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Mr. Walling is a fellow of the Casualty Actuarial Society (CAS), a Member of the American Academy of Actuaries and a Chartered Enterprise Risk Analyst. He currently serves as a member of the CAS Board of Directors. He has previously served as the Chairman of the CAS Ratemaking Seminar Committee, Risk and Capital Management Seminar Committee and the New Fellows Committee.

Rob's experience includes actuarial studies for hundreds of captives and self-insureds, commercial lines ratemaking and loss reserving, legislative costing, regulatory consulting, litigation support and expert testimony. Rob has extensive experience in workers compensation, general liability, commercial auto, medical and non-medical professional liability, commercial property and dozens of specialty insurance programs.

Mr. Walling is a frequent author and speaker on actuarial topics. He has appeared in publications including *Contingencies*, *Inside Medical Liability*, *Captive Review*, *Public Risk*, *Captive Chronicle*, *Actuarial Review* and the *CAS Forum*. He has spoken at meetings such as AMA News, Bermuda Captive, CAS meetings, Cayman Captive, CICA, NAMIC, PCIAA, PRIMA, RIMS, SCCIA, SIAA, V CIA, and World Captive Forum. He is also an instructor for ICCIE.

The Captive Actuary's Expanding Role in the Era of Big Data

Robert J. Walling, FCAS, MAAA, CERA

The IBM Watson commercials showcase a dazzling array of ways in which data-driven decision making is changing the way people think and act. Today Big Data influences the behaviors of individuals, groups of consumers and businesses alike. Telematics devices track both trucks and their cargos. Mobile computer terminals and hospital patient monitors track every action by provid-

ers and continuously update patient progress. Building systems measure everything from temperature and humidity to occupancy and people's movements. Some sports complexes and amusement parks even have real-time evacuation plans that update based on current wind, weather and crowd conditions in the event of chemical or biological attacks. There's simply no escaping the fact that data analytics are a rapidly-growing facet of nearly everyone's lives. The question is: Will captives capitalize on all this data?

In our Big Data world, it's no surprise that multiple opportunities for data-driven business decision-making also abound. Forming and developing a captive insurance company is an important business decision and presents myriad opportunities to utilize the wealth of available data to build and continually enhance a solid risk-management tool. Actuaries are uniquely qualified to provide data-driven

insights to guide a captive owner in optimally designing his captive in the context of his overall enterprise risk management (ERM) strategy. However, too many captive managers and prospective captive owners miss this valuable opportunity to deploy predictive analytics by limiting the actuary's role to merely ensuring regulatory compliance.

KEY POINT

An actuary's understanding of a captive's data can provide important insights which help the captive manager and captive owner make the best decisions for their business.

The Essentials

When considering the actuary's role in the captive formation process, it is critical to differentiate between the essential required tasks an actuary performs as part of the captive feasibility and application process from the much broader analytics opportunities: To engage the actuary to provide information that both guides the captive's formation and defines the organization's broader ERM strategy.

The essential elements that an actuary should be providing to every new captive formation are:

- The initial funding study
- Pro forma financial statements
- Annual loss reserve analyses

The initial funding study forms the basis for the captive's expected losses, premiums and overall financial plan. It is required by nearly all captive domiciles to demonstrate that the premiums for the captive are actuarially sound. This enhances the regulators' confidence that the captive will remain solvent and meet all claims obligations. A funding study typically uses historical loss experience and/or industry benchmarks to establish an estimate of expected losses for the upcoming captive policy period. Provisions for captive expenses, and often a risk margin, are added to the expected losses to develop the indicated captive premiums. These funding studies are then updated annually to reflect changes in exposures (e.g. payroll or revenue), coverage limits, captive expenses, etc.

Actuaries also commonly produce pro forma financial statements which demonstrate the viability of the captive over a five-year period. These pro forma financials start with the expected premiums and losses from the funding study and add information regarding the captive's operating expenses, taxes and fees and investment income. Additional assumptions related to the timing of claims payments, investment strategies and tax rates then allow the creation of balance sheets, income statements and cash flow exhibits. Captive regulators typically require these pro forma financials for both an expected scenario and an adverse scenario which tests the captive's financial strength, particularly its capitalization.



The actuary's final essential role upon a captive's formation is to provide annual loss reserve analyses. These actuarial studies provide an estimate of the unpaid claims liabilities that need to be reflected on the captive's balance sheet. All U.S. captive domiciles, and some offshore, also require some form of statement of actuarial opinion (SAO). This is a formal certification by the actuary regarding whether he or she finds the held loss and loss adjustment expenses reasonable. However, even in domiciles that do not

require SAOs, annual loss reserve analyses are certainly industry best practices and virtually mandatory.

These essential actuarial analyses can also play a key role in negotiating terms with fronting carriers and reinsurers. These negotiations often mean the difference between captive formation and failure. It is important for the captive's actuary to be involved in these discussions because most fronting carriers and reinsurers have actuaries of their own. This is particularly important when a program's unique geographic, coverage and/or industry nuances impact the analysis. Many industries (e.g. healthcare, nursing homes, trucking, agriculture) and coverages (e.g. medical professional liability, warranty or product liability or recall) possess specialized coverage issues and unique claims characteristics. An actuary with deep expertise in a particular area can recognize these issues and ensure that they are reflected in the actuarial analyses, as well as contribute to designing coverages to address the insured's unique coverage needs.

But an actuary can contribute much more to a captive than funding and reserving studies.

Assessing Risk at the Enterprise Level

Actuaries can, and often do, play a much broader role in the development of a new captive beyond just funding and feasibility studies. One key opportunity for an actuary to add value is to assist in enterprise risk management (ERM). ERM services are often initially performed before the captive is formed. According to the Actuarial Standards Board, ERM is the process by which, "an organization in any industry assesses, controls, exploits, finances and monitors risks from all sources (emphasis added) for the purpose of increasing the organization's short- and long-term value to its stakeholders." This is a much broader undertaking than whether to finance retained risks in a captive insurance company. It involves assessing risk on an enterprise basis, whether insured or not. In fact, ERM looks at both insurable and uninsurable risks well beyond the scope of commercial insurance. The ERM process often utilizes large amounts of internal data, sometimes from outside of the traditional insurance program such as the Human Resources and Investment areas.

The ERM process often contributes to the captive development process by:

1. Assessing risk appetites and tolerances
2. Identifying new, currently uninsured coverages for the captive to insure

3. Quantifying appropriate coverage retentions for the captive
4. Assessing which coverages and layers should be retained, insured in the captive or commercially insured.

All actuaries have formal training in ERM. Some seek additional professional qualifications for designation as a Chartered Enterprise Risk Actuary (CERA). As a result, the actuary can be a valuable voice in evaluating how a captive fits into the overall risk financing strategy at an enterprise risk level.

Once the captive is up and running, there are additional opportunities for the actuary to provide ERM-related data insights into captive operational issues such as:

- Changes in coverages and retentions,
- Cost allocations to members or operating units
- Treatment of new members or exiting members of group captives
- Optimal surplus and dividend strategies
- Collateral negotiations with fronting carriers
- Development of claims analytics and dashboards

These are all commonly-encountered opportunities for the actuary to contribute highly-relevant information. As a result, ERM models and analyses are often updated to reflect changes in the organization and the environment in which they are utilized.

Opportunities for Data-Driven Decision Making

Because of their abilities to analyze an insurance program's data and translate those analyses into information upon which captive owners and managers can base decisions, actuaries are often involved in issues such as development of rating plans, deductibles and capitalization levels. We provide valuable insights as to the optimal type of captive to form, as well as preferable domiciles for a specific captive. Predictive analytics can be a valuable tool in many aspects of the captive formation process.

Because an actuary has developed the funding study based on available historical data, he or she may also be able to apply predictive analytics to this data in a way that significantly improves the captive's premium determination process. Quantifying the impact of safety and loss prevention programs on expected losses is one common example. In a recent study,

a consortium of large group captives evaluated the impact of their safety and loss prevention program on member losses. These captives all used the same risk control and safety assessment scoring tool. The analysis found that members that proactively participated in safety workshops and engaged in other efforts that improved their score ultimately experienced workers compensation losses more than 10% lower than those predicted based on their historical experience, often resulting in large benefits to the captive member. This type of analysis can enhance the captive's premium determination process and also make for a compelling marketing and sales tool to highlight benefits of the captive's safety program.



Similarly, there are a myriad of vendors offering enhanced services to captives. One example is Medcor, "a leading provider of 24/7 telephonic triage for worker-related injuries as well as on-site medical professionals, workplace safety services and onsite employee drug and alcohol testing." Predictive analytics can be a valuable tool to isolate and quantify the benefits of vendors like Medcor. These same types of analytics can and have been used to quantify the benefits of a variety of loss prevention and loss control tools including preferred provider networks (medical, attorneys, auto glass, etc.), telematics and camera devices on vehicles, and patient education and physician apology programs.

Some captives can also adopt predictive analytics tools that are considered best underwriting practices in the admitted market. For example, the majority of leading commercial lines programs use some form of predictive analytics within their rating plans. Commonly used factors include years in business, credit score, driving records, vehicle identification number

characteristics, prior claims and dozens more. Large captives with multiple insureds, such as association captives or risk retention groups, can often improve the accuracy of their rating plans by adopting similar underwriting tools within their premium determination plans. If anything, this is more important in captives than the admitted market because the perceived equity of the premium-setting process is essential to the success of any captive with multiple insureds. Claims-related predictive analytics also offer significant opportunities for captive owners to gain insights into their programs and proactively take even greater control of their enterprise risk management (ERM) and risk financing through the captive insurance program.

The Risks of Doing Without

One of the remarkable things about the captive industry is its incredible variety. A Vermont pure captive for a Fortune 500 company, a Cayman group captive with 400 members, a Bermuda medical professional liability captive insuring a hospital and its healthcare providers, a South Carolina trucking captive insuring 200 powered units and a Delaware enterprise risk captive insuring a medium-sized auto dealer would be hard-pressed to recognize many similarities among one another. Some of these captives have much more robust data, and therefore much greater opportunity, to utilize an actuary beyond the essential elements. For those with sufficient data (or access to relevant industry data), engaging in a deeper relationship with their actuary offers the opportunity to leverage this data not only in their captive's operations but within its overall risk-management strategy.

So why are there so many missed opportunities to utilize the actuary's expanded expertise in predictive analytics? Unfortunately, not all actuaries are created

equal. Some can be more akin to the stereotypical "laptop without the personality" than others and lack the ability to "speak human." In addition, some actuaries can be ill-equipped to do much more than the essential work for captives due to their lack of experience or training in predictive analytics or ERM. In other cases, the captive is focused on cost-effectiveness and the investment in additional actuarial services may not appear worthwhile. Honestly, some captives do not have sufficient data for predictive analytics to be useful. As a result, it isn't always necessary to go beyond the basics because of the nature of the captive.

Conclusion

Some captives only use their actuary to fulfill regulatory requirements. These can be real missed opportunities to leverage captives' data through predictive analytics. It's a bit like going to a new restaurant without consulting the Yelp reviews or getting stuck in traffic because you neglected to check Google Maps. Actuaries, by virtue of their training and experience, can be invaluable resources for captive teams. Their understanding of the captive's data can provide important insights which help the captive manager and captive owner make the best decisions for their business. Developing a relationship with an actuary can seem rather intimidating at first – like attempting to converse with IBM's Watson. But a captive that selects an actuary capable of providing more than "just the basics" and one with whom it develops a trusting advisory relationship gains a valued member of the captive team. The actuary will add value as a voice at the table with a deep understanding of the captive's enterprise risks and data.

ABOUT PINNACLE

Pinnacle Actuarial Resources, Inc. is an independent, full-service actuarial firm that focuses on the property/casualty insurance industry. Our home office is located in Bloomington, Ill., with additional offices in Atlanta, Chicago, Des Moines, Indianapolis and San Francisco.

Our *Commitment Beyond Numbers* philosophy encompasses all of who we are and what we do. It drives us to do whatever it takes to help our clients address their risks, understand the challenges they face and find the right solutions to meet their goals.



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