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# A Refreshed Look at Assumption Development: Recap of the SOA Assumption Development and Governance Group 2015Q1 Calls

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In line with the increased scrutiny on assumptions by stakeholders, companies are ramping up efforts and dedicating more resources towards improving the assumption development and governance. The SOA Assumption Development and Governance Group (the Group) was formed in 2013 to provide a hub for actuaries to discuss current topics related to assumptions and to establish industry connections. The Group has since established formal links with the SOA Product Development, Financial Reporting, Modeling and Technology sections in order to coordinate assumptions-related activities.

The 2015 first quarter discussions for the Group took place over two conference calls on March 2 and 3. Representatives from approximately 30 companies were in attendance and additional participants from these companies listened in. Topics of discussion included 2014 accomplishments and “a-ha” moments, the focus for 2015, as well as questions for the Group. Several common themes emerged from these discussions. The most frequently discussed topics included governance structure, documentation requirements, and the role of data and advanced analytics in assumption development.

The most common drivers cited for interest and activities related to assumptions included:

- Increased regulatory demands from both state regulators and federal authorities;
- Anticipation of Principles Based Reserving (PBR);
- Elevated governance and documentation expectations from auditors; and
- Good business practice.

This article will focus on the assumption development discussions. Assumptions governance discussions will be covered separately in the article “A Refreshed Look At Assumption Governance” in the SOA *Financial Reporter* newsletter.

## Assumption Development and Assumption Governance

Although it is not uncommon for companies to set up separate assumption development and assumption gov-

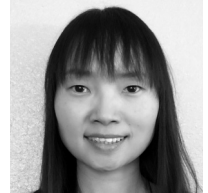
ernance bodies, the two areas are closely interrelated. In line with the Group’s calls last year, assumption governance dominated the discussion. Effective governance has been found to improve the quality and consistency in assumptions. As the governance structure becomes more seasoned and streamlined at insurance companies, it is expected that the focus will naturally shift more towards the refinement and expansion of the assumption development process. A good assumption development process in itself could lead to better documentation and ultimately to improved assumption governance.

## Predictive Modeling Is the New Norm

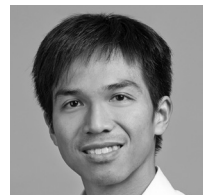
Predictive modeling techniques are not new. They have been an important tool in non-life lines of business, financial institutions and other data-driven industries for many years. Although the life insurance industry generally had a late start on predictive modeling, many life companies on the calls have already begun using predictive modeling to various degrees. Life companies that had not used predictive modeling in the past have recognized that much of the industry has moved ahead and are seriously considering it for use in 2015. The theme of the calls was not about whether to use predictive modeling, but rather how to use it to improve the depth of the predictive analysis and expand the width of its utilization.

Applications of predictive modeling cited by call participants included analyses of lapses, benefit utilization, mortality, premium patterns, etc. There is an emerging trend that predictive analytics are now increasingly extended beyond these traditional life insurance assumption analyses to other impactful areas such as underwriting, marketing, consumer behavior and product design. In some organizations, certain non-actuarial groups had adopted predictive analytics much earlier. Actuarial groups in these organizations could take the opportunity to leverage the data and tools already developed elsewhere in the organization or risk falling behind. No matter where the organizational responsibilities lie, the better actuaries can identify the underlying drivers of consumer behavior pre- and post-issue, the more equipped they will be to develop products, services and more appropriate assumptions.

CONTINUED ON PAGE 12



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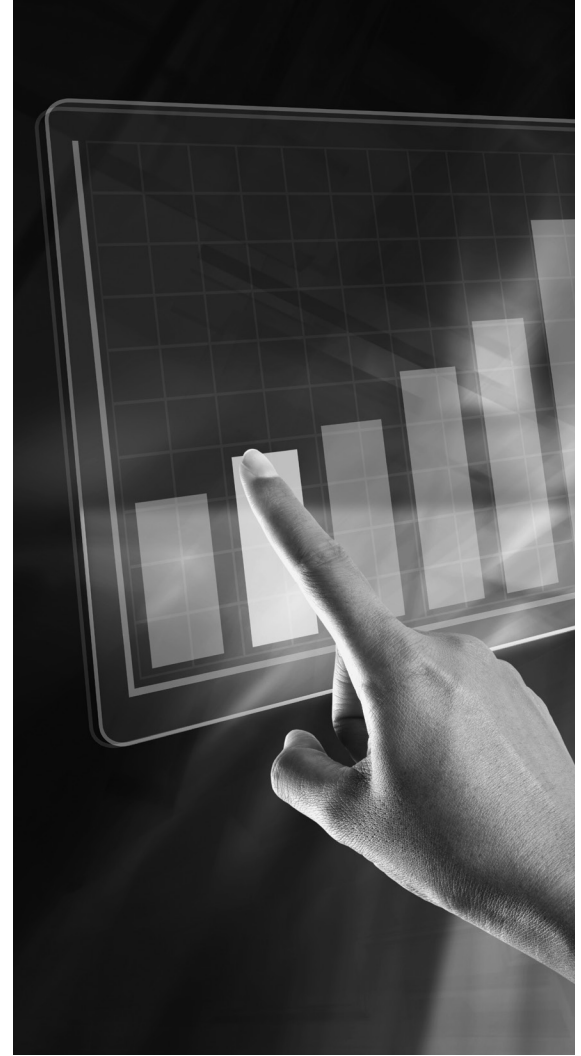
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Many participants noted that their focus for 2015 would be to expand the use of statistical analysis in experience studies and assumption setting. In order to strengthen their statistical analysis capacities, some companies on the call recruited non-actuarial statisticians. The technical expertise and fresh perspectives of statisticians certainly bring welcome opportunities and new ideas, though their different thought processes pose some challenges. One piece of advice shared during the call was to help non-actuarial statisticians to think more from a “cause-effect” perspective (given the long-term nature of life insurance business) in addition to their natural “correlation” perspective.

### Data Science is the Next Frontier for Innovation and Competitiveness.

Data science (e.g., big data, business analytics, predictive modeling) is a hot topic nowadays. Predictive modeling is one application of data science that is familiar to actuaries. McKinsey research<sup>1</sup> classified the various sectors of economy into five clusters based on potential gains from the use of big data. According to this study, the finance and insurance sector is in the second highest-ranked cluster that is “positioned to benefit very strongly from big data.” As a reference, the highest-ranked cluster is the electronic products and information sector that has already been benefiting from the use of big data. McKinsey research also predicted a significant supply shortage of data scientists (a 50 to 60 percent talent gap by 2018) to meet the increasing future demands. The actuarial profession was cited as one of the few professions in which practitioners possess the deep analytical skills needed to meet this future demand, presenting both an opportunity and risk.

Call participants also discussed the agent-based modeling<sup>2</sup> presentation to the Group from last year. Agent-based models, in combination with behavior economics, simulate the individual decision-making and the emergent group behavior to re-create and predict behavior in the real world. This technique takes data analytics beyond predictive modeling. A question was raised on how actuaries could be catalysts in introducing new and advanced statistical analyses such as agent-based modeling to life insurance companies. Several ideas were shared among the Group, for example, getting familiar with a new concept first, evaluating how it can help the company and also considering practical limitations.



It was very encouraging to learn that some of the participants on the call are building comprehensive data marts that include not just traditional liability data, but also market data. For some participants, the data mart is managed at the enterprise level. This type of infrastructure not only provides a centralized, single source of truth, but also provides the potential to prepare for big data initiatives down the road. Some participants are also experimenting with analyses on household data. To benefit from the big data move, it takes time, resources and a data-driven mindset to help cross the initial barriers. Companies that start early in this move could gain competitive advantages.

### PBR Promotes Modernization of Assumption Development

Under PBR, certain assumptions are no longer prescribed and static. Companies are now permitted to perform experience studies to derive appropriate assumptions. These studies need to be complete, repeatable and provide the rationale for chosen assumptions. It was not surprising to learn that many participants on the call plan to focus on modernizing experience studies and developing PBR assumptions in 2015. The modernization process may involve getting data, storing data, developing analytical tools, etc., and ultimately leads to the practice of data science and predictive modeling.

Credibility standards become more important under PBR. Lack of credible data was frequently mentioned as a challenge, especially for small companies and for newer product designs. Another frequently mentioned topic was how to set provisions for adverse deviation (PADs). In order to facilitate deeper dialogue on topics of common concern, the Group plans to schedule further discussions in the near future on topics related to better practices in assumption setting.

## Other Assumption Development Topics

The following topics were brought up for further consideration:

- Consistency not only in the use of assumptions across various functions within the same line of business, but also across lines of business
- Coordination of assumptions. With the general exception of post-level term lapse and mortality assumptions for term insurance products, individual actuarial assumptions have traditionally been developed in isolation. Evolving product complexity, anti-selective

policyholder behavior and competitor behavior are making assumptions more correlated than before. For example, a question was raised on how to develop assumptions for renewal premium, mortality and lapse collectively.

- Assumptions in the tail and long-term assumptions
- Older age mortality and preferred mortality “wear-off” at older ages

Assumption Group discussions take place quarterly. If you are interested in participating or just staying informed on developments, please contact Liz Olson at [olsonl@nationwide.com](mailto:olsonl@nationwide.com) or 614-249-0605 to get on the distribution list. There is no on-going commitment. Also, please look for our group on LinkedIn.<sup>3</sup> □

### ENDNOTE

<sup>1</sup> *Big Data: the next frontier for innovation, competition and productivity* - McKinsey Global Institute, June 2011

<sup>2</sup> *A discussion on behavioral simulations* – PwC presentation at SOA Assumption Development and Governance 2014Q3 call

<sup>3</sup> <https://www.linkedin.com/groups/SOA-Assumption-Development-Governance-Group-4997015/about>