

The banner features a central grayscale image of a classical building facade with two large arched windows. On the left, a yellow-bordered box contains the text '2017 SOA Valuation Actuary Symposium'. On the right, a black box contains the text 'Aug. 28-29, 2017 San Antonio, TX' in yellow.

2017 SOA
Valuation Actuary
Symposium

Aug. 28-29, 2017
San Antonio, TX

Session 53PD: Are Your Models Ready for PBR?

Moderator:

Vikas Sharan FSA,FIA,MAAA

Presenters:

Robert Andrew Barg FSA,MAAA

Brian Wallace Fomby FSA,MAAA

Vikas Sharan FSA,FIA,MAAA

[SOA Antitrust Disclaimer](#)

[SOA Presentation Disclaimer](#)



IT TAKES VISION

Model Governance Checklist

Some considerations for practicing life actuaries

Brian Fomby, FSA, MAAA

August 28, 2017

What the Checklist Is

- Intended as a potential “resource” for practicing life actuaries and others involved in actuarial model governance
- In response to the need for good model governance addressed in PBR regulation
- Potentially useful beyond PBR valuation modeling and wherever actuarial modeling is performed
- A collection of question-based considerations for the purpose of fostering awareness of the respective model governance concerns
- Aimed to foster awareness of model governance issues
- Non-exhaustive
- A work in progress

What the Checklist Is NOT

- NOT intended as an instrument for rating or assessing an organization's level of model governance
- NOT prescriptive in any way, and not constituting a list of model governance requirements
- NOT a list of questions intended to be directed towards any specific individual, actuary, or group (as the questions are intended only for organizational introspection)
- NOT the answer to model governance, but a potential tool that may aid in its development

Model Governance Functional Categories

- Governance Standards
- Modeling Process
- Assumptions Setting
- Input Data/Tables/Mapping
- Access Controls
- System/Model Changes
- Model Selection/Versioning
- Consolidation of Results
- Reporting
- Analysis/Validation

Governance Standards (Sample Questions)

- Has a model governance framework been formally developed, documented, and adopted throughout the organization?
- Have model documentation standards been established and adopted throughout the organization?
- Are model governance protocols strictly enforced during quarterly and annual reporting? (Bypassing protocols may indicate a lack of management buy-in, and/or the need to better address fast-track changes.)

Modeling Process (Sample Questions)

- Is there a formal model/system change request procedure?
- Are model outputs reproducible? (i.e., have the inputs and model versions been archived and has an operable version of the modeling software been retained?)
- Is there a single source or repository that documents the data flow/system processing from end-to-end?

Assumption Setting (Sample Questions)

- Has an assumption governance framework been formally developed, documented, and adopted throughout the organization? Does the framework include a centralized approach for common assumption setting and formal approval?
- Are experience studies performed on a regular schedule, and assumption updates performed at a consistent time each year?
- Is there a single source or repository that documents the data flow/system processing from end-to-end?
- Are assumptions documented and signed-off in accordance with a specified process?

Input Data/Tables/Mapping (Sample Questions)

- Are model input feeds obtained automatically from a centralized data warehouse?
- Has the organization automated and standardized a set of test analytics for validation of model input?
- Are assumptions documented and signed-off in accordance with a specified process?
- Was the correct seriatim input data used?
- Are data sources well defined and documented?

Access Controls (Sample Questions)

- Are access controls in place for models and modeling systems?
- Is there a documented process for granting access to models, systems, assumptions, reports, etc.?
- Are access levels reviewed on a regular basis?

System/Model Changes (Sample Questions)

- Are model and system changes achieved through a formal change management process? (Is there documented evidence?)
- Are there dedicated model/system/data stewards?
- Are test packs (or test beds) kept up to date with new models and product features?
- Are system/model errors adequately documented?

Versioning/Model Selection (Sample Questions)

- Have experienced modeling experts been involved in algorithm selection and implementation of modeling concepts?
- Are reports automatically labeled to indicate data and version sources?
- Are all the modeling components versioned? (i.e., the code, reports, test cases, etc.?)
- Was the correct model and version used?
- Was the "purpose" of the model documented?

Consolidation of Results (Sample Questions)

- Is the reporting process documented? And, is there specific documentation of the mapping describing how reporting levels are linked to each other?
- Have all products been accounted for in the consolidated results?
- Have consolidated results been adjusted to account for unmodeled business?
- Are late adjustments to consolidated results implemented across all related fields (i.e., reflecting unmodeled premiums, but forgetting to account for unmodeled reserves)?

Reporting (Sample Questions)

- Are automated data feeds used to populate reports, as opposed to manual report preparation?
- Do the reports indicate how robust or sensitive key figures are, along with impacts due to estimation error of input parameters?
- Did the process owner and business owner sign off on the report?
- Are results communicated using institutionally accepted metrics that are commonly understood by the reporting audience?

Analysis/Validation (Sample Questions)

- Has the organization planned and budgeted for the time and cost of analysis of results?
- Are assumptions (including both deterministic and stochastic) given an independent review?
- Are test coverage reports available?
- Has an analysis of change from a validated model to a modified model been performed and documented?

Resource Documents

- “A Survey of Actuarial Modeling Controls in the Context of a Model-Based Valuation Framework” (Society of Actuaries, Dec. 2012)
- “System Access and Change Controls” (Society of Actuaries: The Modeling Platform, Dec. 2015)
- “Model Validation for Insurance Enterprise Risk and Capital Models” (© 2014 Casualty Actuarial Society, Canadian Institute of Actuaries, Society of Actuaries, all rights reserved)
- “Report from the Actuarial Processes and Controls Best Practices Working Party” (Institute and Faculty of Actuaries, May 2009)*

**This report was prepared by and/or on behalf of the IFoA. The IFoA does not accept any responsibility and/or liability whatsoever for the content or use of this document. © Institute and Faculty of Actuaries*

Contributors

- Mike Failor, ASA, MAAA, Chairperson
- Brian Fomby, FSA, MAAA
- Pete Weber, ASA, MAAA
- Mike Boerner, ASA, MAAA
- Cande Olson, FSA, MAAA
- Mary Bahna-Nolan, FSA, MAAA, CERA
- Ali Zaker-Shahrak, FSA, MAAA