



Case Study: Whole Life Model Validation for Fortune 500 life insurer

Engagement Type: Fixed Fee per Model – Actuarial Advisory

Practice Area: Life Insurance - Model Risk

Jurisdiction: USA

Objective

Graeme Group was retained by a Fortune 500 life insurer to conduct an end-to-end validation of its Whole Life valuation model (US STAT, LDTI, pricing, plan forecasting, best estimate projections, economic and US Tax bases), implemented in Moody's AXIS. The purpose of this engagement was to ensure the model's accuracy, soundness and comprehensiveness. The client wanted to ensure that it could be confident in using the model to perform new business pricing and accurately report upon US STAT reserves.

Scope of Work

The scope of services included independent validation of model inputs, calculations, outputs, and governance controls for the AXIS WL model. This encompassed a review of data accuracy, assumption appropriateness, and actuarial methodology; verification of model outputs for completeness and reliability; assessment of congruence with the spirit and intent of ASOP 56, and the extent to which the model was governed appropriately. The scope of work also included an evaluation of runtime efficiency, and delivery of findings and practical recommendations for the model owner post-validation.

Services Provided

Graeme Group performed an end-to-end validation on this high-risk model, with the following validation procedures delivered to the client:

- **Input Validation:**

Confirmed the following for all in-force data, actuarial assumptions, WL rates, and product features:

- Accurate referencing from source administration systems
- Successful and complete upload into the model environment
- Alignment with independently maintained reference materials
- Alignment with industry standards and regulator intent, including how these are interpreted
- Consistency with internal documentation and stated model intent

- **Calculation and Output Validation:**

Performed independent, sample-based recalculations and challenger model comparisons using a 1% threshold on seriatim (US STAT) and cohort (LDTI) bases to validate alignment with independently derived results. Assessed the appropriateness of simplifications, input applications, and formulaic accuracy within the code. Evaluated the model's end-to-end design for suitability across use cases and confirmed output completeness, reliability, regulatory alignment, and reconciliation to prior results. Verified that outputs were stored in a well-governed and complete manner for downstream use.

- **Governance Assessment:**

Reviewed model documentation, peer review protocols, version control procedures, and change management processes for compliance with internal risk management policies.

- **Conceptual Soundness Review:**

Assessed the appropriateness of actuarial methodologies and model design against actuarial theory, reserving principles, methodology documents, and common sense.

- **Operational Efficiency:**

Analyzed model structure and runtime to identify opportunities that enhance execution speed.

- **Model Validation Report:**

Delivered a detailed validation report with categorized findings (and proposed remedial actions split by finding and owner) and audit-ready documentation tailored for key stakeholders.

Deliverables and Turnaround Time

This was a 3-month project resulting in:

- A model validation report
- Documentation Templates
- Actuarial models used to independently re-calculate the WL target model output
- A list of items that require remediation and proposed approach and owner for each such item
- Executive summary of findings for use in internal compliance filings
- Sign-off by a Fellow of the Society of Actuaries, and Member of the American Academy of Actuaries

Outcome



- **Model Confidence:** Client materially improved trust in model for reserves, pricing, and ALM.
- **Reserving Efficiency:** Identified efficiency gains and reduced reserve conservatism.
- **Audit Leverage:** Delivered reusable audit-ready documentation. Provided immediate support for year-end external audit.
- **Strategic Use:** Validated model used for new product feasibility and internal forecasting.
- **Improved Model Quality Roadmap:** Engaged model owners to constructively drive remediation.

This engagement highlights Graeme Group's ability to deliver efficient, rigorous, and regulator-ready model validation using independent recalculation procedures, sampling techniques, and industry leading risk management practices. Our team successfully applied industry-leading tools and actuarial governance expertise to independently challenge a high-risk Whole Life model on a tight timeline and in alignment with reserving and internal company requirements.