ROI Analysis of Pharmaceutical Promotion (RAPP):
An Independent Study

Dr. Scott Neslin
May 22, 2001

Study Objectives

- Measure ROI for detailing (DET), direct-to-consumer advertising (DTC), medical journal advertising (JAD), and physician meetings & events (PME)

- Understand how ROI differs according to brand size (in revenues) and launch date

The objectives of this study are fairly ambitious: first, to measure the ROI for detailing (DET), direct-to-consumer advertising (DTC), medical journal advertising (JAD), and physician meetings and events (PME). The second objective is to understand how the ROI changes according to the brand size and launch date. This is a unique study in which we look at all four activities on the same footing, and ask the question, "What is the productivity of these marketing expenditures?" While this endeavor is most challenging from a statistical standpoint, it is also highly relevant for those in the pharmaceutical industry who are determining the marketing mix.

Overall Approach

- Use historical data

- Analyze using standard statistical techniques (ordinary least squares regression)

- Aggregate analysis
    - Measure ROI for median brand profile
    - Measure ROI for median brand profile within size/launch date cells

There are three components of our overall approach: (1) We use historical data; (2) we analyze these data using standard statistical techniques; and (3) we do the analysis in aggregate.

We've assembled a comprehensive historical database of branded products over an extended time period. What we analyze is what has actually happened in the marketplace. It's not an experiment, it's not a test. The benefit of this is broad generality…as well as realism. While historical data analysis has its strong points, it is only one approach to measuring ROI — there are many other approaches as well. All of these approaches should be used together. As noted, the benefits of this approach are generality and realism. However, there is a price to pay for that realism — namely, things get complicated. And thus, we have to use a fairly sophisticated statistical technique known as ordinary least squares regression. This is a standard statistical method. So while the situation is challenging, there is a good standard statistical technique for approaching it.

The third component of our approach is the notion of an aggregate analysis. What we're going to be doing is taking advantage of the breadth and realism of our data to come up with an ROI measure for an "average brand." We will also further calculate the ROI for an average brand within specific size and launch date cells. We will represent the average brand by a "median brand profile," which I will soon describe.

Data

- Includes all brands with ≥$25MM in revenues in 1999
- 391 branded drugs
- 127 generics
- Data from 1995-1999
- 16,696 total monthly observations

The data used included all brands with more than $25 million in revenues in 1999…for a total of 391 branded drugs. Also in the database are 127 generics. The data evaluated cover the period from 1995 to 1999, a 5-year span. This provides us with 16,696 total monthly observations (391 branded drugs times an average of 43 months of data for each brand).

Key Variables

- **DET** — detailing dollars: includes 1-to-1 physician visits, as well as rep-driven small group meetings & events (Scott-Levin)

- **DTC** — direct-to-consumer dollars: includes television, radio, print, and outdoor (Scott-Levin)

- **JAD** — medical journal advertising dollars (PERQ/HCI)

- **PME** — physician meetings & events dollars (Scott-Levin)

- **Scripts** — number of scripts filled at retail (Scott-Levin)

- **Price** — retail pharmacy price per script (Scott-Levin)

Key variables used*: Detailing (DET) was defined as detailing dollars including 1-to-1 physician visits, as well as rep-driven small group meetings and events (data provided by Scott-Levin). Direct-to-consumer (DTC) advertising included television, radio, print, and outdoor (data provided by Scott-Levin). Journal advertising (JAD) comprised both primary care and specialty journals (data provided by PERQ/HCI). Physician meetings and events (PME) covered physician meetings of many kinds, but excluded rep-driven small group meetings and events (data provided by Scott-Levin). Those are the independent marketing activity variables. Scripts refer to the number of prescriptions filled at the retail pharmacy level (data provided by Scott-Levin). And finally, to get return on investment in terms of dollar revenues, we have price per script at the retail pharmacy level (data provided by Scott-Levin).

*See Definition of Terms on this site.

Branded Drug Marketing Expenditures
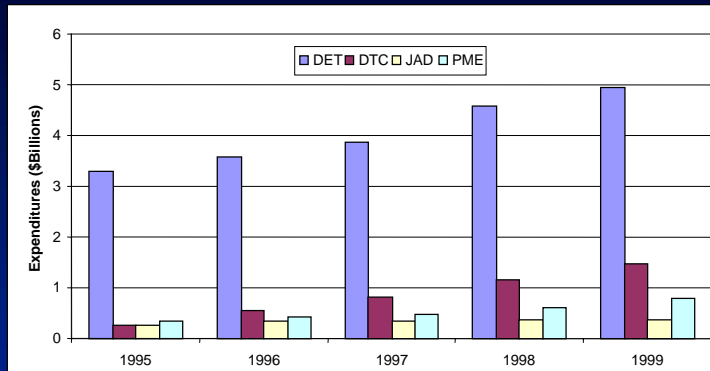
- Total Branded Marketing Expenditures grew at 16.2% per year
  - DET   10.7% per year   – JAD   9.8% per year
  - DTC   53.7% per year   – PME   23.6% per year

This slide shows the progression of spending on these four marketing activities over time. Detailing is the dominant expenditure, and has been increasing over time (over 10% per year). In 1995, over $3 billion were spent on detailing, and it's up to almost $5 billion by 1999. When one looks at JAD, DTC, and PME, it is apparent that one of these activities is moving ahead pretty strongly, with a growth rate of over 50% per year…and that's DTC. DTC grew from $200 million back in 1995 to a billion and a half dollars in 1999. PME has been growing also, although not quite as fast (+23.6% a year). Journal advertising has lagged, with just 9.8% growth per year. While there was an overall growth for JAD between 1995 and 1999, that's mainly because the 1995 base was pretty small. In fact, JAD expenditures crested in 1997 — it's clearly lagging behind the others in terms of growth.

Methodology
Regression Analysis

- Regression analysis examines all the brands in all the months in which they were marketed. It then analyzes how changes in expenditures over time correlate with changes in script levels over time. Regression will conclude that a marketing variable has a high ROI if that variable can consistently explain changes in script levels

- Regression analysis controls for causes of sales not attributed to a brand's marketing (eg, generic presence/marketing, external trends affecting brand growth, competitive spending, price)

Regression analysis examines all the brands in all the months in which they were marketed. It then analyzes how changes in expenditures over time correlate with changes in script levels over time. Regression will conclude that a marketing variable has a high ROI if that variable can consistently explain changes in script levels over time.

What we start with is a spreadsheet with 16,000 rows in it, each row corresponding to a different brand for a different month. If one looks down that spreadsheet, one would notice that scripts went up in a particular month for a particular product. Why did that happen? To explain this, one would then look at the expenditures for DTC, detailing, journal advertising, and meetings and events. If, for example, only detailing expenditures went up in a month in which scripts also went up, one might conclude that detailing explained the increase in sales, and thus it had a high ROI. But, that's just looking at one row of data; regression looks at 16,000 rows, notes when script sales go up or down, and then tries to explain those changes in terms of changes that have occurred in all the marketing variables. To the extent to which a given marketing variable can explain those month-to-month changes, we say it's a powerful explainer of sales. It has a high ROI.

However, it's also important to control for other things that occur in the marketplace. Regression analysis can control for causes of sales not attributed to a brand's marketing: these include generic presence and marketing; external trends affecting brand growth (like growth in the category that's due to a growing awareness of a disease among physicians or patients); competitive spending (for example, a bigger brand marketing effort may affect scripts not only for that brand, but also for its competition); and price.

Methodology
Computing ROI

- ROI (Return On Investment) = Increase in revenues per additional dollar spent

- ROI = % Increase in   x   Base   x   Base
             Unit Sales   Unit Sales   Unit Price

- The % Increase in Unit Sales depends on brand size, launch date, PCP fraction, and size of marketing expenditures (DET, DTC, JAD, and PME)

ROI, or return on investment, is defined as the increase in revenues per additional dollar spent. But, how do we actually compute that ROI? What the regression literally tells us is by what percentage units will increase per dollar spent. Once that percentage increase is known, it is multiplied by the base unit sales, providing the total number of units by which that dollar has increased sales. This is then multiplied by the price, to get the total revenues generated per dollar expenditure.

It should be emphasized here that we're calculating the effect of the marginal dollar change. What it can tell you is that in general, over this 5-year period of time, here's what happened because of the extra dollars that brands have spent from month to month…and therefore, here's the ROI on those investments.

The other thing that should be kept in mind is that the percent increase in unit sales will differ significantly by brand. The percent increase in unit sales will depend on brand size, launch date, fraction of sales that go to primary care physicians (PCP), and finally, level of marketing expenditures (DET, DTC, JAD, and PME).

Methodology
Median Brand Profile

- The data were highly skewed by brands with very high prices, sales levels, and expenditures

- The skewness makes the *mean* not representative of the average brand

- We therefore defined average brand profile by taking the *median* levels of price, base sales, and marketing expenditures

- Using the mean would generally increase ROIs fairly uniformly across the marketing variables

In doing an aggregate analysis, we try to come up with the ROI for the average brand. That begs the question, "How do you define the average brand?" The data were highly skewed by brands with very high prices, sales levels, and expenditures. Most of the brands were in one region in terms of price and expenditure level; however, there were also strong outliers. When one is in that situation, the skewness makes the *mean* not representative of the average brand, or where there is the bulk of the data. A common remedy is to use the *median*, literally the data point with an equal number above and below. We therefore defined an average brand profile by taking the median levels of price, base sales, and marketing expenditures, and calculated the ROI if that brand increased expenditures by one dollar. If we had used the mean, all of the numbers would have increased fairly uniformly.

Revenue/Launch Year Cells
Numbers Represent Median Brand Profile in Each Cell

| | | Launch Year | |
Annual Revenue	≤1993	1994-1996	1997-1999
$25-$50MM			
Number of Brands	66	18	20
Launch	1989	1995	1997
PCP Fraction	.393	.497	.223
Price/script	$46	$55	$66
Scripts 1,000/mo	68	38	22
Revenues/year	$38MM	$25MM	$17MM
$50MM-$200MM			
Number of Brands	108	32	41
Launch	1992	1996	1997
PCP Fraction	.396	.373	.419
Price/script	$45	$53	$78
Scripts 1,000/mo	156	94	59
Revenues/year	$84MM	$60MM	$55MM
$200MM+			
Number of Brands	60	27	19
Launch	1992	1995	1997
PCP Fraction	.618	.546	.543
Price/script	$57	$62	$76
Scripts 1,000/mo	674	332	229
Revenues/year	$461MM	$247MM	$209MM

This slide shows the median brand profiles broken down into nine cells. There are three levels of brand size ($25-50 million, $50-200 million, and $200 million and above), and three levels of launch date (before or equal to 1993, 1994 to 1996, and 1997 to 1999). What you first see in each cell is the number of brands in each of these categories. For example, in the $25-$50 million category launched in 1993 or before, we have 66 brands. Also, what you see is that the majority of brands analyzed were launched before 1993. However, there are a sufficiently large number of brands launched between 1997 and 1999. The primary care physician (PCP) fraction shows that roughly 20% to 50% of sales come from primary care physicians for the smaller brands, but for the very large brands, there is a higher PCP percentage (in the 50% to 60% range). Price per script, scripts per month, and revenues per year for each cell are also shown here.

Revenue/Launch Year Cells
Numbers Represent Median Brand Profile in Each Cell

Annual Revenue	≤1993	Launch Year 1994-1996	1997-1999
$25-$50MM			
DET $1,000/mo	$40	$64	$233
DTC $1,000/mo	$0	$0	$0
JAD $1,000/mo	$0	$0	$12
PME $1,000/mo	$0	$0	$0
$50MM-$200MM			
DET $1,000/mo	$162	$438	$1,162
DTC $1,000/mo	$0	$0	$0
JAD $1,000/mo	$0	$28	$57
PME $1,000/mo	$0	$0	$51
$200MM+			
DET $1,000/mo	$1,344	$1,893	$3,736
DTC $1,000/mo	$0	$0	$0
JAD $1,000/mo	$52	$99	$221
PME $1,000/mo	$85	$240	$610

This slide is also broken down into the same nine cells, but provides the expenditure by marketing variable for a median brand profile in each cell. Not surprisingly, expenditures tended to be larger for more recent and larger brands. However, one thing that might be questioned when looking at these data is that there are zeroes for some median expenditures, especially DTC. That means the median brand wasn't using DTC in a particular month. While that median was zero, we do have a fair amount of variation around that zero, and that's what the next slide shows.

Brands in $200MM+, Launch Year 1997-1999 Cell
Range of Monthly Expenditures ($000)

Brand	DET	DTC	JAD	PME
Allegra-D	205-4,902	0-0	0-476	0-706
Aricept	797-10,742	0-4,395	117-1,392	20-3,093
Arthrotec	489-7,923	0-0	0-965	0-1,545
Celebrex	11,442-29,886	0-7,099	6-1,345	1,879-11,408
Celexa	4,189-12,168	0-0	82-1,916	392-3,074
Combivir	0-322	0-994	0-199	0-212
Detrol	1,587-7,005	0-9,689	0-798	156-1,613
Enbrel	149-1,079	0-3,204	0-211	0-327
Evista	3,335-10,869	0-9,924	0-758	642-2,919
Levaquin	3,372-7,033	0-0	58-1,413	0-906
Lipitor	4,003-11,865	0-13,122	0-1,693	23-3,619
Nasonex	168-5,206	0-19,788	0-692	6-1,142
Plavix	176-6,776	0-0	0-876	106-1,298
Rebetron	365-997	0-0	0-322	0-956
Rezulin	720-5,059	0-7,900	0-932	22-3,710
Singulair	2,059-8,126	0-10,705	0-1,738	523-3,542
Viagra	538-17,460	0-7,612	0-2,267	531-3,491
Vioxx	4,293-20,326	0-16,350	0-1,755	689-5,938
Viracept	0-194	0-139	0-235	0-246

- Although the median may be zero for DTC, we have data on various levels of DTC expenditure

Here we have the range of monthly expenditures for the products with over $200 million in sales, and launched between 1997 and 1999 (functionally, the lower right-hand cell of the previous slide). While the median monthly DTC level was zero for these brands, for almost every one, there's data showing high monthly expenditures. Just because the median was zero, it doesn't mean that there is no right to say something about the effectiveness of the variable. As long as there is a wide range of expenditure, the regression analysis is able to identify instances where DTC increased, and to see how well this explained changes in sales.

Comparative ROI

- For overall median brand:

	ROI	Margin of Error (95% Confidence)
DET:	$1.72	Plus or Minus $0.19
DTC:	$0.19	Plus or Minus $0.52
JAD:	$5.00	Plus or Minus $0.88
PME:	$3.56	Plus or Minus $1.92

These are the ROIs for each tactic for the overall median brand, which turned out to be a brand launched at or before 1993, in the $50 to $200 million range. For that overall median brand, the ROI was $1.72 for detailing, $.19 for DTC, $5.00 for journal advertising, and $3.56 for physician meetings and events. Note the margin of error…meaning that there is 95 percent confidence that the detailing ROI is somewhere between $1.53 and $1.91. It is still generating a significant return on investment. When one looks at JAD and PME, their ROI numbers are noticeably higher. If one remembers the expenditure levels shown previously, especially for journal advertising but also for PME, these are obviously underutilized resources. You know that physicians do not see millions of journal ads for any given drug. They may have seen a few, but when you add an additional one, it's more likely to have an effect.

Now, what about DTC? It's conspicuous at 19 cents. But here again, there's a pretty large margin of error around that level (19 cents plus or minus 52 cents). That means, statistically, one can't distinguish the effect of DTC from zero because that 95% confidence interval goes from a negative to a positive. Why is DTC coming out as less effective? Your conjectures are as good as mine. Is DTC that targeted? What percentage of the audience is it relevant for? While with DTC we can focus promotion to some extent (for example, we can advertise during certain shows that older people watch), it still is not as targeted as the other tactics. Another potential answer is that 1995-1999 was probably a period of learning with DTC. Firms are still investigating which type of creative execution works best.

PME ROI

- PME ROI has a large margin of error (Plus or Minus $1.92). It is highly correlated with other marketing variables (especially DET), making it particularly difficult to determine PME ROI by size/launch date

There is one additional point to note for PME. While it has a significant ROI, there is also a high margin of error ($1.92). What drives this larger margin of error for PME is that PME is very highly correlated with other marketing variables, thus making it very difficult to get a good fix on the exact ROI for this tactic. The regression analysis may find that when scripts go up in a given month, PME expenditures also go up, suggesting a high ROI for PME. However, often when PME expenditure goes up, something else will also go up at the same time, especially detailing. When that happens, it is more difficult to calculate the ROI contribution for PME, and that's why there is a large margin of error. This became an even greater problem when the data were further split by size and launch date, and so we won't be showing the PME splits for the nine cells. The following slides will, however, provide the ROI for detailing, DTC, and journal advertising broken down by revenue and launch year.

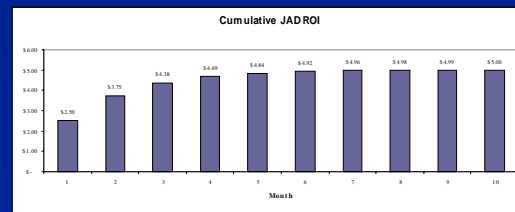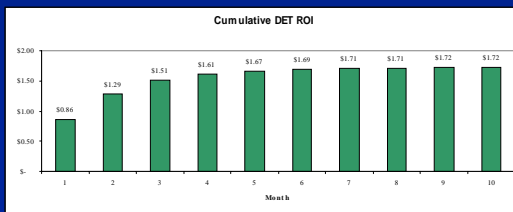## ROI of Median Brand Profile by Size/Launch Date

DET

	≤1993	1994-1996	1997-1999
$25-$50MM	$1.27	$1.41	$1.45
$50-$200MM	$1.78	$2.68	$3.70
$200MM+	$2.34	$6.76	$10.29

DTC

	≤1993	1994-1996	1997-1999
$25-$50MM	n.s.	n.s.	$0.25
$50-$200MM	n.s.	$0.43	$0.59
$200MM+	n.s.	n.s.	$1.37

JAD

	≤1993	1994-1996	1997-1999
$25-$50MM	$3.50	$2.58	$2.22
$50-$200MM	$5.29	$4.54	$4.47
$200MM+	$6.79	$6.86	$5.42

n.s. = not statistically different from zero, two-tailed test, 0.05 significance level

This slide shows the ROI results for detailing, DTC, and journal advertising, broken down into our nine cells. The first thing one is struck by is that the ROI is higher for larger brands. For detailing, in addition to the ROI being higher for the larger brands, it's particularly high for the more recent brands. This study would support the adage that when you're launching a new brand, get that push strategy going, and get the people in the field detailing physicians and pushing it through. That expenditure can have a huge payoff…$10.29. Now, let's look at DTC. The "n.s." means not statistically significant. We could not detect a statistically positive effect for DTC in certain cells, but could for the more recent brands. The ROI for the median brand profile launched between 1997 and 1999, with at least $200 million in sales, was $1.37. In general, DTC does better for larger and more recently launched brands. Journal advertising follows that same pattern in terms of having a larger ROI for the larger brands. However, contrary to detailing and DTC, journal advertising tends to be even better for the mature brands. But, it's not a drastic difference, as JAD does have a high ROI for recently launched brands as well.

Long-Term Effect of Marketing

- Total effect of promotion is not just realized in the first month — it accrues over several months. At most, 50% of the total ROI is felt in the first month — can take 1-2 years for most of the impact to be realized

- Half of the total ROI payback for DET and JAD occurs immediately in the month in which the expenditure takes place. It takes 10 months for the full effect to accumulate

Cumulative DET ROI

$0.86, $1.29, $1.51, $1.61, $1.67, $1.69, $1.71, $1.71, $1.72, $1.72

Cumulative JAD ROI

$2.50, $3.75, $4.38, $4.69, $4.84, $4.92, $4.96, $4.98, $4.99, $5.00

This slide provides an interesting perspective on what we call the "dynamics" of advertising effectiveness. That is, the effectiveness of a marketing expenditure is not only seen in the month that you spend it, but it also accrues in subsequent months. In fact, for our variables, at most 50% of the total ROI occurs in the first month. It can take 1-2 years for most of the impact to be realized. With detailing and journal advertising, exactly half of the ultimate ROI impact occurs in the first month; the other half occurs in the subsequent 9 months. For example with detailing, the total detailing ROI was $1.72. Half of it ($.86) was felt immediately in the first month. However, it then took up to a full 9 months for the total ROI of $1.72 to be accumulated. In contrast, for DTC, only 10% of the effect takes place in the first month, 72% in the first year, and then it takes over 2 years for the total effect to accumulate.

Allocating New Marketing Funds to DET vs DTC
Median Brand Profile: $50-200MM, Launched 1994-1996
DET ROI = $2.68; DTC ROI = $0.43

- What is the ROI for various allocations of a 15% increase ($.788MM) in the current budget?

Annual DET*	Annual DTC*	Total Budget*	Annual Revenues*	ROI on Budget Increase
$5,256	$ 0	$5,256	$59,784	-
$6,044	$ 0	$6,044	$61,922	$2.71
$5,650	$394	$6,044	$60,998	$1.54
$5,256	$788	$6,044	$60,090	$0.39

- Allocating additional funds to DTC, which in this case is less productive than DET, dilutes ROI of budget increase

*Numbers are in $000

What I would like to do now is take you through budget scenarios showing what might be the implications of these findings. Here we're going to look at the median brand profile of a $50 to $200 million brand, launched between 1994 and 1996. The ROI was $2.68 for detailing and 43 cents for DTC. What we're going to look at is a scenario where the brand is expanding its marketing. What would be the implications of putting the additional money into detailing versus DTC? How does that affect the ROI payback? For the median brand profile in this cell, the current detailing and DTC combined budget is $5.256 million. What would be the return on investment for various allocations of a 15% ($788,000) increase in the current budget? What are the implications of putting that increase into detailing versus DTC? The first line in the chart shows the current state of affairs. We're spending $5.256 million on detailing, but nothing at this point on DTC. Thus, the total budget is $5.256 million. Our annual revenues are $59.784 million. If another $788,000 were added to the marketing budget, what would happen if we put all of this into detailing? The regression analysis predicts that the annual revenue would go up to almost $62 million, a gain of over $2 million, on a $788,000 expenditure. This means that the ROI on that budget increase is $2.71. What would happen if we didn't put it all into detailing, but put half into detailing and half into DTC. That's going to dilute the ROI on the budget increase (now $1.54) because you're putting some of the promotional increase into something that's less productive, in this case, DTC. You're also going to be losing potential revenue. What would happen if we allocated all of the increase to DTC? In this case, the ROI would decrease to 39 cents.

Allocating New Marketing Funds to DET vs JAD
Median Brand Profile: $200MM+, Launched ≤1993
DET ROI = $2.34; JAD ROI = $6.79

- What is the ROI for various allocations of a 15% increase ($2.513MM) in the current budget?

Annual DET*	Annual JAD*	Total Budget*	Annual Revenues*	ROI on Budget Increase
$16,128	$ 624	$16,752	$461,139	-
$18,641	$ 624	$19,265	$467,253	$2.43
$17,384	$1,880	$19,265	$472,443	$4.50
$16,128	$3,137	$19,265	$478,870	$7.06

- Allocating additional funds to JAD, which in this case is more productive than DET, enhances ROI of budget increase

*Numbers are in $000

In this scenario, we will use a 15% budget increase, but allocate the promotional increase between detailing and journal advertising. We will also now look at a larger brand — greater than or equal to $200 million in annual revenue — launched on or before 1993. For this median brand, the detailing ROI is $2.34 and the journal advertising ROI is $6.79. You can see that in this case, it's going to be better to allocate more money not to detailing, but to journal advertising. Here we're spending $16.128 million on detailing and only $624,000 on journal advertising, for a total budget of $16.752 million, and annual revenues of $461.139 million. Now let's take that 15% budget increase, which in this case would be $2.513 million, and put it all into detailing. You do get some payback for that because detailing does have a decent ROI. In fact, the ROI on that budget increase would be $2.43. If you divide the budget increase, however, between detailing and journal advertising, you now would get an ROI on that increase of $4.50. If you put all of the increase toward journal advertising, then you get an ROI of $7.06. Obviously, putting all your money into the more productive activity, in this case journal advertising, provides the highest ROI.

Reallocating Budget Between DET and JAD
Median Brand Profile: $200MM+, Launched ≤1993
DET ROI = $2.34; JAD ROI = $6.79

- What is the ROI when one reallocates the current $16.752MM DET and JAD budget?

Annual DET*	Annual JAD*	Total Budget*	Annual Revenues*	Base Revenues*†	ROI on Marktng
$16,128	$ 624	$16,752	$461,139	$416,518	$2.66
$15,504	$1,248	$16,752	$464,101	$416,518	$2.84
$14,136	$2,496	$16,752	$470,728	$416,518	$3.26
$11,640	$4,992	$16,752	$488,372	$416,518	$4.32

- Reallocating more toward JAD, which in this case is more productive than DET, enhances ROI

*Numbers are in $000
†Base Revenues = Estimated Brand Revenues if no money spent on DET or JAD (ie, if Total Budget = 0)

This scenario takes the same median brand profile seen in the previous case, and looks at what happens when one reallocates the current budget between detailing and journal advertising. The detailing ROI is $2.34, and journal advertising is $6.79. But what would happen if we started to take some of that detailing money and put it toward journal advertising? How would that impact the ROI of the total marketing budget? What we start off with is the current budget, where we are spending $16.128 million on detailing and $624,000 on journal advertising, for a total budget of $16.752 million; annual revenues are $461.139 million. Next we calculate a base level of sales, which is an estimate for the sales levels you obtain without any marketing budget. For this median brand, the base revenues are a little over $416 million. This means that the marketing budget ROI is now $2.66 ($461.139 million minus $416.518 million divided by $16.752 million). Now, let's start reallocating some money to journal advertising. What you see is that the ROI of your marketing budget obviously improves. But in this example, it's not highly noticeable until journal advertising dollars are increased significantly. When you move from a journal expenditure of $624,000 to $1.248 million (an increase of over $600,000), it's still a small percentage of the total budget, and thus you are not going to see a huge increase in the ROI. Allocating more money to journal advertising, in this next case close to a $2 million increase, then one starts to see a more noticeable effect with the ROI going to $3.26; for over a $4 million increase, the ROI then goes to $4.32. What comes out of this study is that if you are going to do some reallocation, reallocate to the higher ROI tactic (journal advertising in this example), to make the overall marketing budget more productive.

Overall Findings

Detailing

- Overall ROI of $1.72 suggests that DET pays off even at very high levels of expenditure

- Range of $1.27-$10.29, depending on brand size/launch date

- Particularly higher ROI for large and more recently launched brands

Direct-to-Consumer

- Overall ROI of $0.19 suggests one must be careful to use DTC for the right brand

- Range of $0.00-$1.37, depending on brand size/launch date

- Best for large and more recently launched brands

Our overall findings: for detailing, there is an overall ROI of $1.72, suggesting that detailing pays off even at very high levels of expenditure. The range of this variable is the largest, going from $1.27 to $10.29, depending on brand size and launch date. There is a particularly high ROI for large and more recently launched brands. For direct-to-consumer advertising, the overall ROI is 19 cents, suggesting that one must be careful to use DTC for the right brand. DTC doesn't appear to be as simple as "just throw money at it and good things happen" — that's an important lesson to learn. However, we did find that the large and more recently launched brands (showing an ROI of $1.37) are typically the more promising areas.

Overall Findings (cont'd)

Medical Journal Advertising

- Overall ROI of $5.00 is highest among all four marketing activities

- This plus its small share of budget suggests JAD is underutilized

- Range of $2.22-$6.86, depending on brand size/launch date

- Particularly higher ROI for larger and older brands

Physician Meetings & Events

- Overall ROI of $3.56 is second highest

- This plus its small share of budget suggests PME is underutilized

In terms of medical journal advertising, here we have an overall ROI of $5, which is the highest among all four of the marketing activities. This finding, plus its small share of budget, suggests that journal advertising is underutilized, and may be an area where firms need to focus a little bit more attention. The range calculated was $2.22 up to $6.86, depending on brand size and launch date, with particularly higher ROI for larger and older brands. Physician meetings and events carries a very similar message to that of journal advertising. The overall ROI of $3.56 is second highest. This finding, plus its small share of budget, suggests that PME is also underutilized.

Overall Findings (cont'd)

Other Lessons

- Up to half of the ultimate ROI from a marketing investment occurs in the first month of expenditure. Can take 1-2 years for most of the impact to be realized

- ROI from incremental marketing investments or reallocations depends significantly on which activities get additional monies

In terms of other lessons, there is the finding that the total ROI takes place over time: at most, half of the ultimate ROI from a marketing investment occurs in the first month of expenditure, and then it can take up to 1-2 years for most of the impact to be realized. A final lesson is that ROI from incremental marketing investments or reallocations depends significantly on which activities get additional monies. There are differences from one marketing activity to another, and how budgets are allocated can make a big difference in the overall productivity and returns from marketing expenditures.

Additional Analysis/Next Steps

- Explore ROI for specific brands
    - Very challenging because of smaller sample size
    - Maximum of 60 months versus 16,696 monthly observations in Aggregate Analysis

- Analyze 2000 data
    - More observations
    - More recent ROIs

- Explore competitive impact

- More detail on DTC
    - TV versus print
    - Recent versus earlier ROIs

While we've learned a lot from this analysis, it is time to plan for future analyses. One important next step would be to calculate the ROI for specific brands, rather than for the "median brand profile." The challenge in doing this is that there are only, at most, 60 months for each brand. This is a relatively small sample size, especially compared with the 16,696 monthly observations we have for the Aggregate Analysis. One way to help address the issue of limited data...is to collect more data. And that is why we will soon be adding the year 2000 data to our database. In addition to helping the brand-specific analysis, this will provide more recent, and thus more relevant, ROIs. We also plan to explore the competitive impact of one brand's expenditure upon others in its therapeutic category. And finally, we hope to examine DTC in more detail. In particular, we'll investigate television versus print expenditures, and recent versus earlier ROIs.

Clearly there is still much exciting analysis to be done. We look forward to bringing you these additional results in the future.