

# Predictive Modeling

## NEWS

## States Eyeing PM Tools for Medicaid Need to Know What They're Buying Into

**A new guide outlines the critical considerations**

by Russell A. Jackson

**S**kyrocketing healthcare costs in general – and those for the difficult-to-get-one's-arms-around Medicaid program in particular – have policymakers scrambling for ways to rein in state and federal spending on benefits programs. And one of the tactics they're looking most closely at is predictive modeling, generally for targeting prime candidates for disease management or other care management program intervention; another occasional use is predicting costs for managed Medicaid rate-setting.

Now, the Center for Health Care Strategies -- a not-for-profit policy resource center dedicated to improving healthcare quality for low-income children and adults, people with chronic illnesses and disabilities, frail elders and racially and ethnically diverse populations experiencing disparities in care – has published *Predictive Modeling: A Guide for State Medicaid Purchasers*, in partnership with David Knutson. Knutson is director of health systems studies at the Park Nicollet Institute for Research and Education, Minneapolis, and holds adjunct faculty appointments at the University of Minnesota. The guide features information for state Medicaid program managers on developing or buying a predictive model and on what to expect from it once it's up and running. Here are excerpts.

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## The Predictive Power of Healthcare Data: Leveraging Analytics to Measurably Drive Behaviors

**Turning insights into action and action into value is the key**

by Jack Newsom ScD, Senior Director of Analytics, and Kathleen Ellmore, Director of Consumer Healthcare Behaviors, Silverlink Communications Inc.

**C**onsumer marketing analytics is a well-established discipline that has been used for decades by leading consumer companies to drive behavior. Casinos, credit card companies, the food industry and even political campaigns have all used marketing analytics to motivate specific behaviors and gain valuable insights about consumers. It's no secret that companies in leading consumer industries invest hundreds of millions of dollars in analytics and leverage segmentation and micro-targeting techniques to stay ahead of the competition.

Yet of all industries, healthcare has lagged far behind the trend, even though behavior change is critical to our healthcare system. Consider this: 70% of our nation's healthcare costs, currently at \$2.4 trillion, are directly attributable to behavior-related conditions. Diabetes, a largely behavior-based condition, is one of the most significant costs to our system, with an annual bill of \$214 billion. As such, the issue of moving consumers and our collective health behaviors is gaining interest in Washington and has become part of the reform discussion.

### Are Health Behaviors Different From Other Consumer Behaviors?

When thinking about using consumer marketing techniques in healthcare, it is important to note that the drivers of health behaviors tend to differ from other consumer behaviors. The drivers that motivate us to purchase a flat panel TV or vote for a particular political candidate are far different than those that motivate us to engage in our health. Health behavior can change dramatically from one moment to the next, as health events can be episodic.

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## The Predictive Power of Healthcare Data...continued

Also, health has a long-term perspective versus the instant gratification of other consumer behaviors. Because of those important differences, the predictive rules of consumer behavior don't always apply directly to healthcare.

An important factor when thinking about applying analytics to health behaviors is the understanding that healthcare data are often far more predictive than demographic information. While other industries typically base their marketing segmentation strategies on age, gender and income level, the healthcare industry can use health status and claims information, as well as health plan design, as predictive elements. Successful healthcare analytics strategies, therefore, should include health-related data such as plan tenure, type, design, co-pay structure, deductible and claims, including pharmacy and medical, in addition to the standard demographic data -- such as age, gender, address, income and home ownership -- that are used in other consumer industries. Claims data are essential, as that information is typically the most predictive of health behavior.

### The Power of Actionable Segmentation

Personalized communications targeted to meaningful segmentation groups increases the ability to drive a specific behavior. The challenge is to uncover the most effective message, channel, brand and timing/frequency for a specific segment, within a specific population, for a specific activity. There is a lot of talk around segmentation in healthcare these days, but unfortunately, much of the focus is on large, generalized segmentation schemes that are not actionable for the specific goals that healthcare organizations are trying to achieve.

Segmentation in healthcare must be focused on the specific behavior goals that a healthcare organization is trying to drive. People will segment differently on how they buy health insurance versus their propensity to refill a prescription by mail, for instance.

To optimize healthcare segmentation, there are several best practices to follow:

- Segments must be measurable.
- Segments must be large enough to justify the cost of separate communications tactics.
- Consumers within a segment must be relatively homogeneous and behave similarly.
- Segments must be different enough from one another to mandate different strategies.
- Segments must be actionable.
- Segments must be created based on the behavior you are driving to drive.

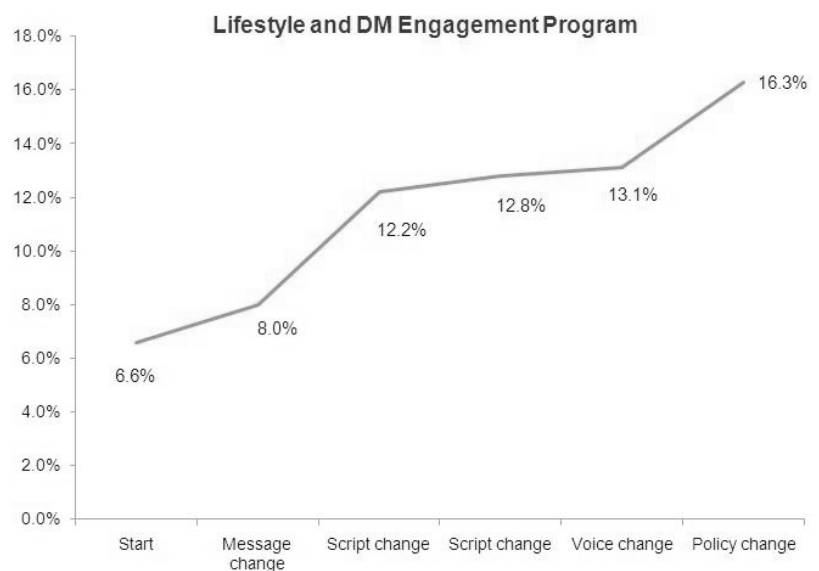
### Using Test-and-Learn Methodologies: The Power of Control Groups and Champion/Challenger

Segmenting appropriately is the first step to cracking the healthcare behavior code. The next step is putting it into motion to motivate behavior. Understanding that every population is unique and that each population responds differently based on the behavior that you are trying to motivate is the key to the process. In essence, it needs to be a fluid model, through test-and-learn experimentation.

While there are best practices and experience to guide our efforts, there are always differences in given populations and programs. Therefore, a population should be initially segmented into groups based on similar demographics and health data. An intervention (a specific communication), which includes messaging, channel, branding, timing, frequency and sequence, is then launched on a segment-by-segment basis and then is assessed and measured by the success rate of the intervention.

The intervention with the highest success rate is identified as the "champion" and the test is run again with a different intervention, called the "challenger," to determine if that intervention is more effective. That iterative testing is a consistent process that employs rapid experimentation and a randomized control group. The findings are captured and integrated into a database for continual improvement.

It is clear that segmentation coupled with test-and-learn methodologies is effective at improving the rate of behavior change, as seen in the results of a health management engagement program (chart above). Six interventions in five cycles increased engagement by 246%. Iterative testing is the key to achieving meaningful results.



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## The Predictive Power of Healthcare Data...*continued*

When it comes to the test-and-learn process, many variables -- such as messages, channel, timing, frequency and sequence -- are constantly tested on their success. Currently, the most common channels for healthcare communications are phone calls, email and regular mail. Text messaging and other social media tools are also beginning to become part of the equation.

Optimizing across channels requires the consideration of additional constraints, like cost. Clearly, some channels, like email, are less expensive than mail. That has to be weighed against responsiveness and budgetary constraints. Also, additional variables, like order and sequencing, must be taken into account for optimization. It is likely that the greatest behavior change outcomes will come from programs that involve multiple channels timed and sequenced properly. With a sense of which combination of variables is most effective for each segment, a plan to optimize cost and ROI can be put into action.

### Consumer Insights: Gaining an Understanding of the Healthcare Consumer

As more and more data on the healthcare consumer are gathered through the test-and-learn process, richer information can be leveraged to move behavior. Through Silverlink's communications programs, here are a few interesting examples of what analytics and predictive healthcare data have taught us about healthcare consumers:

- Income is not closely associated with adoption of cost-savings programs. However, home ownership is typically a more predictive factor.
- Social norm messaging is 20% more effective for people under 50 years old than for seniors (age 65 and above) when it comes to converting them into a cost-savings pharmacy program.
- Consumers in Kansas will drive 30 times farther to attend a Medicare meeting than those in New York.
- Women on Medicaid were three times more likely to get at least one medical screening when they were reminded about three missed screenings.
- The most effective time to reach seniors (age 65 and above) is during the week between 2:00 p.m. and 4:00 p.m. The 3:00 p.m. weekday timeframe performs twice as effectively as 12:00 p.m. weekdays.

### Conclusion

By applying well-developed consumer marketing analytics techniques, it is possible to learn which messages move which people, why and how relative to health behaviors

Turning insights into action and action into value is the key to driving health and unlocking billions of dollars in our healthcare system. It is important to understand when, where, why and how to drive consumer health behaviors. Through consumer marketing analytics, and the related concepts of targeting, segmentation and test-and-learn methods, healthcare enterprises have the opportunity to uncover dozens of meaningful areas to invest in. With the help of marketing analytics, America could become a healthier and wealthier nation.

As Senior Director of Analytics, Newsom is responsible for providing overall vision and execution of Silverlink's analytics strategy. Those activities include targeting, micro-segmentation, maintaining rigorous research methodologies and testing (and retesting) interventions to maximize the impact of communications programs to drive health behaviors. Newsom came to Silverlink from Phar-Metrics Inc., where he led account strategy and project engagements for market research, outcomes research and marketing groups for large pharmaceutical and biotech companies. As Director of Consumer Healthcare Behaviors, Ellmore uses her many years of consumer marketing experience to create strategies, segmentations and interventions that drive increased customer results. She came to Silverlink from the role of Vice President at Digitas, a direct marketing firm. At Digitas, she led the AT&T Wireless B2B Services group, working on direct communications, database marketing management, segmentation and modeling. Ellmore also has more than 20 years of consumer marketing and brand experience at leading consumer marketing organizations, including General Mills and Gillette.

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