

Perspectives: Using predictive analytics in a digital age to mitigate risk

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Having workers get back on the job safely and early is a tremendous social and economic benefit that predictive modeling is helping to achieve, says Amel Arhab, Boston-based manager at Deloitte Consulting LLP. Severe workers compensation injuries, moral hazard, unnecessary litigation, and soft and hard fraud are issues that predictive modeling is helping to mitigate or avoid altogether thanks to large digital data captures and a combination of statistical analysis and technology, she says.

Predictive analytics are being used to recognize and decipher these insights, understand their impact on the organization's profitability, help solve important business issues and identify new opportunities. From analyzing clicks to suggesting new friends and business relationships on social media sites, analytics have taken over many aspects of life. With the rise of data collection and digital "footprints," the use and impact of data analytics will continue to increase. The insurance industry is no exception to this trend. In fact, insurance companies have been one of the earliest adopters of data analytics.

The use of data in the insurance industry started in the 19th century with simple analyses focused on underwriting marine insurance and pricing life insurance. These analytics have since evolved to significantly more complex multivariate models that focus on important areas such as underwriting, price optimization, strategic marketing and insurance claim processing.

The latter is the subject of this article, which will help illustrate how predictive analytics are being used in workers compensation claims to decrease costs, increase recoveries, improve resource assignments and generate savings to the bottom line.

What is data analytics?

Data analytics, predictive modeling and business intelligence all are terms that are used interchangeably in the industry today. They point to the notion of using statistics and technology on vast amounts of internal and external data to solve business problems.

Specifically, data analytics in the claims world refer to the use of large informational datasets (e.g., premium records, claim transactions, policy files, third-party vendor

databases etc.) combined with statistics to link, decipher and extract insights from all this information (e.g. data mining or other statistical techniques), and leverage technology to take appropriate business actions based on these insights.

The use of analytics in workers compensation insurance is largely considered table stakes when it comes to the underwriting of new and renewal business. In fact, organizations that are not leveraging analytics in the underwriting process likely are at a disadvantage and may be exposed to adverse selection from competitors in the marketplace that do utilize analytics. Insurance companies are actively expanding their analytics reach into newer areas, notably the claims management space, to reduce spending, enhance resource allocation and increase recoveries.

Claim life cycle

From claim occurrence and first notice of loss to claim resolution and closure, opportunities exist to positively impact the claim's life cycle and realize social and economic benefits. Getting the injured employee back to work as safely and as quickly as possible is everyone's priority.

PERSPECTIVES: Using predictive analytics in a digital age to mitigate risk with the information they need to have a proper discussion with the claimant and medical provider to determine whether any treatments are truly needed.

Fair and effective settlements are achieved by responding to the first notice of loss proactively: recognizing the level of claim complexity, specialty resource needs and attention level required.

However, limited and immature information available at the first notice of loss coupled with deeply rooted traditional practices are slow to recognize specialized needs in many cases. This is precisely where analytics can help. By focusing on such information, supplementing it with third-party data, and applying complex analyses, analytics are able to help recognize claim intricacies and forecast likely outcomes as early as the first day.

More precisely, workers compensation claim predictive models have matured during the past five years and organizations utilizing advanced analytics now know what type of information is important to look for at the first notice of loss. From intuitive and available characteristics (e.g. age and gender) to more complex information (e.g. lifestyle behavior of the individual and how that relates to the individual's household), these models have become more advanced at recognizing if a claim just reported likely will end up being:

- A complex, long-duration claim that would require medical resource and/or legal attention, vs.
- A simple medical-only claim that should be paid and closed without contact.

Having a model that helps pinpoint complex claims can allow claim department professionals to take the most appropriate actions earlier in the claim's life cycle (e.g. likely the first day claim is filed). Early action helps reduce or avoid inefficiencies that result from reassignments, unnecessary claim escalation, and the loss of time and information between adjusters' hand-offs.

An example of model impact

Take the case of a workers compensation claim that was just reported to the insurance company. Based on the company's rules in place (e.g. young worker, soft-tissue injury and a clerical work classification), this claim was assigned to a lower-tier adjuster.

Actions taken by the lower-tier adjuster were limited to a telephone interview with basic injury and claim characteristics questions. A claim then was opened, processed and payments paid as bills are filed with minimal investigation. This same claim was scored by a workers compensation predictive model and returned a score indicating a high complexity potential. In looking at the main drivers of the model score, it was found that the claimant was in poor financial condition, lives more than 50 miles from work and has filed multiple workers compensation claims in the past three years.

All these elements tend to increase duration due to moral hazard: Such claimants tend to file multiple claims and stay out of work longer than needed. Additional investigation revealed that the claimant had multiple co-morbidities including hypertension and diabetes, which typically increase the time to heal from any medical condition. For all these reasons, the model predicted a much higher duration and severity than expected for a soft-tissue injury on a younger clerical worker.

Had the predictive model been in place, the claim would have been assigned to a higher-tier adjuster with the authority to deploy a nurse on the case and other medical resources to speed the claimant's recovery. Given the high score, the higher-tier adjuster likely would have kept a close eye on the claimant and conducted frequent conversations to help reduce the company's exposure to moral hazard and keep the claim duration closer to expectations.

The high score also may have prompted the experienced adjuster to put in place a litigation mitigation plan, because high-scoring claims have historically displayed stronger propensity to move toward litigation. A litigation mitigation plan might include frequent courtesy calls to the claimant and a more focused customer service approach to help avoid the claim from moving towards litigation.

Beyond first notice of loss

As time goes by, complex claims that drive most of an organization's cost typically stay open. During that time, more information becomes available on the claim: The medical diagnosis evolves to its ultimate state, pharmacy and medical bills become available, and treatment patterns become known. Predictive models are being designed to absorb this continuous feed of information to improve any predictions made. As a result, we see through-time predictive models become stronger over time due to this supply of additional information.

Using the prior claim example, the claimant's treatment patterns were examined in terms of chiropractic visits. According to industry norms for this state and medical diagnosis, the treatments were expected to be in the single-digit range during the first month of injury and decrease until the sixth month—after which they were expected to cease. This claimant's treatments, however, were observed to be double-digit counts in the first three months before starting to decrease and cease on the 10th month. This overtreatment may suggest a moral hazard that has been observed and quantified in the past. Therefore, the predictive model adjusted to this information month after month to sustain a higher score after the first notice of loss. This indication helps arm the adjuster and nurse practitioner with the information they need to have a proper discussion with the claimant and medical provider to determine whether any treatments are truly needed.

Getting the employee back to work

Having workers get back on the job safely and early is a tremendous social and economic benefit that predictive modeling is helping us achieve. Severe injuries, moral hazard, unnecessary litigation, and soft and hard fraud are issues that predictive modeling is helping to mitigate or avoid altogether thanks to large digital data captures and a combination of statistical analysis and technology.

By creating a highly effective path for recovery and return-to-work, we are participating in creating a tremendous social benefit that our workforce and economy truly needs.

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