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# 2017 SOA Modeling Sessions, Part 1

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Here are modeling-related sessions from some of the major 2017 Society of Actuaries (SOA) meetings: Life & Annuity Symposium, Health Meeting and the Valuation Actuary Seminar. SOA members have free access to audio recordings synchronized with slide presentations from these meetings, so check them out!

## 2017 LIFE & ANNUITY SYMPOSIUM

### SESSION 16 TEACHING SESSION: SOA EXPERIENCE STUDY CALCULATIONS EDUCATIONAL TOOL

**Moderator:** Cynthia MacDonald, FSA, CFA, MAAA

**Presenters:** David B. Atkinson, FSA, MBA; John K. McGarry, ASA, Ph.D.

The presenters discussed a paper, initiated by the SOA's Experience Studies Executive Committee, that presents the various rate calculations used in experience studies for different lines of business. The paper was created as an educational tool or resource for SOA members who perform experience studies for the SOA or for their clients or employers. (See session slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-016.pdf>)

### SESSION 17 PANEL DISCUSSION: ADVANCED MODELING TECHNIQUES FOR LIFE & ANNUITY PRODUCT DEVELOPMENT

**Moderator:** Ying Zhao, FSA, MAAA

**Presenters:** Nick A. Komissarov, FSA, FCIA, MAAA; Mark Welchmeyer, FSA, CERA; Ying Zhao, FSA, MAAA

The presenters focused on advanced modeling techniques currently used for life and annuity products. The topics included:

- The Dukes-MacDonald method used to determine post-level term mortality as well as the key parameters of this formula and how to set parameters with limited experience
- Post-level term profitability and the mortality patterns following the initial shock lapse
- State-based modeling for variable annuity withdrawal behavior

(See session slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-017.pdf>)

### SESSION 26 PANEL DISCUSSION: MODERN DETERMINISTIC SCENARIO RESEARCH

**Moderator:** Ronora E. Stryker, ASA, MAAA

**Presenters:** Mark E. Alberts, FSA, MAAA; R. Dale Hall, FSA, CERA, MAAA; Ronora E. Stryker, ASA, MAAA

The Financial Reporting Section, Smaller Insurance Company Section, Modeling Section, and the Committee on Life Insurance Research sponsored a research project to develop deterministic scenario sets reflective of the current life insurance industry environment. These sets were compared to other sets that are



commonly used in asset adequacy testing such as the New York 7 scenarios. In addition, the panelists invited audience participation in a discussion of the current interest rate environment, the prospects for change in that environment, and the impacts on pricing and product design. (See session slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-026.pdf>)

#### SESSION 28 PANEL DISCUSSION: ECONOMIC SCENARIO GENERATOR IN PRICING

**Moderator:** Dennis Radliff, FSA, MAAA

**Presenters:** Dariush A. Akhtari, FSA, FCIA, MAAA; Jean-Philippe Laroche, FSA, CERA; David Moreno Jr., FSA, CERA; Jonathan A. Mossman, FSA

The presenters in this session explored economic scenario generators commonly used to model risks, price products and evaluate hedging strategies. They compared two risk-neutral interest rate models, their pros and cons, and how they impact pricing results. They also discussed advantages and disadvantages of using a stochastic pricing methodology and presented possible solutions to some of the challenges. (See session slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-028.pdf>)

#### SESSION 40 PANEL DISCUSSION: MODEL RISK AND GOVERNANCE

**Moderator:** Zohair A. Motiwalla, FSA, MAAA

**Presenters:** Arnold I. Behrmann, FSA, FIA; James M. Hedreen, FSA, MAAA; Zohair A. Motiwalla, FSA, MAAA

There has been strong recent industry focus on model risk, model validation and model governance, typically at the behest of company management and regulators. The presenters discussed these topics, especially pertaining to the production process. The presenters covered best practices for how companies can adopt a well-structured model governance framework that can help to mitigate financial risk. (See session slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-040.pdf>)

#### SESSION 48 PANEL DISCUSSION: REAL WORLD VS. RISK NEUTRAL: PRACTICAL IMPLICATIONS ON MODELS

**Moderator:** Yuan Tao, FSA, CFA, MAAA

**Presenters:** Melanie Dunn, ASA, MAAA; Ricky Power, FSA, CERA, FIA; Marcus Szeto, ASA, MAAA

The panel covered the theory behind the risk-neutral and real-world frameworks, and provided an overview of how a scenario set is developed to be real-world or risk-neutral. The panel provided practical guidance for when each framework should be used, with examples from the pricing of variable annuities and other products with embedded guarantees. (See session

slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-048.pdf>)

#### SESSION 53 PANEL DISCUSSION: BEST PRACTICES FOR ASSUMPTION SETTING FOR PRODUCT DEVELOPMENT

**Moderator:** Kimberly M. Steiner, FSA, MAAA

**Presenters:** Andrew Chong Jenkins, FSA, CERA, MAAA; Ben J. Quiner, FSA, CERA, MAAA; Kimberly M. Steiner, FSA, MAAA

The presenters described how experience studies can be efficiently used for assumption setting in product development and considerations throughout the product development process. The presenters discussed best practices for how product development actuaries can use, document and communicate assumptions that are used in their models. (See session slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-053.pdf>)

#### SESSION 55 PANEL DISCUSSION: INDIVIDUAL LIFE MORTALITY EXPERIENCE STUDY RESULTS

**Moderator:** Cynthia MacDonald, FSA, CFA, MAAA

**Presenters:** Roland Fawthrop, FSA, MAAA; Brian D. Holland, FSA, MAAA

The SOA's Individual Life Experience Committee presented the results of its most recent mortality study of fully underwritten individual life insurance. The data behind this study was collected by the statistical agent for the states of New York and Kansas, and covers observation years 2009 through 2013. The study shows how the mortality experience varies by numerous factors and compares the experience to recent standard mortality tables. (See session slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-055.pdf>)

#### SESSION 63 PANEL DISCUSSION: PLATFORM CONVERSION: CONSIDERATIONS, PRINCIPLES AND IMPLICATIONS

**Moderator:** Ramandeep Nagi, FSA, FCIA

**Presenters:** Ramandeep Nagi, FSA, FCIA; Hanh Thi Nguyen, FSA, MAAA; Alexander Zaidlin, FSA, ACIA, MAAA

The presenters focused on actuarial software implementations and the lessons learned through the process. The discussion focused on migration from an old modeling software platform to a new platform and how to make this a smooth transition. They also discussed post-conversion considerations and the experience of day two issues with their models. (See session slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-063.pdf>)



**SESSION 76 TEACHING SESSION:  
PREDICTIVE MODELING: GETTING OUT OF  
SQUARE ONE**

**Moderator:** Ricardo Trachtman, FSA, MAAA  
**Presenters:** Eileen Sheila Burns, FSA, MAAA; Jean-Marc Fix, FSA, MAAA

Experts at this hands-on session walked participants through the analytical process of developing a basic generalized linear model. Lessons learned were practical and also provided insights about the process of approaching or evaluating a modeling project. (See session slides at <https://www.soa.org/pd/events/2017/las/pd-2017-05-las-session-076.pdf>)

**2017 HEALTH MEETING**

**SESSION 16 INTERACTIVE FORUM:  
PREDICTIVE MODELING HOT TOPICS**

**Moderator:** Hans K. Leida, FSA, MAAA  
**Presenters:** Gary Gau, ASA, MAAA; Joe Long; Michael Cletus Niemerg, FSA, MAAA

Predictive modeling and machine learning are rapidly finding applications across many actuarial areas of practice, replacing or complementing traditional tools and approaches. This session gave an overview of some of the trending algorithms and approaches that successful modelers are using, as well as a survey of some of the software platforms that can be used to implement them. (See session slides at <https://www.soa.org/pd/events/2017/health-meeting/pd-2017-06-health-session-016.pdf>)

**SESSION 56 PANEL DISCUSSION:  
FINANCIAL ANALYSIS: IMPAIRMENT,  
STRESS TESTING AND PREDICTIVE MODELING**

**Moderator:** Andrea Sheldon, FSA, MAAA  
**Presenters:** Missy A. Gordon, FSA, MAAA; Roger Loomis, FSA, MAAA; Sarah Prusinski, ASA, MAAA

Key pillars in a successful pharmacy benefit management (PBM) program include assessing corporate benefit strategy,

responding to emerging market trends, monitoring internal claims experience and performing industry benchmarking. This session highlighted current strategies to optimize benefits while managing prescription drug trend rates through benefit design, clinical programs, vendor management and strategic planning. (See session slides at <https://www.soa.org/pd/events/2017/health-meeting/pd-2017-06-health-session-056.pdf>)

**SESSION 57 LECTURE:  
DEVELOPING EFFECTIVE HEALTH CARE  
PREDICTIVE MODELS**

**Moderator:** Evan Morgan, ASA, MAAA  
**Presenter:** Syed Muzayan Mehmud, ASA, MAAA, FCA

Data is fast becoming a crucial asset, and the companies that leverage it have an edge over others. Knowing tools and techniques is important; however, the application of the skill is crucial to the success of a predictive modeling effort. Ideas are important, but execution is all-important. This session explored the steps and considerations involved in the development of effective health care predictive models. (See session slides at <https://www.soa.org/pd/events/2017/health-meeting/pd-2017-06-health-session-057.pdf>)

**SESSION 58 PANEL DISCUSSION:  
I’LL HAVE HEALTH INSURANCE WITH A SIDE OF  
HEALTH INSURANCE**

**Moderator:** Gregory G. Fann, FSA, FCA, MAAA  
**Presenters:** Alex Forrest; Shawn Hartman; Dustin David Tindall, FSA, MAAA

As cost sharing for commercial health insurance plans increases, some individuals are seeking additional coverage through increasingly popular gap insurance policies. This session explored the gap insurance market, examined consumer preferences and discussed potential pitfalls for insurance carriers. The latest market activity and modeling techniques were also explored. (See session slides at <https://www.soa.org/pd/events/2017/health-meeting/pd-2017-06-health-session-058.pdf>)

**SESSION 60 PANEL DISCUSSION:  
PREDICTIVE MODELING FOR PHARMACEUTICAL  
COST GROWTH**

**Presenter:** Joseph Farago

This session provided a closer look into the Canadian pharmaceutical market growth trends and their place in overall health care costs. The focus was centered on the private payer market with a detailed look into future growth trends and forecasting. The speaker shared the 2016–18 Canadian private market forecasting model. (See session slides at <https://www.soa.org/pd/events/2017/health-meeting/pd-2017-06-health-session-060.pdf>)

## SESSION 65 LECTURE: MEDICAID RISK ADJUSTMENT: ROLE OF ENCOUNTER DATA AND UNDERSTANDING MODEL-SPECIFIC NUANCES

**Moderator:** Marlene Therese Howard, FSA, MAAA

**Presenters:** Bradley Bruce Armstrong, FSA, MAAA;  
Richard Lieberman

Navigating Medicaid managed care requires an experienced professional to evaluate and/or question how the risk adjustment model establishes payment levels, the role that encounter data plays in terms of both submission and the state's handling of the data, and the importance of encounter data necessary to enhance capitation payment levels and/or avoid financial sanctions imposed by states.

This session explored various scenarios related to the quality of available managed care encounter data and potential implications on managed care program risk adjustment. The speakers described various risk adjustment methodologies, with particular focus on Chronic Illness & Disability Payment System (CDPS), CDPS + MedicaidRx and the Johns Hopkins Adjusted Clinical Groups (ACG) System. (See session slides at <https://www.soa.org/pd/events/2017/health-meeting/pd-2017-06-health-session-065.pdf>)

## SESSION 97 PANEL DISCUSSION: SOA LTD EXP COMMITTEE—UPDATE ON RECENT TERMINATION STUDY

**Moderator:** Paul Luis Correia, FSA, CERA, MAAA

**Presenters:** Paul Luis Correia, FSA, CERA, MAAA;  
Mervyn Kopinsky, FSA, EA; David A. Wall, FSA, MAAA

In 2008 the SOA LTD experience committee published a new termination table to replace the 1987 GLTD table. In 2012, the AAA published a new valuation table and valuation standard using the SOA experience table from 2008.

In this session, the speakers compared the latest actual-to-expected results relative to these tables with experience data submitted through 2012. They also explored various predictive modeling approaches applied to this latest SOA study. (See session slides at <https://www.soa.org/pd/events/2017/health-meeting/pd-2017-06-health-session-097.pdf>)

## SESSION 101 PANEL DISCUSSION: PANDEMIC MODELING FOR GROUP LIFE INSURANCE

**Presenters:** Timothy B. Moran, ASA, MAAA; Kimiko Tam

This session briefly touched on the history of pandemics and pandemic modeling, followed by a discussion of modern

methods for pandemic modeling. Specific topics included the most important vectors to model, how to weight and prioritize them, and how to deal with co-dependencies. Panelists discussed risk concentrations in group life insurance and used sample data to illustrate modeling approaches, while addressing the potential use of reinsurance to mitigate risk. (See session slides at <https://www.soa.org/Files/e-business/pd/events/2017/health-meeting/pd-2017-06-health-session-101.pdf>)

## SESSION 124 PANEL DISCUSSION: NEXT GENERATION RISK ADJUSTMENT

**Moderator:** Jason Robert Siegel, FSA, MAAA

**Presenters:** Ian G. Duncan, FSA, FCA, FCIA, FIA, MAAA;  
Charles S. Fuhrer, FSA, FCA, MAAA; Jason Robert Siegel,  
FSA, MAAA

The speakers discussed the credibility and variance associated with risk-adjusted claims, some of the biases introduced by traditional models and how they can be fixed, as well as how these models can be customized for nontraditional uses such as in provider reimbursement arrangements. (See session slides at <https://www.soa.org/pd/events/2017/health-meeting/pd-2017-06-health-session-124.pdf>)

## 2017 VALUATION ACTUARY SEMINAR

### SESSION 10 PANEL DISCUSSION: MODEL GOVERNANCE AND MANAGEMENT— ADVANTAGES OF A FORMAL MODEL GOVERNANCE FRAMEWORK

**Moderator:** Marc Slutzky, FSA, CERA, FCA, MAAA

**Presenters:** Ryan David Krisac, FSA, MAAA; April Rijing Shen,  
FSA, CERA, MAAA; Uri Sobel, FSA, MAAA

Management of the development of actuarial assumptions and the assumption change management process are key elements of GAAP model validation. The presenters provided an overview of potential frameworks for developing, governing and managing assumptions across departments. They used sample case studies to show how organizations have improved the consistency and transparency of the assumption setting process by restructuring the way assumptions are approved and monitored. (See session slides at <https://www.soa.org/2017-val-act-seminar-presentations.zip>) ■



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