

ASSUMPTION GOVERNANCE

Best practices and 2023 survey highlights

ASNY Fall Meeting, 2023

A business of Marsh McLennan

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CONTENTS

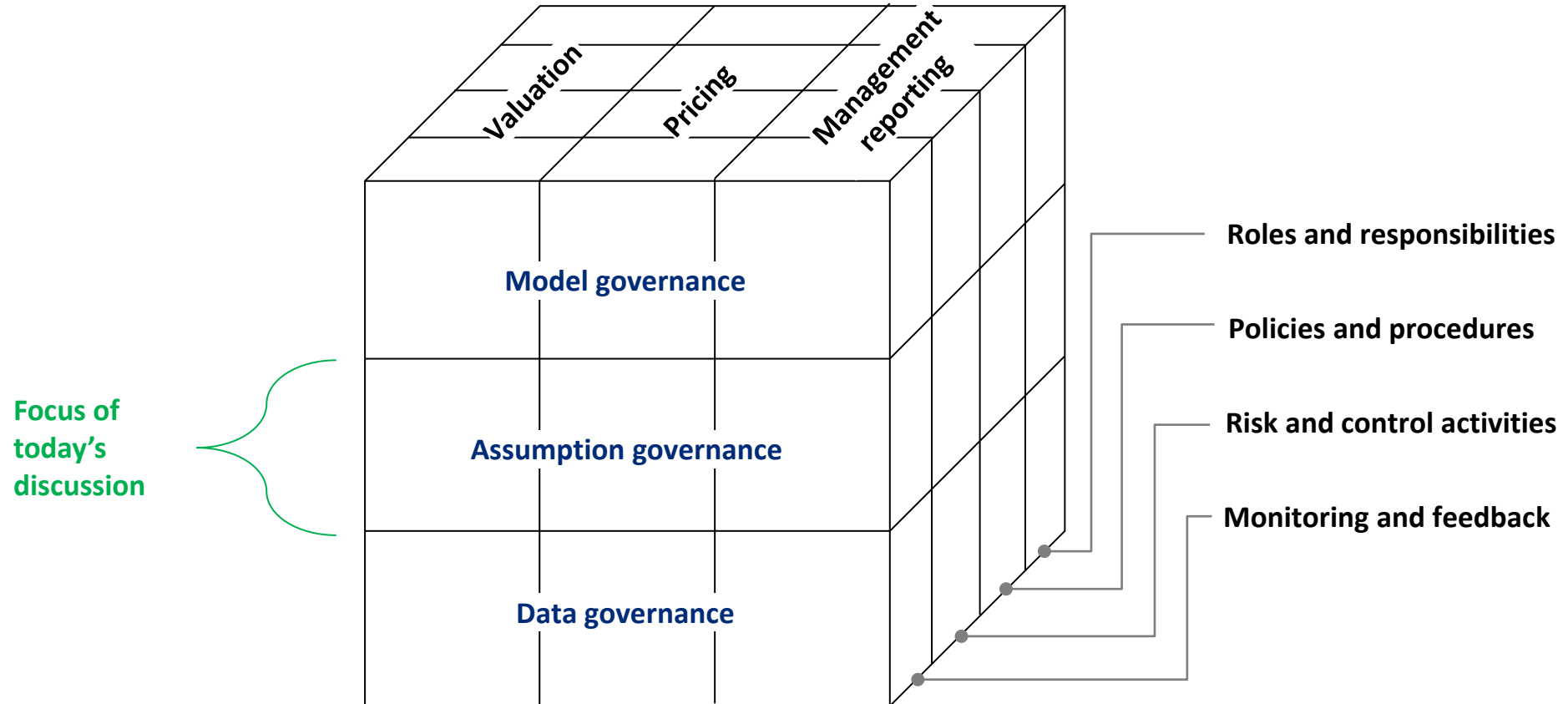
- 1** **Governance overview**
- 2** **Assumptions governance framework**
- 3** **Governance survey key takeaways**

1

GOVERNANCE OVERVIEW

ACTUARIAL GOVERNANCE: A HIGH-LEVEL VIEW

Each sub-framework defines roles and responsibilities, provides clear policies and procedural guidelines, assesses and controls risks, and has a mechanism to address feedback



STANDARDS OF PRACTICE

Various ASOPs address key themes related to actuarial and **assumptions** governance

ASOPs 10¹, 18², 22³, 54⁴

U.S. GAAP, Asset Adequacy Analysis, Assumption Setting and Pricing methods, etc.

- **Internal consistency of assumptions**
- **Use of simplifications and approximations**
- **Appropriate documentation and disclosures**
- Model change controls
- Model validation and review procedures

- **Documentation of data sources and limitations**
- **Internal and external consistency of data**
- **Data availability**
- **Defining data requirements**

ASOP 23

Data Quality

ASOP 41

Actuarial Communications

- **Maintenance of clear and comprehensive documentation**
- **Ownership of material assumptions and methods**

- **Data selection and confirmation**
- **Assumption selection and confirmation**
- Model design
- Model validation procedures
- Model documentation
- Classification of models by risk

ASOP 56

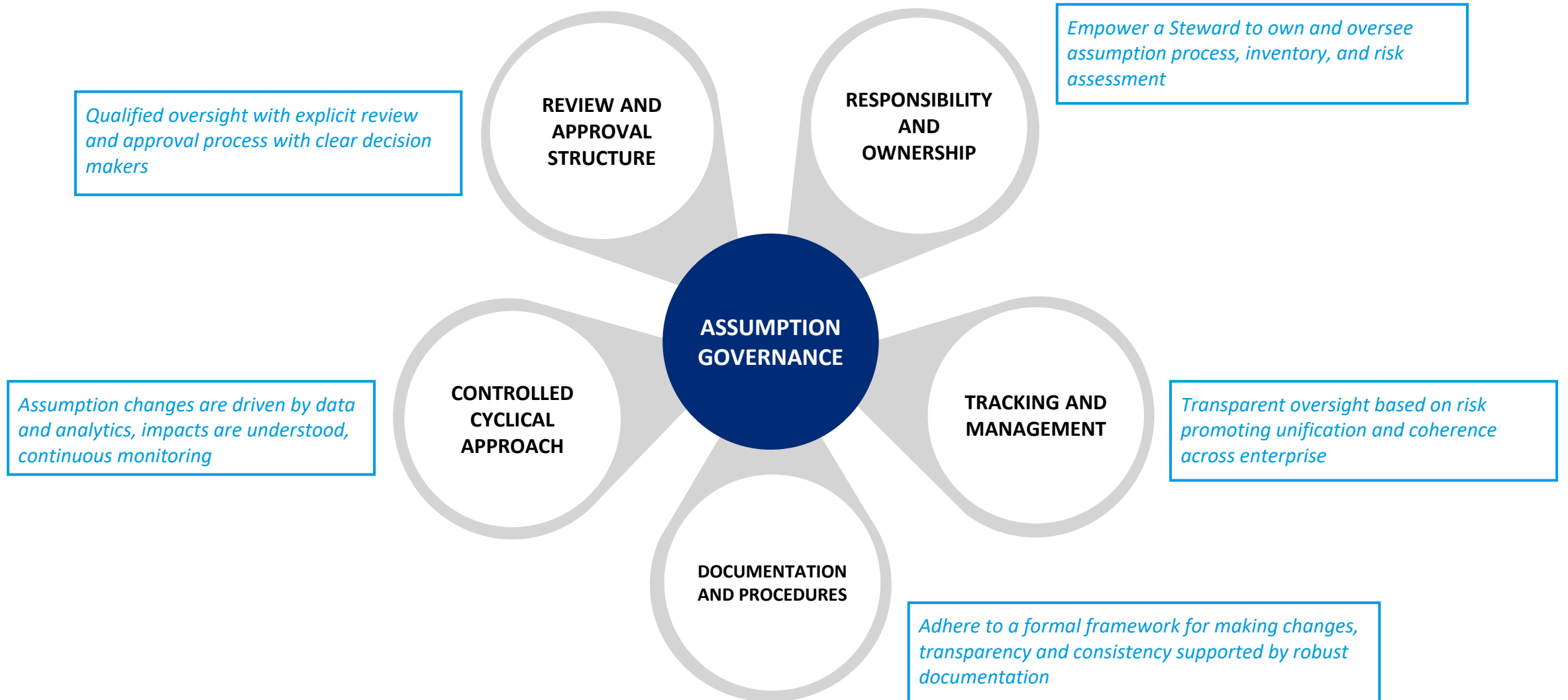
Modeling

1. Methods and Assumptions for Use in Life Insurance Company Financial Statements Prepared in Accordance with U.S. GAAP
2. Long-Term Care
3. Statements of Opinion Based on Asset Adequacy Analysis by Actuaries for Life or Health Insurers
4. Pricing of Life Insurance and Annuity Products

02

ASSUMPTIONS GOVERNANCE FRAMEWORK

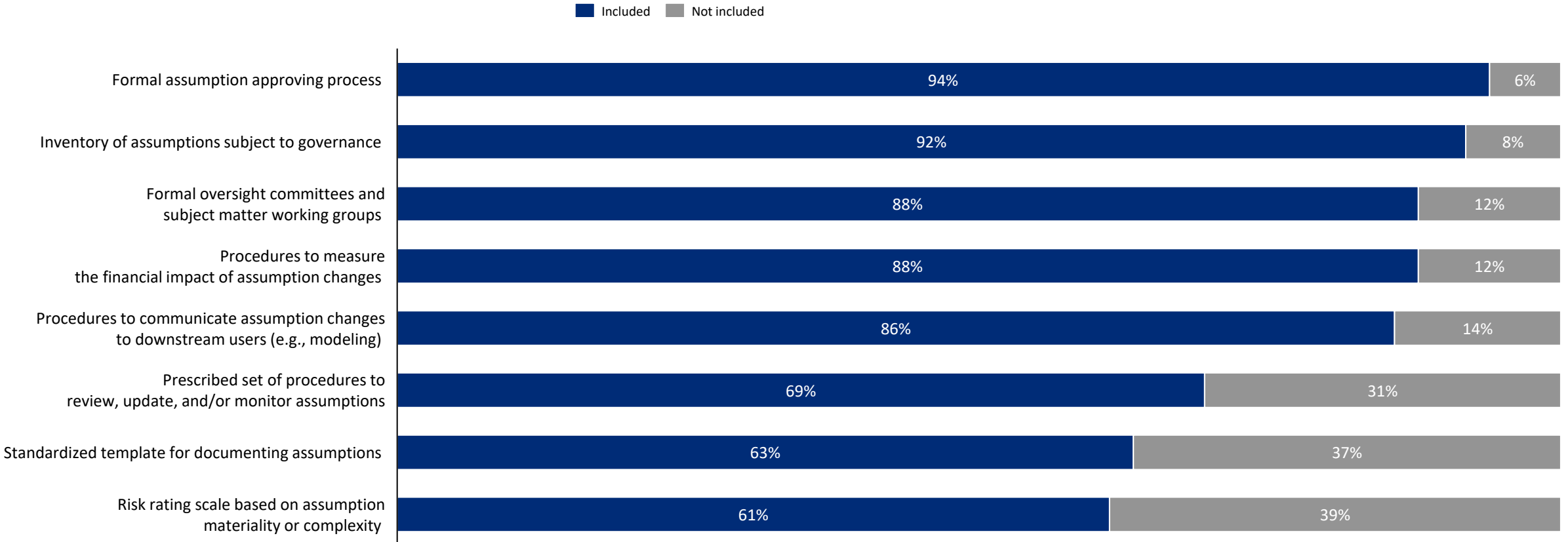
COMPONENTS OF AN ASSUMPTION GOVERNANCE FRAMEWORK



COMPONENTS OF THE ASSUMPTION GOVERNANCE FRAMEWORK

Best practice features are consistently incorporated in governance frameworks across the industry

Components included in assumption governance frameworks or assumption development processes



A risk rating scale for assumption reviews can reduce workload; relative to the prior survey, 22% more companies have embraced this practice. Standardized templates and risk rating scales continue to be emerging components

LEVEL OF ASSUMPTION GOVERNANCE (EXAMPLE)

Combination of quantitative and qualitative assessments determines level of governance (**full** vs. **light**)

PROPOSED LEVEL OF GOVERNANCE	Qualitative assessment		
	High (9-12)	Medium (5-8)	Low (0-4)
Quantitative assessment			
High (> 10x materiality threshold)	Full	Full	Full
Low (In excess of materiality threshold)	Full	Full	Light
Immaterial (Below materiality threshold)	Full	Light	Light

Assessment	Description
Quantitative	<ul style="list-style-type: none"> Measures the potential financial impact of an assumption change given any changes are considered business as usual
Qualitative (see next page)	<ul style="list-style-type: none"> Measures an assumption's exposure to risk of error or inadequacy due to the underlying <i>complexity</i> of the assumption or its reliance on actuarial judgment <ul style="list-style-type: none"> Ratings are assigned based on data complexity, the nature of the assumption, market interaction and other factors that are scored 0-2 A total score is calculated based on 6 subcategory factors (see Slide 2)

Level	Description
Full	<ul style="list-style-type: none"> Deep dive into the assumption and underlying data Obtain new data as necessary and reasonably feasible Full detailed documentation of data validation
Light	<ul style="list-style-type: none"> Review of assumption utilizing existing data Data validation procedures documented in assumption proposal memo No detailed documentation

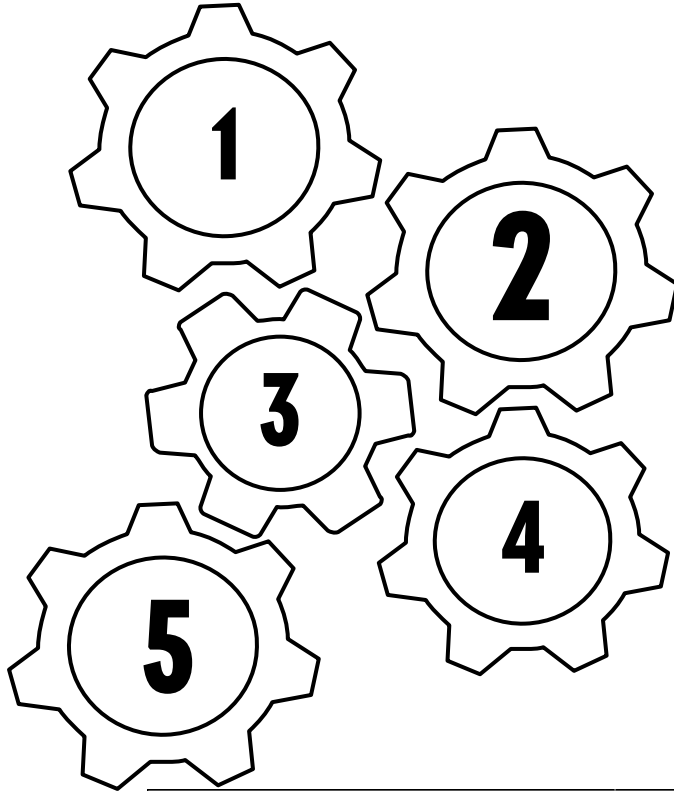
QUALITATIVE ASSESSMENT (EXAMPLE)

Total risk score is calculated by adding qualitative score for each of the 6 factors

Factors	Qualitative score		
	0	1	2
1. Interaction with markets	None	Simple interaction	Complicated interaction (moneyness)
2. Complexity of data sources	Single data source	Multiple data sources, but simple interaction	Complicated interaction of data sources
3. Complexity / level of judgement	Simple formulaic update	Straightforward, clear use of judgement	Complicated or substantial judgement
4. Dimensionality	Single dimensions	Several dimensions, but simple matrix	Non-linear
5. Interaction with other assumptions	None	Simple interaction with 1-2 other assumptions	Complex interaction
6. Overall credibility/reliability of data	Credible, validated, relevant internal data	Credible external data and/or internal data without (one of) full credibility, validity or relevance	Internal data lacks more than one of full credibility, validity of relevance AND external data not relevant

Low risk equals 0-4, medium risk equals 5-8 and high risk equals 9-12

BUILDING AND MAINTAINING ASSUMPTION INVENTORY (EXAMPLE)



Key considerations

I. Outcomes

- Ensure all assumptions are governed
- Identify ownership
- Document governance level / review frequency
- Repository for assumption memos
- Provide other info about assumptions

II. Scope

- I. What is an assumption?

III. Completeness

- Does inventory cover all defined assumptions?

IV. Accuracy

- Requires continuous collaboration with many stakeholders

V. Access and Storage

- Who can make changes?
- Where are production assumptions stored?

Assumption ID #	Name	From Master Model Inventory				Assumption Review Timing				
		Models Impacted (Provide MMI #)	Model Owner (From MMI)	Model Risk Assessment (From MMI)	Products Impacted (From MMI)	Review Frequency	Quarter of Last Review	Quarter of Next Review	Priority	Governance Level
MAI-Prod-Type-###	Assumption name	Link to Master Model Inventory	Link to Master Model Inventory	Link to Master Model Inventory	Link to Master Model Inventory	Annually, Quarterly, etc.	YYYY QQ	YYYY QQ	Urgent, High, Medium, Low	Full, Light
MAI-MS-Mgmt-0002	Management Case: Investment strategy	All	All	High - Low	All	Annually	2017 Q2	2018 Q2	Urgent	Full

ASSUMPTION PROPOSAL PROCESS AND DOCUMENTATION REQUIREMENTS (EXAMPLE)

Formal documentation and proposal process supports changes that are transparent, fully understood, and hold up to independent scrutiny

VERSION: V1

[Assumption Name]
#Q 20YY Assumption Proposal Memo

Executive Summary

Assumption Description	• [High level description of the assumption]
Assumption Owner	[First Last]
Peer Reviewer	[First Last]
Current Assumption	• [Key information on the current assumption]
Assumption Proposal for Approval	• [Summary of proposal, by segment, as needed]
Data and Credibility Considerations	• [Highlight d
Impacts	• [Highlight d
	GAAP (\$MM)

Assumption Proposer Confirmation of Data Review Procedures

The checklist below provides a high-level summary of the review performed. For additional details, please reference the Data section of this document.

From Actuarial Standard of Practice ("ASOP") 23 - Data Quality: In undertaking an analysis, the actuary should consider what data to use. The actuary should consider the scope of the assignment and the intended use of the analysis being performed in order to determine the nature of the data needed and the number of alternative data sets or data sources, if any, to be considered.

Confirmations	Confirmation	Comments
I confirm that the data is appropriate for the intended purpose of the analysis and there is no alternative data source better suited to this analysis that could be obtained for both a reasonable cost and in a reasonable time frame.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
I confirm that the data is sufficiently current with no material limitations.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
I confirm that I reviewed the data for reasonableness and comprehensiveness, with particular attention to internal and external consistency.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
I confirm that any data controls contained within the assumption workbook have been performed.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	

- Providing a template ensures consistent and complete information
- Allow for exceptions that can result from use of actuarial judgment or special circumstances
- Documentation requirements should address all modeling uses relevant to your company
- Control activities (e.g., peer review) must be evidenced in a standardized manner

03

GOVERNANCE SURVEY KEY TAKEAWAYS

BACKGROUND AND KEY TAKEAWAYS

The survey covered assumption-setting processes and governance, with focus on current and emerging practices and opportunities for improvement

Participant responses covered a range of assumption-related topics



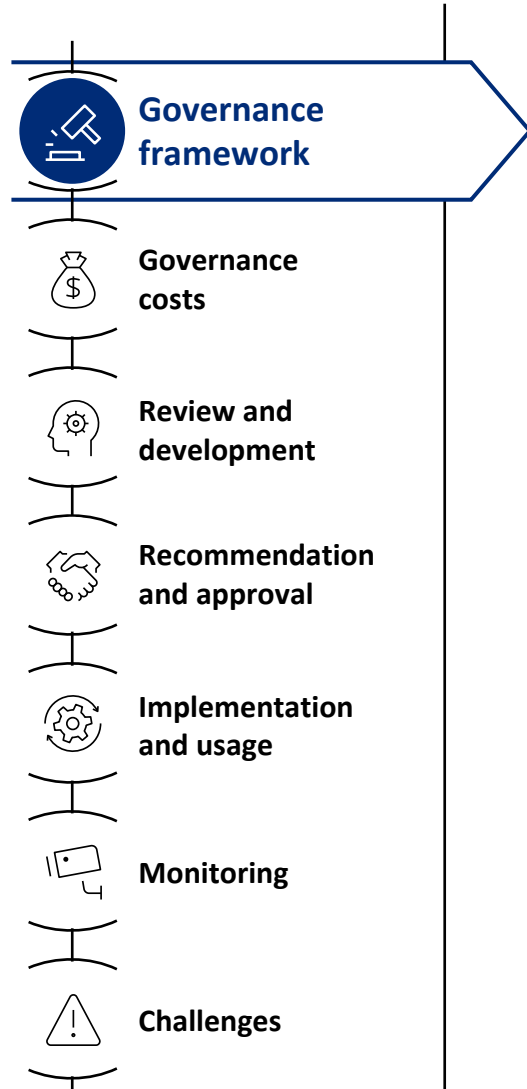
Industry current state

1. 80%+ of participants have formal governance structures, 16% with implementation in the past two years
2. All participants believe their structure is **very effective** in achieving their primary goals: meeting regulatory standards and controlling assumption updates
3. Most participants have assumption inventories (91%), various channels of review (92%), and documentation templates (63%) but **do not have** a formal definition for an assumption (14%)
4. The most common review frequency for all assumptions is annual, and most participants are consistent in the sequence of events within the assumption approval process

Industry challenges and opportunities

1. Out of 7 objectives of assumption governance, gaining insights from assumptions ranked 5th, indicating that companies **continue to prioritize compliance** over strategic decision-making
2. Securing resources is noted as the biggest challenge (60%), **yet few participants** utilize dedicated teams (24%) or external resources (27%)
3. Over a quarter of participants (27%) spent **more than 25 FTE weeks in 2022** on audit and remediation while 45% of participants spent **less than 25 FTE weeks in 2022** on governance related tasks
4. Despite tight timelines, many companies (60%) **do not use** a risk-based approach to reduce the review effort
5. Defending assumptions to management and auditors is a noted challenge, yet many **rely heavily on judgment** and don't involve these parties until the end of the process

GOVERNANCE FRAMEWORK



Key takeaways








Best practice



Emerging practice



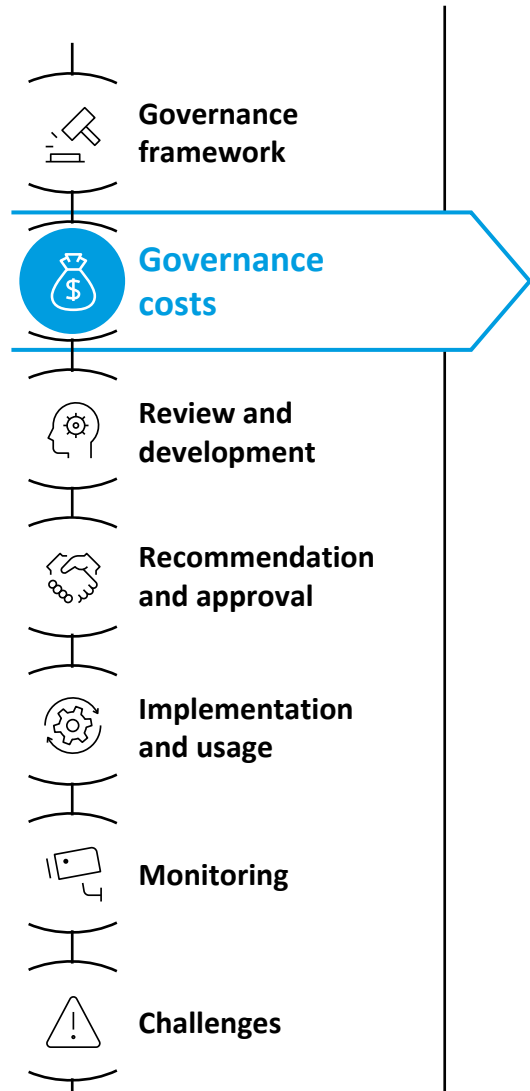
Opportunity

- 1**  Most companies (80%+) have a documented framework, with a significant proportion having established their framework over two years ago
- 2**  Satisfying regulation and ensuring accurate implementations were the most cited governance objectives, while leveraging data and getting better insights were the least cited
- 3**  63% of participants now rate themselves as “fully effective” for multiple objectives
- 4**  The actuarial function typically owns the assumption process with finance/risk most likely involved, but key stakeholders are often not included in policies and procedures
- 5**  60% of participants cited resource shortages as the primary obstacle preventing their governance framework from being fully effective

6	60%	24%	71%
	Cited resource shortages as primary obstacle	Have dedicated assumption teams	Do not use external support

- Companies set the top objective of assumption governance as satisfying external requirements (not better managing business)
- Viewing governance as a requirement, as opposed to being strategic, leads to **low priority** resourcing, **inefficient** structures, and **missed insights** into fundamental forces driving financial results

GOVERNANCE COSTS

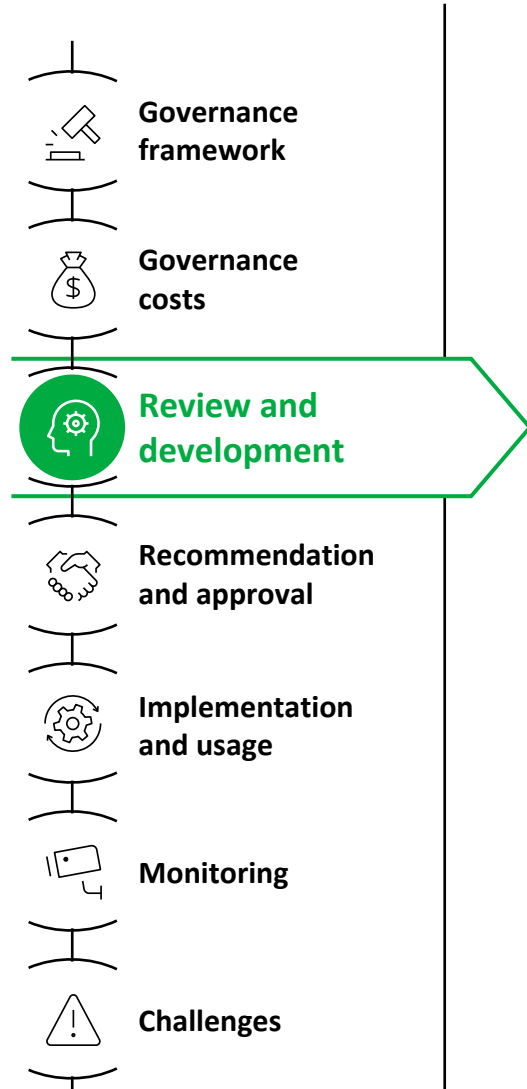


Key takeaways Best practice Emerging practice Opportunity

- 1** Less than half (43%) of participating companies employ one or more full-time actuaries in a governance-oriented role
- 2** Resources allocated to governance-related tasks (e.g., updating inventories, complying with policy) varied widely across participants, with 25% spending under 10 FTE weeks and 14% spending more than 125 FTE weeks annually
- 3** 96% of participants reported spending 75 FTE weeks or less annually answering questions or remediating issues related to actuarial audit, while 32% reported spending 10 FTE weeks or less annually
- 4** Governance is largely handled internally by participating companies, with only ~15% using external resources in excess of 10 FTE weeks annually for assisting with governance-related tasks or audit support

- Despite the benefits of dedicated resources, the majority of companies **do not support** full-time governance roles, exacerbating **resource strain** and de-prioritizing governance frameworks
- Most companies are **not fully leveraging** available external resources for governance support, limiting their insight into industry best practices and not **maximizing total experience** of governance teams

REVIEW AND DEVELOPMENT



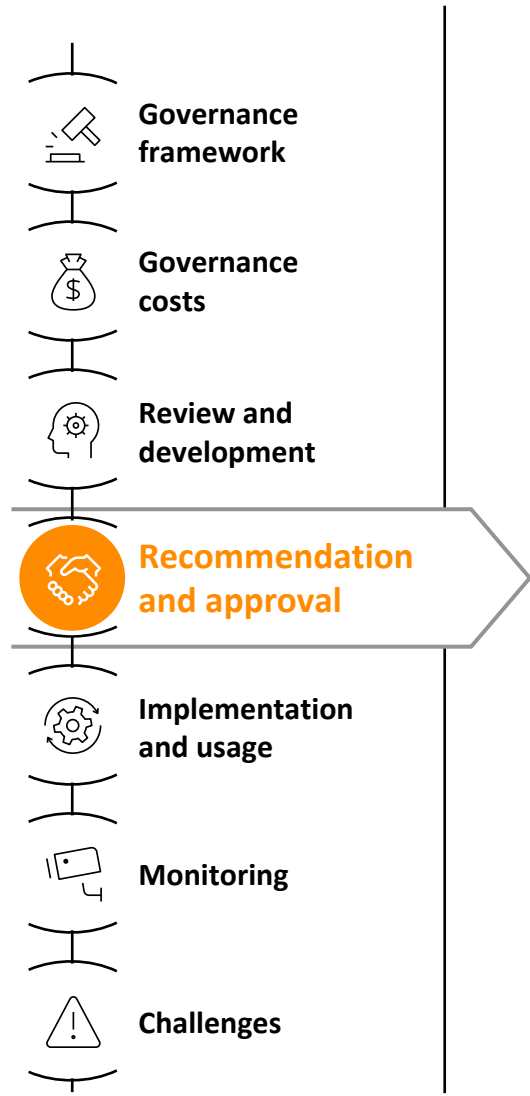
Key takeaways Best practice Emerging practice Opportunity








- 1 Condensed timelines further compound resource constraints
- 2 Frequency of review is typically annual and often pre-defined or judgment-based and rarely based on monitoring of results or materiality
- 3 Judgment-based thresholds for assumption changes can be difficult to explain internally and externally
- 4 Almost all companies agree that a recommendation of 'no change' to an assumption still requires a formal governance process

5	22 COMPANIES	86%	6 YEARS
	Review, approve, and implement in Q3	Review assumptions on a pre-defined schedule	Average lookback period for actuarial assumptions

- Overall, companies use **traditional actuarial methods** to develop assumptions on a pre-defined schedule with heavy use of **judgment** to decide if changes are warranted
- Using thresholds, advanced statistical methods, and robust monitoring reduces judgment and review frequency leading to **easier explanations** and **resource relief**

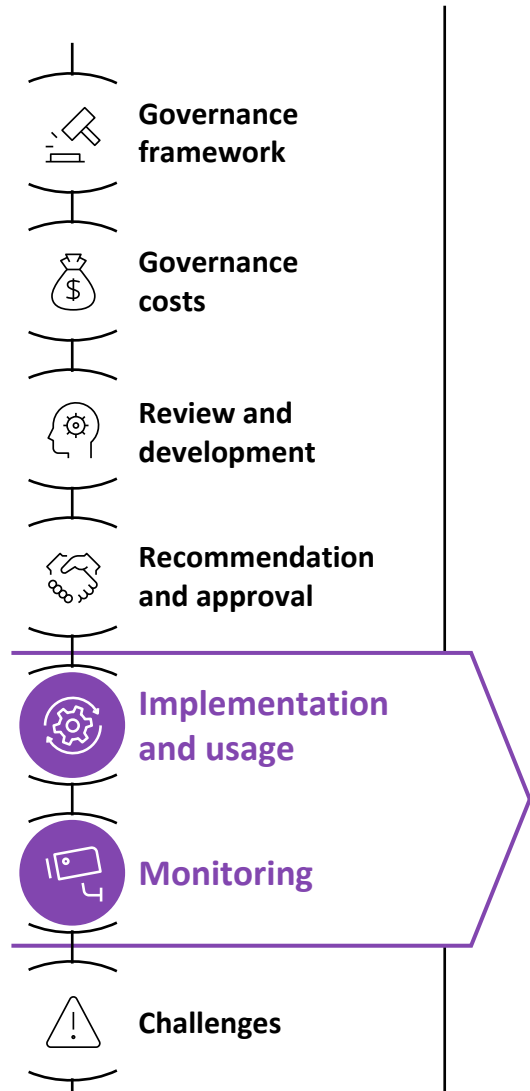
RECOMMENDATION AND APPROVAL



Key takeaways	 Best practice	 Emerging practice	 Opportunity	
1				Most companies share financial impacts of assumption changes (either estimated or actual) within the actuarial department and with the approval committee
2				Criteria to determine level of approval is typically based on estimated financial impact but tends to ignore complexity, risk, or impact of market movements
3				Most companies start model changes prior to final assumption approval to ensure multiple changes are implemented efficiently
4				Most participants use a waterfall approach when implementing multiple assumption changes within a model to ensure they are implemented accurately
5	79% Use financial impact to determine the level of approval	67% Have strategies in place to make the implementation of changes more efficient	81% Do not share financial impacts with Board of Directors before approval	

- The majority of companies use input from **subject matter experts** and **financial impacts** of assumption changes to inform assumption committee decisions

IMPLEMENTATION & USAGE AND MONITORING



Key takeaways Best practice Emerging practice Opportunity

- 1

 Assumption changes are usually implemented by a central modeling team

- 2

 Key functional areas (actuarial, modeling) are represented on the assumptions committee or receive formalized communications of assumption changes

- 3

 Companies strive for consistency in assumptions across functions, but there is typically no formalized process for ensuring desired consistency

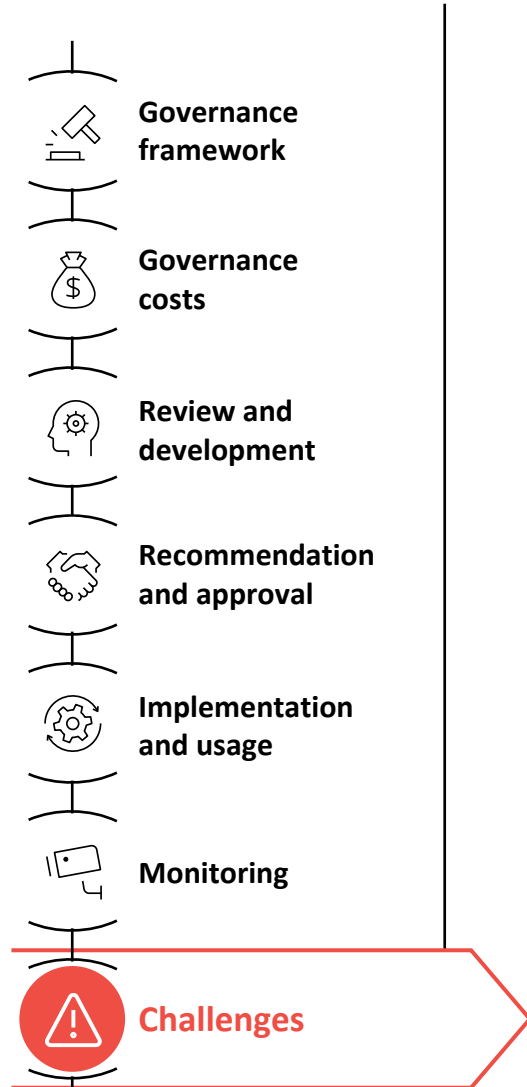
- 4

 75% of companies monitor actual-to-expected actuarial assumptions at least quarterly, but dynamic validations are not frequently updated







<p style="font-size: 2em; font-weight: bold; margin: 0;">5</p> <p style="font-weight: bold; font-size: 1.5em; margin: 0;">21%</p> <p style="font-size: 0.8em; margin: 0;">Utilize all four <i>best practice</i> steps to accurately update assumptions in models</p>	<p style="font-weight: bold; font-size: 1.5em; margin: 0;">41%</p> <p style="font-size: 0.8em; margin: 0;">Do not require the assumption owner to sign-off on implementation</p>	<p style="font-weight: bold; font-size: 1.5em; margin: 0;">35%</p> <p style="font-size: 0.8em; margin: 0;">Do not have formal review and documentation of the assumption monitoring process</p>
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- Few companies have a clearly defined process to validate that assumption changes accurately reflect the approved assumption
- Assumption monitoring is often based on A/E analysis performed by the assumption owner, with thresholds for triggering a change typically based on judgment

CHALLENGES



Key takeaways

-  1 Difficult to find available and appropriate resources
-  2 Unavailable or unreliable data
-  3 Modeling constraints or other technological challenges
-  4 Unreasonable timeline
-  5 Lack of information about common industry practices and benchmarks
-  6 Reaching consensus by SMEs

- Assumption governance has developed due to regulatory and reporting requirements
- The value of a **robust assumption process** justifies **necessary investments** in resources and technology to **fully realize its potential**

OPPORTUNITIES FOR IMPROVEMENT

The 3 most common opportunities for improvement from each section of the survey are listed below

GOVERNANCE FRAMEWORK	GOVERNANCE COSTS	REVIEW AND DEVELOPMENT	RECOMMENDATION AND APPROVAL	IMPLEMENTATION AND USAGE	MONITORING
1ST Formally defining an assumption	1ST Increasing the number of resources	1ST Improving data collection	1ST Improving communication across all functions	1ST Formalizing controls around implementation	1ST Improving automation
2ND Improving assumption inventory	2ND Attaining governance expertise	2ND Improving communication between resources	2ND Standardizing processes	2ND Improving automation	2ND Defining and establishing monitoring thresholds
3RD Implementing a dedicated governance team	3RD Protecting against material weaknesses	3RD Maintaining consistency throughout the review process	3RD Maintaining consistency	3RD Maintaining clear and consistent documentation	3RD Formalizing a risk based monitoring system

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