

Health Insurance and Managed Care

-- Uses of Information Technology

"The unavailability of a sufficient quantity of statistically valid data has made it difficult for decision makers to assess the impact of a range of potentially significant factors using traditional techniques" opine Tia Sawhney, Alam Singh and Rich Moyer.

There are many possible benefits from the use of information technology in health insurance and managed care. Standard driven and interconnected IT systems can enable all stakeholders to interface with each other seamlessly. Providers can use it to better communicate the treatment and conditions of their patients; the insurance companies can do more precise underwriting; and TPAs can process more claims with less errors. This article will explore a very specific way that health insurers and managed care companies globally are using IT today and understand some of the possibilities for predictive analysis in the near future in India.

Health Insurance in India

Although the Indian health insurance market topline is growing well, the lack of a corresponding bottom line growth is of concern. Historically employer health insurance has been priced aggressively, sometimes to secure associated tariffed business from clients and at other times to increase market share. With detariffing round the corner the first reason for aggressive pricing will no longer exist and under-pricing to increase market share is a strategy which any board is unlikely to support for a long term.

The health insurance market potential within India is strong. With increased awareness about the need for financial risk mitigation in the event of a major illness and the rising income levels, a sizable section of India's urban inhabitants are increasingly interested in health insurance. The double digit growth, albeit on a small initial base, does demonstrate a better understanding of and a growing demand for health insurance. The industry is poised for a paradigm shift, replete with opportunities for those who modify their strategies to fit the current

times. At the forefront of these changes would be to use technology more effectively.

Besides group insurance, a significant opportunity exists for growth in the individual insurance market. Many Indians do not have access to group insurance. Therefore one way to deliver increasing returns is to grow the top line with profitable individual health insurance sold to the currently

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uninsured. Many of the urban middle class can afford to buy some insurance at some price. But so far, the industry has not found the right combination of product, price and underwriting, at least not on a large scale.

Another way to deliver returns is both a topline and a cost strategy. Historically, health insurers have been satisfied by driving margins at some aggregate level, such as a particular large group or a state. The smart players in the highly competitive market of the future will attempt to create positive margins at an increasingly granular level—that is, within each product line and from each market segment. Like any insurer, they are likely to accept risk, but are less likely to tolerate systematic losses, even

when offset by profits from other lines of businesses.

The smart players will use advanced analytics to predict costs and to price and target market accordingly. As a result, their prices for the best risks will be better than the competition, allowing them to sell a disproportionate amount of this business. But even if their top line does not grow (and it should), they will earn superior returns due to better alignment between premiums and costs.

While this may sound futuristic, it is a model with a proven track record in other industries, and the leading health insurance players are already experimenting with it. This technology is the art and science associated with advanced data modeling and predictive analytics.

Data Analysis Today

Insurers, of course, have always wanted to create their desired margins by line if business. This has been historically difficult due to the limited tools that insurers have had available to them for analyzing experience. It was not long ago that the industry performed its analyses of financial data by hand. Then, as now, corporate decision makers required snapshots of immediate financial situations to help map out strategies. But without the power of computers, weeks would pass before any analytic output appeared.

Today's industry leaders can rely on servers and intranets, IT departments and portals to gather the information they seek. In India most companies have not used these tools to analyze detailed data. Instead they have waded through aggregate data to gain their insight. Though these enormous databases can contain up-to-the-minute information, the data may

be spread across disparate systems and archived in dissimilar, non-transferable formats. Staff must organize it into new spreadsheets. For those whose job it is to subset the data into smaller pools, automating an otherwise tedious, painstaking manual process could increase their ability to provide the requested information in a timely manner.

Advances in data analysis; reporting and information delivery tools that can cull from an organization's databases all the information it uses in its daily operations, regardless of the format or the system on which the data resides; have opened up new possibilities. Users can then apply specific rules and relationships to the data, assemble it into indexed dynamic data files, or models, without the need to write scripts or queries. Till now, the industry has had to rely upon techniques that drill down into the data using only a handful of parameters; such as age, gender, area and group. Now data warehouses, such as MedInsight, give business users much more capabilities including the ability to generate ad hoc reports, thus advancing the decision making capabilities of the users

However, the unavailability of a sufficient quantity of statistically valid data (credibility requires a minimum data set) has made it difficult for decision makers to assess the impact of a range of potentially significant factors using traditional techniques, the ability of decision makers to analyze potential covariance between known factors also has remained limited. Health insurers usually treat age and geography as independent drivers of health costs, but geographic differences may be more relevant within certain age bands than within others.

Industry decision makers have struggled with historical claims and have such limited understanding of clinical data that efforts to pull in related data about primary customers have been minimal. Data sets that represent significant potential for the health insurance industry include psycho-demographic and socio-demographic data about key segments within their target markets. Long used

by the retail and financial services sectors, psycho- and socio-demographic group profiles are rich with details about the typical characteristics or buying patterns of different market segments. These databases do not lend themselves to traditional analysis techniques.

The Use of Predictive Analytics

Predictive analytics is, at its core, a set of techniques that does not rely upon traditional techniques. It also does not require that explanatory factors be independent of each other, an assumption which is implicit in most other techniques. In the hands of a skilled practitioner, predictive analytics works on large, complex sets of data to uncover hidden relationships and trends that could not be found otherwise.

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Like any data analysis, for predictive analytics, data quality drives quality of analysis. Insurers that have a data warehouse which can deliver clean data relative to a large number of parameters are well positioned to use predictive analytic tools. But since predictive analytic software runs off databases, a data warehouses-is the core requirement for predictive analytics. The in-house data can be combined with quality psycho-demographic data readily available from outside sources.

Predictive analytic tools and techniques are being used to manage margins on an increasingly granular basis today. Risk predictors use predictive analytic techniques to forecast future claim levels based on the age, gender and detailed health insurance claims history of an insured.

The resulting predictions are much more accurate than the traditional age- and gender-based forecasts that were and are used for refined pricing of individual and small group insurance. Because they require detailed claims history, the risk predictors are used primarily at renewal. For example, The Milliman Medical Underwriting Guidelines rely upon similar methods for setting the debit points that are assigned to medical information obtained via medical questionnaires.

The predictive analytics department of an insurer has to work with the actuarial department, which relies upon more traditional analysis. Although predictive analytic techniques are already used in the health insurance industry and are here to stay, their use is in its infancy and actuarial validation is important. It takes both a little imagination and a review of other industries to see their true potential. Here are only three of the potential uses of predictive analytics.

1) Individual Underwriting:

Earlier, obtaining a housing loan meant completing a lengthy, multiple page application and submitting supporting information. The decision to accept or reject an application came back weeks after the application was submitted. In short, it was much like individual health underwriting is today. The predictive analytics pioneers in the mortgage lending business found that only a handful of questions from the application, when combined with information from other sources, produced superior underwriting results.

Today, a mortgage application can often be underwritten in minutes, at a price more appropriate to the risk, making mortgages more affordable to the best risks and opening up the market for the sub-prime risks that formerly would have been denied. The individual health insurance market could be posed for a similar revolution.

2) Large Group Segmentation and Product Design: Consumer services companies use technologies that may have applicability for large group insurers, where the insurer does not have individual underwriting discretion and has to set a single price for every employee within the group. Telephone companies that offer service packages are not content selling to the maximum number of people. Instead, they use predictive analytic techniques to segment their business by usage patterns and offer an appropriately designed and priced plan for each segment. Then, they develop marketing materials to steer people toward the correct plans for their needs, and subsequently evaluate whether they obtain both total sales numbers and the desired segmentation.

Of course, insurers have been designing products and prices for use in large group multiple-option environments with specific target segments in mind, but the employee segmentation and resulting product designs have been based on as much intuition as data.

3) Channel Management: Channel management has always been notoriously difficult for insurance companies. Insurers have struggled to attribute profitability (or losses) to individual agents and producers. As a result, agents often have had incentives to emphasize top line growth at the expense of the ultimate desirability of the business. In the future, the granularity of analysis made possible by predictive analytics will allow insurers to set not just top line growth goals but also goals for profit and performance within each market segment.

Predictive Analytics for Tomorrow's Insurance Market

Predictive analytic techniques are providing insurance companies with new perspectives on their business and, in turn, will fundamentally alter how the business is organized. The full impact cannot be predicted, but it is easy to envision the following impacts:

Dramatic changes in rating methodologies: Health insurance rates historically have been based on a limited number of readily available

parameters, such as age, sex, and area, available at the time of underwriting. Predictive analytic techniques have been used in auto insurance rating for years. Far more variables are used for calculating auto insurance rates than individual health insurance rates. Rating for individual and small group business has already begun to change.

Target marketing: When insurers can identify the characteristics of their most profitable insureds, they will naturally work to enroll more of these insureds. They will want to offer retention incentives specific to the profitable insureds they already have. The potential for target marketing will be enhanced if insurers can identify the psycho-demographic characteristics of a potential insured, prior to obtaining

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specific underwriting information. They then can then market to such profile using databases from outside entities.

An explosion in benefit design: When desirable targets are identified, the next step is to offer appropriately designed and priced products, which are attractive specifically to those target segments.

New products targeted at under-served market niches: Although the most advanced insurers may identify the most profitable target segments first, other insurers will soon follow, chasing the same target segment thereby diminishing the profits. The result will be a continuous search for ever more under-served market niches. At the appropriate price, a wide variety of businesses can produce positive margins. The sub-prime mortgage market and the impaired risk auto

insurance markets exploded after the advent of predictive analytics. The result was less auto insurance in state mandated risk groups and the greatest access to home mortgages in history.

Toward a "retail model" of group insurance: Consumerism is putting the financial responsibility for healthcare decision making back into the hands of employees. Defined contribution approaches leave employees free to choose among a variety of plans. Insurance companies will use and are using data analysis enabled by predictive analytics to design products with appeal to specific sub-populations of employees. Group insurance design increasingly will need to respond to the preferences of individual customers.

Faster reaction time: Besides predicting the future, predictive analytic tools can be used to identify problems before they can be identified via traditional methods. But that knowledge is only useful if it is acted upon.

Health insurance is a competitive industry. Like any competitive pursuit, success requires staying ahead of the competition. Success, however, does not require that the entire summit be scaled at once. Forward thinking insurance leaders will recognize the power of predictive analytics and take decisive steps to build these new approaches into the way they assess and build their marketing, pricing, and underwriting strategies. They will not wait for perfectly clean data or optimized algorithms. They will learn as they go and expect to reap the benefits of being one step ahead of their competitors.

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