

Client Communication – September 20, 2004

Joint Arbitron-Nielsen Update on PPM Collaborative Tests

On Wednesday, August 25, 2004, Nielsen Media Research and Arbitron Inc. held the first in a series of client roundtables to review and discuss results from three collaborative tests of the Arbitron Portable People Meter (PPM). Additional roundtables will be held this fall with a comprehensive cross-section of client constituencies. This report will provide the context and key results for the three collaborative tests, which clients can consider, in advance of the additional roundtables and other client discussions.

Context

In June 2000, Arbitron and Nielsen Media Research announced an agreement that gives Nielsen the option to join Arbitron in the deployment of the Arbitron Portable People Meter in the United States through a potential joint venture that would measure both television and radio audiences. In 2002, Arbitron launched a PPM demonstration market in Philadelphia. Detailed results from Philadelphia as well as Nielsen's methodological and engineering tests of the PPM were presented to Nielsen's television clients at a series of client roundtables held in Fall 2002. To address various issues discussed at these meetings, Arbitron and Nielsen agreed to use Philadelphia as a test bed to collaboratively conduct three follow-up tests:

- **Response Rates**: Determine whether new recruitment and maintenance methodologies could yield acceptable sample performance indicators.
- **Dual Meter**: Evaluate the extent of out-of-home viewing by installing PPMs and set-meters in the same households.
- **Meter Sensitivity**: Understand the PPM's audio-based definition of viewing by testing its acoustic characteristics in the real-world environment of panelists' homes.

All three tests were collaboratively designed, executed and analyzed by Arbitron and Nielsen. The Response Rate test began first in April 2003 and had the largest sample sizes with two panels of 100 households each. The test designs for both the Dual Meter and Meter Sensitivity went through multiple iterations, with the final tests beginning later in March 2004. These two tests were based on significantly smaller sample sizes given the timeline for completing all collaborative tests.

Response Rate Test: Summary of Results

The objective of the test was to determine if PPM panels could achieve response rates comparable to existing Nielsen meter panels.

The two companies developed two similar panel recruitment and maintenance methods which were tested in the Philadelphia DMA® starting in April 2003 through July 2003. The first method used Nielsen membership representatives exclusively to recruit all panelists. The second method was a hybrid using both panel representative and phone-based recruiting.

Both methods used an all area probability sample frame, the standard "Basics and Alternates" sampling technique, respondent materials that were co-branded as "Nielsen TV Ratings /

Arbitron Radio Ratings” and an SPI (Sample Performance Indicator) response rate calculation for households and persons.

In the all In-Person method, Nielsen membership representatives used the standard Nielsen recruitment procedures for all respondent contacts with the following exceptions: the PPM equipment was installed at time of recruitment; the Arbitron name was used in addition to the Nielsen name; and the printed recruiting materials were appropriate for delivery to the household by the membership representatives.

The Hybrid method used a combination of telephone and in-person recruitment. Recruitment of the basic sample households was first attempted by telephone when a phone number was available. The PPM equipment was mailed to agreeing households for the panelist to self-install. Basic Refusals and no-phone Households were sent to the Nielsen field staff for in-person recruitment and installation. In addition, all recruitment and installation of alternates was done in-person by Nielsen field staff. It should be noted that approximately 50 percent of installed panel in the hybrid method was recruited by phone

Both approaches used equivalent incentives at recruitment and for panel maintenance. These incentives were higher than the incentives used in the 2002 Philadelphia PPM market trial and higher than the incentives used in Nielsen Media Research meter panels. Since PPM is a persons based methodology the incentives for PPM were awarded on a personal basis compared to the household incentives used for Nielsen meter panels. It should be noted that the hybrid method offered a promised incentive at pre-recruitment stage.

The two test methods performed equally well.

For the 13 months ending May 31, 2004, the membership representative-only technique delivered a 37.5 household SPI; the hybrid methodology delivered a 41.4 household SPI. On a persons level, the membership representative-only method delivered a 31.9 SPI, and the hybrid method delivered a 33.1 SPI.

Both methods showed similar, satisfactory results for compliance. Turnover rates for both remained low throughout the test.

Both Arbitron and Nielsen agree the results, achieved over the 13 months, were positive and were in-line with current measures for set-meter. The hybrid method offers greater operational efficiency (more installs per recruiter) and speed of deployment.

In Houston, Arbitron is using a hybrid recruitment method similar to the method tested collaboratively in 2003. Arbitron, in consultation with Nielsen, has selectively reduced some incentive levels as compared to the test and retained others at the same level used in the test. Also in Houston, Arbitron will employ its own membership reps and printed materials, without the direct involvement and co-branding with Nielsen as was the case in the test. Arbitron and Nielsen will monitor the results from Houston to confirm if the response rate treatments being used will yield similar results.

Dual Meter Test: Summary of Results

The Dual Meter test placed PPMs with 17 persons, age 6 and older, in eight former Nielsen meter households in the Philadelphia DMA for a minimum of four weeks each. The standard Mark II meter was retained on all working sets and stationary PPMs were placed in each room. The test then compared Mark II results to portable PPM results in order to estimate out-of-home viewing.

The Dual Meter Test found that on average 10.6 percent of total viewing minutes in these eight households were viewed out-of-home. The out-of-home viewing estimates for the 17 individuals in the test ranged from 0.9 percent of PPM exposure to 60 percent of PPM exposure with a median of 6.3 percent.

It should be noted that the test was unable to distinguish between out-of-home viewing done in other residential dwellings (already reflected in current methodologies through “guest viewing” procedures) and that done in non-residential settings (such as work or school, which are not captured by current methodologies). Also when viewing to the same channel took place both in home and out of home at the same time, the analysis required the assumption that the viewing took place in the home.

Meter Sensitivity Test: Summary of Results

The Meter Sensitivity study evaluated the acoustic characteristics of the PPM in a sample of 20 households equipped with Mark II meters to understand the PPM’s audio sensitivity and associated definition of viewing. The specific research questions examined in this study were:

- How well do the PPM and the Mark II agree on encoded channel identification and tuning times for metered sets? Or, more specifically:
 - *When PPMs are placed near TV speakers, to what extent do the PPM and the Mark II meters yield the same result?*
- Do all PPMs in the room give the same answer? Or, more specifically:
 - *When PPMs are placed around the room, how does their recorded tuning compare with a PPM placed directly in front of the TV speaker?*
- To what extent are PPM audience estimates driven by detection of TV audio from other rooms? Two different issues related to this question:
 - *When a set is on in a room, how often does PPM detect a code from another room? (“Hijacking”)*
 - *What part of the PPM audience might be the result of exposure outside of the room with a TV set on? (“Spillover”)*
- Is there evidence that audio “hijacking” or “spillover” effects would systematically bias the ratings results by type of HH or program?

Question #1: When PPMs are placed near TV speakers, to what extent do the PPM and the Mark II meters yield the same result?

	Total as % of Encoded TV	Total as % of Audible Encoded TV
Exact Match	89.1	96.4
Time/Clock Differences (<2 Min.)	2.7	2.9
Mute/Inaudible	7.6	--
Different Channel	0.6	0.7
<i>Total</i>	<i>100.0</i>	<i>100.0</i>

The study found that when placed at the TV set in front of the speakers, PPMs and Mark IIs agreed on channel ID and tuning times for 96.4 percent of time when the volume was audible. The PPM and Mark IIs agreed 89.3 percent of the total time. The difference is explained by the fact that metered TVs appeared to be muted or otherwise inaudible for 7.6 percent of the time. Arbitron and Nielsen agree that control PPMs and Mark IIs agree on channel ID and tuning times.

Question #2: When PPMs are placed around the room, how does their recorded tuning compare with a PPM placed directly in front of the TV speaker?

	Percent of Total Test Time (When at Least One TV in HH Is Being Tuned)
Match (same code or no code on both control and room PPMs)	93.4
Inaudible to room PPM (control PPM has code, but room PPM doesn't)	3.3
Room PPM has a code, but control PPM doesn't	2.8
Room PPM and control PPM have different codes	0.4
<i>Total</i>	<i>100.0</i>

PPMs placed at the TV set agreed with PPMs in the same room 93.4 percent of the time. Of the remaining 6.4 percent, the largest single factor (3.3 percent) was due to times when PPMs located directly in front of the set speakers detected usable codes but some PPMs placed elsewhere in the room did not. This could occur if the TV audio was set at a low level; if some type of background noise interfered with one or more of the in-room PPMs; or both.

Question #3a: To what extent are PPM audience estimates driven by “hijacking”?

Arbitron and Nielsen agree that “hijacking” – audio codes from a TV set in one room being picked up by a PPM in a different room with another TV on – was not a factor in any of the study homes. Nearly all of the codes credited by the test PPMs (99.8 percent) were to the appropriate sets.

Question #3b: To what extent are PPM audience estimates driven by “spillover”?

Because PPM audience is defined as “exposed to the audio,” PPM audiences are fundamentally different from the current “watching or listening” definition of audience. The purpose of this analysis was to better understand how often audio spilled-over between rooms and what impact such spillover might have on PPM ratings.

Arbitron and Nielsen agree that audio “spillover” – that is, when a PPM in a room without a TV or with a TV that is off picks up codes from an audible TV set in another room – does occur in television households and does have the potential to impact PPM ratings. Arbitron and Nielsen also agree that sound spillover alone does not create spillover ratings credit. In order for a viewer to be credited, they must be located (with their PPM) within the audible range of the TV set, or the so-called “audio footprint”. Thus, the question of spillover ratings involves two important factors: (1) Where does the sound go when the TV is on?; and (2) is there anyone there to be exposed to the sound? Two separate analyses were conducted to address each question.

Both sets of analyses relied on data from 20 households. Each home had Mark II meters as well as a number of stationary PPMs placed in those rooms that panelists said were used on a regular basis and positioned in places people said they were likely to stand, sit, or sleep. To get an understanding of PPM’s audio sensitivity in “real-life” environments, panelists were asked to watch TV, eat, sleep and otherwise live life as usual. This data was used for two subsets of analyses.

In the first set of analyses, Nielsen and Arbitron measured the audio footprint of TV sets in terms of “room counts” to understand how far the TV audio could travel. The television audio typically reached into various areas beyond the TV’s immediate viewing area, such as into nearby open areas (like an adjacent dining room or kitchen) as well as separate rooms (such as bedrooms).

A “room count” was based on the following scoring system:

- Totally separate room counted as one (1.0) room;
- Extended open areas with a line of sight to the immediate viewing area (e.g. kitchen or dining room overlooking the family room) count as 0.3 rooms;
- Extended open areas without a line of sight to the TV (e.g. dining room on other side of the kitchen) count as 0.7 rooms.

Based on this scoring system, the study estimated that, on average across all homes and sets, TV program audio reached into 1.1 additional rooms or extended areas (of those measured) beyond the immediate TV viewing area.

While the audio footprint analyses illustrate how far TV audio can travel, they do not address how this might impact TV ratings as reported by the PPM. To understand ratings impact it is also necessary to estimate how often a person wearing a PPM will be exposed to the TV audio when outside the TV viewing area. Therefore, the second set of analyses used a model developed by the joint engineering and research team to estimate the probability of a person being within the audio footprint that falls outside the viewing room.

First, the model applied empirical information collected from each household regarding the hours during the day when specific household members are rarely at home; e.g., while they are at work or at school. Household members were counted as "not home" only during these hours.

Next, the model applied Nielsen data on tuning without viewing and co-viewing estimates (ratio of viewers per set) from the Philadelphia portion of the NPM sample to estimate how often one or more people were in the room with the TV, when the set was on (based on the Mark II tuning data). The remaining time for each person in the household was randomly distributed across the various non-TV rooms in the home to obtain an unbiased estimate of each person's location in any given minute of the day.

The model therefore estimated how often, on average, the TV audio reached another room and there was also a person there to be credited by the PPM. The team then calculated what portion of the total PPM viewing time might have been credited in locations other than the immediate TV viewing area.

The model generated estimates for four possible definitions:

- *Separate Rooms*: any location divided from the TV room by a door or hallway, regardless of distance from the TV room. Audio codes detected in these areas were estimated to account for approximately 10.4 percent of the PPM audience on average across all HHs.
- *Extended Area with Line of Sight*: anywhere the TV can be seen without the line of sight being interrupted by a door or hallway (e.g. family room and the dining room overlooking it). Audio codes detected in these areas were estimated to account for approximately 1.7 percent of the PPM audience on average across all HHs.
- *Extended Area without Line of Sight*: anywhere in an adjoining area to the TV that is not separated from the TV room by a door or hallway, regardless of the ability to actually see the TV (e.g. family room, dining room overlooking it, and the open kitchen around the corner). Audio codes detected in these areas were estimated to account for approximately 2.6 percent of the PPM audience on average across all HHs.
- *In Room, Near the TV*: the same room or immediate area as the TV (e.g. anywhere in the family room, but not in the adjacent open dining room). Audio codes detected in these areas were estimated to account for approximately 85.3 percent the PPM viewing audience in this study.

Based on the findings for these definitions of room area, Arbitron and Nielsen agree that an estimated 10.4 percent to 14.7 percent of PPM audience comes from separate rooms and extended areas across all households in the test:

- *Separate Room only*: 10.4 percent of PPM viewing credit for all households;
- *Separate Room plus Extended Room Area, no line of sight to TV*: 13.0 percent of PPM viewing credit for all households
- *Separate Room plus Extended Room Area, no line of sight plus area with line of sight to TV*: 14.7 percent for all households,

These percentages are rough directional estimates limited by the model's assumptions about "at-homeness," tuning without viewing levels, and co-viewing ratios. It should also be noted that the

test had a small sample size and PPMs were distributed around the test homes only in places that panelists reported as regularly used. Nonetheless, Arbitron and Nielsen agree the modeled data provide a rough quantitative estimate of the potential for "spillover" ratings credit (which the "audio footprint" data alone does not do).

The ratings model also examined the percentage of PPM exposure for these four categories of “proximity” by five different variables within the 20 studied households: household size, number of TV sets, age head of household, housing structure; and daypart.

Household Size

Percentage of Credited PPM Exposure that Falls in 4 Categories of “Proximity to the TV Set”

	One Person	Two People	Three+ People
Separate Room	0.9	12.8	15.0
Extended – Line of Sight	0.3	2.9	1.3
Extended – No Line of Sight	0.0	2.2	5.1
In Room with TV	98.8	82.0	78.5
<i>Sample Size (HHs)</i>	5	8	6

Given the tuning without viewing estimates used in the model, we found little spillover viewing credit in one-person households. Among multi-person households, the potential for spillover viewing credit does not increase in proportion to household size.

Numbers of television sets

Percentage of Credited PPM Exposure that Falls in 4 Categories of “Proximity to the TV Set”

	One	Two	Three	Four+
Separate Room	4.4	12.6	12.7	9.5
Extended – Line of Sight	4.7	1.7	0.3	0.1
Extended – No Line of Sight	0.0	3.7	2.4	3.4
In Room with TV	90.9	82.0	84.7	87.0
<i>Sample Size (HHs)</i>	4	7	5	3

There was no clear pattern by number of sets.

Type of structure

Percentage of Credited PPM Exposure that Falls in 4 Categories of “Proximity to the TV Set”

	Apartment	Attached	Detached
Separate Room	7.4	12.7	9.2
Extended – Line of Sight	8.6	0.7	0.1
Extended – No Line of Sight	2.1	2.6	2.7
In Room with TV	81.8	84.0	88.1
<i>Sample Size (HHs)</i>	3	8	8

Type of housing structure (apartment, attached, detached) does not appear to systematically drive spillover ratings impact, although apartments may have more “line of sight” exposures.

Age Head of Household

Percentage of Credited PPM Exposure that Falls in 4 Categories of “Proximity to the TV Set”

	<35	35-54	55+
Separate Room	13.8	5.7	13.0
Extended – Line of Sight	9.1	1.5	0.4
Extended – No Line of Sight	2.3	2.5	2.6
In Room with TV	74.8	90.3	84.0
<i>Sample Size (HHs)</i>	2	7	10

There was no clear pattern by age of head of household.

Daypart

Percentage of Credited PPM Exposure that Falls in 4 Categories of “Proximity to the TV Set”

	AM 5am-9am	Day 9am-4pm	Fringe 4pm- 8pm	Prime 8pm-11pm	Late Fringe 11pm-1am	Over night 1am-5am
Separate Room	8.9	4.6	14.6	12.2	8.0	5.6
Extended – Line of Sight	0.2	0.5	1.9	2.0	0.6	0.4
Extended – No Line of Sight	1.3	0.1	3.6	3.6	2.8	3.8
In Room with TV	89.6	94.8	80.0	82.2	89.6	90.2
<i>Sample Size (HHs)</i>	14	13	17	17	15	10

During the highest viewing dayparts, fringe and primetime, the potential for spillover credit is greatest.

Question #4: Is there evidence that audio “hijacking” or “spillover” effects would systematically bias the ratings results by type of HH or program?

The size of the audio footprint and therefore the estimated spillover does not appear to vary by number of sets or age of household head. Audio sensitivity does appear to vary by a number of other factors, many of which may relate to volume-setting behavior.

Note that the following scores are based on a scoring system: a room separated by wall or hallway counts as “1.0” rooms, an extended area with a line of sight to the TV in the adjacent room counts as “0.3” rooms, and an extended area with no line to the TV counts as “0.7” rooms.

Footprint by Household Size

Number of Rooms/Areas Where PPMs Detect Codes from TV in One Room

	One	Two	Three	Four+
Average Footprint	2.5	2.0	1.7	1.9
<i>Sample Size</i>	5	8	4	3

One-person households had the largest audio footprints. 3+ person households the smallest.

Footprint by Number of TV Sets

Number of Rooms/Areas Where PPMs Detect Codes from TV in One Room

	One	Two	Three	Four+
Average Footprint	2.0	2.0	2.0	2.1
<i>Sample Size</i>	4	7	5	4

Footprints do not appear to vary by number of sets.

Footprint by Type of Structure

Number of Rooms/Areas Where PPMs Detect Codes from TV in One Room

	Apartment	Attached	Detached
Average Footprint	1.6	2.2	2.1
<i>Sample Size</i>	3	8	9

Apartments had smaller footprints than both attached houses and detached homes.

Footprint by Age Head of Household

Number of Rooms/Areas Where PPMs Detect Codes from TV in One Room

	<35	35-54	55+
Average Footprint	2.1	1.9	2.2
<i>Sample Size</i>	2	8	10

Footprints do not appear to vary by age of household head.

Footprint by Presence of Children

Number of Rooms/Areas Where PPMs Detect Codes from TV in One Room

	None	1+ Children
Average Footprint	2.1	1.8
<i>Sample Size</i>	16	4

Households with children had smaller footprints.

Footprint by Type of Room

Number of Rooms/Areas Where PPMs Detect Codes from TV in One Room

	Common Living Room	Bedroom	Kitchen	Other
Average Footprint	2.5	1.5	1.7	2.5
<i>Sample Size</i>	17	17	3	5

Common rooms such as family and living rooms had the largest footprints and bedrooms the smallest.

Footprint by Number of TVs on Simultaneously
Number of Rooms/Areas Where PPMs Detect Codes from TV in One Room

	1	2+
Average Footprint	2.2	1.6
<i>Sample Size</i>	20	13

Single-set tuning showed larger footprints than when multiple TVs were on at same time.

Footprint by Daypart
Number of Rooms/Areas Where PPMs Detect Codes from TV in One Room

	Footprint
Early Morning (5AM-9AM)	1.5
Daytime (9AM-4PM)	2.0
Early Fringe (4PM-7PM)	2.4
Access (7PM-8PM)	2.3
Prime Time (8PM-11PM)	2.3
Late News (11PM-11:35PM)	2.1
Late Fringe (11:35PM-2AM)	2.0
Overnight (2AM-5AM)	1.4

Data are logical given volume levels associated with household activities by daypart: lowest volumes early morning, late night; highest volumes early fringe, access and prime time.

Footprint by Program Genre
Number of Rooms/Areas Where PPMs Detect Codes from TV in One Room

	Footprint	# of HHs	# of Minutes
Feature Film	2.7	9	431
Talk Shows	2.6	15	1,148
Daytime Drama	2.5	7	606
Quiz Giveaway	2.5	14	850
General Variety	2.3	16	1,369
General Documentary	2.3	15	1,156
Instruction	2.3	11	430
Sports Commentary	2.2	7	300
General Drama	2.2	16	1,966
News Documentary	2.2	10	266
Participation	1.9	8	480
Situation Comedy	1.8	16	1,522
National News	1.6	19	3,084
Popular Music	1.2	7	343

Footprints sizes varied for all genres, with less variation among the more frequently watched genres. It was unclear to what degree this variation was due to programs' audio content, their daypart, type of rooms in which they were watched, or viewer preferences for volume setting.

Next steps and discussions regarding the collaborative tests

Over the next few weeks, Nielsen and Arbitron will contact television, agency and advertising clients to schedule additional PPM roundtable discussions for the fall. These discussions will review the collaborative tests' results in more detail as well as discuss the following items:

Response Rate

- In Houston, Arbitron is using a hybrid recruitment method similar to the method tested collaboratively in 2003. Arbitron, in consultation with Nielsen, has selectively reduced some incentive levels as compared to the test and retained others at the same level used in the test. Also in Houston, Arbitron will employ its own membership reps and printed materials, without the direct involvement and co-branding with Nielsen, as was the case in the test.
- Recruitment in Houston is underway, and early response rate results will be available by year-end. Both Arbitron and Nielsen will follow the response rate results in Houston closely.

Out-of-Home Viewing

- Nielsen has indicated that it will conduct exit interviews of the panelists who participated in the Dual Meter test to help determine what proportion of out-of-home viewing is in other person's homes and a proportion is in public places and workplaces. (Viewing in other persons' homes is currently captured as guest viewing while public place and workplace viewing is not currently captured).
- Arbitron is using a new PPM technology in the Houston test market that contains an "at-home indicator" to distinguish at-home and out-of-home exposures to TV and radio. Arbitron expects to have the first out-of-home PUT estimates from Houston by the second quarter of 2005. Nielsen is currently testing the new technology.

Meter Sensitivity

- Arbitron believes that the PPM's ability to track automatically exposure to encoded audio in areas beyond the immediate viewing area of a TV room, in combination with other characteristics of the PPM's personal, passive and electronic data collection abilities, better reflects the way consumers use television in their daily lives. Arbitron will carefully evaluate the feedback from customers on this issue.
- Nielsen believes that steps should be taken to mitigate the potential for spillover. Nielsen will discuss the issue with clients to gain their input.
- Nielsen also believes there is uncertainty as to the appropriate value to use for key variables in the model for estimating the ratings impact of audio spillover. In particular, Nielsen is concerned that the data on tuning without viewing derived from the Philadelphia portion of the NPM sample may not reflect normal behavior regarding leaving TVs on unattended (due to People Meter prompting). Nielsen will request that the model be run with updated estimates of tuning-without-viewing to see what impact this has on the model's spillover estimates.

- If, based on customer feedback from advertisers, agencies and broadcasters, it appears desirable to reduce the sensitivity of the PPM in order to reduce the impact of exposure to “spillover” audio, Arbitron and Nielsen have agreed to work together to evaluate the most appropriate adjustments to the PPM that might meet clients needs.

Both Nielsen and Arbitron encourage television clients to review these PPM test results and consider the various definitions of viewing in preparation of our upcoming roundtable meetings to ensure that the meetings are true working sessions.

Additional Work by Arbitron and Nielsen on the PPM

In parallel to the collaborative tests in Philadelphia, Nielsen has been performing additional due diligence on a number of fronts: engineering, methodology, IT systems, and financial.

Collaborative work between Arbitron and Nielsen will continue throughout the upcoming client roundtable discussion. Nielsen and Arbitron are also continuing the joint analyses of financial and methodological issues.

Nielsen's Participation in the Houston market demonstration of the PPM

The original intent of Houston was for both Nielsen and Arbitron to jointly decide to launch this market as a demonstration once the collaborative tests in Philadelphia and other key due diligence had been completed. However in March 2004, before such tests had been completed, Arbitron announced its commitment to the current launch of the Houston market based on radio industry needs. While Nielsen was prepared at that time to provide sample characteristics, program titles, and other data, it was not prepared to fully participate in the launch of a demonstration market. Both parties agreed that Nielsen would participate in Houston once the collaborative tests and other due diligence yielded positive results.

Arbitron's Houston market demonstration of the PPM

During the fall of 2004, Arbitron will continue its launch of a PPM demonstration market in Houston. The Media Rating Council audit process has already begun and will be ongoing throughout the demonstration. Arbitron intends to gain MRC accreditation before Houston would be offered as a commercial ratings service for radio.

Arbitron intends to install a panel of 2,100 persons, age 6+ using the hybrid recruitment method similar to the method tested collaboratively in 2003.

The key milestones for the demonstration are:

Milestone	Date	Data reported
Recruitment begins	Aug 04	
Feb 05 TV (Sample size 1,000)	Apr/May 05	Persons Using TV only
Winter 05 radio (Sample size 1,000)	Apr/May 05	Persons Using Radio only
New PPM analysis software	Jul 05	
May 05 TV (Sample size 2,100)	Jul 05	Individual encoded channels
Spring 05 Radio (2,100,	Jul 05	Individual encoded stations

Arbitron has made a number of improvements to the overall PPM system that it will deploy in Houston.

- Encoding will take place in the primary and backup audio paths of participating stations and cable outlets (including digital and SAP). The encoder now features a full-time, in-studio code monitor.

- The PPM now includes an in-home/out-of-home detection system that provides automatic and ongoing measures of where reported viewing and listening takes place.
- The time-stamp carried by the PPM code now has the ability to detect time shifting in one-minute increments. (The Philadelphia trial in 2002 had the ability to detect a five-minute time shift.)
- The PPM encoding system can now carry three levels of source identification that allows for simultaneous codes that can identify network origination, local distribution source and specific content.
- Arbitron is also conducting a pilot test of retail encoding. A small number of retailers will encode their in-store audio throughout their retail outlets in the Houston DMA.

Nielsen is currently conducting due diligence, engineering tests on the in-home/out-of-home detection system, the one-minute time stamp and the multilayer PPM encoding system.

In addition to the technology improvements being deployed for Houston, Arbitron had modified some of the data crediting and editing procedures that were originally used in the 2002 Philadelphia trial.

- The daily in-tab qualification for Adults 18+ will remain at eight or more hours of “carry time” as detected by the motion sensor within each PPM. For persons age 6 to 17, the daily in-tab qualification in Houston will be changed to five or more hours of “carry time.”
- Arbitron will replace the lead-in, lead-out and “bridging” edits that it applied to PPM codes in Philadelphia with a single lead-in duration edit. In Houston, the first code following a “null” period of code detection will be credited with a start time 30 seconds in advance of the actual time of detection.
- Arbitron will also adopt a docked meter edit rule in Houston. Arbitron will stop crediting PPM codes 60 minutes after last dock time each day.
- Language weighting will be applied on a test basis.

It should be noted that the changes in edit and in-tab qualification rules will have an impact on the estimates that will be reported in Houston. Clients should expect that the differences between PPM television audience estimates and meter/diary television audience estimates that will be reported in Houston may be different from those reported in the Philadelphia PPM market trial.

Arbitron expects that, assuming a successful demonstration and the support of the marketplace, the PPM could be launched as a commercial service in Houston in 2006.

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