UNDERSTANDING RELATIVE SALES IMPACTS AND DERIVED SYNERGY FROM CROSS-PLATFORM ADVERTISING

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INTRODUCTION

Marketers' increased demand for transparency, coupled with a deep understanding of their ROI has never been more important. Measuring the sales impact of their advertising investment has become a critical component to their overall assessment of ROI. What continues to be a challenge is to measure the investment of a single campaign across ALL media platforms.

At the 2013 PDRF conference in Nice, France, Time Inc. and Nielsen Catalina Solutions (NCS) shared through their award winning paper, "Cross Platform Sales Impact: Cracking the Code on Single Source", results from a rudimentary method for combining the measurement of print, digital and TV. In that study, we acknowledged that more work needed to be done to evolve the method to measure synergy and individual media effects more holistically at the HH level. While all NCS ROI measurement is conducted at the HH level, there are currently different methods applied due to unknown exposure dates and the high exposure levels of TV.

This paper continues the collaboration between Time Inc. and NCS to explore a new method for measuring cross-platform media campaigns, their impact on sales, and the value that synergy holds in driving response.

OBJECTIVES

Time Inc. and Nielsen Catalina Solutions (NCS), in partnership with Kraft, set out to determine an analytical construct that would provide a more accurate, reticulated assessment of the sales impact of cross-platform advertising.

There were three main objectives:

1) To create a holistic, single-source approach to quantifying cross-media impact.
2) To provide an understanding of how consumers respond to messages on one platform vs. another.
3) To quantify the synergistic effects of multiple media advertisements in play for an advertised brand.

KEY FINDINGS:

In order to answer these questions, a combination of several NCS Sales Effect Measurements and different NCS panels were used, which analyzed purchase and exposure data for millions of households in its TV, online, print, and cross-media panels. Details of the approach, the campaign measured, and results are the focus of this paper, and outlined below are our key takeaways:

1) Yes, there is a more holistic approach to quantifying cross-platform sales impact.
2) By looking across platforms we saw that the combined print and online advertising investment elicited a higher response compared to TV.
3) The synergistic effect of media generated an additional $1.6M in incremental sales for the advertised brand.

The collaboration between both companies' research departments and Kraft produced a method for answering these questions, which will be described in the next section

METHODOLOGY

Combining viewing and purchasing data sets gives transparency to what households are watching or reading or listening to and subsequently what products they are buying in a store. This is known as single-source, a data set that marks the foundation of measurement products at NCS. When multiple viewing data sets are intersected, the body of work falls into cross-platform analysis. The requirement of a single household falling into multiple viewing panels reduces the overall number of panelists that qualify, lowering the overall sample of households for cross-media measurement. Consequently, multiple panels were used in this analysis, each for their inherent strength. The native TV

and online/print panels provides more accurate absolute results due to their large sample sizes while the smaller cross-media panel provides the relationship between combinations of exposures across all media.

Combining print and TV in a single measurement study poses unique issues. For Print, the exact date of exposure is not known which makes ANCOVA the preferred method for measurement. TV campaigns have substantial reach, which makes Cognitive AdVantics (CA) the preferred method for measurement (Wood, Gerhart 2015). Using different measurement methods for each media is fine, but poses strong issues when we need to examine the cross-media effects. NCS in cooperation with Time Inc. has developed a method that measures each media with the strongest method available for each, and also allows CA to measure the combined elements of both campaigns. The method does this by measuring the print campaign using both methods and calibrating the CA results to the ANCOVA results. In addition, each media has a data set that is substantially larger for the individual media than it is for the cross-media. A similar technique is used to solve this issue by measuring each media using its preferred method in the larger data set and then re-measuring that media in the same way using the smaller cross-media data set. The effect of these multiple measurements is that each media is measured as accurately as possible using the preferred method and then calibrated to the cross-media panel producing reliable, accurate results.

Additionally, it's worth noting that while we know magazines deliver substantial secondary audiences through pass-along readers, NCS has access to only the primary audience through subscriptions and in-store single copy purchases. Similarly, at the time of this study NCS could only capture desktop impressions and had not yet developed a solution for mobile browser. As a result, the ROAS (return on ad spend) does not reflect the impact from secondary and mobile browser exposure.

This study builds on the earlier work between Time Inc. and NCS (Klein, Wood 2013) and codifies and enhances substantially the ability to address the issue of exposure, but future work will be needed to address the issue of capturing both print and digital's total audience reach and exposure.

As outlined in our prior paper (Klein,Wood 2013) the NCS single-source data set is comprised of several disparate data sets that are linked by an anonymous household ID. These ID's are the backbone of the data and represents all households in the United States. This anonymous household ID helps NCS to understand those who were exposed to advertising, and as a result, purchased the product. NCS uses a third party to link data sources like Time Inc.'s subscriber file to the shopper data, so no personally identifiable information (PII) is within the NCS data set. NCS can only identify households with their unique household ID. Appendices A and B provide details from the PDRF 2013 Klein,Wood paper on the matching process, how exposures and purchases are tracked, and specifically how the NCS panel data is collected for each media platform.

NEW CROSS-MEDIA MEASUREMENT METHODOLOGY EXPLORED:

The strength of any model is in part determined by the foundation of the data set upon which it's predicated. Households must first pass the scrutiny of several filters. Each must display consistent buying behavior month after month, defined as spending in the category 10 out of the 12 months prior to the campaign period, during the pre-campaign, campaign, and post-campaign periods (pre-campaign is used to create model covariates and post-period is used to determine residual effect of a campaign after it ends). Print and Online households must be active, meaning they were eligible to either receive a magazine (subscribers or newsstand buyers), or served tagged digital impressions and have their reading/viewing behavior tracked during the campaign period. Meters and set-top boxes must be collecting data properly for 75% percent of days during a campaign period for a TV household to be included.

Exposure and purchase data are combined for households that met the required quality thresholds, forming a modeling data set that's built at the daily level. All purchase occasions are considered, as are exposures that have the opportunity to influence buying behavior. Determining influence is relevant because a person retains the message of an advertisement beyond the day he sees it. Statistical models, however, only measure the influence of covariates at the observation level (and if the modeling data set is at the daily level, like it is for this analysis, it assumes an exposure today only influences a purchase today).

Retention must be built into the modeling data set, and so for an exposure to be considered relevant, it must pass two criteria:
- First, an exposure must occur before a purchase occasion takes place. The most imaginative analyst can't defend the hypothesis that a store trip made today can be influenced by an advertisement seen tomorrow.
- Second, the ad must be viewed within twelve weeks of making a purchase occasion. NCS has seen historically that over 90% of an ad's effectiveness takes place within 28 days of seeing the ad and that the direct effects of advertising occur within the first 12 weeks of exposure. For this analysis, the resulting

treatment variable is a binary indicator identifying a purchase occasion as supported or unsupported by an ad seen within the past 28 days.

So within a single campaign period, one household can be classified as exposed and unexposed, and when exposed, it could've been exposed to only the TV ad, only the online or print ads, and to ads on all media. Figure 2 below shows the relationship between exposures and purchases for a single household.

FIGURE 2: RELATIONSHIP BETWEEN EXPOSURES AND PURCHASE OCCASIONS

D = Digital/Print Exposure
T = TV Exposure
PO = Purchase Occasion
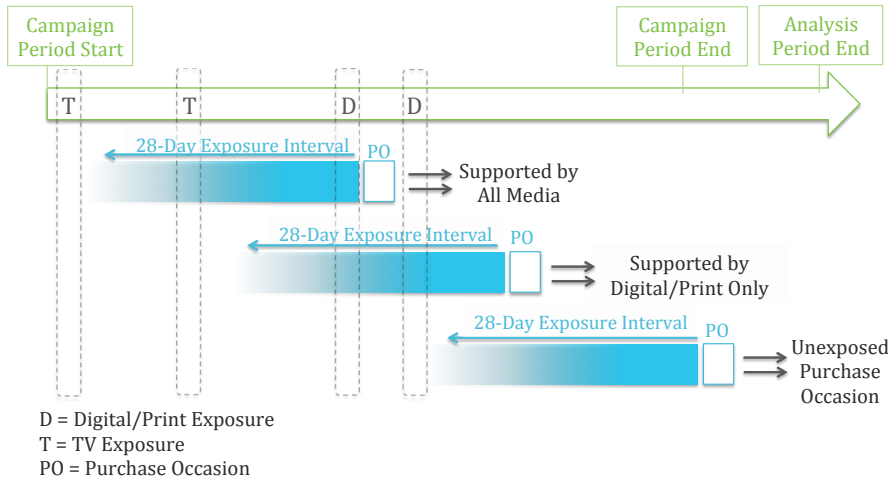
To determine the relationship between seeing an advertisement and purchasing the advertised brand, NCS employs a recursive, multivariate test vs. control methodology. On any given calendar date a set of purchase occasions are made and these can be split between those supported by an ad and those not supported by an ad. NCS models control for other variables that are known to influence buying behavior, like historical buying habits, targeting, retailer and demographics, leaving the differential between exposed and unexposed sales, which is the isolated effect of an advertisement on buying behavior. Purchase occasions are continually analyzed throughout the campaign period, ultimately leading to an overall campaign effect.

A succession of three models were run to determine overall sales lift due to a treatment variable:

1) **Category Choice:** measures the ad's ability to drive a category purchase during a purchase occasion.
2) **Brand Choice:** limits occasions to those where the category was purchased, to control for the ad's ability to drive category lift, and determines if the treatment drove more households to choose the brand over its competitors.
3) **Brand Depth of Purchase:** further limits the modeling data set to brand purchase occasions and the response variable measures whether exposed occasions are accompanied by larger amounts spent on the advertised brand.

The three models have a multiplicative relationship, with each measuring a mutually exclusive response, and each impacting a brand's overall sales impact.

SINGLE-MEDIUM VS. CROSS-MEDIA MODELS

Historically, if an advertiser or publisher wanted to know the effect of a particular TV, online or print campaign, it would do so through a Sales Effect analysis. Only a single medium would be analyzed and any sales lift or corresponding decomposition of response would be for the total effect of the advertisement on that medium. Built into the approach are implicit controls used to account for the effects of advertisements on other media. Implicit controls are possible because most media buys are targeted using historical purchasing behavior or demographics, which are covariates in the Sales Effect models. Implicit controls, however, do not control for the synergy effect produced by cross-platform advertising.

The total effect of a single-medium analysis is comprised of three elements, three sources of the response that cannot be broken out. The first effect is measured from households that only saw the advertisement on that one medium. They

were exposed to nothing else, so this is the cleanest read with respect to the confounding effects of other media, although households exposed to only one media in a cross-media analysis may be small and quite different from those exposed to multiple media. The second and third effects stem from households that see the ads on multiple media. The second effect is the single medium in isolation. The third effect is the synergy, or boost in effectiveness to an advertisement, that derives from the supporting effect of having seen the ad on both marketing vehicles. Figure 3 below illustrates this decomposition, with print magazines as the main medium and online as the supporting one. A single-medium Sales Effect study would produce a sales lift corresponding to the bar on the far right, which is the combination of all three effects.

FIGURE 3: DECOMPOSITION OF TOTAL PRINT EFFECT
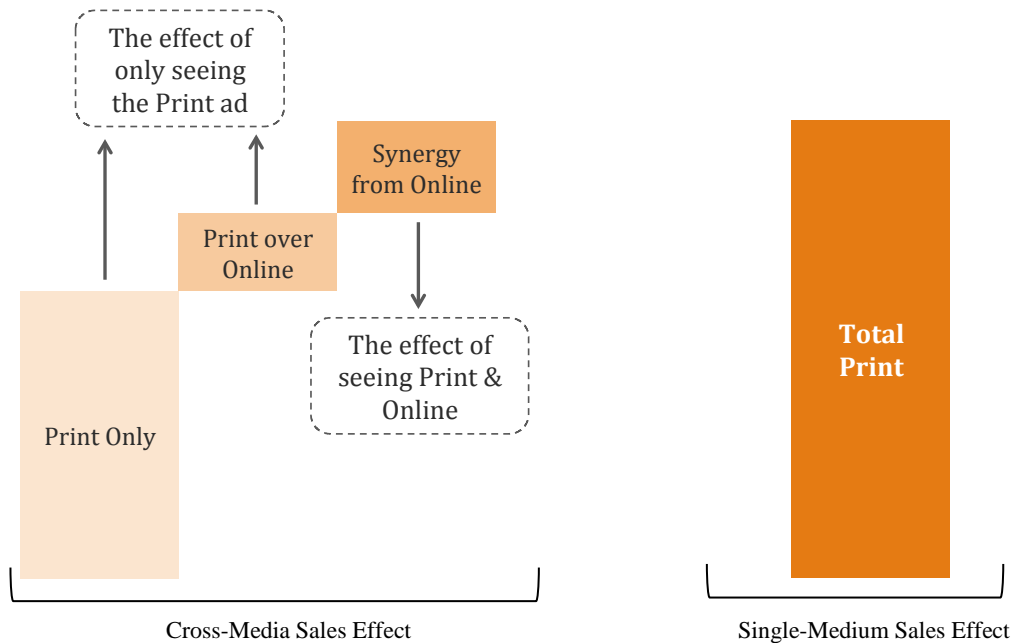
Cross-media Sales Effect, by directly controlling for advertisements on multiple media, produces the three left bars in Figure 3. Combining the effects of 1) households only seeing the ad on one vehicle ("Print Only") and 2) the single medium in isolation ("Print over Online") yield the combined advertising effect in isolation. This is what advertising on that medium would produce in the absence of advertising anywhere else. The synergy effect is the increase in effectiveness that comes from secondary support through other media.

Through the decomposition of multi-platform response, two of our questions can be answered. When multiple media are analyzed in one model, the true effect of each ad in isolation can be determined and directly compared. In addition, the overall boost that each medium gets as a result of another can be aggregated to a total cross-platform effect, the secondary benefit of reticulate advertising. An additional question can be posited, that is a combination of the previous two: *What is the relative secondary, or supportive effect of each medium onto the other, and how does this change the initial comparison of each effect in isolation?*

MODEL RESULTS: THE NEW APPROACH IN ACTION

THE CAMPAIGN:

Crystal Light, a Kraft Foods beverage brand specializing in ready-to-drink beverages, liquid concentrates, and powder mixes, was identified as an optimal candidate for cross-platform research due to its marketing activity and high penetration among US households.

Crystal Light ran TV advertising for approximately five months from April through August 2014 and its print and online ads for approximately nine months from April through December 2014, resulting in a ten-month study period ending in January 2015 (includes a 4-week post-campaign period to pick up residual effects of the advertisements).

TV commercials aired from April through August, reaching 71.6% of US households and generating 542 Gross Rating Points (GRPs).   The ads aired on the following broadcast network shows:
Today Show
Good Morning America
The Millers
Castle
Last Comic Standing

And the following Cable network shows:
Friends
Bones
Law & Order
George Lopez
Food Network Star

Printed advertisements ran in the following Time Inc. titles and reached 15.4% of US households:
Cooking Light
Essence
InStyle
People
Style Watch
Real Simple
All You

Online advertisements were placed on websites owned by Time Inc. and reached 2.3% of US households. As a result of online's low reach and the number of households available in the cross-media panel (which will be described in a subsequent section), online and print exposures were combined as a single treatment variable. 17.3% of US households saw a print and/or digital ad, both of which ran from April through December 2014. Households that saw Crystal Light ads on each of the three platforms comprised 9.8% of the total US. By the end of December 2014, the entire marketing campaign for Crystal Light was seen by 79.1% of total US households. Figure 1 below illustrates the campaign reach across all media.

FIGURE 1: CRYSTAL LIGHT CAMPAIGN REACH ACROSS ALL MEDIA
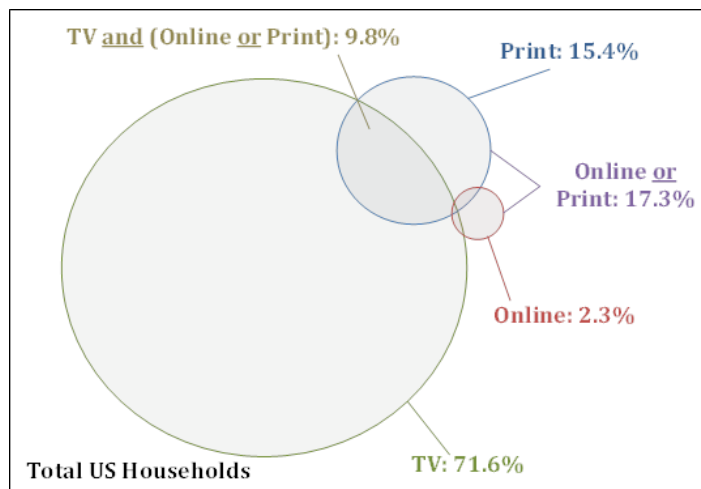
At the start of this measurement study, it was noted that the TV campaign aired for ten weeks, while the print and digital campaigns aired for six months. Should we only measure the cross-media when they were both on the air? No. The key need was to understand what each media brought to the brand. TV aired for three 2-week flights, separated by 2 weeks off the air, delivering substantial reach (72%). Print and digital delivered 17% reach over six months. None-the-less, by continually delivering the message across the year, the print and digital campaign was able to deliver advertising to proportionally more category purchase occasions within 28 days prior to purchase.

THE RESULTS

The total effect for each medium must be determined before the relationship between different combinations of

exposures. Remember that the total effect is comprised of all three elements of response, which was described in the previous section.

Across the five and a half months the TV ad was analyzed (campaign period plus a four-week post period to pick up residual effects of the ads), households exposed to it spent 12.3% more on Crystal Light. On average, those that didn't see the ad purchased $0.58 of the brand and those that saw the ad purchased $0.65.[1] The 12.3% lift translates to an increase of $0.07 in the amount each exposed household spent on Crystal Light.

The online and print ads were analyzed across a longer time period (campaign ran from April through December plus a four-week post period to pick up residual effects of the ads). The average amount of Crystal Light purchased by unexposed households was $1.11 and the amount purchased by exposed households was $1.43, producing an incremental lift in sales of $0.32 per exposed household. The incremental lift in dollar sales translates to a percent lift of 28.4%.

The difference in average exposed and unexposed dollars between TV and online/print is a function of 1) the longer time period (more weeks mean more opportunities to purchase Crystal Light) and 2) different panels equating to different subsets of households with slightly different dollar averages. A direct comparison of the responses derived from both models identifies the online/print ads as more effective at driving consumers to purchase more Crystal Light. Figure 4 illustrates the comparison of the household-level responses.

**FIGURE 4: TOTAL RESPONSE TO TV AND ONLINE/PRINT ADS**
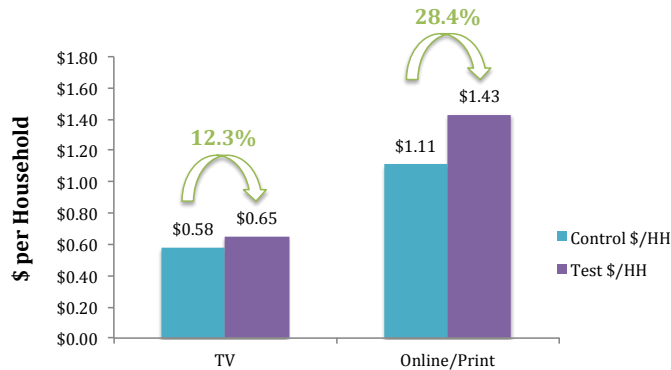
Decomposing the overall sales lift derived from each medium yields fairly similar results. The TV ad drove 2.1% more households to choose the category; among those that chose the category, the ad drove 10.1% more households to choose Crystal Light over competitors; and among those that purchased the brand there was no significant increase in the amount of dollars spent on Crystal Light. The culmination of these successive decision responses equal the 12.3% lift saw above [1.021 x 1.101 x 1.000 = 1.123]. In terms of relative importance of each decision, the online/print ads resulted in a similar, yet somewhat distinctive, outcome. Category choice increased by 7.9%, brand choice by 19.7%, and purchase depth wasn't significantly higher [1.079 x 1.197 x 1.000 = 1.284].[2] Category choice driven by the online/digital ads carried a higher weight of importance in the brand's overall sales lift.

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[1] Dollar per household metrics include households that did not purchase Crystal Light. These are averages across all panel households in the time period being analyzed.
[2] Numbers are rounded and may not match the calculation exactly.

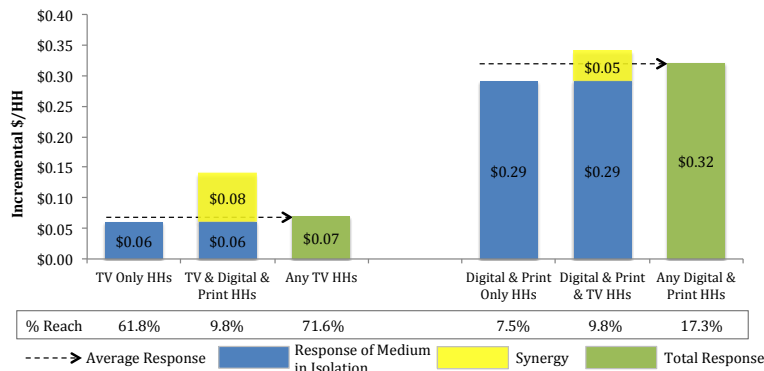**FIGURE 5: DRIVERS OF SALES IMPACT – TELEVISION VS. DIGITAL/PRINT**
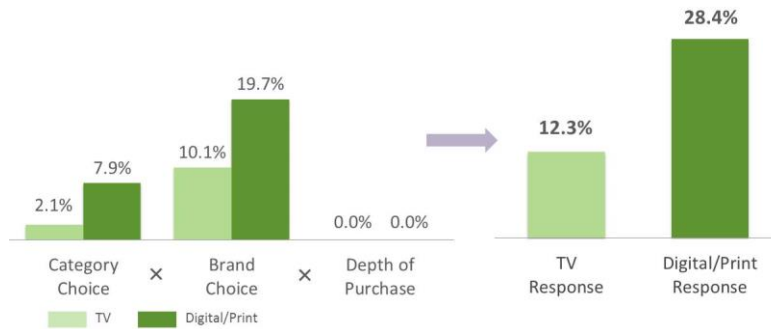
The net total effect of each advertisement is an aggregation of the household-level responses among all exposed households. Recall a 71.6% reach for the TV ad, and consider a total US population of 120,160,000 households. This translates to a total of 86 million affected households. Each spent about $0.07 more on Crystal Light as a result of seeing the ad, totaling a net sales effect of $6.2 million. One measure of standardized effectiveness is the Return on Ad Spend (ROAS), which is the total incremental sales generated from the advertisement divided by the spend in that medium. Kraft Foods spent $3.5 million on its TV ads for Crystal Light. The resulting ROAS metric is $1.77. The same calculations are made for online/print. Recall a reach of 17.3%, which translates to 21 million exposed households, and a household-level response of $0.32, generating total incremental sales of $6.6 million. Kraft Foods spent $3.1 million on their online/print campaign, generating a higher ROAS of $2.16.

FIGURE 6: ROAS (NOT ACCOUNTING FOR SYNERGY BETWEEN PLATFORMS)

		Total TV	Total Digital/Print
Percent of US HHs Reached		71.6%	17.3%
Total US Households	x	120,160,000	120,160,000
Estimated Campaign Reach	=	**86,019,600**	**20,811,951**
Per Exposed HH Adjusted Incremental Dollar	x	$0.07	$0.32
Total Incremental Dollar from Campaign	=	**$6,172,045**	**$6,560,115**
Total Spend	÷	$3,480,400	$3,037,263
ROAS	=	**$1.77**	**$2.16**

The previous results are derivations of a standard Sales Effect for which ads on other media aren't *explicitly* controlled. When other media can be controlled using cross-platform analysis, the synergy and single-medium effect in isolation can be identified. Recall that the TV ad increased the amount of Crystal Light by $0.07 among those exposed to it. This response can be broken down into the amount derived by households that only saw the ads on TV and on no other media and households that saw that ads on all media. Those only exposed to TV increased purchasing of Crystal Light by $0.06 and those exposed to all media increased purchasing by $0.14, of which $0.06 came from the effect of TV in isolation and $0.08 came from the boost that TV received from additional ads being run online and in print magazines. The $0.32 sales lift generated from the online/print ads were a combination of the $0.29 response from those that only saw the ads on this vehicle and the $0.34 response from those that saw the ads on all media, $0.05 of which came from the synergy online/print received from TV ads airing concurrently. Figure 7 illustrates the response of each medium in isolation as well as the synergy generated from the supporting media.

FIGURE 7: HOW EFFECT IN ISOLATION AND SYNERGY COMBINE TO TOTAL SALES LIFT

	TV Only HHs	TV & Digital & Print HHs	Any TV HHs	Digital & Print Only HHs	Digital & Print & TV HHs	Any Digital & Print HHs
% Reach	61.8%	9.8%	71.6%	7.5%	9.8%	17.3%

- - - - → Average Response ▮ Response of Medium in Isolation ▮ Synergy ▮ Total Response

Now that the synergy effect of cross-platform advertising has been identified, its incremental value to the overall marketing campaign can be calculated. Recall that the effect of the TV campaign was $6.1 million and the effect of the online/print campaign was $6.6 million, totaling an overall impact of $12.7 million. The same sales impact can be calculated for each medium in insolation. It was seen in the previous section that the effects of TV in isolation and online/print in isolation were $0.06 and $0.29, respectively. These updated household-level lifts are applied to the total number of reached household for each medium, generating the effect of each in isolation. If ads ran on no other media, TV would have generated $5.1 million in incremental sales. The same logic derives incremental sales from online/print of $6.0 million. The sum of all media in isolation is $11.1 million, and so the resulting $1.6 million is the synergy from cross-platform advertising. Now consider the updated ROAS numbers, outlined below.

FIGURE 8: ADJUSTED RETURN-ON-AD-SPEND (ROAS)

		TV impact in Isolation	Digital/Print impact in Isolation	Synergy	Total Campaign
Estimated Campaign Reach		86,019,600	20,811,951	11,780,420	95,051,131
Per Exposed HH Adjusted Incremental Dollar	x	$0.06	$0.29	$0.13	$0.13
Total Incremental Dollar from Campaign	=	$5,185,508	$5,987,537	$1,559,114	$12,732,160
Total Spend	÷	$3,480,400	$3,037,263		$6,517,663
ROAS	=	$1.49	$1.97		$1.95

CROSS-MEDIA STUDY FINDINGS & RECOMMENDATIONS

In the introduction of this paper, three objectives were identified as the impetus for this body of work. The first was ***to create a holistic, single-source approach to quantifying cross-media impact.*** This objective was a requisite to meet the subsequent two objectives. Several Sales Effect Measurements were run to determine the overall effects of each media as well as the interplay of all campaigns running concurrently. These models measured the effects of media on different panels of households. One major accomplishment was determining how to combine and calibrate results from multiple Sales Effect Measurements and media panels. The outcome was a reproducible method of determining cross-platform advertising for future studies.

The second was ***to provide an understanding of how consumers respond to messages on one platform vs. another.*** At a household level, the online/print ads were more effective on average at driving consumers to purchase more Crystal Light. Among total exposed households, online/print increased sales by 28.4% while TV increased sales by

12.3%. This is likely due to 1) higher levels of engagement when viewing ads in print magazines and online and 2) more precisely targeted viewers in these media compared to TV, which is a mass medium.

This is not to suggest pulling out of TV. Each medium has its strength, and what TV lacks in finely targeted audiences it makes up in its high reach, which still has an influence on households, albeit not the primary consumer. Also, abandoning TV (or any medium) reduces the synergy effect that comes from cross-platform advertising. A suggested future body of work should analyze the saturation point of each media in a cross-platform campaign. In other words, at what point does one vehicle exhaust its benefit in the overall marketing mix strategy.

The third objective was *to quantify the synergistic effects of multiple media advertisements in play for an advertised brand.* On purchase occasions preceded only by the TV ad, households spent $0.06 more on Crystal Light, but when online/print ads were also seen, the effect of TV increased by $0.08 (this is the synergy generated by online/print). The analogous effect of online/print in isolation was $0.29, but increased to $0.34 when TV was also seen prior to the purchase occasion. So overall, households spent an additional $0.13 simply as a result of seeing the ad on TV, online, and in print magazines. This is the unintended benefit of cross-platform advertising – totally incremental sales that cost nothing additional to the advertiser.

The online/print ads had a stronger synergy effect overall. Of the $0.13 increase in purchasing, $0.08 was due to these media compared to $0.05 for TV. Additionally, the boost that TV got from online/print was much higher relatively than that of TV onto online/print. Sales lift due to the TV ads went from $0.06 to $0.14 among those exposed to all media, a boost of 133%, while the sales lift for online/print increased by 17%, raised to $0.34 from $0.29.

The overall findings of this body of work are profound. Through cross-media Sales Effect, each element of the overall sales impact was identified and the true impact of synergy, which was a truly significant increase in sales, was determined.

FUTURE RESEARCH

While this study has provided significant advancements in single-source measurement, there are several areas that need further development. First, cross-media studies incorporating print advertisements need to more accurately reflect their total audience. As mentioned, this body of work measured only the effects of the primary print audience. Primary readers are households that subscribe to magazines or purchase single copies at retail. This leaves a secondary or pass-along audience – those households that read magazines in public places (e.g, waiting rooms, nail/hair salons, health clubs, etc.) or received/picked up issues from friends or families – which significantly expands the number of households reached and therefore the ROAS of print campaigns.

An additional area for future research is to expand cross-media measurement to include other media, such as mobile and radio campaigns. Time Inc. will continue to partner with NCS to test and expand measurement across many of these platforms.

Lastly, how online advertisements are tagged for data collection determines the amount of the campaign that can be measured. Future studies will work to include all online exposures through improved monitoring and methods of digital tagging and data collection.

APPENDIX A: DATA COLLECTION

The NCS single source data set is comprised of several disparate data sets that are linked by an anonymous household ID. These ID's are the backbone of the data and represents all households in the United States. This anonymous household ID helps NCS to understand those who were exposed to advertising, and as a result, purchased the product. NCS uses a third party to link data sources like Time Inc.'s subscriber file to the shopper data, so no personally identifiable information (PII) is within the NCS data set. NCS can only identify households with their unique household ID.

The matching process begins with the de-identification and anonymizing of the combined data file. The first part of the process starts with print where Time Inc.'s active subscriber file is matched through Experian to the NCS Frequent shopper database (FSD).

For digital, a cookie match is done via third party cookie pools (e.g., Neustar). The cookies are constantly being updated since consumers delete their stored cookies on their computer. The third party cookie pools are regularly matched and updated to the NCS data set. For TV, set-top box data, the Nielsen People Meter panel and Nielsen Metered Market panel are matched through a third party (i.e., Experian) to the NCS data set.

Connecting Data
Prior to beginning a study, the panel of HHs is defined to use in the study and "exposure" files are created. Exposure files are defined as HHs who have been exposed to the advertising through the various platforms. In addition, those households also must have FSD purchase data. The data for this study is based on HHs that had "good" purchase data and "good" exposure data for print, digital and television.

APPENDIX B: TRACKING EXPOSURES AND PURCHASES

Tracking Exposure
Exposure for magazines is measured in three ways:

1. Subscriber: Subscribers are measured by collecting the anonymized HH IDs for those who were active subscribers and active for each magazine and specific issue an ad was placed in. These subscribers are included in the exposed group of HHs.
2. Newsstand: HHs that purchase the issue with the campaign creative at newsstand and have been recorded in the FSD data. UPC codes are provided in order to ensure the specific issues featuring the ad are captured.
3. Secondary: Currently, secondary household reach is estimated based on MRI audience data. After identifying the proportion of secondary audience, a factor is applied to household the data, maintaining consistency to the measurement of sales impact based on household purchases. Sales impact from secondary households is not observed in the data, and is inferred using the impact from subscribers and newsstand buyers. When reported to clients, we include the impact from secondary in the payback analysis. However, for the purposes of this paper, we are only showing what is observed and measurable from the NCS data.

Digital exposures are measured via a cookie match, by including a 1x1-pixel tag to the ad. This tag fires a message that looks for a cookie on the reader's computer (cookies are placed on a computer via that reader having visited any one of thousands of sites supported by NCS' third-party cookie match partner). The 1x1-pixel tag then sends the user's cookie information back to NCS' third-party cookie match partner who shares with NCS that that tagged creative was delivered to that specific anonymous HH ID.

NCS collects TV exposure from set-top box data as well as Nielsen electronically collected exposure from the Nielsen People Meter and in mid-sized markets from household meters in the Nielsen Metered Market panel.

Both TV and Digital HHs are monitored for being "intab" on a daily basis. A household can be intab even when there is no viewing – being intab requires that the HH be able to be measured if they chose to watch TV. To be included in this study's measurement panels, a HH had to be intab 75% of the campaign period time. Being intab for digital requires that the HH's cookie was noted as being valid in the user's computer during the campaign period.

Tracking Purchase
NCS has three sources of purchase data: Nielsen Homescan data (HS), Catalina Frequent Shopper data (FSD) and Scantrack (RMS – Retail Measurement Services) data. Homescan collects purchases via a panel of roughly 100,000 households that scan the UPC codes of groceries when they are brought into the home. The HH also records which retailer the purchase was made from. Homescan is a nationally representative, currency panel for CPG purchases. Catalina, also one of NCS's parents, collects purchases made in their retailers by customers with frequent shopper or loyalty cards (FSD). NCS's FSD data include roughly 90 million households. There is a 55,000+ household overlap between the HS and FSD data sets. This overlap is used to understand the biases of each data set as well as to estimate the all-outlet purchases made by the FSD HHs. NCS uses Scantrack purchasing data from Nielsen to provide an all-outlet view of UPC sales. Data are collected from stores through scanner logs in the following channels: Grocery, Drug, Mass, Club, Dollar, Convenience, Liquor, and Pet. These sales are used to adjust the FSD-based dollar figures generated from Sales Effect Measurements. This adjustment provides a more accurate reflection of brand sales within the Total US market.
Purchase data is collected by UPC code allowing the definition of each brand and category to be defined by the advertiser's specific needs. In this study, there are two brands each from different product categories.

In the purchase data sets, HHs are determined to be in the static when they have "good" purchasing data. The static applied for this study was $50 of purchases three out of four months during the campaign period as well as the 52-weeks prior to the campaign period (pre-period) and six weeks after the campaign period (post-period).

Connecting data, tracking exposure, and purchase is a complex multi-step process that can be summarized in Exhibit 1:

Exhibit 1
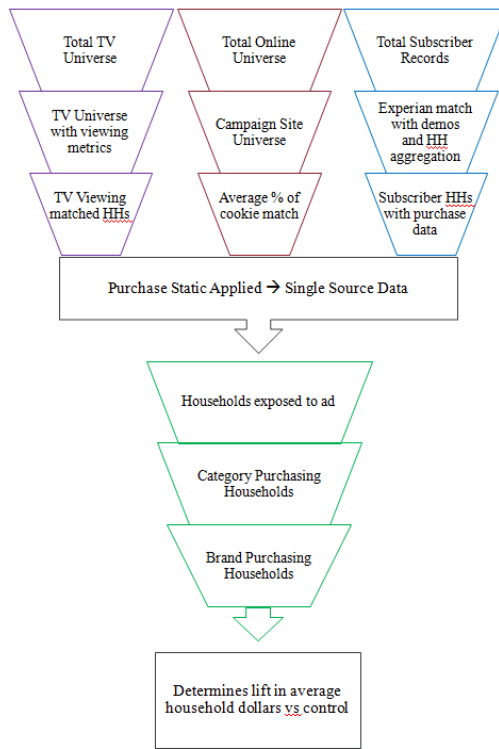
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