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Predictive Analytics in Workers' Comp

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By [Bill Lentz](#), Property/Casualty Claims Executive, New York

Gary Tamburri, Gen Re

Lori Walters, Gen Re

Stan Smith, MillimanMAX

Gen Re Workers' Comp team opines on Predictive Analytics in Workers' Comp. In addition, Stan Smith, who leads the Predictive Analytics Practice with MillimanMAX, provides insights from his organization.

Gary Tamburri, Gen Re, Workers' Comp Line of Business Underwriter

Technological advancements and the use of metrics have been chipping away at the "art" of underwriting for many years. Some industry leaders believe the art in underwriting is only about 15% of the job. Recent studies and publications suggest computers and machine learning will have a significant impact on the labor force, possibly eliminating 50% of jobs within a few decades, including insurance underwriting. But this isn't bad news for the insurance (or reinsurance) underwriter. Actually, it's great news!

The ultimate goal of the underwriter is to evaluate and price exposures and risks accurately, efficiently, and consistently. The job of underwriting involves many tasks to achieve that goal, some of which are considered art. But aren't tasks that involve art generally much more difficult to produce accurate, efficient and consistent results? If so, applying computer technology to the art will improve the process, and underwriters can more easily achieve their ultimate goal.

Keep in mind, the job of underwriting is to complete the process. Continued improvement of the underwriting process is a career.

Bill Lentz, Gen Re, Claims Executive

The use of data and analytics in the Workers' Comp industry continues to grow as more companies make investments in this area. As the largest Workers' Comp writer in the U.S. (with 8% market share), Travelers was an early adopter of analytics in both underwriting and claims. In addition to being the top Workers' Comp writer in the country, it has also consistently outperformed the industry in this line over the past five years.

While having expertise in a number of important areas, such as medical management, Travelers' publicly attributes a large portion of its success to leveraging its use of data and analytics. It believes analytics has provided a competitive advantage in risk evaluation, selection, and claims management. In light of this, Gen Re has high interest in data analytics, so we asked Stan Smith, who leads the Predictive Analytics Practice with MillimanMAX, his thoughts on what Workers' Comp insurers, regardless of their size, need to be thinking about—and possibly doing differently—with regard to analytics and leveraging their own data.

Lori Walters, Gen Re, Senior Quantitative Analyst

Early adopters have and will continue to leverage analytics to gain a competitive advantage in risk selection, pricing and claims management. In the years ahead, analytics will become even more widespread in the industry as the digital and technology revolution promise to drive significant change in nearly every aspect of our business. To successfully navigate these changes, it is critical that carriers embrace this new technology and advanced analytics; those who don't, risk falling behind.

New technology such as sensors and the "Internet of Things," are not only changing insurance exposures and loss costs, but will also provide new and innovative ways to connect with consumers and gain operational efficiencies. In addition, these devices are generating massive amounts of rich data. Data from sources such as social media and wearable devices will provide Workers' Comp carriers real-time and detailed understanding of risk to enhance underwriting and pricing, and identify potentially severe claims. This data could also enable carriers to mitigate losses and enrich customer relationships by providing employers and employees feedback on risky work behaviors. Tremendous opportunity exists for carriers to leverage these new data sources and analytics to gain competitive advantage.

As technology has advanced, big data and analytics have become more accessible to companies of all sizes. However, there is still a hesitancy to fully embrace analytics. According to a survey by Valen Analytics, 82% of respondents "expressed underwriting adoption as a 'significant' or 'high concern' when deciding to implement predictive analytics."¹ To increase the likelihood of implementing successful analytics, carriers should focus on change management and develop the talent necessary to navigate the dynamic market environment.

Trends suggest that analytics will not only be a differentiator, it will be an essential capability in future Insurance operations. At Gen Re, we are investing in advanced analytics and look forward to partnering with you to help navigate this exciting new frontier.

1. Valen Analytics, 2015 Analytics Summit Survey of 39 U.S. P/C insurance executives

Stan Smith, MillimanMAX, Leader of the Predictive Analytics Practice

During the initial introduction of analytics to the industry, only the large national carriers had both the data and the capital to leverage early types of predictive modeling. Many of the more traditional statistical approaches to analyzing data also had credibility requirements that include data volume and consistency. These requirements also tended to have given the advantage to the bigger firms that happen to have larger data sets as a starting point. Even with large amounts of data the effort to access and utilize it could be daunting. In many cases the data is stored in multiple systems, which usually means it has been organized differently across various platforms.

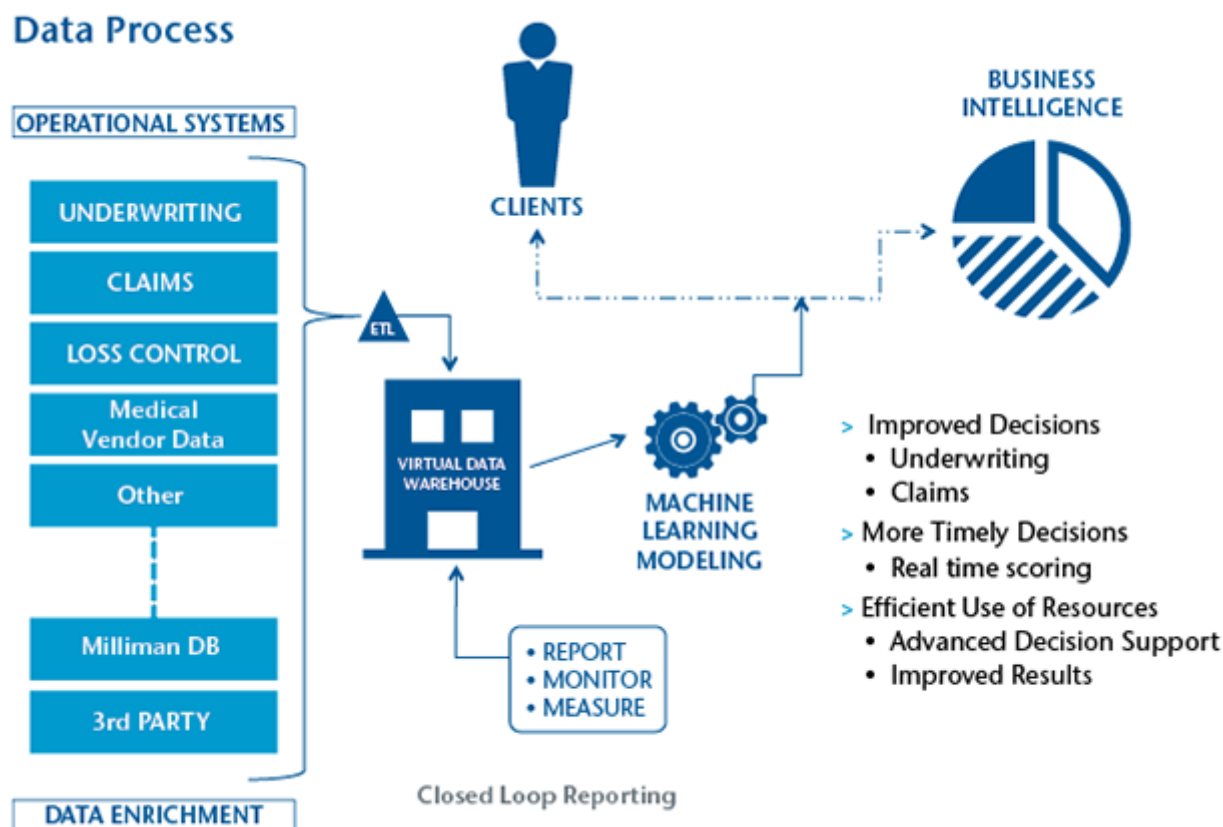
In recent years, data analytics and the core math have advanced considerably. These advances have the potential to have a significant and disruptive impact on the insurance industry, while allowing all carriers to gain from the use of analytics. These newer technologies, such as Machine Learning-based analytics, can uncover credible insights from smaller and noisier data sets while also having the potential to reduce time and costs by substantial amounts over more traditional methods and approaches.

Machine Learning technology is well suited to using the data in its original condition, including missing and incorrect data. For example, data conditions that would present a problem to more linear methods often contain patterns or signals that are quite consistent with certain outcomes and that the new technology can recognize. While much has been written with regard to the use of analytics on Workers' Comp claims, it has benefits for underwriting as well. When certain fields of data are missing,

for instance, and they have been historically observed to be missing from the same producer on similar policies that have had poor results, the models can accurately inform the underwriter these policies should be reviewed/refused unless and until they are completed and then re-analyzed.

As the barriers to entry for these improved risk selection capabilities continue to fall, those companies not using the most advanced forms of analytics face increasing risk of adverse selection. Over time, as more companies apply these approaches to their renewal and new business underwriting processes, a likely increase will appear in the percentage of "available" business and reflect a higher risk of loss profile. To understand how adverse selection may already be having an impact on their books, companies should consider a historical analysis of the business that they quoted but did not bind.

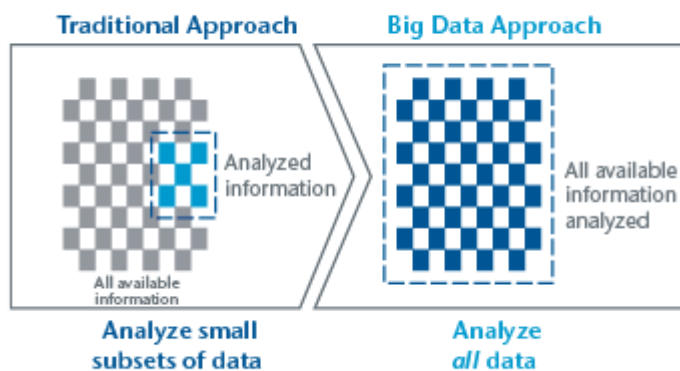
In this analysis the focus should be on the comparison of the distribution of written versus not written business, which will show what trends, if any, are present in the data. Any change in overall risk profile of the book year-over-year could indicate when and if there has been a significant impact on the business that an individual company is successful in attracting versus the business that they lose.



Source: Milliman, reprinted with permission.

Analytics can help identify "Useful" data

Leverage more of the data being captured



Source: Milliman, reprinted with permission.

About Stan Smith

Stan Smith is a consultant with the Boston office of Milliman. He joined the firm in 2011 and has held founding or executive-level roles for multiple startup companies, including VP at MatrixOne, EVP and GM at Agile Software, and CEO and founder at OpenRatings (predictive analytics based on solution leveraging machine learning, purchased by Dun & Bradstreet). Stan also led the development of patented technologies for predicting bankruptcies for small privately held suppliers, a global database for supplier performance, and combining assessments with performance data for identifying opportunities for lean initiatives and waste reduction. Stan has a BA in Economics from Dartmouth College. He may be reached at Tel +1 781 213 6278 or stan.smith@milliman.com.

We appreciate Stan Smith and Milliman for contributing to this publication.

Industry Meetings

Members from the Gen Re Workers' Comp team will be attending the following industry meetings. Please contact your Gen Re rep if you will be there too!

AmComp Annual Meeting

April 14 & 15, 2016

Mandalay Bay Hotel & Casino

Las Vegas, NV

NCCI Annual Issues Symposium

May 5 & 6, 2016

Hyatt Regency Grand Cypress Resort

Orlando, FL

AASCIF Annual Conference

July 23 – 27, 2016

Little America Hotel

Salt Lake City, UT

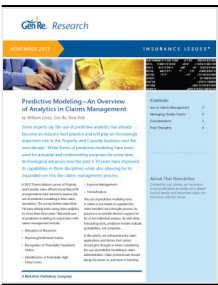
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