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# MARKETING MIX MODELING

WHAT MARKETING PROFESSIONALS  
NEED TO KNOW  
MARCH 2014





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# FOREWORD

## ATTENTION BRAND MANAGERS, MULTICULTURAL MANAGERS, MARKETING INTELLIGENCE TEAMS AND PLANNING AGENCIES:

Though you may already use primary and secondary media research to guide your marketing strategy, you may be missing out on key information if you're not measuring marketing effectiveness too. More information is required to answer these compelling questions:

- How much media is enough?
- Which medium is most effective?
- What is the best media environment to use?
- Is it better to use flighting or continuity?
- When are ads worn out?

Marketing Mix Modeling (MMM), the use of statistical analysis to estimate the past impact and predict the future impact of various marketing tactics on sales, can deeply inform marketing plans. While marketing spend and bottom line results are often perceived as disconnected, Marketing Mix Modeling closes the loop and shows the path to improved return on marketing investment.



This paper will give you an understanding of the elements of a Marketing Mix Modeling project and how to use its outputs to improve marketing efficiencies and Marketing Return on Investment (MROI). We'll explore the importance of segmenting your audience to improve your effectiveness, looking at the Hispanic segment as an example, since they are one of the fastest growing groups in the U.S.

In Section I, you'll get an overview of the key components and phases of a Marketing Mix Modeling project. Section II identifies what to consider when incorporating your results into planning, with a lens focused on Hispanic media. Mastering Marketing Mix Modeling can enhance your marketing and advertising decision-making, giving you not only positive results, but confidence in your future marketing plans.

As the world's largest marketing mix modeling provider, Nielsen has an unmatched ability to integrate a diverse set of data sources into state-of-the-art marketing models to provide globally relevant and consistent marketing mix recommendations. With local presence in more than 100 countries, Nielsen delivers an end-to-end solution using integrated insights, global comparability and proven predictive simulation and optimization tools. Nielsen is a founding member of the Digital Media Consortium with Google, Facebook and a group of leading advertisers, focusing on identifying groundbreaking trends and insights on measuring the return of digital marketing initiatives.



## EXECUTIVE SUMMARY

Marketing Mix Modeling (MMM) is an important part of any marketing plan. It allows you to measure past performance and chart a path for future success. To ensure a successful Marketing Mix Model project, every project must begin with a checklist of business questions, which will keep you focused on your goals and make sure your project is answering the right questions. You can see a sample checklist at the end of this paper.

The four phases of a Marketing Mix Modeling project are:

1. Data collection and integrity: Collaborate with your Marketing Mix Modeling vendor to decide which data needs to be included.
2. Modeling: Test the models against your checklist. Ensure your in-house analytics team is involved.
3. Model-based business measures: Interpret the model-based outputs and look at your campaign's effectiveness, efficiency and Marketing Return on Investment. Measure incrementality by campaign for all tactics so you can better understand drivers of incremental profit.
4. Optimization and simulation: Determine the best marketing mix for your next planning period.

Your Marketing Return on Investment (MROI) will be a key metric to look at during your Marketing Mix Modeling project, whether that be Marginal Marketing Return on Investment for future planning or Average Marketing Return on Investment for past interpretation. The best projects also gauge the quality of their marketing mix model, using Mean Absolute Percent Error (MAPE) and R<sup>2</sup>.

Once you feel comfortable with the way a Marketing Mix Modeling project should work, it's time to take it to the next level: applying what you've learned to specific audiences. We've chosen to focus on one of the fastest growing groups in the U.S., the Hispanic population. Looking at data from previous Nielsen studies, we note these five key findings when including Hispanic media into your Marketing Mix Modeling project:

1. Ad creative is very important to your sales top line and your MROI, especially if you can tailor it to a segmented audience. This paper presents five best Spanish language creative practices to drive MROI, which should also impact top-of-the-funnel marketing measures.
2. The long-term impact of marketing on sales is hard to nail down, but we have found that ads that don't generate sales lift in the near-term usually don't in the long-term either. You can also expect long-term Marketing Return on Investment to be about 1.5 to 2.5 times the near-term Marketing Return on Investment.
3. Modeled sales may not be equivalent to total sales. Understand how marketing to targeted segments will be modeled.
4. Brand size matters. As most brand managers know firsthand, the economics of advertisement favors large brands over small brands. The same brand TV expenditure and TV lift produces larger incremental margin dollars, and thus larger Marketing Return on Investment, for the large brand than the small brand.
5. One media's Marketing Return on Investment does not dominate consistently. Since flighting, media weight, targeted audience, timing, copy and geographic execution vary by media for a brand, each media's Marketing Return on Investment can also vary significantly.

Knowing these key findings, you can follow the best practices for a Marketing Mix Modeling project, such as focusing on campaign effectiveness and deciding between continuity and flighting. It also helps to get to know your category's wallet share, the effect your brand size may have on your results and the differences between various forms of media. Once you understand these best practices, you'll be well on your way to executing a successful Marketing Mix Modeling project.

# OVERVIEW OF MARKETING MIX MODELS

Marketing Mix Modeling (MMM) is the use of statistical analysis to estimate the past impact and predict the future impact of various marketing tactics on sales. Your Marketing Mix Modeling project needs to have goals, just like your marketing campaigns. As a brand manager, you are responsible for setting those goals and seeing them through. Before you begin working with a modeling vendor, make a checklist of questions for your vendor to address, like the one at the end of this paper. Think of your checklist as a roadmap to success—you'll never get anywhere if you don't know where you're going, so don't skip this step.

## MARKETING MIX MODELING OBJECTIVE AND REQUIREMENTS

The main goal of any Marketing Mix Modeling project is to measure past marketing performance so you can use it to improve future Marketing Return on Investment (MROI). The insights you gain from your project can help you reallocate your marketing budget across your tactics, products, segments, time and markets for a better future return. All of the marketing tactics you use should be included in your project, assuming there is high-quality data with sufficient time, product, demographic, and/or market variability. Each project has four distinct phases, starting with data collection and ending with optimization of future strategies. Let's take a look at each phase in depth:



### PHASE 1: DATA COLLECTION AND INTEGRITY

To kick off your project, do your due diligence and collect the data that will be used in the statistical model. Determine which products will be analyzed, the timeframe you'll look at, the time-dimension granularity, and which markets to model. Finally, determine the sales performance measure to be analyzed – dollar sales, volume, units or something else.<sup>i</sup> You'll also need to gather brand margin rates and marketing tactic spend, which are needed to calculate Marketing Return on Investment down the road.

<sup>i</sup>Regardless of the actual sales performance measure modeled, we will refer to it as “sales.”

**HIGHLIGHT**

THE MAIN GOAL OF  
ANY MARKETING MIX  
MODELING PROJECT  
IS TO MEASURE  
PAST MARKETING  
PERFORMANCE SO  
YOU CAN USE IT TO  
IMPROVE FUTURE  
MARKETING RETURN ON  
INVESTMENT (MROI).



Partner with your Marketing Mix Modeling vendor to decide which tactics to include in the model. You can use our list, below, for ideas.

### SAMPLE MARKETING MIX MODEL SALES TACTIC

DISTRIBUTION & PRICING	PRODUCT	PAID MEDIA	PROMOTIONS	EXTERNAL FACTORS
Distribution	Product Life Cycle	TV	Merchandising	Seasonality & Weather Patterns
Pricing	Product Changes	Magazines	Couponing	Competitive Factors
CRM & Offers	New Products	Newspaper	Public Relations	Macroeconomic Inputs
Channel Incentives	Segment Trends	Radio	Loyalty Program Activity	
Retail Format Changes	Product Recalls	Outdoor/Out-of-Home	Event Marketing	
	Quality Metrics	Online Media	Sponsorships	
	Awards		Word-of-Mouth	
	Third-Party Reviews			
	Sampling			
	Inventory Levels			
	Sales Force Activity			
	Customer Satisfaction			
	Product Performance			
	Product Placement			

In Phase 1, your team will answer questions like: How can you make sure that your chosen data is consistent over its entire life cycle? And are you using the best available data for your project? Phase 1 also includes verifying data integrity, which requires coordination among all project stakeholders. To ensure that your Marketing Mix Modeling project meets expectations, key stakeholders must participate in a Data Review session before you move to Phase 2 (Modeling). This review will ensure proper handling of the data by the vendor, who will eventually be processing and synthesizing large amounts of disparate data for you.

### PHASE 2: MODELING

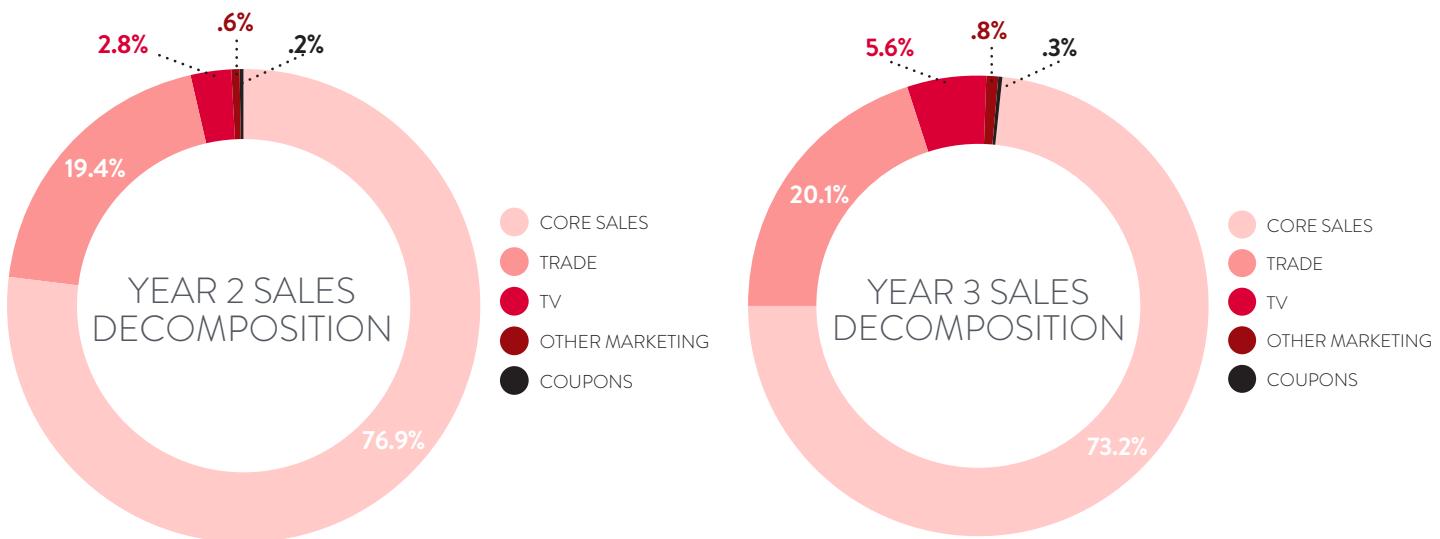
The statistical method used is usually determined by the vendor after collaborating with the advertiser to ensure the model addresses your questions. Brand managers should partner with their in-house analytics team during this phase of the project. It's important for the in-house analytics team to dive deeply into the statistical details and specifications. Any concerns the in-house team has with these details should be raised with you immediately.

### PHASE 3: MODEL-BASED BUSINESS MEASURES

The outputs from your Marketing Mix Modeling project – that is, the data that comes out of your statistical model – needs to align with your checklist and address the questions you listed. Your project will produce a host of outputs that measure how each tactic affects sales, and before sharing results with a wide audience you should review your vendor's proposed outputs to make sure they support your goals.

A fundamental output of a Marketing Mix Modeling project is the decomposition of sales, often represented by a pie chart, showing sales volume broken down by each modeled tactic. This output differentiates core and incremental marketing tactics – the core includes all marketing tactics not controlled by the marketing/trade team (for example, distribution, weather, seasonality, competitive trade, competitive advertising and more). You can also think of it as the sales that would be generated in the absence of any marketing efforts. Incremental tactics are just the opposite, those controlled by the marketing/trade team. Your project should measure incrementality by campaign for all media-specific tactics executed. This way, you'll know whether existing campaigns should be continued, and if so, to what extent.

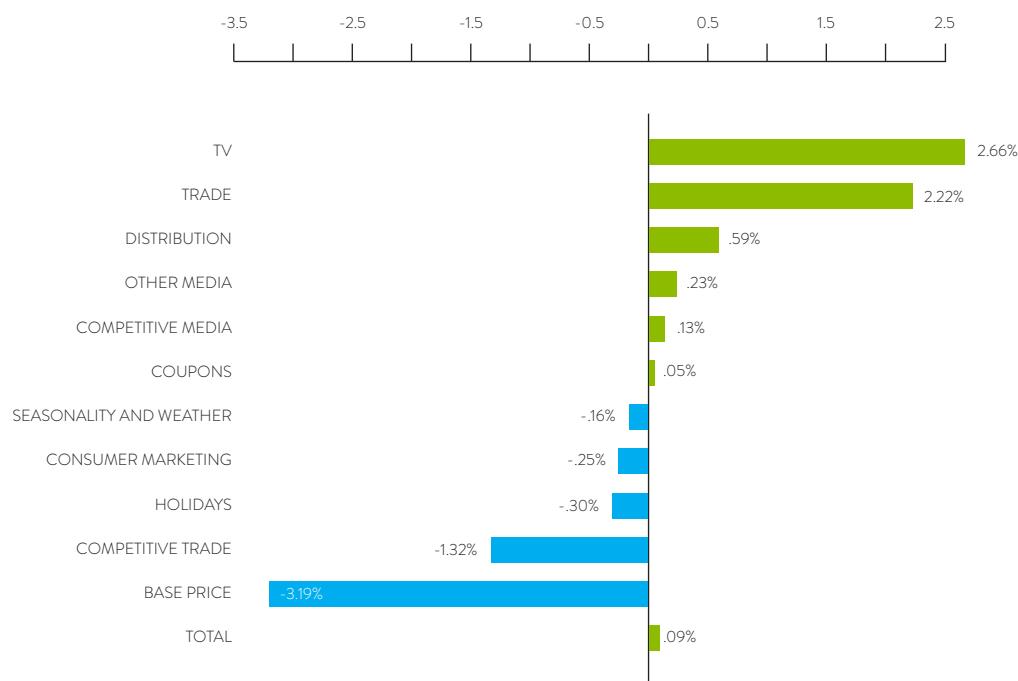
The pie chart below shows the percentage of total sales attributed to each marketing tactic in Year 2 and Year 3<sup>2</sup>.



<sup>2</sup>The charts in this section are illustrative and should not be considered to be the output of an end-to-end marketing mix modeling project.

Another fundamental business output of a Marketing Mix Modeling project is the year-over-year impact of each tactic on sales. This chart usually includes comments about the changes in marketing support that caused changes in incremental sales.

## YEAR 3 VS YEAR 2, PERCENTAGE CHANGE IN TACTIC CONTRIBUTION



### COMMENTS

TV: TV spend increased by 50% and GRPs by 55%

Trade: Trade support increased by 10%

Distribution: Average # items per store selling increased by 6%

Other Media: Radio spend increased by 30%

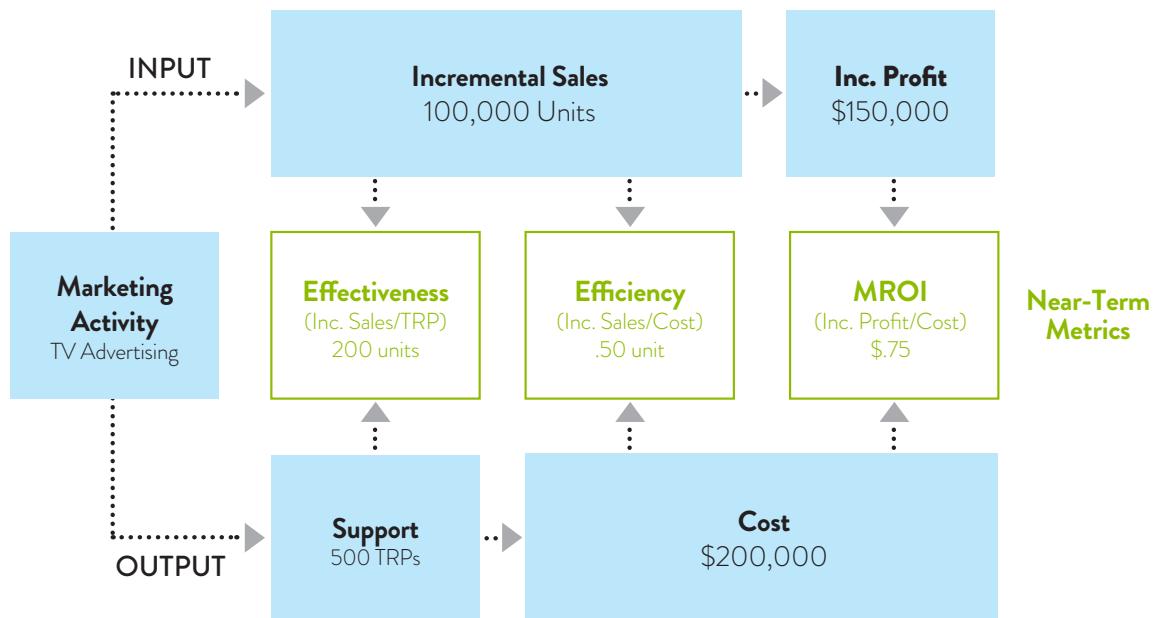
Competitive Media: Though competitors increased TV spend by 20%, the year-over-year affect is relatively constant

Consumer Marketing: In store promotions decreased by 4%

Price: Base price increase by 1.9% on average

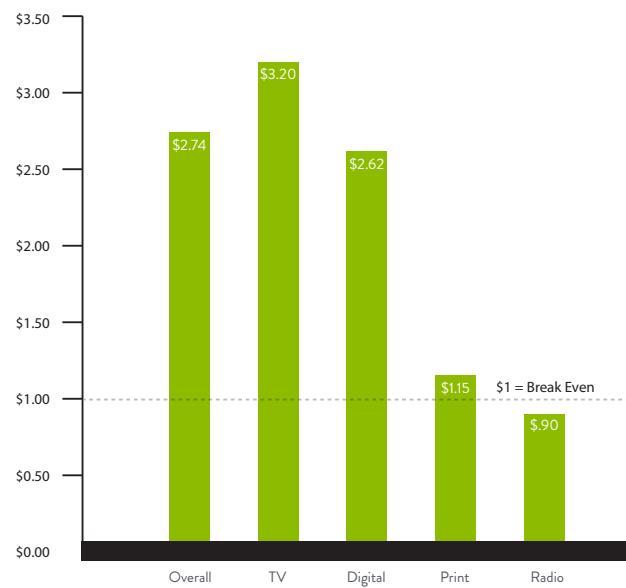
There are three important metrics to look at after performing a decomposition of sales.

- The first is **Effectiveness**. If you divide the incremental sales (those that came as a result of marketing efforts) by the support (the execution of each marketing effort, such as Target Rating Points for media) for each tactic, you get near-term Effectiveness.<sup>3</sup>
- The second metric is near-term **Efficiency**, which you can find by dividing incremental sales by expenditures (typically working spend for media) for each tactic.
- Lastly, dividing a marketing tactic's incremental margin dollars (the gross profit) by its spend yields **Marketing Return on Investment**.



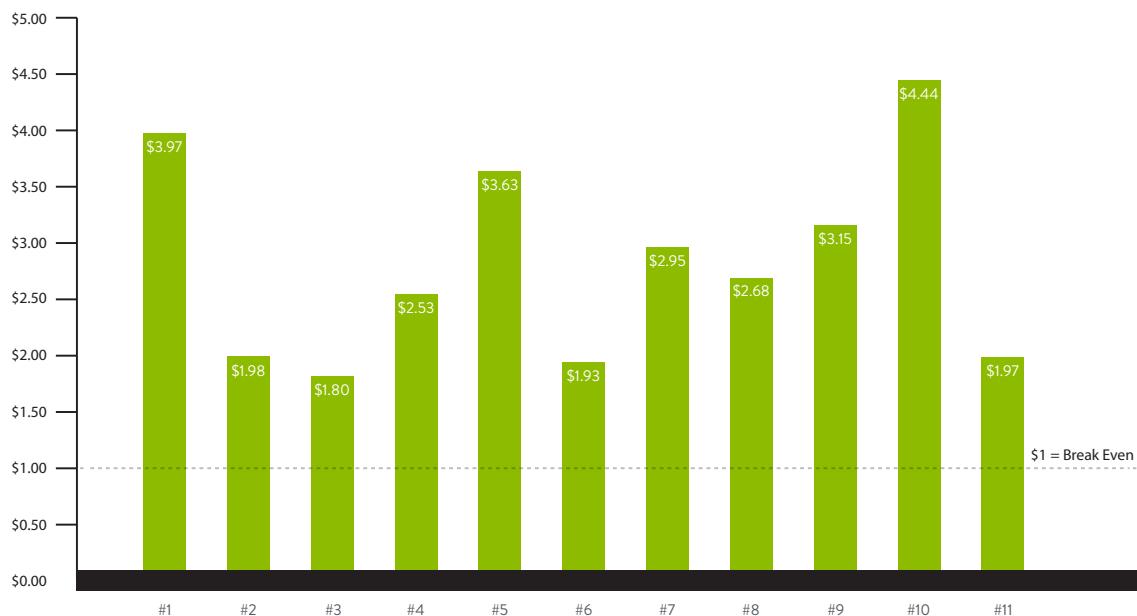
<sup>3</sup>Near-term is usually 5 to 8 months after the first media exposure.

Brand 1 MROI by Media



Each media type in the graph shown above is made up of a number of distinct campaigns. The Marketing Return on Investment for each of these campaigns by media, or across media, are also available since Marketing Mix Modeling estimates the impact of each campaign by media. The chart below shows the Marketing Return on Investment for each of the 11 TV campaigns executed for Brand 1. These insights will be key in helping you address business challenges and improve Marketing Return on Investment.

Brand 1 MROI by TV Campaign



#### PHASE 4: OPTIMIZATION AND SIMULATION

The final phase of a Marketing Mix Modeling project essentially turns your outputs into inputs for future marketing planning. After the completion of modeling, you can perform an optimization/simulation exercise, which provides insights to use when planning future marketing campaigns. These exercises simulate the effect that varying each marketing tactic might have on future sales (also known as simulation, or “What-if Analysis”), and determine the best combination of tactics for reaching your goals (also called optimization). In other words, a mathematical model and various user-supplied constraints can provide insights to make the way you approach marketing even better in the future.



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THE FINAL  
PHASE OF A  
MARKETING  
MIX MODELING  
PROJECT  
ESSENTIALLY  
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FOR FUTURE  
MARKETING  
PLANNING.

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## USE OF MARGINAL VS. AVERAGE MARKETING RETURN ON INVESTMENT

So far we've been using the term "Marketing Return on Investment" to mean Average Marketing Return on Investment. But Marketing Mix Modeling can also provide insights into Marginal Marketing Return on Investment, and it's important to know the difference between the two. Marginal Marketing Return on Investment measures the financial impacts of the next \$1 in spend. While Average Marketing Return on Investment can help you gauge past performance, Marginal Marketing Return on Investment is what you should use for future media planning, such as in Optimization and "What-if" exercises. See illustrative example on page 29.

## GAUGING THE QUALITY OF A MARKETING MIX MODEL

Before you make changes to your marketing plan based on the output from your Marketing Mix Modeling project, it's a good idea to evaluate the quality of the model.

Though brand managers are not necessarily modelers, you should have a basic understanding of how to gauge the quality of a Marketing Mix Model. For instance, models that do not accurately predict sales should be a cause of concern. It's a good idea to include a section on model quality in your checklist.

You can use many different diagnostics to measure the quality of a model. Some diagnostics can also be used to determine if you have data quality issues. Two popular measures that determine how well the model will predict sales are Mean Absolute Percent Error (MAPE) and  $R^2$ .

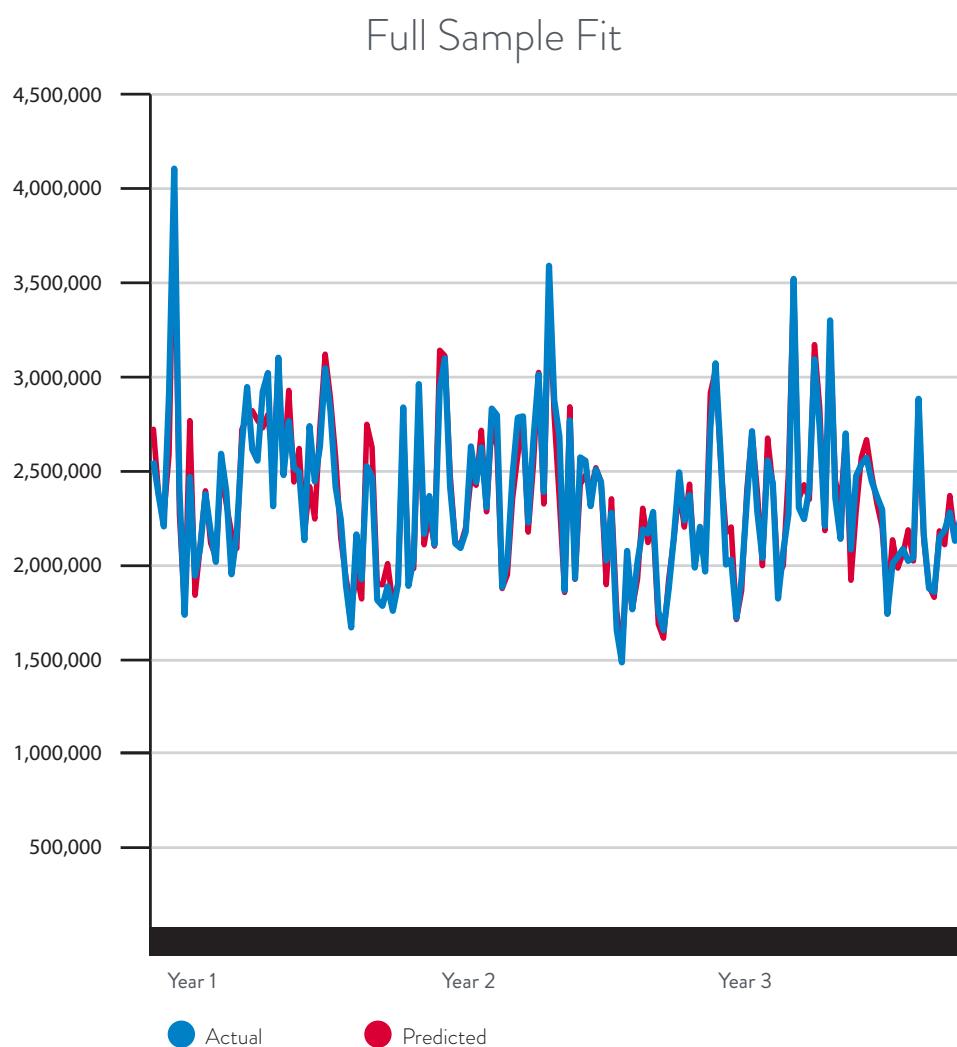
**How to use MAPE.** This diagnostic validates the quality of a Marketing Mix Model by comparing the MAPE between a training sample and a holdout sample. The training sample is used to build the model, and the holdout sample is used to validate the model.<sup>4</sup> A smaller MAPE for both samples indicates a better model fit. A model that fits the data perfectly has a MAPE=0%. No model should be expected to fit the data perfectly. Moreover, models that fit historic data perfectly usually have poor future performance. As a guideline, the difference between the training sample's MAPE and the holdout sample's MAPE should be less than 2 percentage points, and the value of training sample's MAPE should be less than 10%, preferably less than 5%.

<sup>4</sup>The training sample is used to determine each tactic's lift factor. A tactic's lift factor determines the effect the tactic has on sales.

**How to use  $R^2$ .** Another measure used to determine the quality of the model for the training sample is  $R^2$ .  $R^2$  is the percentage of sales variation that is explained by the model's tactics.  $R^2$  is between 0 and 1. A model that will fit the data perfectly will have an  $R^2=1$ . A principle that it is usually abided to in the industry is that  $R^2$  should be greater than 0.8.

### MAPE & $R^2$ FOR ONE BRAND OF A MULTI-BRAND MARKETING MIX MODELING PROJECT

FULL SAMPLE FIT	TRAINING SAMPLE FIT	HOLDOUT SAMPLE FIT
100% Sample	80% Sample	20% Sample
$R^2 = 0.93$ MAPE = 3.7%	MAPE = 3.8%	MAPE = 3.9%



# CONSIDERATIONS WHEN INCORPORATING MARKETING MIX MODEL RESULTS INTO A MEDIA PLAN

While Marketing Mix Modeling can be especially effective when focusing your modeling efforts on a segmented audience, there are several nuances to keep in mind when taking this strategy. We'll use the Hispanic population as a lens through which to look at Marketing Mix Modeling in segmented media planning.

Marketing Mix Modeling isn't the only tool you can use when planning your marketing budgets across a portfolio of brands. You should also consider each brand's sales dynamics and trend, its category market share, household penetration, operating income and its targeting strategy in the annual marketing decision process. Using this information, you can begin by allocating marketing budgets to each brand. For many brands, the next step is top line media spend allocations, followed by determining publishers, formats and media mix (e.g., copy, layout, etc.). As the year unfolds, you can modify brand budget allocations by evaluating a broad set of evolving measures.

What should you consider when planning marketing tactics around these results? We'll first start by reviewing findings for the Hispanic segment, followed by general directives.

## FINDINGS WHEN INCLUDING HISPANIC MEDIA INTO MARKETING MIX MODELING

### IMPACT OF CREATIVE ON SALES

Industry research has shown that the size and duration of marketing's impact on sales are determined primarily by the persuasiveness of the ad's messaging and creative, effective delivery, and purchase reinforcement.

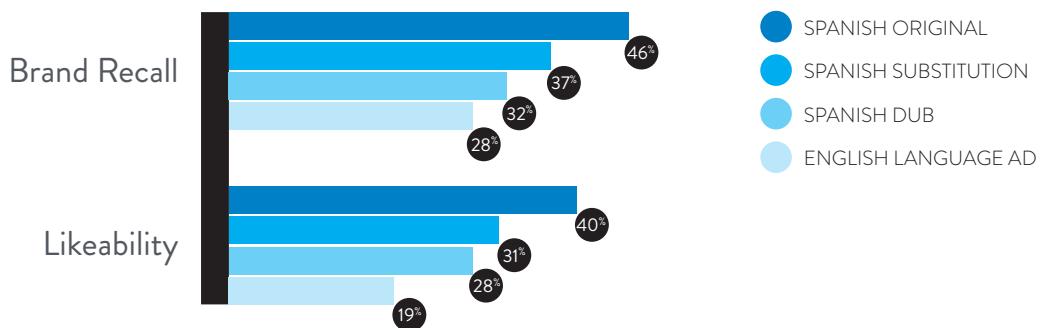
This research, as well as the Marketing Mix Modeling industry's standard approach to model media by campaigns, stresses the importance of the impact of creative on all levels of the marketing funnel.

Results from focus groups and brand effect studies tend to correlate with sales effectiveness – when an ad is well received by focus group attendees, the campaign tends to also do well. In planning your strategy, you can overlay a campaign's focus group or brand effect results on your Marketing Mix Modeling project results to get an even better idea of what is and what isn't working.

Because having robust top-of-the-funnel measurements of a creative's impact is so essential, you should have segment-level detail for Hispanic segment advertising initiatives. Nielsen TV Brand Effect studies have made some interesting discoveries for those looking to target the Hispanic segment. We've found that Spanish language original ads with a Spanish dialogue and a Spanish engaging narrative storyline increase brand recall, likeability and, therefore, purchase intent. Nielsen also found that among bilingual Hispanics, ads generate better recall and likeability on Spanish language broadcast than on English language broadcast.

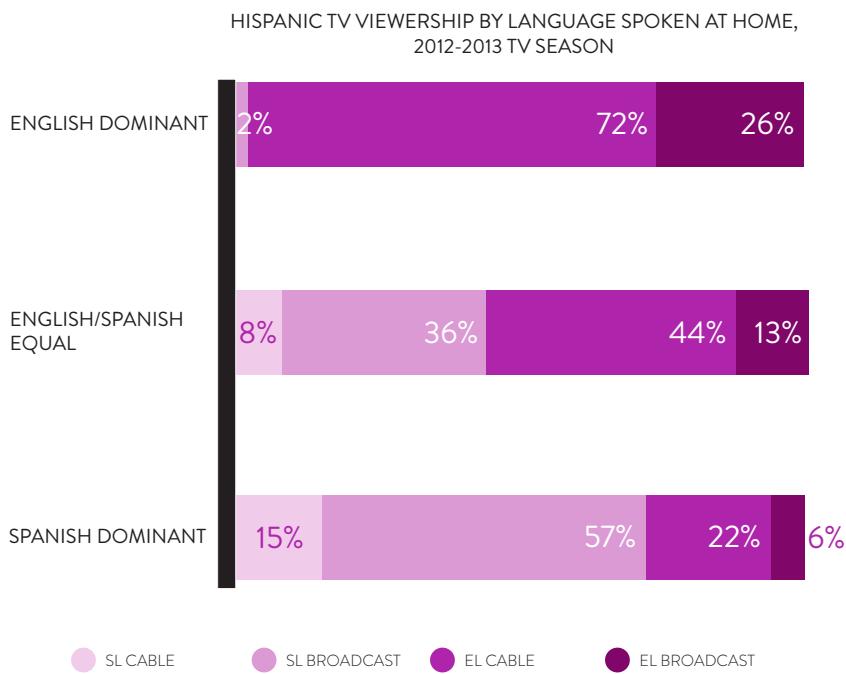
Producing more tailored Hispanic ads improves performance among bilingual Hispanics. The same study shows that "Spanish Original Ads" performed better in terms of brand recall and likeability than "Shadow Ads," "Spanish Dub Ads" and "English Ads."

## AD PERFORMANCE – BILINGUAL HISPANICS A18-49



Source: Nielsen TV Brand Effect (IAG) 7/1/11 to 12/31/11. Limited to Primetime Non-Sports Programming, limited to same brands on Spanish-Language Broadcast and English-Language Broadcast, and limited to same brands on Spanish & English Language

These results make sense because we already know that Hispanics are more likely to watch TV in the language that they speak at home. Spanish-dominant Hispanics spend more than 72 percent of their TV minutes watching Spanish language broadcast or cable, and only 28 percent of their TV time watching English language broadcast or cable.



Source: Nielsen Measurement of Percentage of time viewing English and Spanish Language TV by Hispanics 18-49 during 2012-2013 TV Season

If you're developing Spanish language creative, follow these five best creative practices to drive top-of-the-funnel marketing measures and Marketing Return on Investment:

1. Spanish Original: Ads targeted to the Latino market outperform repurposed General Market ads.
2. Spanish Dialogue: Enhance cultural relevance with on-screen dialogue in Spanish.
3. Narrative Storyline: Engage with a story, particularly those that highlight family bonds.
4. Humor: Leverage the universal human desire for a good laugh.
5. Relatability: Feature relatable characters in familiar, real-world settings.

Source: Nielsen TV Brand Effect (IAG) 1.01.09 – 12.31.11

## LONG-TERM IMPACT OF MARKETING ON SALES

So far, there is no single analytical method that has been uniformly accepted for measuring the long-term impact of marketing on sales. However, research studies have uncovered a few common themes about long-term marketing, which you may find useful when focusing on the Hispanic population. One finding was that ads that do not generate sales lift in the near-term usually do not generate sales lift in the long-term either, and you can expect long-term Marketing Return on Investment to be about 1.5 to 2.5 times the near-term return.

For example, Nielsen recently completed a CPG brand long-term impact study and estimated the long-term impact of media on sales to be slightly less than 2 times the near-term effect. We also discovered that the brand's media reduced consumer price sensitivity. Using both of these insights, the marketing department was able to further justify its share of the total consumer promotion, trade and advertising budget.

You can expect there to be a "maturation time" between branding a new product or line extension and seeing any sales growth. This is especially true for lines with relatively long inter-purchase times (the time elapsed between two purchases on the same product). For example, if the inter-purchase time of a line is longer than 4 months, we recommend you use other measures to gauge marketing performance, in addition to near-term Marketing Return on Investment.

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FOR BRANDS  
RECENTLY  
INTRODUCED TO  
A DEMOGRAPHIC  
SEGMENT, BUILDING  
BRAND AWARENESS,  
IMPROVING BRAND  
CONSIDERATION AND  
OTHER TOP-OF-THE  
FUNNEL MEASURES  
USUALLY TAKE  
PRECEDENCE OVER  
NEAR-TERM MROI.

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## MODELED SALES MAY NOT BE EQUIVALENT TO TOTAL SALES

If the total universe of sales is not modeled, or best-in-class demographic/retail channel projections are not used, the impact of a marketing tactic may be underreported. To mitigate this issue, attempt to model channels that make up at least 90% of total sales, where channel projections are representative of demographic segment buying. This is particularly important for the Hispanic segment since for many categories they shop in channels that may not be easily tracked.

When you cannot model the universe of sales, one option you can use instead is to model shipments of non-modeled channels. This can be a challenging modeling exercise, because of missing marketing data and the challenge of properly aligning marketing data to sales. But if you decide to model shipments, it's important to use model diagnostics to gauge model performance.

Finally, instead of modeling retail channels, you can instead model demographic segments, like Hispanics, directly using panels. Panels that Nielsen has used include the National Consumer Panel and advertiser-based databases, like those in the financial and telecommunications industries.

Depending on the available data, your checklist and requested insights, Nielsen typically uses one of these three approaches to measure how marketing targeted to a specific demographic segment can affect sales:

1. Advertiser Defined Segment Model: Aggregates the advertiser's data to segments and model them.
2. Consumer Mix Model: Model store-level data where sales lift varies by trading area demos.
3. Hybrid Model: A two-phased modeling approach that uses store-level and market-level data where lift varies by market demos.

While each model comes with statistical nuances, each can provide you with deep insights. For example, any of the three approaches can determine if a campaign has a "C-shape" or "S-shape" effect on sales, which is vitally important knowledge when planning media; these curves determine if it would be better for your campaign to follow a continuity or a flighting schedule. We'll take a closer look at C-shaped and S-shaped curves later.

## BRAND SIZE MATTERS

As most brand managers know firsthand, the economics of advertisement favors large brands over small brands. Large brands can generate larger sales and thus higher Marketing Return on Investment than small brands for the same quality of copy and execution. In the example below, the two brands both get a 9.5 percent lift from TV advertisement. However, there is a huge difference in core sales between the large brand and the small brand. This means that the same brand TV expenditure produces larger incremental margin dollars, and thus larger Marketing Return on Investment, for the large brand than the small brand<sup>5</sup>.

### LARGE BRAND VS. SMALL BRAND MEDIA LIFT

	LARGE BRAND	SMALL BRAND
Core Volume	5,500,000	1,000,000
Lift from TV	9.5%	9.5%
Incremental Volume	522,500	95,000
Incremental Margin \$ (\$2.39)	\$1,248,775	\$227,050
TV Spend	\$1,000,000	\$1,000,000
MROI	\$1.25	\$0.23



<sup>5</sup>Marketing Return on Investment = 1 is Break-Even Profitability

## ONE MEDIA'S MARKETING RETURN ON INVESTMENT DOES NOT DOMINATE CONSISTENTLY

Since flighting, media weight, targeted audience, timing, copy, geographic execution, and response vary by media for a brand, each media's Marketing Return on Investment can also vary significantly. For example, even though TV Cost Per Thousand (CPM) tends to be higher than other media, TV can still have a higher Marketing Return on Investment than other media.

Nielsen conducted a meta-analysis of more than 250 US Marketing Mix Modeling brands across 30 consumer packaged goods manufacturers in which TV was measured. For 73 percent of the Marketing Mix Modeling brand projects, TV Marketing Return on Investment was larger than Cinema's. TV surpassed Radio in 53 percent and Outdoor in 50 percent of the projects. Magazine Marketing Return on Investment was larger than TV for 63 percent of the projects, and Online Marketing Return on Investment was larger than TV for 62 percent.<sup>6</sup> What do these findings tell you? Since one media does not dominate consistently, you need to periodically conduct brand studies.

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SINCE ONE MEDIA DOES NOT DOMINATE CONSISTENTLY, YOU NEED TO PERIODICALLY CONDUCT BRAND STUDIES.

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<sup>6</sup>Digital media varied by project and could include a wide variety of types (for example, paid search, display ads, pop-ups, pop-unders and social media marketing). Though the media benchmarks reported are the results of 250 individual brand studies, specific media recommendations vary for each brand.

## THREE DIRECTIVES FOR BRAND MANAGERS

### KEEP A LENS FOCUSED ON EFFECTIVENESS

Earlier we talked about the concept of Effectiveness, which is an important metric to keep in mind throughout your planning process. A Nielsen study analyzed 25 campaigns with both Spanish and English language executions. We found that Spanish language TV campaigns were more Effective in 11 of 25 cases. However, English language TV Marketing Return on Investment was better than Spanish language TV for 24 out of 25 cases. How do you explain this seeming disparity?

A deeper dive into the campaign executions revealed that the analyzed brands over-indexed in using English language TV cable and 15-second spots compared to Spanish language TV. Since cable is, on average, less expensive than network TV, and 15-second spots are less expensive than 30-second spots with regards to Cost Per Thousand (CPM)<sup>7</sup>, it makes sense that this execution favorably affected the Marketing Return on Investment for English language TV. The takeaway? When reviewing Marketing Mix Modeling results with vendors, request that Effectiveness, Efficiency and Marketing Return on Investment be available for review to ensure you have a complete picture of how media impacted sales.

You should also use your checklist to prioritize campaign insights that you would like to receive. You could prioritize ad length, day-part, and type of buy (syndication, cable and network). Working closely with your modeling vendor will allow you to determine if there is sufficient media variation to get these insights.

### CHOOSE A FUTURE STRATEGY: CONTINUITY VERSUS FLIGHTING

Many advertisers use Brand Linkage studies to determine if continuity or flighting is the best strategy for a brand. Brand linkage reflects an ad's branding power and is defined as the percent of those who recall seeing an ad that can associate it with the correct advertiser. In other words, brand linkage tells you if your brand is being successfully linked to your ad campaigns, rather than forgotten about or being linked to your category in general. Brand linkage metrics generally increase with the continuity and intensity of a brand's media investment, making flighting a poor option for improving brand linkage.

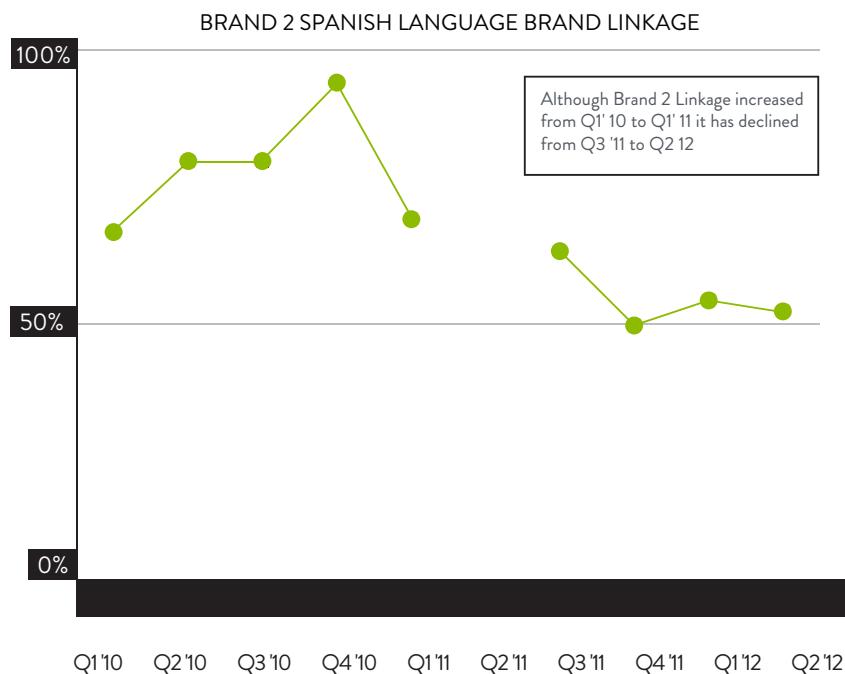
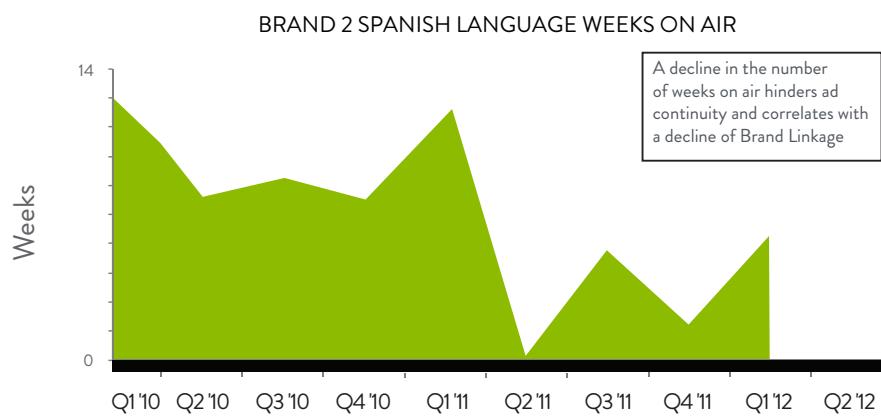
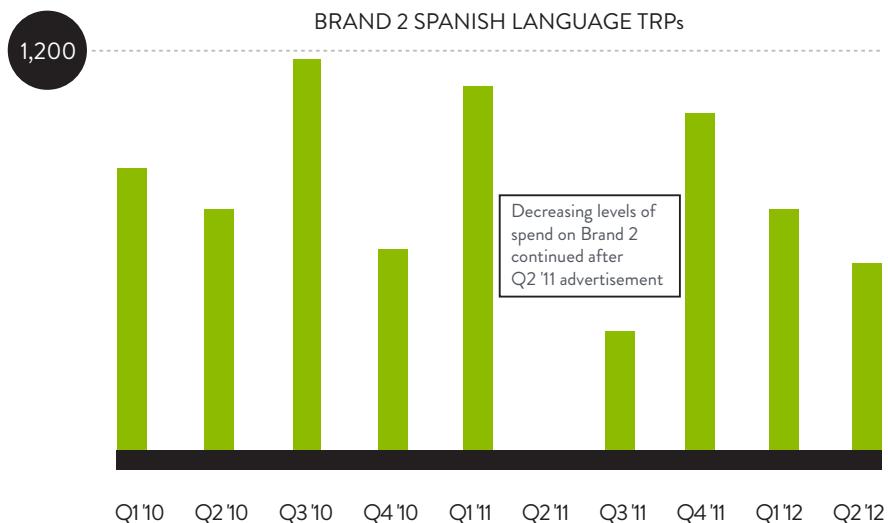
In the example on the next page, notice that brand linkage is correlated with continuous Spanish language TV support between Q1 2010 and Q1 2011. When a Spanish language TV advertisement returned to the air after taking a hiatus in Q2 2011, brand linkage decreased considerably.

<sup>7</sup>Cost Per Thousand (CPM): Cost per thousand impressions, used to determine advertising pricing.

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BRAND  
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ASSOCIATE  
IT WITH THE  
CORRECT  
ADVERTISER.

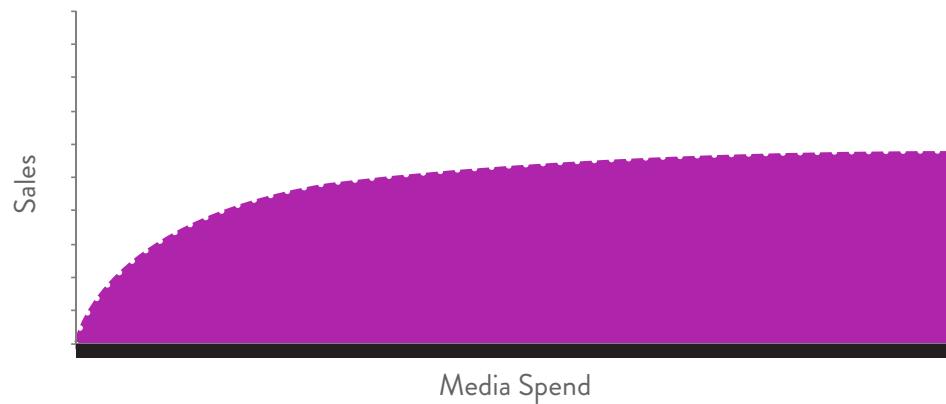
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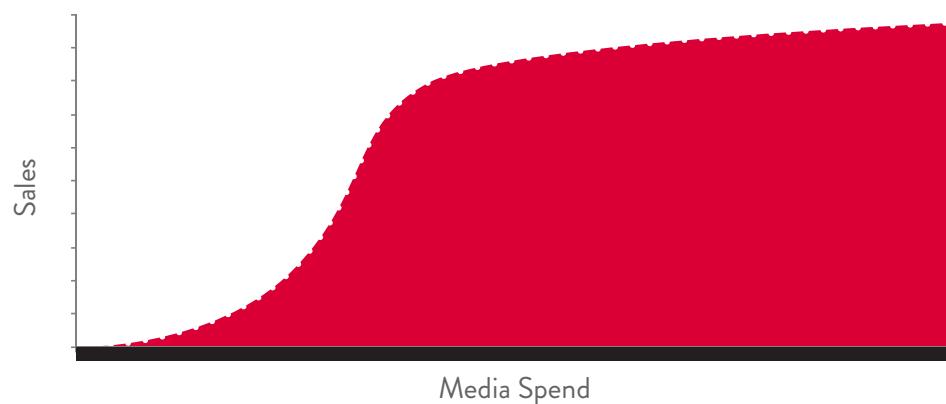
Sources: Brand Linkage Source: Nielsen TV Brand Effect (IAG), 1.01.2010 – 6.10.2012, HF18+. TRPs are based Monitor+ Ad\*Views data, 1.01.2010 – 6.10.2012, HF18+. Brand Linkage reflects an ad's branding power. Brand linkage is defined as the % of those who recall seeing an ad that can associate it with the correct advertiser.

So should you pursue a continuity campaign or use flighting? A great way to make an informed decision is to incorporate Marketing Mix Modeling campaign sales response curves into your toolkit. Sales response curves can be either C-shaped or S-shaped. A campaign with a C-shaped curve tells you that the first exposure had the largest impact on sales, and therefore you should go with advertising continuity. An S-shaped curve, on the other hand, illustrates the “threshold” effect, which means you should use flighting.

C-Shaped Response Curve



S-Shaped Response Curve



## KNOWING A SEGMENT'S WALLET SHARE MAY LEAD TO GROWING YOUR BRAND'S SHARE

You also need to be knowledgeable of segment-specific consumer strength by category and develop your plan to take advantage of Hispanics' consumer preferences. Identifying categories where the Hispanic segment over-indexes share of wallet, and you may be able to gain market share via impactful and moving campaigns. This is vitally important in categories that are highly competitive across brands or where there is encroachment by private label. Hispanics significantly over-index in the following categories:

ADVERTISERS NEED TO BE KNOWLEDGEABLE OF SEGMENT-SPECIFIC CONSUMER STRENGTH BY CATEGORY.

### HISPANIC VS. NON-HISPANIC WALLET SHARE

CATEGORY	HISPANIC DOLLAR INDEX
Dry Vegetables & Grains	227
Baby Food	193
Men's Toiletries	160
Women's Fragrance	153
Family Planning	152
Baby Needs	143
Hair Care	142
Shortening and Oil	140
Disposable Diapers	133
Cosmetics	130

Source: Nielsen Homescan®, Total U.S.; 52 Weeks Ending 9/28/13. Index Dollar Index- Hispanic Wallet Share to Non-Hispanic Wallet Share.

In summary, Marketing Mix Modeling can be a powerful tool for analyzing past success and planning for future campaigns. When working with a segmented audience, such as Hispanics, it's important to learn the ins and outs of the process and what it can do for your bottom line. When it comes to marketing and sales impact, things aren't always as they seem. Marketing Mix Modeling can dramatically improve decision-making.

## ILLUSTRATIVE EXAMPLE: THE IMPORTANCE OF USING MARGINAL VS. AVERAGE MARKETING RETURN ON INVESTMENT IN MEDIA PLANNING

Marginal Marketing Return on Investment measures the financial impacts of the next \$1 in media spend, making it more suitable for planning than Average Marketing Return on Investment, which is the metric best for financial reporting. Marginal Marketing Return on Investment is a key concept in conducting Optimizations and What-if exercises.

To reinforce this very critical concept, let's take a look at an example that compares and contrasts the outcome of media planning decisions made using Average Marketing Return on Investment and Marginal Marketing Return on Investment when more than one media is planned for future execution.

Assume the marketing department begins planning for the upcoming year with the same budget as the previous year (\$5.9M) with the following previous-year media investments:

- Media 1: \$2.3M
- Media 2: \$2.2M
- Media 3: \$1.4M

Based on the incrementality measurements of a Marketing Mix Modeling project, Media 1 spend produced \$0.69M in net profit, Media 2 produced \$0.38M in net profit and Media 3 spend produced -\$0.11M in net profit. This makes the total net profit \$0.96M.

HISTORICAL SCENARIO - SPEND MUST BE \$5.9M (\$M)	MEDIA 1	MEDIA 2	MEDIA 3	TOTAL
Spend	\$2.30	\$2.20	\$1.40	\$5.90
Incremental Margin Dollars	\$2.99	\$2.58	\$1.29	\$6.86
Net Profit	\$0.69	\$0.38	(\$0.11)	\$0.96
Average MROI	1.30	1.17	0.92	1.16
Marginal MROI	-0.10	-0.54	1.38	-

Based on these results and using Average Marketing Return on Investment alone, the brand manager may decide to cut all spend on Media 3 and reallocate the \$1.4M to Media 1 since it had the highest Average return. A What-if analysis yields the following results:

WHAT-IF-SCENARIO - SPEND MUST BE \$5.9M (\$M)	MEDIA 1	MEDIA 2	MEDIA 3	TOTAL
Spend	\$3.70	\$2.20	\$0.00	\$5.90
Incremental Margin Dollars	\$4.02	\$2.58	-	\$6.60
Net Profit	\$0.32	\$0.38	-	\$0.70
Average MROI	1.09	1.17	-	1.12
Marginal MROI	-0.41	-0.54	-	-

Reallocating \$1.4M in spend from Media 3 to Media 1 actually results in *lower* total net profit. What went wrong? Since Average Marketing Return on Investment does not provide direction on the impact of changes in media spend with respect to incremental margins or net profit, dropping Media 3 and allocating those dollars to Media 1 was misguided.

If we were to conduct an Optimization exercise by using response curves produced by Marketing Mix Modeling, the media plan can achieve \$2.4M in net profit at the same \$5.9M spend level by using the media allocations below.

OPTIMIZED SCENARIO - SPEND MUST BE \$5.9M (\$M)	MEDIA 1	MEDIA 2	MEDIA 3	TOTAL
Spend	\$2.42	\$1.06	\$2.42	\$5.90
Incremental Margin Dollars	\$3.09	\$1.86	\$3.34	\$8.30
Net Profit	\$0.68	\$0.80	\$0.92	\$2.40
Average MROI	1.28	1.75	1.38	1.41
Marginal MROI	-0.13	-0.13	-0.13	-

**Note:** Total net profits are maximized when all tactics' Marginal Marketing Return on Investment are equal.

This example shows how you can use the outcomes from your Marketing Mix Modeling project to further improve your marketing and media plans and, ultimately, enhance the economic value of your company.

## BRAND MANAGER CHECKLIST

BUSINESS QUESTIONS TO ADDRESS	PRIORITY RANKING	HOW WILL THIS QUESTION BE ADDRESSED?	WHAT DATA IS NEEDED?
<b>BUDGET &amp; FINANCIAL</b>			
What is the optimal marketing plan to maximize future net profits given our current budget, or a future tentative budget?			
How should our future marketing budget be allocated among marketing tactics and campaigns?			
Which geographies, channels, consumer segments, ...have the largest lift and MROI?			
Which marketing tactics and campaigns have the best MROI?			
<b>MARKETING &amp; MEDIA</b>			
What is the most sales effective and efficient marketing tactic for a given demographic segment?			
Are we able to drill deeper into MROI for a given Campaign? For example, are 15 second ads nearly as effective as 30 second ads? What's the difference in MROI for Network TV advertising and Cable TV advertising?			
For a given campaign, is Continuity or Flighting better?			
What was the year-over-year net change on sales from changes in the Marketing Mix?			
How reliable and robust are effectiveness, efficiency and MROI for campaigns that begin at the end of the modeling window?			
What's the consumers' media retention rate for each campaign?			
Over how-long of time period do you measure MROI for a campaign?			
How does our media performance compare to other advertisers in similar verticals?			
Is my traditional media driving consumer generated media, which drives sales?			
Are there synergies across media?			
How should we prioritize media insights?			
<b>PRICING</b>			
How is my advertising affecting consumer price sensitivity?			
How does price sensitivity compare across products, segments and geographies?			
What is the impact of a price change on sales and profits? How does changing price impact volume?			
<b>COMPETITIVE</b>			
Which competitor's advertising campaigns are having the largest negative impact on sales?			
Does one competitive media seem to be affecting us more negatively than all other media?			
Which media plan is more effective assuming the competitor's future media plan is its historical plan?			
<b>MODELING</b>			
What statistical method are you using? Are we able to review the model specification?			
What measures will be provided to measure the accuracy of the model?			

## ABOUT NIELSEN

Nielsen Holdings N.V. (NYSE: NLSN) is a global information and measurement company with leading market positions in marketing and consumer information, television and other media measurement, online intelligence, mobile measurement, trade shows and related properties. Nielsen has a presence in approximately 100 countries, with headquarters in New York, USA and Diemen, the Netherlands. For more information, visit [www.nielsen.com](http://www.nielsen.com).

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