



MOBILE ADVERTISING BENCHMARKS AND BEST PRACTICES

Do Your Mobile Metrics Measure Up?

Mobile Advertising Benchmarks and Best Practices

Even big risk takers avoid making a significant investment in the unknown, and many marketers put mobile advertising in that category. Everybody knows mobile matters, but few understand how to determine with certainty whether it's delivering a return on their investment. Without that confidence, many are holding back on what may be their biggest opportunity for sales growth.

Brand marketers need the assurance that comes with knowing what to expect from their campaigns. That assurance comes from being able to accurately measure results that matter—including the ability to connect offline and online sales directly to their mobile campaigns.

This report presents the industry's first benchmarks to provide guidance for brand marketers. The benchmarks are based on sales lift measurement data from 83 mobile campaigns executed during the past two years. The studies were conducted in partnership with Nielsen Catalina Solutions, which independently compiled and validated the benchmarks shared here.

Summary

- Understand how to link mobile ad impressions with offline sales data to measure incremental revenue generated by your campaign
- Be able to use the industry's first benchmarks to compare your sales lift and Return on Ad Spend to other campaigns across several categories
- Learn five best practices based on more than 100 mobile ad campaigns

Benchmarks derived from 83 mobile campaigns help marketers evaluate their mobile advertising by what matters most: Return on Ad Spend.

The State of the Industry and the Shifting Use of Media

Mobile has become increasingly dominant in just about every consumer's daily life, prompting a dramatic shift in media use that requires a change in the way marketers allocate their advertising dollars.

1. Media usage from 2010 to 2014 shows a dramatic shift toward mobile in consumer usage of media.¹
2. Non-voice mobile minutes have grown seven-fold, from 3.7% of media consumption in 2010 to 22.9% in 2014, which puts it on par with the time they are spending on desktops and laptops. It's more time than they are spend listening to the radio each day. And it's triple the amount of time consumers spending reading newspapers and magazines daily.²
3. By 2016, US advertisers are expected to spend more than \$40 billion to reach consumers on tablets and mobile phones, more than doubling the total from 2014.³

Despite the shift in media use, advertising budgets are historically not aligned with where consumers spend time, with only 4% of media budgets⁴ allocated toward mobile advertising vs. 23% of media consumption via mobile devices. In fact, if the amount of time people are spending on their mobile devices were aligned with advertising spending, marketers would spend \$30 billion more on mobile advertising than is anticipated this year.

Forrester Research Shows Measurement Remains a Mystery for Marketers

Last year, a survey of large national, consumer brands conducted by Forrester Research⁵ revealed that although marketers considered mobile advertising important, their measurement maturity was very low.

Forty-two percent of respondents feel they are still experimenting with digital. Only 18% of marketers are fully confident in their ability to attribute Return on Ad Spend (ROAS) from their mobile advertising. Many didn't know you could link mobile impressions to offline transactions for measurement.

Despite the fact that 97% acknowledged the importance of linking digital marketing to business impacts and 60% rated their firms as "effective" at this measurement, fewer than half could agree that they have "a clearly developed process and KPIs" for their digital programs.

Without strong measurement, it's no wonder that marketers are left feeling that they don't really know what works in digital marketing. And if they don't know what works, it's not hard to see why they're hesitant to fully invest in the channel.

2015: The Year Measurement Takes Center Stage

Over the past year, more and more marketers embraced the realities of measuring what really matters—actual sales. And 2015 is shaping up to be the year that measurement takes center stage.

Marketers are asking pragmatic questions about mobile advertising:

- What should we expect in terms of sales lift?
- How should a campaign be flighted?
- What are other marketers learning?
- What proof do you have that it's generating a return on investment?

These questions prompted the development of mobile's first sales lift measurement norms and benchmarks. They are intended to provide guidance and help establish expectations for marketers moving more dollars into mobile advertising.

But First, What Makes Metrics Meaningful?

To put the benchmarks into context, it's important to look at why mobile measurement matters—and how it's done effectively. According to the Forrester study, most marketers would agree that sales lift and new accounts opened would be their top two ways of determining whether their ad budget was well spent.

But what they're using instead are more traditional digital metrics like taps, click-through rates and website hits, as well as downloads and mobile purchases. As a result, there's a huge disconnect between the data they need in order to justify their ad spend, and what they're actually using.

This leaves them unable to defend their mobile ad spend. There's a difference between metrics that are useful and the ones that are truly meaningful. **Useful** metrics such as taps and clicks are interesting early indicators that can help you adjust and optimize campaign tactics such as creative, while **meaningful** metrics like sales lift are used by CMOs and CEOs to justify budgets.

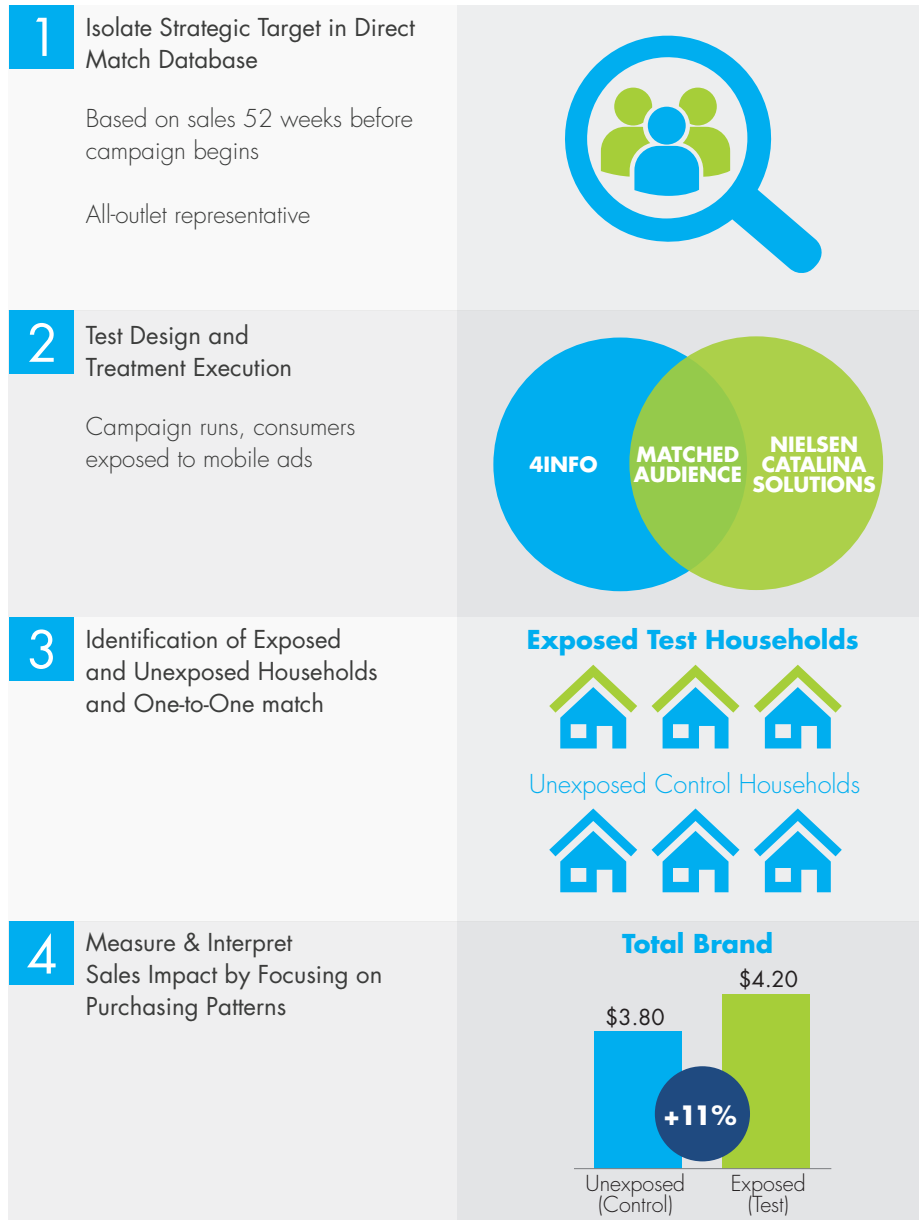
Naturally, the most meaningful metrics are the most challenging to obtain. And that can be true with measuring Return on Ad Spend. The Forrester study indicates that the inability to connect mobile impressions with online and offline data is a huge stumbling block for marketers. But there is, in fact, a way to make that connection and see the corresponding sales lift.

There's a difference between metrics that are *useful* and the ones that are truly *meaningful*.

The Formula for Using Sales Lift to Measure Return on Ad Spend

In order to calculate a Return on Ad Spend (ROAS) based on sales lift, marketers need to be able to tie mobile ad viewers to offline transaction data and attribute specific purchases to the people exposed to the ad campaign. Then you divide the sales lift amount by your mobile ad campaign costs, multiply by 100, and that gives you your ROAS. For example, a 257% ROAS means for every dollar you spent on media, you generated \$2.57 in incremental sales lift.

The trick is how you determine your sales lift. Both people who saw the mobile ad, and people who did not, will make purchases. So you need to be able to compare the sales resulting from those who **were** exposed to the mobile advertising with the sales of those who **were** exposed. That will give you the true incremental sales lift resulting from the advertising.



Source: Nielsen Catalina Solutions

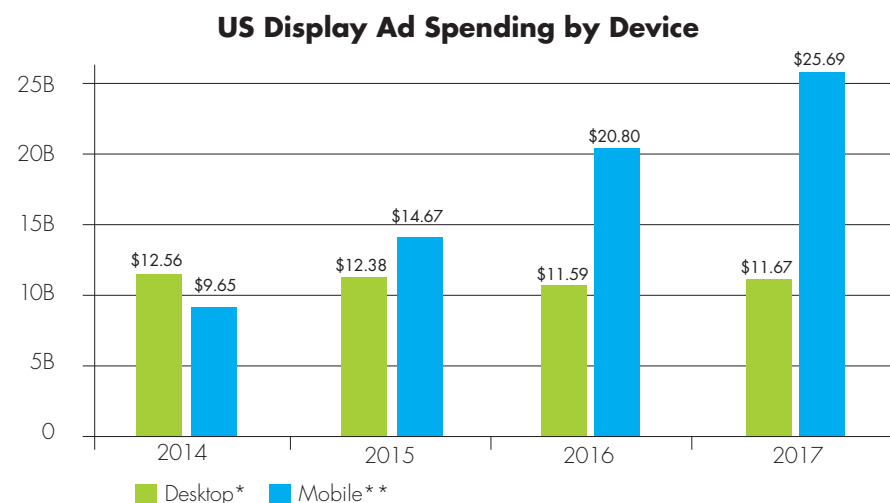
Mobile Ad Benchmarks & Norms Give the Confidence That's Been Missing

It's not a question of **whether** marketers will increase budgets but rather **when** they will do so, given how consumers are moving to mobile. That's why it's more critical than ever to establish benchmarks, as mobile advertising continues to mature. Despite their concerns, marketers are already increasing their mobile ad budgets.

- March 2015 eMarketer data shows that mobile display ad spending is projected to exceed the desktop total by double-digit percentages.⁶
- \$14.67 billion will be spent on mobile display ads in 2015 compared with \$12.38 billion for desktop display, an 18% difference.⁷
- US advertisers have spent—and will continue to spend—significantly more to advertise in apps vs. on mobile websites.⁸

For the first time, our Mobile Advertising Benchmarks and Best Practices show how a marketer's brand and product campaigns compare to the industry. They can evaluate their efforts and actual sales results, confidently set campaign objectives and better forecast results.

Catalina BuyerVision and Nielsen Catalina Solutions (NCS), the industry's leading media performance analytics company, independently compiled and validated the benchmarks that follow.



Note: includes banners, rich media, sponsorships, video and other (static displays such as Facebook's New Feed Ads and Twitter's Promoted Tweets), *includes spending primarily based on desktop-based ads, **ad spending on tablets is included

Source: eMarketer, March 2015

How the Benchmarks Were Calculated

Campaigns represented were run in the US via Catalina's BuyerVision Mobile, powered by 4INFO. Impression data was provided by 4INFO to NCS, and matched to the NCS dataset. The ROAS was calculated by NCS using Catalina's frequent shopper data and Nielsen's Homescan Panel data. Data included a total of 83 mobile campaigns, across a variety of consumer packaged goods (CPG) categories for 59 different brands. Campaign duration was from 4 to 38 weeks, with an average of 11 weeks.

Campaigns from Seven CPG Categories:

1. Baby
2. Beverage
3. Food
4. General Merchandise
5. Health & Beauty
6. Over-the-Counter
7. Pet

And 36 Sub-categories:

 Alcohol	 Eye Care	 Ointment
 Baby Care/Diapers	 Feminine Hygiene	 Paper/Plastic
 Baby Food	 First Aid	 Pet Litter
 Baby Formula	 Frozen Foods	 Ready to Bake/Desserts
 Carbonated	 Gastro Relief	 RTS Soup
 Cat Food	 Gum	 Shelf Stable/RTS
 Coffee	 Hair Care	 Skin Care
 Condiments/Sauces	 Hispanic	 Snacks/Crackers
 Cosmetics	 Juice	 Sugar/Sweeteners
 Dairy	 Laundry Care	 Toilet Tissue
 Dog Food	 Liquid Tea/New Age Bev	 Total Category
 Dry Meals	 Magazines	 Vitamins/Supplements

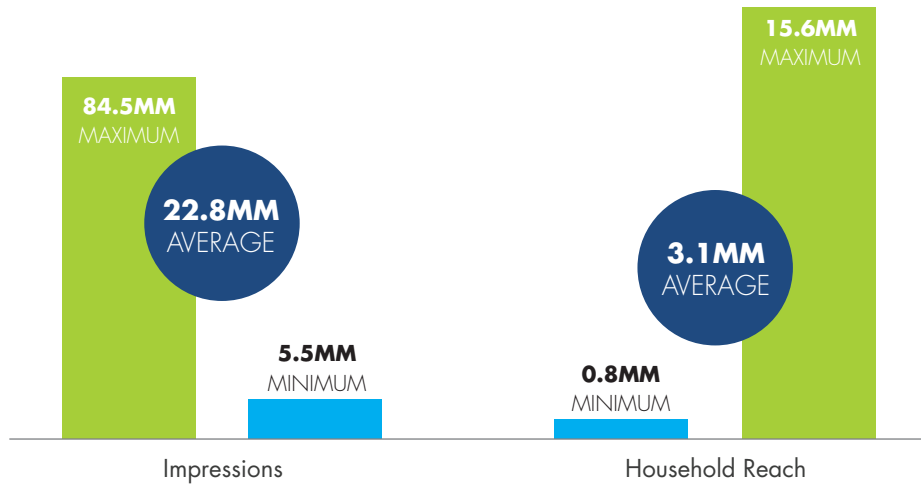
Creative Types

A variety of creative tactics were used:

1. Equity/Branding
2. Interactive
3. Nutritional
4. Promotion/Coupon
5. Recipe
6. Usage

Campaign Size

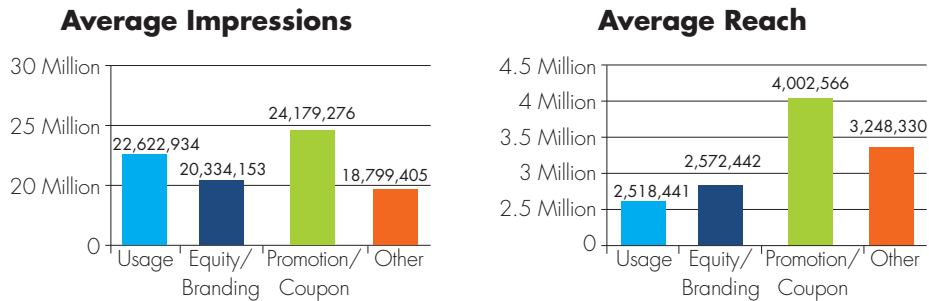
Benchmark campaigns averaged 22.8 million impressions total, with the largest being almost 100 million impressions and the smallest being 5.5 million impressions. Campaigns delivered, on average, a reach of approximately 3 million households, with the largest reaching more than 15 million households and the smallest reaching 800,000 households.



Comparing Creative Types—Campaign Size

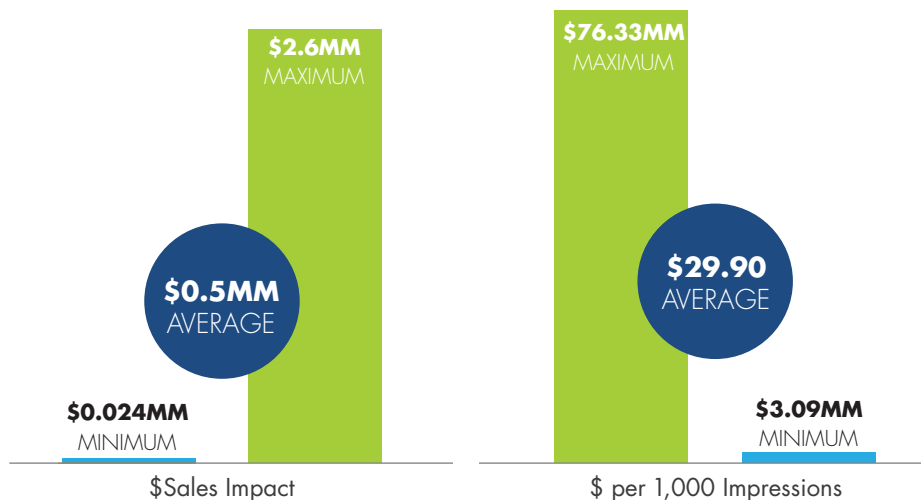
For a few categories where there were enough campaigns to break out results separately, we see that the size of the campaigns (in terms of impressions) are about the same, averaging between 19 and 24 million impressions, regardless of the creative goal.

Promotional/coupon campaigns experienced lower frequency and higher reach than other creative types, with a difference of nearly 30% between the lowest and highest.



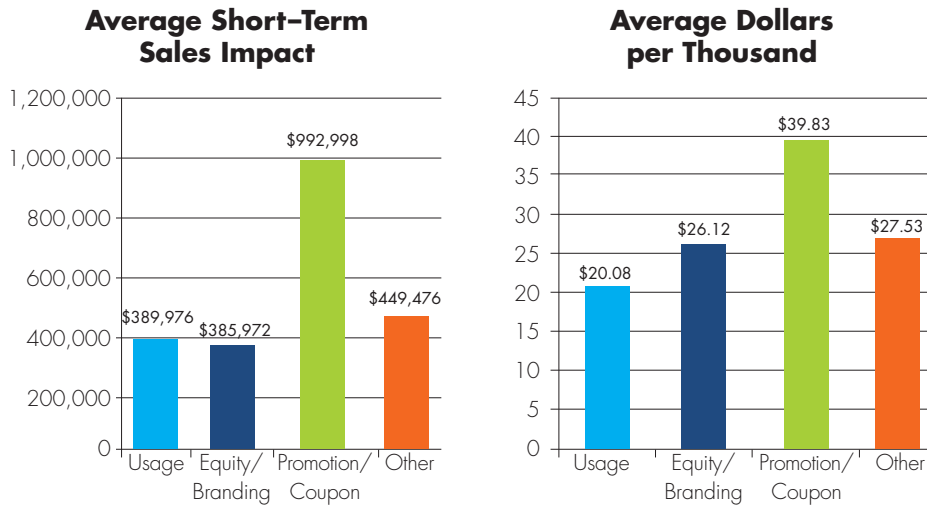
Sales Generated

Measured mobile campaigns generated, on average, \$500,000 in total sales, with the largest campaign generating nearly \$3 million total in-store sales. When analyzed based on a “dollar-per-thousand impressions” basis, benchmark campaigns delivered almost \$30 in sales per thousand impressions, with a high of \$76.33 and a low of \$3.09.



Comparing Creative Types—Sales Impact

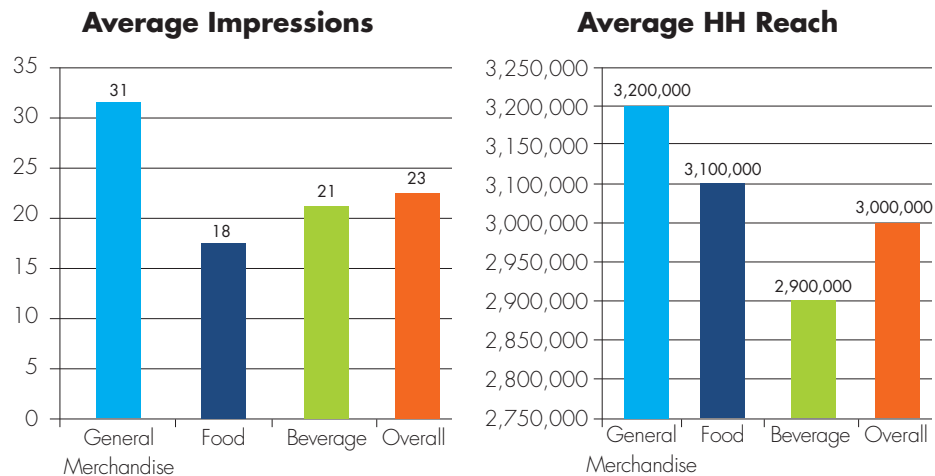
There is considerable disparity in short-term sales impact and to some extent, dollars-per-thousand across creative types. Clearly, promotional/coupon ads drive short-term sales impact greater than any other creative types and (even when factoring in media cost) outperform other creative types on a dollar-per-thousand basis.



While many campaigns initially focused on brand equity two years ago, promotional/coupon campaigns started trending up as it became clear they were more effective at driving sales. Consequently, in the past year, the majority of campaigns included some sort of promotional element.

Comparing Campaign Size by Brand Category

When we break down campaigns by category, we see similar averages, although clearly brands advertising food products are running smaller campaigns than brands running general merchandise campaigns.



The number of general merchandise campaigns has increased during the past 18 months. Meanwhile, the 4INFO platform reach has also steadily increased.

The first 4INFO beta campaigns on the BuyerVision Mobile platform ran in late 2012 and the platform officially launched in March 2013. During that time, the total number of households 4INFO mapped to mobile devices increased more than 30%—increasing overall campaign reach as a result. National brands require substantial reach because it's proven to drive sales lift.

Return on Ad Spend

Return on Ad Spend (ROAS) is the primary metric brands use when evaluating campaign success, because ROAS factors in not only the sales lift but also the cost of the media. In the end, that's what a CMO and CEO want to know—did we see a positive return on our ad spend, telling us this was a wise investment?

Across all of the benchmark campaigns, the ROAS average is 257%. In other words, for every dollar of media invested in mobile advertising, the benchmark brands generated \$2.57 in incremental sales lift. It's important to note this is **incremental**. It's not total sales, but rather the amount above the control group who wasn't exposed to the mobile advertising.

Naturally, there isn't always a positive ROAS. Anything below 100% means the client spent more in media than they generated in incremental sales lift. But that doesn't necessarily mean the client considers it a waste of money.

The ability to measure ROAS gives marketers the ability to learn from every campaign, even if the results indicate something didn't work. They can then examine factors such as campaign duration, size and creative, making adjustments as needed before the next campaign. Another benefit is the ability to look across other campaigns that generated an ROAS of below 100%, to see trends that might inform future campaigns.

Finally, on the extreme end of the spectrum, one campaign generated an ROAS of 1,028%. In other words, for every dollar of media, the brand saw more than \$10 in incremental sales lift.

Many times, brands prefer to receive a ROAS calculation, which takes into consideration the two accessible numbers: incremental sales lift and cost of the media. This enables brands to do an apples-to-apples comparison of media providers and media types, based on accurate and consistent calculations.

Learnings from both positive and negative campaigns were used to create the Five Best Practices that begin on page 12.

Best Practices

The campaigns represented in the Mobile Advertising Benchmarks, as well as hundreds of additional mobile campaigns, illuminate five best practices related to key areas of campaign planning, development, delivery and measurement.

Best Practice #1: Bet the Future on the Past

Mobile ad targeting has evolved significantly during the past few years, becoming far more precise. Meanwhile, consumers expect and deserve a relevant experience with your brand.

Here is a Step-by-Step Approach to Mobile Ad Targeting

Step 1

Precise targeting starts with knowing who your audience is. This is done through a person-based targeting approach that uses contemporary match key technologies, such as household ID, rather than outdated and less-accurate approaches such as matching to email addresses. Once you know precisely who you are reaching, you have more options for identifying your best prospects for a specific campaign.

Step 2

Employ past purchase data. Using past purchase behavior to forecast future purchasing behavior has proven to be highly successful for advertisers. The best indicator of future purchases is past purchases, and it's possible to link mobile devices to household purchase data.

Step 3

Augment your campaign with geo-location targeting for added relevance in your messaging. Many marketers see location as the most compelling value within mobile advertising. After all, mobile is the one marketing medium that people take everywhere, including the stores where they make purchases. It's not surprising that location is a component of a comprehensive mobile ad campaign, but it shouldn't be the sole basis of a campaign.

But Don't Strive for Perfection

Sometimes, marketers are so intent on being precise and narrow in targeting that it becomes challenging to deliver a large enough campaign to drive the kind of sales lift they want to see.

When using purchase data for targeting, who you choose to target depends on the goal of the campaign. Acquiring new customers means you'll seek out category buyers who don't buy your product currently.

Maximizing sales means targeting existing customers and also getting mid-loyal category buyers who are non-customers to try your offering. But if you cut the file to reach only loyal buyers, it's unlikely you will generate enough sales lift to produce an acceptable ROAS.

Then there is the matter of retention goals, which means targeting your own customers and keeping them loyal to your brand. But again, if you restrict the target audience to loyal customers alone, you're unlikely to generate an acceptable ROAS because they are already heavy buyers of your product. Instead, including some mid-loyal customers and even low loyalty customers will produce more incremental sales lift.



If you are using CRM data for targeting, take these guidelines into consideration. You may be well served to target both your loyal customers and people who look like them but aren't currently customers in a larger campaign, or expect to run a longer campaign in order to expose enough of the audience with enough frequency to drive purchase behavior.

Using a Match Key to Link Mobile Users to Sales

To calculate sales lift, you must be able to link a mobile user to sales transaction data. This requires a match key that can accurately link purchase data to a mobile user. Only then can ROAS be calculated to obtain meaningful data.

The two most common match keys are email address and home address. But email often doesn't match at the necessary scale, so if your provider is relying on email addresses to match mobile users to sales data, you'll want to make sure they are able to match enough transactions to impressions to get an accurate read of ROAS.

Best Practice #2: Creative is a BIG Deal, Especially in a SMALL Ad

Brands and agencies tend to see mobile banners and campaigns as an easy execution—simply a downsized version of an online display ad, not worth the time and trouble of a unique execution. They tend to think a little mobile banner can't be as creatively exciting as other campaign components, and some believe banners don't deliver in terms of consumer action or engagement.

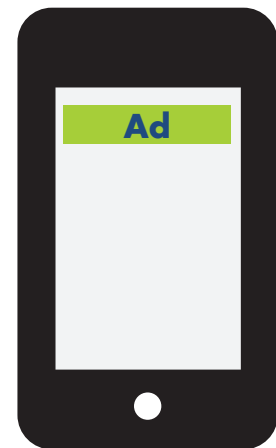
Nothing could be further from the truth.

Just because banner ads are small doesn't mean they don't deserve a creative team's full focus and attention. They do work and can be highly effective.

- More than 87% of the benchmark campaigns leverage a standard banner ad.
- Banner ad creative has to be good—it can't just be a resize of a desktop ad. It needs:
 1. Logo and simple call to action
 2. Prominent product shots
 3. Clear branding
 4. Bright colors
 5. Clicks to landing page that is relevant to the mobile audience

When it comes to mobile creative, clean, clear and simple is best. Include a logo and simple call to action, but don't allow any particular creative element to be so small as to be unrecognizable. An ad that looks good zoomed large on a desktop looks quite different on a mobile device. Use prominent product shots and clear branding, as well. Bright colors drive engagement, as do promotional elements.

Also think about the creative after the first click, and be sure to drive the consumer to a relevant mobile-friendly experience that pays off the ad.



When to Use Rich Media and Other Formats

While banner ads have proven effective, there are times when another format is the better choice.

In situations where the creative has to do heavy lifting—for example, an acquisition campaign or new product introduction—use of rich media and video ads has proven to be more effective simply because the additional space allows for more information. Interstitials can also provide considerably more space to educate, inform and entertain.

However, because these ad units are more costly, they must be significantly more effective than a banner ad in order to produce an acceptable ROAS—they must generate superior sales lift to offset that added media expense.

Best Practice #3: The Devil is in the Details

The third best practice is about those crucial details of mobile display advertising and the campaign mechanics surrounding these campaigns. By comparing the metrics and tactics of mobile and desktop campaigns for the past few years, it's easy to see several key differences.

Mobile Campaigns Require Fewer Impressions than Desktop Campaigns

Mobile campaigns require half the number of impressions as desktop campaigns, with mobile campaigns averaging approximately 23 million impressions and desktop display campaigns averaging approximately 46 million impressions. Yet they produce a 15% better ROAS, with desktop campaigns averaging 216% in ROAS vs. the 257% we see from mobile campaigns.

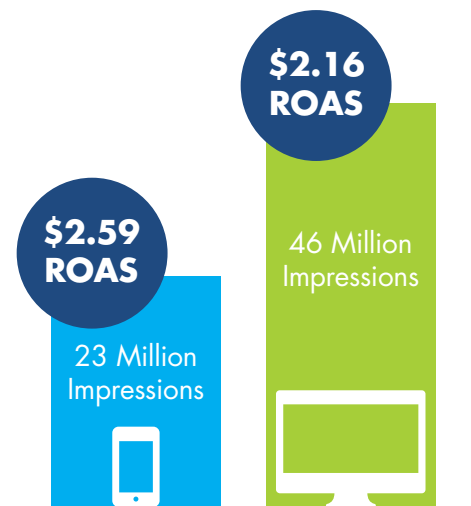
Why? One of the biggest reasons is the fact that most mobile ads are delivered in-app, and are typically the only ad on the screen at the time, so the advertiser has 100% share of voice with that ad. Contrast that to the desktop, where consumers often experience what is called “banner blindness”—some pages have so many different, competing banner ads that the average person simply can't visually process everything they see on the page.

The viewability issues that advertisers wrestle with in desktop don't exist in mobile in-app advertising because for most apps, there's no such thing as an ad appearing “below the fold.” The ad typically appears on the screen every time, when it first displays.

You Must Actively Manage Frequency Capping and Pacing

In mobile, you can't simply turn on a campaign and let it go. It requires active management to ensure the reach, frequency, pacing and ROAS goals are met. In general, campaigns deliver optimal ROAS results when impressions are paced fairly evenly rather than “heavying up” at the beginning or end of a campaign.

While desktop campaigns typically need 10+ impressions over the life of the campaign, comparable or better results are achievable with as few as 5 impressions during a mobile campaign. Again, the issues of banner blindness and viewability drive the frequency requirements.



It's important to note that these are averages. The campaign goals often drive the frequency of impressions, with acquisition campaigns requiring greater frequency vs. retention campaigns. It's also true that campaigns promoting a specific brand/product often require greater frequency than an overall brand franchise campaign. On the other hand, promotional campaigns can often deliver with much lower frequency, depending on the nature of the promotion. And certain high impact ad formats require lower frequency to achieve comparable ROAS.

The bottom line? Under-frequenting can result in lower ROAS and over-frequenting can sometimes push people right out of the purchase funnel. The key is be sure your mobile ad provider has run enough measured mobile campaigns to have mastered the nuances of running a campaign designed to drive in-store sales lift. They should be able to advise you on how to plan your campaign, and you want them to be capable of actively managing the campaign while it runs, so it can be adjusted in real time as needed.

What's the Right Campaign Length?

The optimal campaign length varies. While campaigns in the benchmarks averaged 11 weeks, they range widely from 4 to 38 weeks. As a general guideline, when looking at ROAS, it becomes evident that campaigns lasting at least 7 weeks tend to produce a 30% to 35% higher ROAS.

There are times when much longer campaigns make sense. Brands who want to drive continued brand awareness and preference may want to run continuously during critical buying periods. Products requiring a higher level of consideration, such as automotive campaigns, generally require lengths of 12 weeks or more.

Conversely, some retailers want to run extremely short campaigns, such as a 4 day sale. If you're going to run very short campaigns, you will need a large audience in order to achieve reach and ROAS goals for the campaign. Why? Because mobile users don't necessarily interact with ad-supported apps on their mobile devices every day.

Best Practice #4: Put Location in its Place

Location is often perceived as the ultimate advantage of mobile advertising. However, it's important to recognize where location is most beneficial for mobile advertising.

The promise of reaching people who are in or near your store or in a competitor's store is very alluring. In fact, reports from various ad serving companies indicate as much as 90% of campaigns are using some form of geo-precise targeting techniques.

Many location targeting websites and pitches make statements like, "Location is the new cookie!" and "**WHERE** you go is the best indicator of **WHO** you are." These are misguided statements. Just because someone is near a particular store doesn't make them a viable prospect. If you don't know who they are, then you're going to risk a lot of inefficiency in your targeting (wasted impressions).

Take, for example, a person seen near a strip shopping center where there's a donut shop, a nail salon, a battery store and a CrossFit gym nearby. Do they have a fondness for donuts? Are they a fitness buff? Is it a woman getting a manicure while the kids are at school or a gadget geek guy picking up a battery for one of his specialized gadgets?

Even if you string together many different locations, you are still making a lot of guesses about just exactly who you are targeting, and you're bound to be wrong. Why take on that uncertainty when there are mobile platforms capable of tying mobile devices to individuals? This kind of data enables you to match where a customer is with who they are, so you can target your campaigns (and your messages) with precision.

Why take on that uncertainty when there are mobile platforms capable of tying mobile devices to individuals?

Once a consumer's home address is known, marketers can find out how many kids they have and what ages, what kind of car they drive, how much they paid for their house, what shampoo they buy and when they last bought it. All of that data is available for marketing purposes and accessible just by knowing the household and the mobile devices that live there. So instead of guessing, you can be sure who's receiving your mobile ads.

Another thing to remember is that mobile advertising isn't push advertising. With geo-location ads, the person has to be in a store, using their mobile device and be in an app or browsing the web for you to have the opportunity to advertise to them. Consider the grocery shopper with three kids in tow. How likely are they to pull out their phone for a quick game of Candy Crush while at the store?

Does all this mean using geo-location to target an ad is a bad idea? Not at all, but it must be used wisely in a campaign for it to be effective.

Location is Only One Component of a Comprehensive Mobile Ad Campaign

First, don't use location as a proxy for the owner of the mobile device. Instead, rely on more accurate audience targeting.

Then, use location to give your ads context and relevance, adjusting the creative message and offer when you see a person near your store, shopping in your store or shopping in a competitor's store. Offer them a coupon or use location to provide mapping to the store closest to them at that moment.

And if you want to minimize waste, combine audience and location so you target only the people who are good prospects for your product—based on purchase or demographic data—and then adjust the creative (e.g. offer a promotion) when they are close to the store.

Also keep in mind that a buyer often plans a purchase long before they set foot in a store. You want to reach them at all times in the buying cycle, using location to decide what creative to show (e.g., the couch shopper on an iPad is a good audience for an educational video, while a shopper running errands is better suited to a promotional banner ad.)

Consider an automobile purchase, which often involves weeks or months of research before the consumer sets foot in a dealership for a test drive. If you try to reach them for the first time at the point of sale, you're too late and you've missed out on a potential purchase. Again, it's about precise, well-timed targeting. And it means knowing who your prospect is and where they are.



Best Practice #5: It Matters What You Measure When You Measure What Matters

It really does matter what you're measuring. Let's look at a few of the nuances that go beyond the benchmarks.

Mobile Clickers Aren't Buyers

You've probably heard the statement that clickers aren't buyers, and now there is data to prove it.

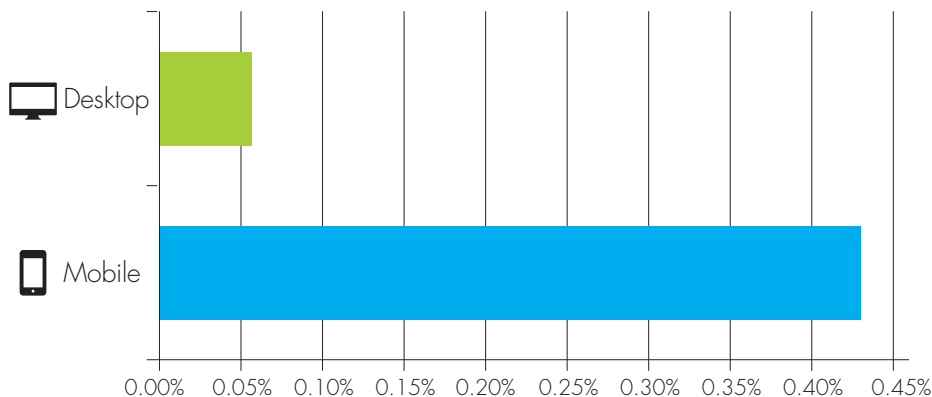
First, it's important to note that mobile produces 8 times as many clicks as desktop. However, a close examination of clicks vs. actual sales lift shows no correlation whatsoever between those who click and those who buy.

So if you're trying to optimize your mobile campaigns based on clicks, you could actually be steering away from buyers and focusing impressions on a very small percentage of the audience who click—less than half of 1%.

The end result: you'll reduce your reach and impact sales lift dramatically, resulting in a poor ROAS.

Use clicks as a path-to-purchase indicator but not as a measure of campaign success. And make sure your agency's incentives aren't misaligned to reward them for higher click rates, because you could actually be paying more for less effective campaigns.

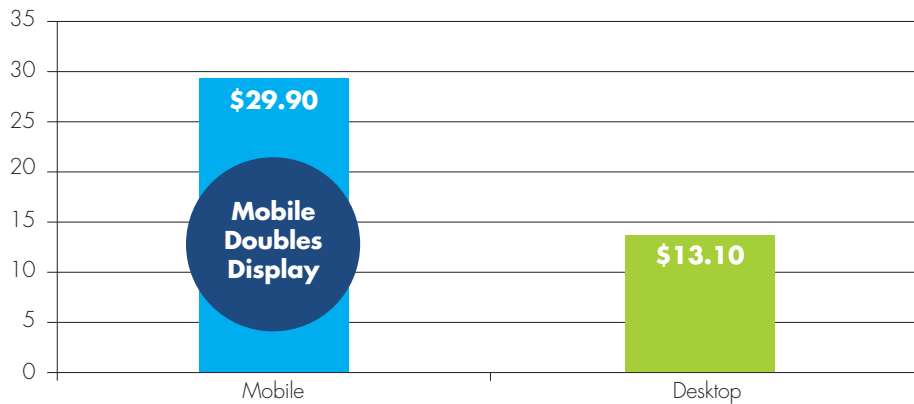
Average Click Through Rate



Mobile Drives Double the Sales Lift of Desktop

When comparing mobile campaigns to desktop campaigns, it becomes evident that mobile actually drives double the sales lift of desktop. Total sales per thousand impressions is almost \$30 for mobile, compared to \$13 in sales per thousand impressions in desktop. Even though mobile advertising tends to be priced higher than desktop impressions, the ROAS is still 15% better for mobile than desktop.

Sales in \$ per 1,000 Impressions



As mobile advertising matures, brand marketers need to know what to expect from their campaigns. It is, in fact, possible to connect mobile ad impressions with offline sales data to measure the revenue generated by a campaign. The rest of the picture comes from comparing those results to similar mobile campaigns, using the benchmarks presented here.

By measuring what matters and using these benchmarks and best practices as your guide, you can determine with certainty your Return on Ad Spend. And that will give you the confidence you need to fully invest in the fast-growing medium of mobile advertising.

1. eMarketer, Smartphones: Time Spent Per Day, United States, 2010-2015, April 2015
2. eMarketer, US Time Spent with Media, October 1, 2014
3. eMarketer, Mobile Ad Spending, United States, 2013-2019, March 2015
4. Mobile Spend, Kleiner Perkins Caufield & Byers, May 2013
5. Master Mobile Measurement To Unleash True Cross-Channel Advertising, A Forrester Consulting Thought Leadership Paper Commissioned by 4INFO and Acxiom, August 2014
6. eMarketer, US Mobile Ad Spending, by Format, 2013-2019
7. eMarketer, US Display and Search Ad Spending, by Device, 2015, March 2015
8. eMarketer, US Mobile Ad Spending, In-App vs. Mobile Web, 2014-2016, March 2015

About Catalina

Catalina's personalized digital media drives lift and loyalty for the world's leading CPG retailers and brands. Catalina personalizes the consumer's path to purchase through mobile, online and in-store networks powered by the largest shopper history database in the world. Catalina is based in St. Petersburg, FL, with operations in the United States, Europe and Japan. To learn more, please visit www.catalinamarketing.com or follow us on Twitter [@catalina](https://twitter.com/catalina).