

Chapter 7

Toward Accountability

Introduction

You now have considerable capability to develop and evaluate comprehensive advertising media plans. Indeed, it may seem that so much is done for you that there is little discretion remaining for media planning. It wouldn't take much thought, however, to rid yourself of this notion. Selecting goals, target audiences, and media categories, assessing message effects, allocating budgets across markets, estimating audience and cost data, among countless other decision areas, requires experience, judgment and careful, systematic thought.

The books and article included in the references of this chapter will help you make some of these judgments. The goal of this chapter is to cover critical ground that is not well traveled by others, doing so in ways that are facilitated by the accountability philosophy that drives ADplus™. In a sentence, it will be shown how media planners can estimate advertising campaign effects by following a number of relatively simple analytical procedures.

For several reasons, many of the ideas presented here may seem new to the field. Actually, they build on literature and ideas that have been around for some time. What is new is the synthesis of the concepts and relations into a comprehensive and operational whole. In the end, if you are not convinced that you can indeed make reasonable assessments of likely campaign effects, at the very least it is hoped that you will not allow yourself, or others who work with you, to follow procedures that are naive at best, and most probably misleading. Here is a brief overview of the major questions that will be addressed in this chapter.

Toward Accountability in Advertising Media Planning: A Brief Overview

- 1. Time Frame** What time frame should be used for reach and frequency analysis--daily, weekly, monthly, quarterly, semi-annual, yearly?

 - 2. Advertising Carry-over** How can the cumulative value of advertising media be estimated without aggregating time periods in reach and frequency analysis?

 - 3. Frequency Threshold** If minimum or optimum frequency (n) is required for message effects, what is the value of a media plan in terms of reach ($n+$)?

 - 4. Message-vehicle Gap** How large and important is the difference between vehicle (publication, program) and advertising message audiences?

 - 5. Forecasting Ad Effects** How can likely advertising campaign effects be estimated using media planning models?

 - 6. Audience Spill-over** Does targeting of media in the face of limited budgets necessarily sacrifice coverage of other desirable but *non-funded* targets?

 - 7. Message Characteristics** How can media planners determine what message characteristics are best, such as advertisement size, length, use of color, and position, among others?

 - 8. Creative Value** Can the effects of creative effort be separated from media volume when evaluating alternative media plans?

 - 9. Media Mix** When has an advertising campaign saturated a media category audience? When should multiple media categories be used?

 - 10. Setting Ad Budgets** How can media planning models help determine how much to spend on advertising?
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These are just a sampling of the kinds of questions that can be answered by models such as ADplus[™]. Each of these areas will be explored in a way that is designed to highlight the possibilities. Hopefully, enough examples will be provided to convince you that in many more situations than you might expect, it is possible to answer questions like these with some clarity--certainly in terms of the likely *direction* of an outcome, but quite often in terms of the *magnitude* as well.

Time Frame

A surprisingly simple decision has monumental implications for the magnitude of estimated media evaluation factors. That decision has to do with the interval that should be used for reach and frequency analysis. In many situations the time frame selected may be too long if the goal of the evaluation is to anticipate potential communication effects. A colleague who was exposed to the following description of this faulty media planning practice, aptly characterized it as a "classic bonehead error." See if you agree.

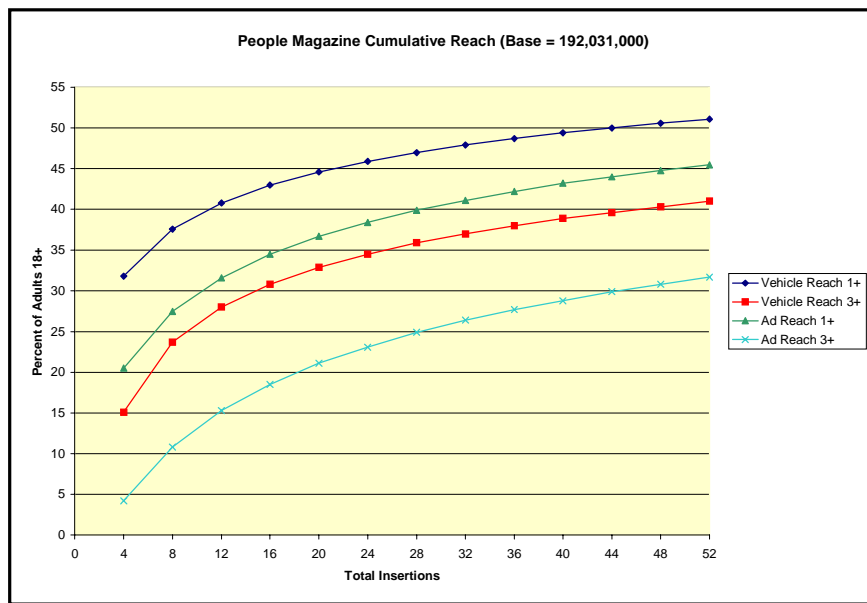
Armed with reach and frequency models, many planners are inclined to pool quarterly or yearly media options and develop global reach and frequency estimates for proposed or executed media plans. The reasons may range from a lack of expertise, to a simple desire to impress clients or superiors that expensive media schedules are generating big numbers. For example, analyses of monthly magazine plans will look stronger when insertions are pooled over a year rather than when assessed on a month-by-month basis.

Situations like this arise, in part, because media terminology, concepts and data are complex and specialized, thereby often limiting communication more than enhancing it. To see for yourself, ask any two media executives (or any pair of university media instructors) to define potentially loaded media terms like *reach*, *frequency*, or *GRPs*, then notice how widely the answers differ in terms of substance, precision and comprehensiveness. This fuzzy communication and subsequent understanding makes it impossible to link media schedules with likely communication effects. It's just easier to make descriptive statements of media evaluation factors, perhaps compare them with similar previous schedules, and let it go at that. The notion of using the available data to estimate market place results is unlikely to be discussed.

Another reason for broadly gauged media evaluation is that the effects of advertising are infrequently measured by most advertisers, aside from global tracking of general communication measures. Consequently, planners avoid the discipline of linking media schedules with measured communication effects. Indeed, if tracking studies show lower than expected results, as they

often do because inflated media numbers vaguely raise expectations, then many are tempted to conclude that it must be a creative problem, since media has delivered big numbers.

Here's an example. In previous chapters, a monthly magazine schedule was evaluated that used two vehicles, *TV Guide* and *People*, against U.S. adults 18+. Examining only *People* magazine, for simplicity, using ADplus™, the following figure shows the estimated vehicle and message (*Ad*) reach (1+) and (3+) for various aggregations of time frames, assuming a typical, full-page, four-color advertisement. Rating, cost and target size data are obtained from *MGM 1998-99*.



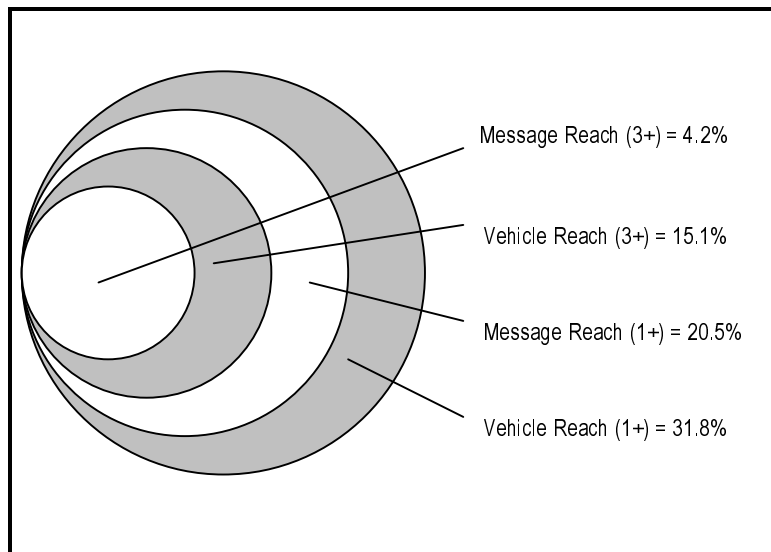
This figure shows that estimated *Ad* reach, the second curve from the top of the figure, for a typical month (four insertions) is 20.5 percent; 31.6 percent for a typical quarter (12 insertions); and 45.5 percent for the year (52 insertions). Which figures should be considered for planning purposes? The annual figure, for example, assumes that consumers exposed to the advertisement the first week of January remember it the last week of December. The annual reach figure of 45.5 percent may be valid in a purely mathematical sense. But as a practical matter, a tracking study will probably come in *under* the first figure of 20.5 percent, because that is the upper limit of media pressure provided by *People* magazine within a given month. Said differently, no typical four-week period exposes more than 18.4 percent of the target audience to advertising messages. And with this, consumer forgetting and competitive advertising are constantly conspiring to diminish this limited effect. Furthermore, this analysis assumes that *one* message exposure within a four-week period will have some measurable effect. But

if frequency is required for some communication to occur, then the situation will be more like the curve corresponding to *Ad Reach (3+)*, the lowest curve in the figure.

Frequency Threshold

A frequency threshold of three advertising message exposures is used here only to make the point. As a practical matter, a message, or pool of messages, may require more or less frequency within a specified time frame, on average, to generate measurable effects. Nevertheless, given these assumptions, *People* magazine is estimated to deliver 4.2, 15.3 and 31.7 message effective reach (3+) points for the average month, quarter and year respectively. Now which should be used? The reasoning advanced earlier still applies. A periodic tracking study that focuses on the ability of these messages to *communicate*, even at the broadest exposure levels, will come closer to 4.2 percent than to 31.7 percent. But don't take this writer's word for it. Try it yourself when the opportunity presents itself. The results are likely to be sobering. Yes, you're probably getting what you are paying for, or less.

The following figure illustrates what you would expect from *People* magazine for the typical month. It illustrates the vertical (y) axis in the figure above, corresponding to four (4) total insertions.



Now consider that this four-week schedule would cost over \$6.8 million if it

were run for the year. It's not hard to understand why advertisers or their agencies would much prefer to look at the 51.1 percent annual *vehicle* reach (1+) that this magazine is estimated to deliver. And if tracking studies were to show only five percent unaided recall at various intervals, most of the blame would likely be foisted on the creative team. Facetiously, *what do they know about media evaluation?*

Returning to the typical monthly effective reach figure of 4.2 percent, although sobering, this outcome is really not as bad as it looks. After all, it represents U.S. adults who are likely to have been exposed to *messages* three or more times in a four week period, most of whom can probably play back some message content. This represents over 8 million adults. If the communication/purchase ratio is 16 to 1, for example, that's a healthy half-million prospects and a decent **monthly** number to multiply times any margin.

So why do too many media planners work with inflated figures? Why do their clients tolerate it? If the reasons could be measured, this writer's guess is that media planners are overwhelmed by the pressures of deadlines and expediency--they lack the time, resources, and reflective environment. Consequently, everyone involved loses an opportunity to better understand how advertising works, in addition to potentially generating less than optimum media plans. It takes little extra effort to use the procedures described here. The difficulty lies in explaining them to others, and defending the results in the face of seemingly endless, but often less important limitations.

Message-vehicle Gap

One such limitation concerns margins of error in vehicle audience ratings upon which message audience estimates are based. The total readership of *People* magazine might have a margin of error at the 95 percent confidence level of plus or minus four percent. That is, the true rating might be somewhere between 18.6 percent and 20.2 percent, a gap representing about 3.1 million adult readers. Now some planners use reasoning like this to justify relying largely on judgement "because all of the numbers are suspect." In doing so, a planner is committing a substantially greater error by ignoring the message-vehicle gap, adding an additional margin of error to the process that is 10 to 20 times or more larger than the error associated with the vehicle rating, depending on the media category, rating measurement service, the size of the rating, and the audience measured, among other factors.

As in the previous examples, let's assume a plan involves full-page, four-color advertisements and a message/vehicle ratio of 45.6 percent. This ratio

implies a 54.4 percent margin of error in relation to the vehicle rating of 19.39 percent (e.g., $54.4\% = 100\% - 45.6\%$). Therefore, the *message* rating for *People* is somewhere between 8.4 percent and 9.2 percent. In relation to the original 19.39 percent vehicle rating, that's a gap ranging from 10.19 percentage points to 10.99 percentage points, or 19.6 million to 21.1 million adult readers.

Ignoring the vehicle-message gap is probably the biggest source of inflated media evaluation factors. It is a problem for all media categories. For instance, in broadcast and cable television, message/vehicle ratios cluster around 32 percent, for newspapers, a typical quarter-page advertisement has roughly a 16 percent chance of being noticed.

Estimating Cumulative Advertising Effects

After examining the implications of aggregated reach and frequency analysis, the discussion focused on the requirement for frequency and the gap between vehicle and message audiences. We left unanswered the issue of how to evaluate the cumulative effect of advertising if it is not appropriate to pool options across broad time frames within reach and frequency models. Here we will take up this issue.

There is an extensive literature on estimating the cumulative effects of advertising, advertising retention or carry-over, and advertising decay, among numerous other related substantive and methodological questions. This research stream will not be reviewed here. Nevertheless, ADplusTM builds on this literature by providing procedures for estimating advertising carryover, given the cross-sectional structure of its reach-frequency or BBMD procedure. That is, the ADplusTM BBMD algorithm provides reasonable reach and frequency estimates within narrowly specified intervals, such as weekly or monthly. The ADplusTM *Flowchart* procedures help extend these results across months.

In projecting ADplusTM results through time, the *Flowchart* procedure draws on previous literature for its carryover functions. For the clarity of the examples that follow, a simplified version of the fixed carry-over function will be presented. The fixed function is simple and conservative. Vehicle and message reach (1+) and (3+), or more generally, reach (n+), are assumed to have a retention value (λ), assigned by the user, that can range from none, or zero (0), to 60 percent. The vehicle or message reach (n+) in a given period t is estimated as follows:

$$R_t = R_t + \lambda R_{t-1} - (R_t)(\lambda R_{t-1}) \quad (7-1)$$

where:

R = reach (n+) of a monthly media plan,

λ = vehicle or advertising message retention rate,

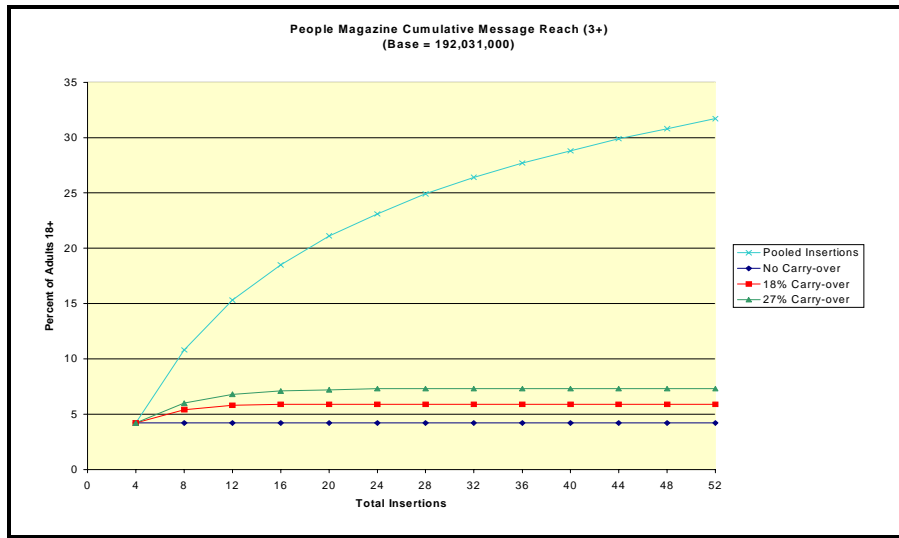
t = a given month.

In a sentence, Equation 7-1 says that monthly reach (n+) is the ADplus™ estimate for a monthly schedule, plus λ percent of the previous monthly schedule reach (n+), minus the reach (n+) that would be duplicated between the two periods on the basis of chance.

Those who pool broad time periods in estimating reach (n+) are essentially assuming that λ is equal to 100 percent, which is clearly unrealistic. In most situations involving new or specific message content or effects, an assumption of *no* advertising message carryover will be appropriate and conservative, and ADplus™ results tables will correspond closely to tracking study results. Essentially the lagged and duplicated terms would drop out of Equation 7-1. In some situations, however, there may be measurable carry-over of new or specific message content or effects which can be accounted for in ADplus™ by selecting an *Ad Carry-over/Rate* from the *Flowchart* menu.

You may have noticed the references to *new or specific message content or effects* in the discussion of estimating advertising carry-over. This is done to focus attention on relatively recent advertising activity, the effects of which are assumed to be separable from historical advertising and promotional activity. Brand name recognition of established brands, such as Coke, Pepsi, and Prudential, for example, have been built over decades of marketing activity. Unless the focus is on *new* communication dimensions of advertising messages or campaigns, or *changes* over initial benchmarks, it will be difficult, if not impossible, to account for advertising carry-over.

With these caveats in mind then, let's examine the revised *People* magazine reach curves in the following figure.



These curves show the original naive, pooled reach estimates provided in the previous figure, in comparison to more realistic and conservative estimates based on the range of monthly carryover rates that can be found in the literature. These include no carryover rate, and rates of 18 and 27 percent. Notice that even when using an unrealistic high estimate of 27 percent, the revised message reach (3+) curve at year's end is 7.3 percent, less than one quarter (23 percent) of the magnitude of the naive or pooled curve of 31.7 percent.

There are certainly other defensible forms of the advertising carry-over function in addition to the fixed and power functions that are included in ADplus™. These have not been built into ADplus™ for the time being because a wide variety of actual case studies has shown that the assumption of no advertising carry-over is associated with fairly accurate predictions. And even with highly conservative approaches, models similar to ADplus™ have nevertheless tended to slightly overstate actual tracking study results. Use of more comprehensive or optimistic monthly carry-over functions would only exacerbate this situation. Certainly more research is needed, particularly studies focused on the decay function for time frames less than one month. For the time being, it appears that the monthly time frame for reach-frequency analysis provides reasonable results, probably because the decay function within a month is approximately offset by audience accumulation across months.

To summarize up to this point in the chapter, these examples make it quite clear that planners who ignore some or all of the concepts that we've discussed so far, including the time frame, message frequency requirements, message-vehicle gaps, and proper accounting of cumulative advertising

effects, will have considerable difficulty relating estimates of media planning factors to measurable marketplace activity. Indeed, it is probably safe to conclude that planners who do not take these few and simple factors into account probably cannot demonstrate how media plans contribute to communication goals. The next few sections demonstrate how planners can build on these concepts to develop optimum media schedules and to forecast the likely communication effects of advertising plans.

Forecasting Advertising Effects

The previous discussion was focused on a single magazine in order to simplify the analysis. Now let's introduce greater complexity to make the examples more realistic and, incidentally, more dramatic. The following table includes 35 magazines that were chosen because they were either among the top 20 rated vehicles against adult women, adult men, or both. The alphabetical listing includes the yearly publication frequency, typical single-insertion ratings against each audience, the audience size, and the one-time cost for a full-page, four-color and a black and white advertisements.

Magazine Audience Sizes and Costs[†]

#	Vehicle Name	Women	Men	Adults	Cost	
	(Yearly Publication Frequency)	(100.04*)	(91.99*)	(192.0*)	4cPg1x	BWPg1x
1	<i>Reader's Digest</i> (12)	29.50%	22.44%	26.11%	\$208,000	\$179,000
2	<i>TV Guide</i> (52)	20.98	18.57	19.83	155,200	131,800
3	<i>People</i> (52)	24.70	13.62	19.39	131,500	104,000
4	<i>Better Homes & Gardens</i> (12)	26.96	8.62	18.17	213,900	176,700
5	<i>National Geographic</i> (12)	14.23	17.88	15.97	159,345	142,185
6	<i>Good Housekeeping</i> (12)	23.03	2.92	13.40	174,385	138,975
7	<i>Sports Illustrated</i> (52)	5.33	21.62	13.19	170,000	117,000
8	<i>Time</i> (52)	11.47	13.55	12.47	169,000	116,000
9	<i>Family Circle</i> (17)	20.53	2.32	11.81	147,500	124,030
10	<i>Woman's Day</i> (17)	19.24	1.60	10.87	140,055	116,980
11	<i>Newsweek</i> (52)	9.45	12.12	11.10	154,750	99,470
12	<i>Modern Maturity</i> (6)	12.21	7.09	9.76	248,800	224,540

13	<i>Life</i> (13)	8.14	7.31	7.74	67,575	52,530
14	<i>McCall's</i> (12)	13.50	1.43	7.81	113,120	95,880
15	<i>Cosmopolitan</i> (12)	13.25	2.64	8.43	99,550	79,660
16	<i>Ladies' Home Journal</i> (12)	14.59	1.34	8.38	137,000	129,500
17	<i>Redbook</i> (12)	10.55	1.21	6.08	99,300	75,100
18	<i>Southern Living</i> (12)	8.88	3.36	6.24	89,850	64,310
19	<i>Field & Stream</i> (12)	2.54	10.93	6.56	84,630	59,290
20	<i>Ebony</i> (12)	7.18	5.39	6.35	49,975	36,991
21	<i>Parents</i> (12)	10.51	2.30	6.74	76,460	59,715
22	<i>Prevention</i> (12)	8.62	2.82	5.84	68,910	59,070
23	<i>Country Living</i> (12)	8.75	2.79	5.90	80,175	58,610
24	<i>Glamour</i> (12)	10.72	1.07	6.16	88,403	62,774
25	<i>US News & World Report</i> (52)	4.62	7.30	5.94	103,500	69,300
26	<i>Popular Mechanics</i> (12)	1.03	9.39	5.04	82,225	57,945
27	<i>Money</i> (13)	3.58	5.87	4.68	103,655	70,700
28	<i>Playboy</i> (12)	1.36	8.49	4.77	96,210	68,700
29	<i>Car & Driver</i> (12)	0.90	6.91	3.81	99,850	64,855
30	<i>Golf Digest</i> (12)	1.38	5.54	3.38	106,610	71,070
31	<i>Motor Trend</i> (12)	0.49	5.93	3.11	94,065	55,990
32	<i>Hot Rod</i> (12)	0.86	6.11	3.41	48,080	28,705
33	<i>Guns & Ammo</i> (12)	0.57	5.54	2.95	31,785	19,410
34	<i>American Legion</i> (12)	1.10	3.02	2.09	44,250	32,610
35	<i>Cable Guide</i> (12)	5.65	5.94	5.79	53,850	40,300

†Costs are based on full-page, four-color, one-time advertisements.

*Target audience size in millions of adults, 18+.

Source: derived from *Marketer's Guide to Media*, 1998-99, pp 155-82.

These data will be used in several examples that follow. For the moment, let's use ADplus™ to prepare a four-week data base against adult women. All of the vehicles will be included, although seven were selected because of their high ratings against adult males. The ADplus™ results table that follows summarizes the data file.

 ADplus(TM) RESULTS: MAGAZINES (P4C)

Kent Lancaster Target: 100,036,000
 Media Research Institute Women
 Typical Month Message/vehicle ratio = 50.1%

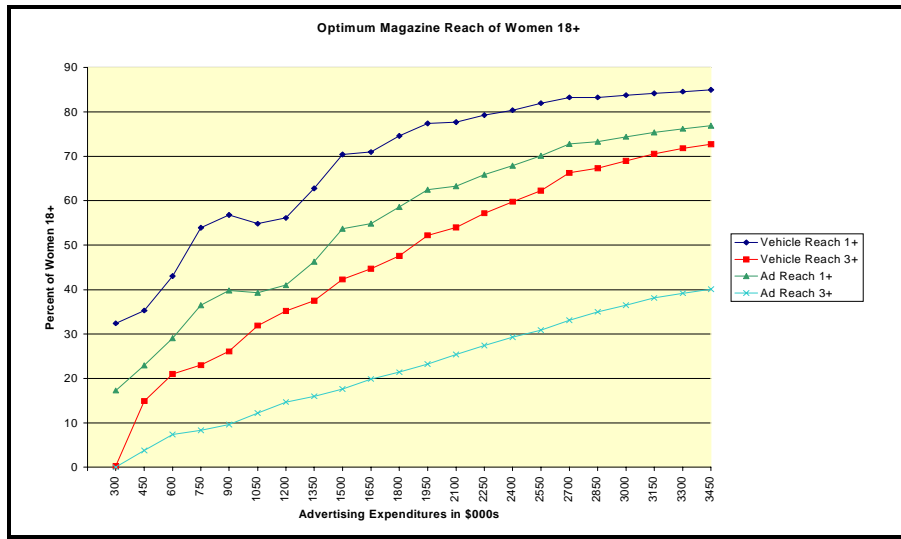
Summary Evaluation	Vehicle	Message
Reach 1+ (%)	86.9%	80.8%
Reach 1+ (000s)	86,909.2	80,846.1
Reach 3+ (%)	78.8%	49.2%
Reach 3+ (000s)	78,781.7	49,177.1
Gross rating points (GRPs)	551.2	276.2
Gross impressions (000s)	551,438.4	276,270.6
Average frequency (f)	6.3	3.4
Cost-per-thousand (CPM)	8.84	17.64
Cost-per-rating point (CPP)	8,842	17,649
Cost-per-net reach point (CPRP)	56,103	60,310
Cost-per-response (CPR)	0.06	0.06

Vehicle List	Rating	Ad Cost	CPM-MSG	Ads	Total Cost	Mix %
Reader's Dige	29.50	208,000	14.07	1	208,000	4.3
Better Homes	26.96	213,900	15.83	1	213,900	4.4
People	24.70	131,500	10.62	4	526,000	10.8
Good Housekee	23.03	174,385	15.11	1	174,385	3.6
TV Guide	20.98	155,200	14.76	4	620,800	12.7
Family Circle	20.53	147,500	14.34	2	295,000	6.1
Woman's Day	19.24	140,055	14.52	2	280,110	5.7
Ladies' Home	14.59	137,000	18.74	1	137,000	2.8
National Geog	14.23	159,345	22.34	1	159,345	3.3
McCall's	13.50	113,120	16.72	1	113,120	2.3
Cosmopolitan	13.25	99,550	14.99	1	99,550	2.0
Modern Maturi	12.21	248,800	40.66	1	248,800	5.1
Time	11.47	169,000	29.40	4	676,000	13.9
Glamour	10.72	88,403	16.45	1	88,403	1.8
Redbook	10.55	99,300	18.78	1	99,300	2.0
Parents	10.51	76,460	14.52	1	76,460	1.6
Newsweek	9.45	154,750	32.67	4	619,000	12.7
Southern Livi	8.88	89,850	20.19	1	89,850	1.8
Country Livin	8.75	80,175	18.28	1	80,175	1.6
Prevention	8.62	68,910	15.95	1	68,910	1.4
Totals:	17.64	34	4,874,108	100.0		

Notice that the number of *Ads* listed for each vehicle is based on the publication frequency of that vehicle within a four-week period--one insertion for monthlies, four for weeklies. For the time being, we'll ignore the fact that *Family Circle* and *Woman's Day* are published more than once a month. Also, we'll ignore the fact that some of the publications would not normally appear on a list targeted against females, such as *Playboy*. The entire list is included here for consistency and for comparison in spill-over analysis to be discussed later. Moreover, the ADplus™ optimization procedure will **not** select such a vehicle unless all other options in the data base are exhausted--*Playboy's* inappropriateness for this target audience is reflected in the relatively high *CPM-MSG* at \$130.13.

Given these potential monthly options, the data base can accommodate schedules that cost from \$62,790, the least expensive vehicle, to over \$3.6 million, the cost of all feasible ads for these vehicles within four weeks.

We can use the ADplus™ optimization procedures to analyze these data to determine the likely effects of schedules for various budget levels. To do so, simply retrieve the data shown above into the ADplus™ program and use Plan/Duplicate to make as many copies as there are budget levels and/or criteria that you wish to analyze. Then follow the optimization procedures described in Chapter 3. These steps were used to generate 22 optimum plans, based on message effective reach (3+), for budget levels ranging from \$300,000 to \$3,450,000, in increments of \$150,000. The results of this work are summarized in the following figure, which builds on the concepts that we've discussed so far.



For 22 potential budget levels that start at \$300,000, this figure shows the estimated *monthly* vehicle and message reach levels that would be achieved against adult women, assuming typical, full-page, four-color advertisements among the 35 magazine options listed earlier. Given these constraints, the curves also represent *upper limits* on reach since they are based on optimization procedures. Non-optimum schedules can be from ten percent to 25 percent or more *lower* than optimum schedules for a given budget, across media categories, optimization criteria, and budget levels.

The points made earlier are vividly illustrated in this figure. For example, in describing a plan to an advertiser, it would be naive to use the 85 percent *Magazine Reach 1+* estimate, shown in the top curve of the figure, for a budget level of \$1.2 million. The entire plan is displayed in the following figure.

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ADplus(TM) RESULTS:  MAGAZINES (P4C)
Kent Lancaster                      Target: 100,036,000
Media Research Institute              Women
Typical Month                        Message/vehicle ratio = 50.1%

Summary Evaluation                    Vehicle           Message
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Reach 1+ (%)                          56.1%            41.0%
Reach 1+ (000s)                       56,156.2         41,057.9

Reach 3+ (%)                          35.2%            14.7%
Reach 3+ (000s)                       35,207.4         14,721.4

Gross rating points (GRPs)            182.7            91.5
Gross impressions (000s)              182,785.8        91,575.7
Average frequency (f)                 3.3              2.2

Cost-per-thousand (CPM)               6.27             12.52
Cost-per-rating point (CPP)           6,276            12,527
Cost-per-net reach point (CPRP)       20,429           27,941
Cost-per-response (CPR)               0.02             0.03

Vehicle List  Rating  Ad Cost  CPM-MSG  Ads  Total Cost  Mix %
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People        24.70  131,500  10.62   4    526,000    45.9
TV Guide     20.98  155,200  14.76   4    620,800    54.1
Totals:      12.52      8    1,146,800  100.0

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Optimum reach (3+), budget: 1,200,000, time (mm:ss): 00:01
Problem size: 1 media category, 20 vehicles, 34 Ads
System speed: 486 CPU @ 186 Mhz, Math Coprocessor: Yes
File used:  women
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Certainly that's probably a good estimate of how many adult women are likely to see one or more of the selected magazines in a typical four-week period. The magazine publishers would argue that this is one of their major responsibilities to advertisers, and it has been solidly met in this instance. But this 85 percent reach estimate says nothing about likely *communication* effects, which were the motive for the advertising in the first place, and the magnitude of which can only be accurately obtained through measurement, not opportunities-to-see, and not wishful thinking.

What can we expect to *measure* after running such a schedule? That's certainly something that can be debated *a priori*--intensely and often heatedly, to put it mildly. Nevertheless, this writer's experience suggests that the lowest curve in the figure, that for *Ad Reach 3+*, will be the best predictor of broad communication effects (e.g., top-of-the-mind awareness, unaided recall, name recognition), assuming a reasonably tight tracking study design, without going into all which that implies. For the \$1.2 million budget, that would be 18.9 percent, as shown in the figure and table above. This seems to be a good predictor because it is based on a narrow time frame assuming little or no advertising carry-over, because it is based on message exposure probability instead of vehicle exposure, and because a message frequency threshold of at least three exposures is assumed before the typical consumer is able play back broad message content.

Every media planning situation is unique. Therefore, all of the constraints used in this example would have to be adapted to suit different circumstances. Nevertheless, the framework is likely to be quite manageable, and the magnitude of the constraints can usually be estimated in ways that most folks involved can come to some agreement. Moreover, planners can usually work backward from tracking studies through the media planning process to see what constraints would have predicted the outcome. These results can then be used confidently with similar future media planning projects.

Audience Spill-over

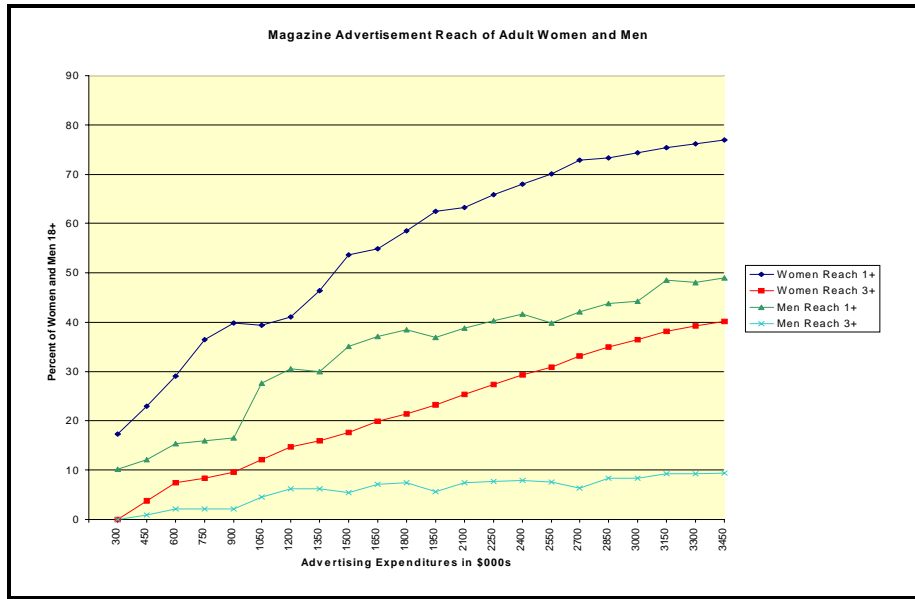
Selecting the target audience for advertising is one of the most important decisions because it drives the choice of media categories and vehicles. Often, however, the choice of target audience is not as clear cut as might be hoped. There may be multiple potential targets, perhaps fairly closely related, and they may be similar in size and responsiveness to marketing activity.

Given a fixed advertising budget under these circumstances, it is not possible to develop an optimum plan against each potential target audience. One useful approach to this dilemma is to nevertheless select one target audience definition to receive optimum advertising effort. Then put together the best possible plan against this group as though it were the only consideration. Once the final plan against this audience is determined, evaluate this fixed plan against all other targets of interest. You may be surprised to find rather healthy coverage of these related targets as well.

As an example, let's look again at the 22 optimum plans against adult females that were developed for budgets ranging from \$300,000 to \$3.45 million, in increments of \$150,000. What would the impact of these schedules be against adult males?

To answer this question, copies of the 22 schedules against women were retrieved into ADplus™. Two changes were made to each schedule. First, the target audience was changed from 100.04 million adult women to 91.99 million adult men. Second, for each magazine in the original schedule, only the rating was changed to reflect the audience size of the publication against adult males. Of course the vehicle name, cost and number of insertions remain unchanged because we simply want to know what the effect would be of the women's magazine schedule against men.

The following figure summarizes the message reach ($n+$) for both of the target audiences.



Notice that, as expected, the curves for reach ($n+$) for men are below those for women. However, what may be surprising is that the schedule has considerable weight against men. For example, across all budget levels the reach (1+) for men is, on average, 60.2 percent of that for women; 26.8 percent for reach (3+). This is biased upward by budget levels above \$1.65 million because all of the largely female oriented publications have been used after this point. Nevertheless, across the first ten budget levels the reach (1+) for men is 59.2 percent, on average, of that for women; 28.6 percent for reach (3+).

There is certainly no substitute for intelligent targeting of advertising effort. But when the choice is not clear cut and the media options are not exclusive to particular audiences, the approach described here may provide some insight and comfort to management as it attempts to cover all bases in the face of limited resources. The graphical approach taken here can be extended to several more targets at once, across perhaps fewer but relevant budget levels, and include more media categories, without losing the ability to communicate strongly, and quickly, a relatively complex idea.

Message Characteristics

The curves that have just been examined can also be used as a point of departure to highlight potential differences in likely communication effects across different message characteristics. In the case of magazines, there are differences in page size and placement, black-and-white versus color, the presence of offers, cover position, spread location, and inside position, among others. These differences can be fairly well quantified in terms of norms for particular brands, publications, product categories, or types of advertisements. The norms and the actual data can be obtained for a variety of media categories through services such as Gallup and Robinson, Harvey Research Organization, Readex, and Starch Readership Reports, for example. These norms have been summarized for several media categories and message characteristics in Chapter 4, and in a number of other publications, so they will not be repeated here.

As an example, let's examine the differences in impact between full-page, black-and-white advertisements, and full-page, four-color advertisements. For one measure of impact, we'll use the optimum message effective reach (3+) results obtained earlier against women for full-page, four-color advertisements. In contrast, we'll examine the optimum message effective reach (3+) for the various budget levels using instead full-page, black-and-white advertisements. A copy of the black-and-white data base follows.

ADplus(TM) RESULTS: MAGAZINES (PBW)						
Kent Lancaster Media Research Institute Typical Month			Target: 100,036,000 Women Message/vehicle ratio = 44.9%			
Summary Evaluation			Vehicle	Message		

Reach 1+ (%)			86.9%			79.4%
Reach 1+ (000s)			86,909.2			79,380.5
Reach 3+ (%)			78.8%			44.1%
Reach 3+ (000s)			78,781.7			44,085.1
Gross rating points (GRPs)			551.2			247.5
Gross impressions (000s)			551,438.4			247,595.8
Average frequency (f)			6.3			3.1
Cost-per-thousand (CPM)			6.95			15.48
Cost-per-rating point (CPP)			6,954			15,487
Cost-per-net reach point (CPRP)			44,121			48,305
Cost-per-response (CPR)			0.04			0.05
Vehicle List	Rating	Ad Cost	CPM-MSG	Ads	Total Cost	Mix %

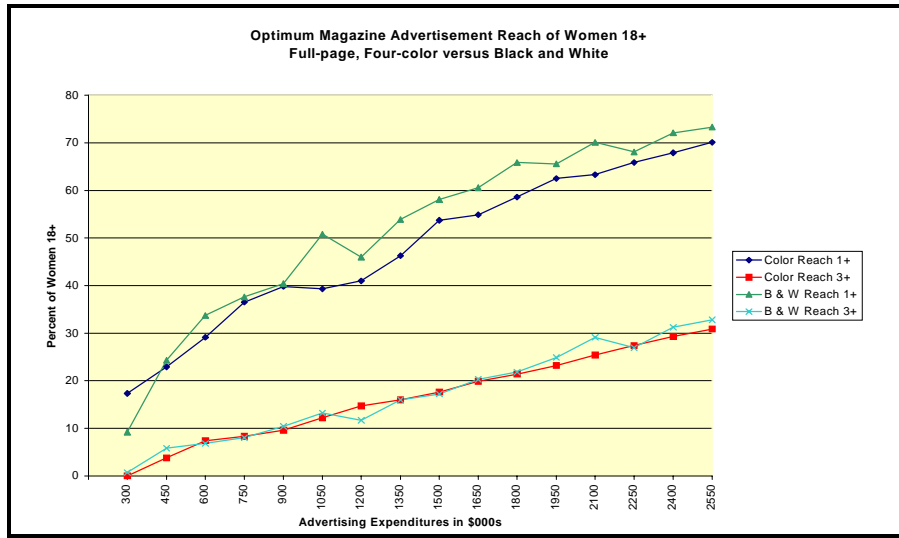
Reader's Dige	29.50	179,000	13.51	1	179,000	4.7
Better Homes	26.96	176,700	14.59	1	176,700	4.6
People	24.70	104,000	9.37	4	416,000	10.9
Good Housekee	23.03	138,975	13.44	1	138,975	3.6
TV Guide	20.98	131,800	13.99	4	527,200	13.8
Family Circle	20.53	124,030	13.45	2	248,060	6.5
Woman's Day	19.24	116,980	13.54	2	233,960	6.1
Ladies' Home	14.59	129,500	19.76	1	129,500	3.4
National Geog	14.23	142,185	22.25	1	142,185	3.7
McCall's	13.50	95,880	15.81	1	95,880	2.5
Cosmopolitan	13.25	79,660	13.39	1	79,660	2.1
Modern Maturi	12.21	224,540	40.94	1	224,540	5.9
Time	11.47	116,000	22.52	4	464,000	12.1
Glamour	10.72	62,774	13.04	1	62,774	1.6
Redbook	10.55	75,100	15.85	1	75,100	2.0
Parents	10.51	59,715	12.65	1	59,715	1.6
Newsweek	9.45	99,470	23.43	4	397,880	10.4
Southern Livi	8.88	64,310	16.12	1	64,310	1.7
Country Livin	8.75	58,610	14.91	1	58,610	1.5
Prevention	8.62	59,070	15.26	1	59,070	1.5
Totals:			15.48	34	3,833,119	100.0

Notice that it is similar to the four-color data base except the message/vehicle ratio has been lowered to 90 percent of that for four color at 50.1 percent, yielding 44.9 percent ($44.9\% = 90\% \times 50.1\%$; see the magazine indices on page 67). In other words, although the probability of the target audience seeing the typical full-page, four-color advertisement is just over 50 percent, it drops more than five percentage points for full-page, black-and-white advertisements.

Also, all of the page costs have been lowered to reflect the black-and-white rates. The average cost of the black-and-white advertisements is 78.7 percent of the four-color cost. Therefore, average costs drop just slightly more than average impact, suggesting similar reach curves between the two advertisement types across budget levels.

The outcome of the optimizations of these data for two message reach measures is included with the original four-color results in the figure below. This figure does not include as many budget levels as the original 22

because the black-and-white data base value is roughly 90 percent of the color data base. Therefore the last schedule shown is for \$2.55 million.



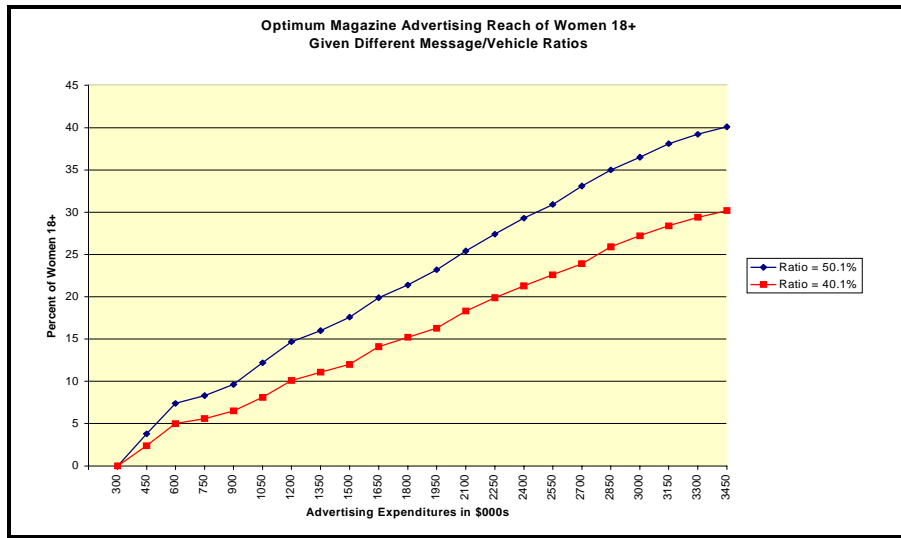
This result suggests that typical full-page, four-color advertisements are likely to have more communication impact at any budget level than are typical black-and-white advertisements. However, in view of the relatively small differences, advertisers should examine each case separately, using the latest available data. Also, in reaching conclusions for other message characteristics, advertisers should conduct a similar and careful analysis.

Creative Value

One of the most important features of ADplus™ is its ability to evaluate message communication given vehicle exposure. This is an especially useful tool for creative individuals associated with a particular advertising campaign. There are at least two reasons for this. Planners can decompose the relative impact of creative value versus media activity. Consequently, given proper reach-frequency analysis and solid tracking study results, planners can get a pretty reliable idea as to the contribution of the media plan versus the ability of messages to communicate.

Let's begin with a positive example. Assume that prior to the current advertising campaign, the average magazine Starch score was 40.1 percent, and the current average score of 50.1 percent reflects overall improvements in the messages as a result of exceptional creative effort. This gain in Starch scores represents an improvement of 10 points or a 25 percent improvement in recognition. This is clearly beyond the likely margin of error in the methodology associated with Starch and media audience measurement. Therefore, it would be reasonable to attribute much of the gain to creative. What is this creative gain worth to an advertiser?

The figure that follows illustrates the relative impact of the old versus the new creative effort for each of the 22 optimum budget levels that were generated earlier.



We can estimate the value of this creative improvement for a given budget level in terms of media expenditures. For a budget of \$1.2 million, for example, the message effective reach (3+) was 10.1 percent when the message/vehicle ratio was 40.1 percent. With the improved creative driving

the 50.1 percent message/vehicle ratio, the resulting message effective reach (3+) is now 14.7 percent. That's a 4.6 percentage point increase in likely message effects, or a 45.5 percent increase over the previous level of 10.1 percent.

These figures are impressive in themselves, but they take on even more significance when examined in terms of media dollars. The actual cost of the schedule associated with the \$1.2 million monthly budget is \$1,146,800.

Since it initially delivered 10.1 message effective reach (3+) points (MER), that works out to be a cost of \$113,545 per MER point. Since the creative now delivers 4.6 additional MER points, the value of the creative effort is \$522,305--per month!

Of course, this sword cuts both ways. If the situation were reversed and the direction of change was based on a 25 percent *drop* in message effectiveness, from 50.1 percent to 40.1 percent, or from the top to the bottom curve in the above figure, then the cost per MER point would be based on the higher impact level, and would therefore be lower at \$78,014. Since the creative is now assumed to deliver 4.6 *fewer* MER points, the cost of the diminished creative effort is \$358,864 per month.

More than anything else, this analysis underscores the enormous importance of message effectiveness within a given media plan. Clearly the message gives the media plan value. It is difficult to understand why it is ignored in many media planning procedures that rely solely on media vehicle data.

Saturation

The curves in the figure above also illustrate how to identify saturation budgets. Given the options in the magazine data base, it appears that budget levels beyond some point become noticeably less productive--nearly flat for broad reach measures and large budgets. If an advertiser wanted to reach a greater percentage of the target audience, it is at this saturation budget range that a second media category should be considered. Indeed, given two or more media category data bases, ADplus™ will determine what combination will maximize the desired optimization criteria.

Mixed Media

A great many advertising campaigns involve more than one media category. However, relatively little has been written about how to decide precisely which media categories to use and how much to spend on each. Most discussions center on the inherent strengths and limitations of the media options toward strategic decisions made largely on the basis of judgment.

As a practical matter, this approach may serve advertisers quite well, especially when particular mixes have been used over a period of years with strong indications of success.

The discussion that follows attempts to build on this approach by adding an additional margin of confidence to the decision about which media categories to use and how much to spend on each, given a fixed budget. The starting point is to build a data base for each media category that can be reasonably expected to efficiently reach the target audience. Each media category data base would reflect the message/vehicle ratio appropriate for the communication goal and the messages designed to achieve it.

This approach applies only to media categories that are tasked with the same communication goal (e.g., exposure, recall, brand recognition). It is not appropriate to examine the joint effects of mixed media schedules when the separate media categories are intended to achieve different communication goals. This is because the message/vehicle ratios for each media category data base would correspond to a different communication objective. The same mix however, can be tasked with multiple goals and can be assessed in relation to those goals, one goal at a time.

Let's consider an example. For each of the 22 budget levels examined earlier, \$300,000 to \$3,450,000 in increments of \$150,000, what magazine, network television, or combination media plan delivers the highest message effective reach (3+) against U.S. Adults, 18+? For this example it will be assumed that messages involve full-page, four-color magazine insertions, and 30-second television commercials. Consequently, we will use a message/vehicle ratio of 50.1 percent for magazines and one of 31.0 percent for network television.

To analyze this question, we need a data base for each media category. The list of magazines on page 117 is used again, focusing on adults. Using the sources and methods described in Chapter 3, the network television data base is adapted from *MGM 1998-99*. The network television data base appears in the following table.

 ADplus(TM) RESULTS: NETWORK TV

Kent Lancaster
 Media Research Institute
 November

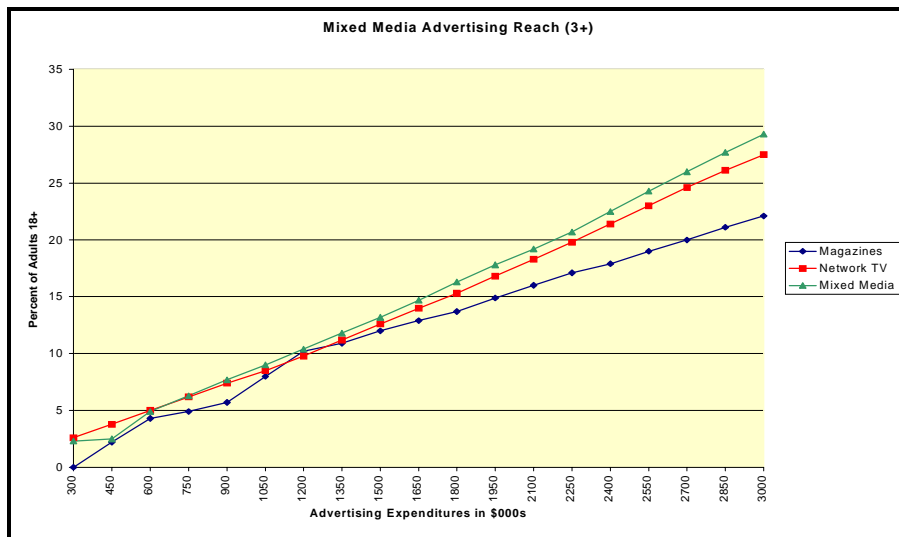
Target: 192,031,000
 Adults
 Message/vehicle ratio = 31.0%

Summary Evaluation	Vehicle	Message
Reach 1+ (%)	92.3%	88.3%
Reach 1+ (000s)	177,311.4	169,580.8
Reach 3+ (%)	92.3%	88.3%
Reach 3+ (000s)	177,311.4	169,578.7
Gross rating points (GRPs)	10,674.0	3,308.9
Gross impressions (000s)	20,497,390.0	6,354,191.0
Average frequency (f)	115.6	37.5
Cost-per-thousand (CPM)	4.28	13.80
Cost-per-rating point (CPP)	8,215	26,501
Cost-per-net reach point (CPRP)	949,696	992,990
Cost-per-response (CPR)	0.49	0.52

Vehicle List	Rating	Ad Cost	CPM-MSG	Ads	Total Cost	Mix %
EM ABC lo	2.50	12,500	8.40	30	375,000	0.4
EM CBS Lo	2.20	11,500	8.78	30	345,000	0.4
EM FOX Lo	1.40	7,000	8.40	30	210,000	0.2
EM NBC Lo	1.90	9,100	8.05	30	273,000	0.3
EM ABC Hi	4.80	25,800	9.03	30	774,000	0.9
EM CBS Hi	4.40	23,400	8.93	30	702,000	0.8
EM FOX Hi	2.80	14,400	8.64	30	432,000	0.5
EM NBC Hi	3.60	18,800	8.77	30	564,000	0.6
WD ABC Lo	1.80	9,800	9.15	30	294,000	0.3
WD CBS Lo	1.60	9,100	9.55	30	273,000	0.3
WD FOX Lo	1.10	5,500	8.40	30	165,000	0.2
WD NBC Lo	1.30	7,200	9.30	30	216,000	0.2
WD ABC Hi	7.80	40,800	8.79	30	1,224,000	1.4
WD CBS Hi	7.10	37,200	8.80	30	1,116,000	1.3
WD FOX Hi	4.50	22,800	8.51	30	684,000	0.8
WD NBC Hi	5.80	29,800	8.63	30	894,000	1.0
EF ABC Lo	2.00	10,600	8.90	30	318,000	0.4
EF CBS Lo	1.80	9,700	9.05	30	291,000	0.3
EF FOX Lo	1.20	5,900	8.26	30	177,000	0.2
EF NBC Lo	1.50	7,800	8.74	30	234,000	0.3
EF ABC Hi	10.50	70,800	11.33	30	2,124,000	2.4
EF CBS Hi	9.70	64,400	11.15	30	1,932,000	2.2
EF FOX Hi	6.10	39,500	10.88	30	1,185,000	1.4
EF NBC Hi	7.90	51,600	10.97	30	1,548,000	1.8
News ABC Lo	2.00	12,500	10.50	30	375,000	0.4
News CBS Lo	1.80	11,400	10.64	30	342,000	0.4
News FOX Lo	1.20	7,000	9.80	30	210,000	0.2
News NBC Lo	1.50	9,100	10.19	30	273,000	0.3
News ABC Hi	13.60	100,500	12.41	30	3,015,000	3.4
News CBS Hi	12.40	92,700	12.56	30	2,781,000	3.2
News FOX Hi	7.90	61,800	13.14	30	1,854,000	2.1
News NBC Hi	10.20	76,800	12.65	30	2,304,000	2.6
PA ABC Lo	5.30	31,300	9.92	30	939,000	1.1
PA CBS Lo	4.80	28,500	9.97	30	855,000	1.0
PA FOX Lo	3.10	17,400	9.43	30	522,000	0.6
PA NBC Lo	3.90	22,900	9.86	30	687,000	0.8
PA ABC Hi	19.70	177,200	15.11	30	5,316,000	6.1
PA CBS Hi	18.10	161,200	14.96	30	4,836,000	5.5
PA FOX Hi	11.50	98,800	14.43	30	2,964,000	3.4
PA NBC Hi	21.60	129,200	10.05	30	3,876,000	4.4
PT ABC Lo	3.80	33,300	14.72	30	999,000	1.1
PT CBS Lo	3.40	30,300	14.97	30	909,000	1.0
PT FOX Lo	2.20	18,600	14.20	30	558,000	0.6
PT NBC Lo	2.80	24,300	14.58	30	729,000	0.8
PT ABC Hi	25.20	327,000	21.80	30	9,810,000	11.2
PT CBS Hi	23.10	297,600	21.64	30	8,928,000	10.2
PT FOX Hi	14.70	182,300	20.83	30	5,469,000	6.2
PT NBC Hi	18.90	238,600	21.21	30	7,158,000	8.2
LF ABC Lo	2.00	11,000	9.24	30	330,000	0.4
LF CBS Lo	1.80	10,200	9.52	30	306,000	0.3
LF FOX Lo	1.20	6,400	8.96	30	192,000	0.2
LF NBC Lo	1.50	8,000	8.96	30	240,000	0.3
LF ABC Hi	6.60	47,600	12.12	30	1,428,000	1.6
LF CBS Hi	6.00	43,300	12.12	30	1,299,000	1.5
LF FOX Hi	3.80	26,500	11.71	30	795,000	0.9
LF NBC Hi	4.90	34,700	11.90	30	1,041,000	1.2
Totals:			13.80	1680	87,690,000	100.0

Before proceeding, a few remarks are in order about some of the limitations of this set of options. Because of the football sports time slots, it must be assumed that the results that follow pertain to a typical Fall month. Furthermore, each time slot for which MGM data are available is used only once. As a practical matter, each time period would be represented by several listings, reflecting the number of monthly positions per time period that are available on several different networks. The number of *Ads* shown is intended to reflect a reasonable upper limit for a four-week period for a given time slot. Overall, the number of *Ads* and the number of daypart options have been limited to prevent the ADplus™ solutions from being dominated by network television, where inexpensive daytime and fringe time slots could exhaust most of the budgets by undercutting *all* of the available magazines on the basis of message CPM (*CPM-MSG*). Although this might be an efficient schedule, reach levels would be restricted by the four-week cumulative audiences of the dayparts.

Proceeding with the analysis, 57 optimizations were completed following steps outlined previously--19 each for magazines, network television, and the combination of the two media categories. Each optimization reflects the highest message effective reach (3+) that can be achieved by a given media category or combination at the specified budget level. The following figure summarizes the optimization results.



Notice that at nearly every budget level, network television outperforms magazines, and the combination of media categories largely exceeds network television alone. This can be learned by simple inspection of the figure. Nevertheless, it is also interesting to note that, on average, the

combination of media categories is 1.9 percent higher than network television alone, and 20.3 percent higher than magazines alone.

This example shows planners how to graphically underscore a recommended media mix over the range of relevant media categories, budget levels, and communication goals. If the assumptions are sound and they are reflected in the data base, it is difficult to go against images like the figure above. At the very least they will force planners to review their assumptions if the results differ from expectations. Ideally, they will help planners find particular combinations of media that they may not have considered before, which can be compared with previous schedules and results.

For example, returning to the \$1.5 million budget analyzed previously, here is the optimum schedule that ADplus™ recommends, given the constraints. Before looking at the table, try to guess at the likely budget proportions that are recommended for network television versus magazines.

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ADplus(TM) RESULTS:  MAGAZINES (P4C), NETWORK TV

Kent Lancaster                      Target:  192,031,000
Media Research Institute              Adults
Typical Month                        Message/vehicle ratio = 35.2%

Summary Evaluation                    Vehicle           Message
-----
Reach 1+ (%)                          62.7%            43.2%
Reach 1+ (000s)                       120,432.4        82,892.6

Reach 3+ (%)                          39.5%            13.2%
Reach 3+ (000s)                       75,760.0         25,424.5

Gross rating points (GRPs)            270.3            95.1
Gross impressions (000s)              518,983.0       182,629.8
Average frequency (f)                 4.3              2.2

Cost-per-thousand (CPM)                2.89             8.20
Cost-per-rating point (CPP)            5,543            15,752
Cost-per-net reach point (CPRP)        23,887           34,705
Cost-per-response (CPR)                0.01             0.02

Vehicle List  Rating  Ad Cost  CPM-MSG  Ads  Total Cost  Mix %
-----
1  MAGAZINES (P4C)  Totals:  7.74    4    526,000  35.1
  People          19.39  131,500  7.74    4    526,000  35.1

2  NETWORK TV      Totals:  8.47   73    972,100  64.9
  EM NBC Lo       1.90    9,100   8.05   10    91,000   6.1
  EF FOX Lo       1.20    5,900   8.26    9    53,100   3.5
  EM FOX Lo       1.40    7,000   8.40    9    63,000   4.2
  EM ABC lo       2.50   12,500  8.40    9   112,500   7.5
  WD FOX Lo       1.10    5,500   8.40    9    49,500   3.3
  WD FOX Hi       4.50   22,800  8.51    9   205,200  13.7
  WD NBC Hi       5.80   29,800  8.63    9   268,200  17.9
  EM FOX Hi       2.80   14,400  8.64    9   129,600   8.7
  Totals:        8.20    77   1,498,100  100.0

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Optimum reach (3+), budget: 1,500,000, time (mm:ss): 00:08
Problem size: 2 media categories, 76 vehicles, 1,717 Ads
System speed: 486 CPU @ 148 Mhz, Math Coprocessor: Yes
Files used: mag20, netv
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Surprised? Yes, the optimum plan for a \$1.5 million budget requires 35.1 percent of the expenditure to be committed to magazines!

Certainly this process is more complex and iterative than this simple example would indicate. But once planners have benchmarks like these, they can negotiate with media representative and re-analyze the resulting options to fine tune the schedule, focusing on the most persuasive direction at the outset.

Conclusion

This chapter covered a great deal of ground, focusing on numerous critical media planning decisions. The goal was to illustrate the possibilities for quantifying often judgmental decisions by explicitly estimating the constraints in a reach-frequency model. Hopefully, these examples will stimulate readers to apply some of the more useful ideas to their current media planning problems in an attempt to improve the quality of the decision-making process and the effects of resulting media plans.

ADplus[™] is a tool that can be used with considerable benefit. It can be misused as well. Holding planners accountable by requiring linkage between plans and market place effects can have enormous positive effects on the media planning process, and help ensure that sound procedures are being used to help achieve measurable advertising communication effects. This isn't a new ideal. But ADplus[™], and the philosophy that drives it, offers a practical way to get there.

Further Reading

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