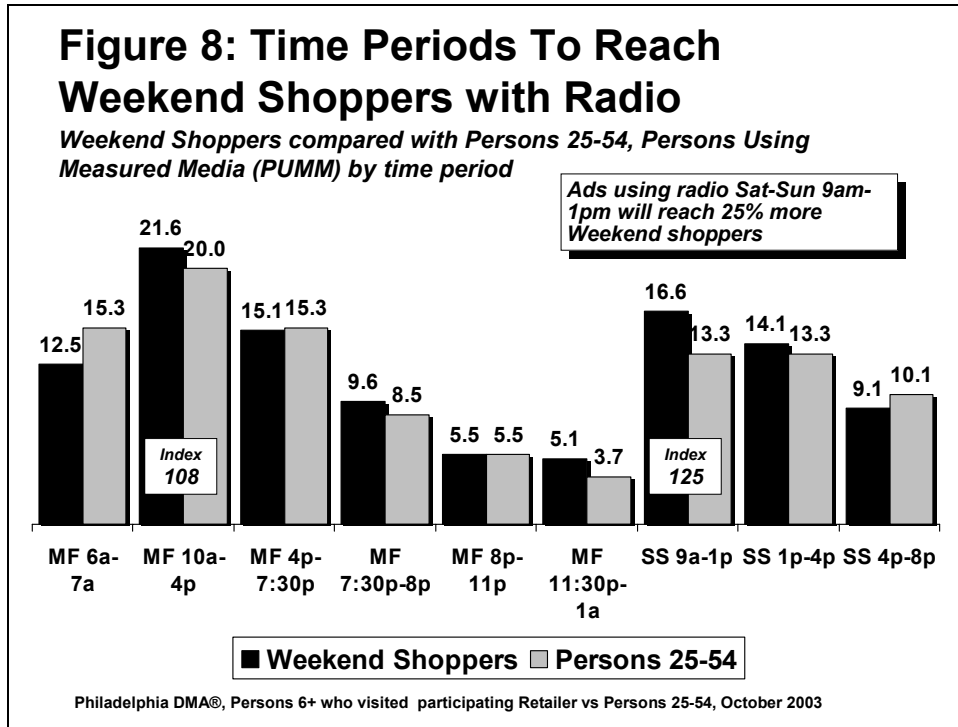


Figure 8 uses the same time periods and shows where radio reaches Weekend shoppers effectively, particularly Monday-Friday 10:00AM-4:00PM and Saturday-Sunday 9:00AM-1:00PM. Figure 9 shows cable television’s ability to reach Weekend shoppers by time period, with the Monday-Friday 4:00PM-7:30PM time period and Saturday-Sunday 4:00PM-8:00PM time period showing opportunity.



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Going deeper into these data in future analyses, it is possible for marketers to then find the programs, stations and networks that are the strongest opportunities to reach Weekend shoppers and other customer or shopping segments.

**Does the media schedule reach retail shoppers? How does it impact store visit behavior?**

One of the most important considerations in establishing the effectiveness of media in reaching customers is measuring the extent to which exposure to advertising correlates with visits to retail stores. Ultimately it is the link between advertising exposure and retail store visit behavior that will convince marketers that the media they use is delivering the desired return on investment, and that its contribution to store visits and ultimately product sales can be quantified.

In the 2003 pilot studies conducted by Arbitron, Arbitron worked with TNS Media Intelligence/CMR to obtain advertising schedules for major retailers in the U.S., including several participating retailers. The advertising schedules were matched with the viewing and listening data to determine advertising exposure for each panelist.

Panelists were grouped into three advertising exposure levels: heavy exposure, light exposure and no advertising exposure. Advertising impressions were calculated for each panelist for each of three months: October, November and December 2003. Number of store visits and time spent in the store per visit was calculated for panelists in each exposure level. The results are presented in Figure 10 and 11. Figure 10 presents indices comparing the average visit frequency by shoppers at different advertising exposure levels to the average visit frequency for all shoppers in the September 2003-December 2003 timeframe. Figure 11 presents indices comparing the average visit duration by shoppers at different advertising exposure levels to the average shopping visit duration.

### Figure 10: Measuring Correlation of Ad Campaign to Store Visits

*How to read: Shoppers with heavy ad exposure in October had 54% more retailer store visits than the average retailer shopper*

|                   | Oct 2003 | Nov 2003 | Dec 2003 | Average |
|-------------------|----------|----------|----------|---------|
| Heavy Ad Exposure | 154      | 124      | 123      | 134     |
| Light Ad Exposure | 89       | 101      | 92       | 94      |
| No Ad Exposures   | 66       | 62       | 59       | 62      |

Index compares average visits by shoppers with different advertising exposure levels to average visits by all shoppers

Philadelphia DMA®, Persons 6+ who visited participating Retailer, Sept-Dec 2003

### Figure 11: Measuring Correlation of Ad Campaign to Time Spent In Store

*How to read: Shoppers with heavy ad exposure in October spent 5% more time in the retailer stores than the average retailer shopper*

|                   | Oct 2003 | Nov 2003 | Dec 2003 | Average |
|-------------------|----------|----------|----------|---------|
| Heavy Ad Exposure | 105      | 107      | 103      | 105     |
| Light Ad Exposure | 96       | 94       | 99       | 96      |
| No Ad Exposures   | 99       | 101      | 88       | 96      |

Index compares average time spent in stores by shoppers with different advertising exposure levels to average time spent in stores by all shoppers

Philadelphia DMA®, Persons 6+ who visited participating Retailer, Sept-Dec 2003

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If advertising has a correlation to store visits, one would expect more heavily exposed consumers to have heavier store visit volume.

In the case study presented here, a positive advertising correlation is seen. Figures 10 and 11 illustrate that the advertising campaign reached shoppers who visited the stores more frequently. In October, visits by retail store shoppers who had high levels of exposure to the advertising campaign indexed at 154, indicating that visits were 54% higher for shoppers who had high levels of advertising exposure than the average shopper. Shoppers who had light exposure levels made slightly fewer visits to the retail stores compared to the average visit frequency for this retailer's shoppers, indexing at a 93. Shoppers who had no exposure to the advertising campaign in October had fewer visits than average, indexing at a 69.

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**SUMMARY AND CONCLUSIONS**

As we continue to explore the possibilities of this new research, we find that data from a single-source multimedia panel have the potential to go beyond existing modeling, fusion and individually measured media to create a direct and continuous link between a customer's media exposure and his/her resulting shopping behavior.

The 2003 pilot studies enable us to explore the potential of single-source electronic measurement to help marketers create behavior-based customer segmentation systems and measure the relationship between media advertising campaigns and retail store visit behavior. The case-study presented here can be repeated for other behavioral segments, persons with any demographic or household composition.

It is our objective that this research enable retail marketers to fine-tune their media strategies using the insights derived from single source, multi-media and retail store visit data. The pilot studies provide a research framework to evaluate the extent to which advertising exposure correlates with changes in retail store visit behavior.

Using this framework in future research, marketers have the opportunity to modify their media mix and weight and measure the results to achieve greater returns on their media investment. One can expect retailer marketers to improve their ability to target key customer segments and directly measure the impact of their advertising on store visits and other behavioral markers, substantially improving their ability to quantify the return on investment of their broadcast and cable media advertising.