

## MineThatData Brief: Ad Curves

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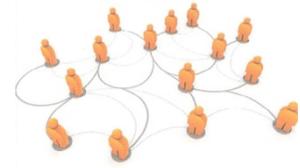
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ONLINE MARKETING  
SIMULATIONS



THE DEFINITIVE METHODOLOGY  
FOR PREDICTING THE FUTURE  
OF YOUR ONLINE BUSINESS

KEVIN HILLSTROM

“Ad Curves” represent a framework for thinking about the relative efficiency of various advertising channels. “Ad Curves” allow an Executive to do simple, high-level calculations that directionally point the Executive toward accurate investment conclusions.

In no way do “Ad Curves” replace the detail-level work that is done by online marketing teams, web analysts, or business leaders in determining marketing budget allocations. The calculations do, however, help illustrate opportunities that would otherwise be missed using traditional calculations.

I developed “Ad Curves” from the results of hundreds of direct marketing contact strategy tests I’ve been part of during the past twenty-one years.

Let’s use e-mail marketing as an example. Assume that an online marketer conducted a three month e-mail contact strategy test. Below, I summarize the results of the test.

- Customers Receiving “0” Contacts Spent an Average of \$20.00.
- Customers Receiving “3” Contacts Spent an Average of \$22.00.
- Customers Receiving “6” Contacts Spent an Average of \$23.00.
- Customers Receiving “9” Contacts Spent an Average of \$23.75.
- Customers Receiving “12” Contacts Spent an Average of \$24.25.

In other words, customers are going to spend an average of \$20.00 per customer, no matter what. At a typical level of twelve e-mail contacts, the customer spends \$24.25. The  $\$20.00 / \$24.25 = 82.5\%$  rate is called the “Organic Percentage” ... it is the percentage of demand that will be generated regardless of e-mail marketing. This percentage is one of the most important percentages that all online marketers should know and understand.

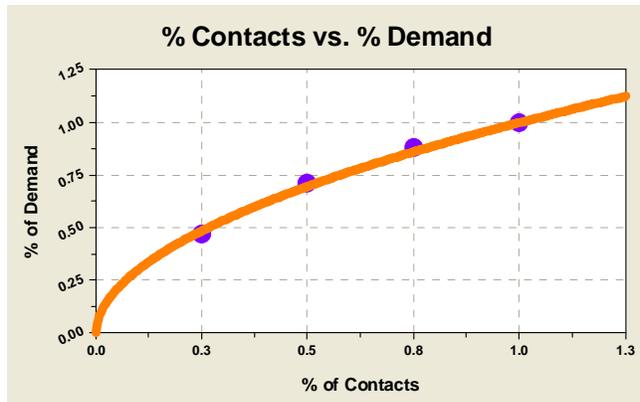
Let’s remove the \$20.00 that happens organically. Our dataset now looks like this:

- Customers Receiving “0” Contacts Spent an Average of \$0.00.
- Customers Receiving “3” Contacts Spent an Average of \$2.00.
- Customers Receiving “6” Contacts Spent an Average of \$3.00.
- Customers Receiving “9” Contacts Spent an Average of \$3.75.
- Customers Receiving “12” Contacts Spent an Average of \$4.25.

This dataset can be transformed into a series of fractions, a fraction of contacts, and a fraction of the \$4.25 that is generated.

- Customers Receiving 0.00 of the Contacts Spent 0.00 of the Demand.
- Customers Receiving 0.25 of the Contacts Spent 0.47 of the Demand.
- Customers Receiving 0.50 of the Contacts Spent 0.71 of the Demand.
- Customers Receiving 0.75 of the Contacts Spent 0.88 of the Demand.
- Customers Receiving 1.00 of the Contacts Spent 1.00 of the Demand.

With this data, we can build a “model” that relates fraction of contacts and fraction of demand. This relationship can be built any of a number of ways. I have found that one family of equations can be used to greatly simplify the “Ad Curves” process.



This relationship is easily quantified via a shareware software tool called “Curve Expert”. In this software application, I create a user generated model:

- $y = x^a$

In this case, “Curve Expert” fits the following model:

- Fraction of Demand = (Fraction of Contacts) <sup>0.52</sup>

Again, there are other equations that fit this relationship even better (check out Hoerl Models and Weibull Models, which always fit well but can yield unpredictable outcomes). But there simply isn’t an easier relationship to project future results with than this relationship.

Notice the coefficient in this model, “0.52”. The value is very close to the value that represents the “square root” function, a value of 0.50.

You’ll find that many traditional direct marketing strategies yield coefficients ranging between 0.30 and 0.70. Traditional direct mail to housefile customers yields values between 0.40 and 0.55. Traditional direct mail strategies mailed to acquisition customers yield values between 0.50 and 0.70. E-mail marketing often yields values between 0.35 and 0.65. Paid Search often yields values between 0.50 and 0.80.

Some marketing strategies yield linear relationships. For instance, an affiliate marketing program, say one where you pay an affiliate 8% of your average order value, will yield a linear relationship (coefficient = 1.00), because you pay the same percentage increase as affiliates deliver more and more orders.

Relationships hold in offline marketing, too. If you add a third store to a two-store market, you’ll find that total retail sales increase at a rate comparable to an “Ad Curve” coefficient ranging between 0.50 and 0.85. If you add 24 pages to a 124 page catalog, you will find that an “Ad Curve” factor of 0.50 does a very credible job of predicting how much additional demand can be expected. If you increase catalog circulation from 1,000,000 to 1,500,000, you’ll find that an “Ad Curve” factor of 0.50 can predict, reasonably accurately, how much additional demand is generated.

“Ad Curves” allow us to make interesting predictions.

For instance, in our e-mail marketing example, we can quickly simulate what might happen if we go from 12 e-mail contacts in a quarter to 24 e-mail contacts in a quarter.

- Fraction of Demand = (Fraction of Contacts) <sup>0.52</sup>.
- Fraction of Demand = (24 / 12) <sup>0.52</sup>.
- Fraction of Demand = (2) <sup>0.52</sup>.
- Fraction of Demand = 1.434.

In other words, if we double the number of e-mail contacts during this three month period of time, then demand attributed to e-mail marketing will increase by a factor of 1.434. Recall that twelve e-mail contacts caused an incremental \$4.25 demand to be generated. This means that twenty-four e-mail contacts will cause an incremental  $\$4.25 * 1.434 = \$6.09$  demand to be generated.

So, if we mail twelve contacts, we get \$4.25 total demand, or \$0.35 per contact.

If we mail twenty-four contacts, we get \$6.09 total demand, or \$0.25 per contact.

Now, honestly, as we move further and further away from the number of contacts that are tested, our projections are going to be less and less accurate. You should not use this methodology to accurately estimate what happens when you go from twelve contacts to one-hundred and twelve contacts.

But you can do a very credible job of estimating what will happen when you go from twelve contacts to, say, sixteen contacts, or from twelve contacts to eight contacts.

As mentioned earlier, similar relationships hold for paid search, for affiliate marketing, and especially for offline marketing.

## Putting It All Together

I use "Ad Curves" in combination with Online Marketing Simulations to predict what is likely to happen to a business during the course of the next five years. I can, for instance, see what happens to the long-term health of my business if I increase paid search spend by 50% ... in fact, the Online Marketing Simulation environment allows me to see what happens to e-mail marketing and affiliate marketing and any other online marketing channel if I increase paid search spend by 50% for each of the next five years.

This is what CEOs ask me to do for them, the methodology forms the framework of nearly all of my consulting projects. It is amazing to me that online marketing vendors and web analytics providers have not partnered with me (or others who do this kind of work) to build the Online Marketing Simulation / Ad Curve framework into their applications. The combination of methodologies allow the business leader to understand how marketing decisions made today influence the future health of a business.

## But What About Attribution?

Almost everybody in online marketing and web analytics is focused on order attribution, and for good reason. Marketers desperately want to know which combination of marketing activities yielded an order, and then parse that order based on the marketing activities that generated the majority of the order.

I am simply not going to compete with order attribution methodologies. The methodologies, if done accurately (and that is a big "IF"), theoretically help the marketer figure out how to optimize conversion rate.

I am not remotely interested in optimizing conversion rate.

I am 100% interested in helping a CEO build a framework that allows the Executive to understand the future health of her business. And as long as the rest of the online marketing community focus on using mathematical methodologies and web analytics software to optimize the short-term health of a business, there is an inefficiency that this combination of methodologies (Online Marketing Simulations + Ad Curves) are able to capitalize on, helping a business become more profitable than competitors using conversion rate optimization.

## Online Marketing Simulations + Ad Curves = Long-Term Optimization

Should you need assistance for your project, please contact me:

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