

The Financial Impact of Predictive Modeling (Part 2)

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This is the final installment of a two-part article on predictive modeling. The first part appeared in the December 11 issue.

Last month we showed how recency-frequency-monetary (RFM) cells can be used to generate a per-mailing profit of \$25,650 on sales of \$751,500, for a return of 3.41 percent. Although not outstanding, it is an improvement over indiscriminately mailing the entire file – which generates no profit on sales of \$900,000.

Let's now replace our RFM Cells with 10 segments generated by a statistics-based predictive model. Again, we will depend on the concept of lift to illustrate the segmentation power of the model. As we see in Table 5-A, Segment 1's response rate of 6.80% has a ratio-to-average of 3.40 versus the overall response rate of 2.00%. This is very typical of the lift that is seen in models built off databases with a wealth of detailed and accurate transaction history, and is far superior to what is attainable with typical RFM Cells.

**Table 5-A:
Segmentation Strategy #2 – Predictive Model**

(1.54% = Breakeven Response Rate)

Cell	Mail Qty	Resp Rate	Ratio to Avg	Cum Ratio to Avg	Revenue @ \$75 Avg Ord Size	Contribution to Overhead & Profit
1	60,000	6.80%	3.40	3.40	\$306,000	\$102,600
2	60,000	3.00%	1.50	2.45	\$135,000	\$ 28,500
3	60,000	2.20%	1.10	2.00	\$ 99,000	\$ 12,900
4	60,000	2.00%	1.00	1.75	\$ 90,000	\$ 9,000
5	60,000	1.70%	0.85	1.57	\$ 76,500	\$ 3,150
6	60,000	1.40%	0.70	1.43	\$ 63,000	(\$ 2,700)
7	60,000	1.10%	0.55	1.30	\$ 49,500	(\$ 8,550)
8	60,000	0.80%	0.40	1.19	\$ 36,000	(\$ 14,400)
9	60,000	0.60%	0.30	1.09	\$ 27,000	(\$ 18,300)
10	60,000	0.40%	0.20	1.00	\$ 18,000	(\$ 22,200)
Total	600,000	2.00%			\$900,000	\$ 90,000
(Overhead)						(\$ 90,000)
Contribution						\$ 0
(% of Rev)						0.00%

Notice also that the bottom segments have much lower response rates and lifts than their corresponding RFM Cells. Segment 10, for example, has a response rate of 0.40% and a ratio-to-average of 0.20 versus RFM Cell 10's 0.80% and 0.40. This is because the predictive model is doing a much better job of concentrating high-probability responders in the top segments and low-probability responders in the bottom segments. (Under ideal circumstances, I have seen top-10%-to-average lifts of well over 4.00 and bottom-10%-to-average lifts of under 0.15.)

Because our predictive model is doing such a good job of concentrating high-probability responders in the top segments, Segments 6 to 7 join Segments 8 to 10 in qualifying for elimination. As is apparent in Table 5-B, mailing only the five above-breakeven segments generates \$706,500 in revenue, which is even less than with the RFM strategy. But profitability is up significantly to \$66,150 or 9.36% of sales. Again, revenue has been sacrificed for profitability.

**Table 5-B:
Predictive Model (cont.)**

(1.54% = Breakeven Response Rate)

Cell	Mail Qty	Resp Rate	Ratio to Avg	Cum Ratio to Avg	Revenue @ \$75 Avg Ord Size	Contribution to Overhead & Profit
1	60,000	6.80%	3.40	3.40	\$306,000	\$102,600
2	60,000	3.00%	1.50	2.45	\$135,000	\$ 28,500
3	60,000	2.20%	1.10	2.00	\$ 99,000	\$ 12,900
4	60,000	2.00%	1.00	1.75	\$ 90,000	\$ 9,000
5	60,000	1.70%	0.85	1.57	\$ 76,500	\$ 3,150
Total	300,000	3.14%			\$706,500	\$156,150
(Overhead)						(\$ 90,000)
Contribution						\$ 66,150
(% of Rev)						9.36%

Some readers might be concerned with a predictive modeling strategy that sacrifices a significant chunk of sales, even if it results in an improved bottom line. Fortunately, there is a second chapter to our story in the form of a re-mail strategy.

Re-mailings generally result in a response rate decline. Because many direct marketers find that re-mailings perform at about 50% the rate of the main mailing, we will use this assumption with our cataloger. With this in mind, our re-mail strategy will be targeted only to customer file segments that are sufficiently responsive to remain above breakeven even with a 50% response rate decline.

As is seen in Table 6, only RFM Cell 1 and Predictive Model Segment 1 meet this criterion. (This is a conservative assumption because a predictive model often generates a larger number of these segments than do RFM Cells.) Predictive Model Segment 1, because of its superior concentration of high-probability responders, performs much better than RFM Cell 1: \$153,000 versus \$90,000 in revenue and \$36,300 versus \$9,000 in profit.

**Table 6-A:
Re-Mail Performance – RFM Cells**

(1.54% = Breakeven Response Rate)

Cell	Mail Qty	Resp Rate	Remail @ 50%	Revenue @ \$75 Avg Ord Size	Contribution to Overhead & Profit
1	60,000	4.00%	2.00%	\$90,000	\$9,000
2	60,000	2.90%	1.45%		
3	60,000	2.30%	1.15%		
4	60,000	2.10%	1.05%		
5	60,000	2.00%	1.00%		
6	60,000	1.80%	0.90%		
7	60,000	1.60%	0.80%		

**Table 6-B:
Re-Mail Performance – Predictive Model**

(1.54% = Breakeven Response Rate)

Cell	Mail Qty	Resp Rate	Remail @ 50%	Revenue @ \$75 Avg Ord Size	Contribution to Overhead & Profit
1	60,000	6.80%	3.40%	\$153,000	\$36,300
2	60,000	3.00%			
3	60,000	2.20%			
4	60,000	2.00%			
5	60,000	1.70%			

It is now time to tally the results of our original mailing in combination with our re-mailing. As illustrated in Table 7, the predictive model has a small, \$18,000 revenue advantage over the RFM Cells. On the profit side, however, the model has a substantial, \$67,800 advantage. In short, what our predictive model has done is enhance significantly the profitability of our catalog mailing with the additional benefit of a small revenue increase.

**Table 7-A:
Overall Revenue, Model Versus RFM Cell**

	RFM Cells	Predictive Model	Advantage
Original Mailings	\$751,500	\$706,500	(\$45,000)
Remailings	\$ 90,000	\$153,000	\$63,000
Overall	\$841,500	\$859,500	\$ 18,000

**Table 7-B:
Overall Profit, Model Versus RFM Cells**

	RFM Cells	Predictive Model	Advantage
Original Mailings	\$25,650	\$66,150	\$40,500
Remailings	\$ 9,000	\$36,300	\$27,300
Overall	\$34,650	\$102,450	\$67,800
(% of Revenue)	4.12%	11.92%	

Conclusion

An investment of, say, \$25,000 in a statistics-based predictive model by a moderately sized direct marketer will more than pay for itself in the first promotion alone. Even assuming a \$1 or \$2 per thousand incremental cost for scoring, there will be an immediate impact on the bottom line. And after the first promotion, the moderately sized direct marketer can look forward to an annuity of \$68,000 per promotion. There are few investments available to direct marketers with such a favorable cost/benefit ratio!

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