



Using advanced analytics in the insurance industry

Industry

General Insurance:
Private lines of business

Geography

U.S.A.

Technologies

R

The idea in brief

Leading insurance companies are deploying advanced analytics to achieve lasting competitive advantage.

We discuss an example where an insurer could achieve a 14% reduction in loss ratio.

This was achieved without substantial changes to the business processes and while limiting the exposure to risk at every step.

The change set the company up for success with the regulator and they were ahead of the game as regulation tightened.

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Best practice implementations and recommendations

Insurance companies are under pressure to improve their analytical capabilities by using more data and advanced models. For example, Tesco Insurance has access to Clubcard holders' detailed purchase history before they make an underwriting decision – they can adjust your car insurance premium based on how much alcohol you buy. They are at a competitive advantage by using more data combined with the large scale data mining and machine learning capabilities the originally developed for their loyalty card. Traditional insurers need to respond to the challenges posed by many innovative newcomers or they risk going the way of the small local super-market or independent book store (remember them?).

The good news is that advanced analytical capabilities are now available for the taking. The latest machine learning techniques are easy to access through modern analytical tools like R and large scale computing is readily available through private and public clouds.

Even better, you do not have to “boil the ocean” to get started. With the right commercial focus you will deliver value immediately even from small, easy-to-implement changes, and you will have started your journey.

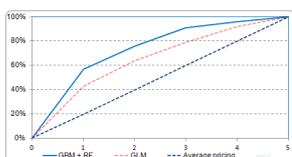
You do not need to abandon well-established practices but can supplement them and validate them against best-in-class processes to deliver commercial value right now. We outline a simple example below.

Quest for profit: Advanced analytics and the processes around it deliver immediate profits while at the same time establishing the foundation for delivering a sustained competitive advantage. We discuss below an example where one company was able to achieve a 14% drop in loss ratio by validating a GLM pricing model for Personal Lines against a modern ensemble model.

“Tesco-fication” of the industry: The best companies use more data and advanced models and are at a competitive advantage as a result. Traditional insurers have to respond or go the way of the small local supermarket.

Regulatory changes: New regulatory demands require companies to demonstrate that they are aware of the latest analytical techniques and that they have incorporated these into their workflow and business processes. While many quick wins are outside the regulatory scope (e.g. personal lines pricing) the working practices recommended by the draft regulations represent sensible best-practice that should be incorporated into the workflow as a matter of course. Implementing these changes first outside the regulatory regime may in fact be a good opportunity to learn about the organizational impact in an area that can easily be controlled for exposure.

GBM + RF achieves a higher lift compared with traditional GLM



In practice

One leading insurance company was concerned with the performance of their property book and decided to apply advanced analytics. Their existing pricing model was an industry standard GLM (generalized linear model) which was, it quickly turned out, inadequate for the risk profiles the company faced. After a focused data visualization exercise, modern ensemble models were applied to the pricing problem. They demonstrated a much better fit with the observed losses and showed that the 5% most mispriced policies contributed 14% of the loss ratio.

Approach to business change and results

Faced with this situation there are at least two options for the actions that we can take.

First, we can decide that this is risk we do not understand and therefore will not insure. In this case we may simply let the 5% policies lapse without offering to renew them for a 14% improvement in loss ratio. This response can be very appropriate in the short term, and may be the right response where we decide that the business opportunity is small or not strategic to our organization.

Second, we can decide that this is an attractive business opportunity and focus our efforts on understanding complex risk represented by the mispriced policies. In this case will use the modern models to understand the reasons for the poor performance of the existing model. We can use this understanding to create new rating factors incorporating complex interactions or non-linearity with which the classical model can deliver acceptable performance.

We stress that we do not advocate the wholesale abandonment of classical models for modern techniques. Rather, we propose to make use of both: continuity and understanding tempered with the results from the latest up-to-date methods.

To learn more, email insurance@cybaea.net or visit us at www.cybaea.net.

"Risk we do not understand and will not insure."

Understanding complex risk

About us

At CYBAEA, we are passionate about value creation and delivering commercial results. We help organizations identify and act upon opportunities in the areas of Customer Value Management (CVM), Customer Experience and Advocacy, and Innovation and Growth. We are commercially-driven scientists, data scientists, customer experience experts, strategic thinkers, and practical hands-on doers. We can help you discover your opportunities, paint your vision, align your organization, and deliver the bottom-line results.

CYBAEA is based in London with an international network of associates and partners.

Visit us at www.cybaea.net or email insurance@cybaea.net and discover how data can work for you.

64Squares is a team of data scientists working across Asia, Europe and Americas. Their offices are based in India and blessed with rich access to highly talented and skilled staff. 64Squares' mission is to be the world's best provider of advanced machine learning solutions; visit them at www.64sqs.com.