

Actuarial & Finance

**LTC Risk Management:
Understanding Capital Needs
and Reporting**



18th Annual Intercompany Long Term Care Insurance Conference

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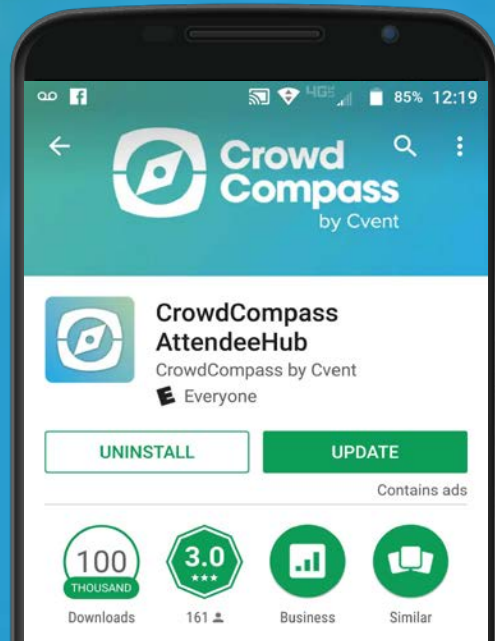
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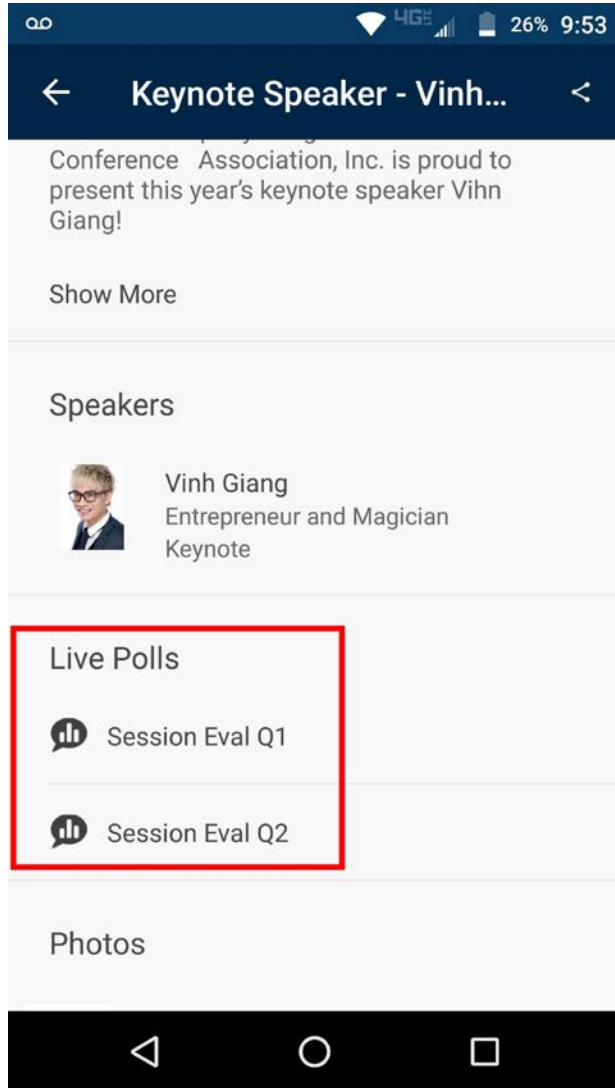
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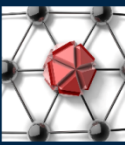
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- **Tim Bischof, FSA, MAAA**
Senior Vice President - CNO Financial Group
- **Jim Stoltzfus, FSA, CERA, MAAA**
Principle, Consulting Actuary - Milliman
- **Dana Hunt, FSA, MAAA, FRM**
Director, Risk and Capital, Life Insurance - PwC

Risk Management and Reporting

Tim Bischof, FSA, MAAA
CNO Financial Group



The Life Cycle of LTC Risk Management



- **Taking the Risks**

- Development and Pricing
- Systems Set-up
- Marketing and Sales

- **Knowing the Risks**

- Exposure Reporting
- Operational Reporting
- Experience Analysis

- **Managing the Risks**

- Basic Approach
- Ownership and Accountability
- Governance

- **Communicating the Risks**

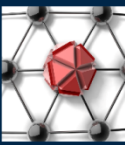
- Content
- Powerful Tools





- Importance and prevalence
- Audiences and constituencies
- Perspectives and purposes
- Tools for and core tenants for the message

The Importance & Prevalence of Risk Mgmt



- **Risk Management is a role**

- The Scouts

- What can get better or worse?
- Where can it get better or worse?
- What is driving the change?

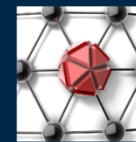
- The Messengers

- The Advisors



- **Risk Management is comprehensive**

Identifying Your Audiences



Audience	Their Charge	Available Tools	Timing
Internal Management	Introduce, monitor, manage, report	Metrics, indicators, meetings	Daily
Executive Leadership	Understand, prepare, act (or react)	Reports, valuations	Monthly
Boards	Envision, enable	Presentations	Quarterly
Regulators	Protect, enforce, examine	Formal Reports, Form F, ORSA, etc.	Triennially
Rating Agencies	Analyze, access, communicate	Presentations and tools from other Audiences	Semi-annually
The Market	Reward the risk adjusted	10K, 10Q, 8K, Investor Presentations	Quarterly, Upon crisis
Others	Public Policy, senior protections	Public relations	Ad hoc

Addressing Your Constituencies



Audience	Primary Risk Focus	Key Medium	Intent
Internal Management	Credit, Insurance, Market Risks	Metrics	Inform
Executive Leadership	Strategic and Reputational Risks, Internal Management Risks	Meetings	Inform
Boards	Strategic and Reputational Risks	Meetings	Advise
Regulators	Solvency and Operational Risks	Exams	Direct
Rating Agencies	Credit-worthiness and Viability. Self Reputational Risks	Ratings Reviews	Showcase
The Market	Financial Credibility and Performance	News releases	Demonstrate
Others	Reputational Risks	News and community	Showcase



Metrics

- Dashboards
- Relative Measures

Presentations

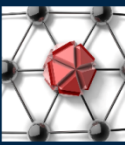
- Mix of past, present, and future
- Credibility through completeness
- Summary and storylines

Formal Reporting

- ORSA
- Form F
- Annual Surveys and Benchmarks

Capital impact emerges as the ultimate score

Own Risk and Solvency Assessment



- Section 1 – Description of Risk Management Framework
 - Coverage of legal entities
 - Risk philosophy, risk culture, compensation alignment
 - Risk Appetite, tolerances and limits
 - ERM Process Cycle – management and controls
 - Risk reporting and governance
- Section 2 – Assessment of Risk Exposures
 - Qualitative and Quantitative processes
 - “Risk Heat Map” process
 - Assessment and mitigation of key risks
 - ERM in Action
 - Capital Model documentation



**NAIC OWN RISK AND SOLVENCY
ASSESSMENT (ORSA) GUIDANCE
MANUAL**

Maintained by the
Group Solvency Issues (E) Working Group of
the Financial Condition (E) Committee

As of December 2017



- Section 3 – Assessment of Capital and Prospective Solvency
 - Solvency assessment
 - Risk review process
 - Assessment of Capital in Business Plan and Stress Tests
 - Projected capital including Economic Capital
- Appendix provides additional detail on the following:
 - Marketing, Distribution, Product Portfolio
 - Non Insurance Subsidiaries
 - Risk Committees, Hierarchy, Accountabilities
 - Boards of Directors by Legal Entity
 - Executive Reporting Structure
 - Key Risk Indicators
 - Excerpts from Form F

Risk Appetite Statement

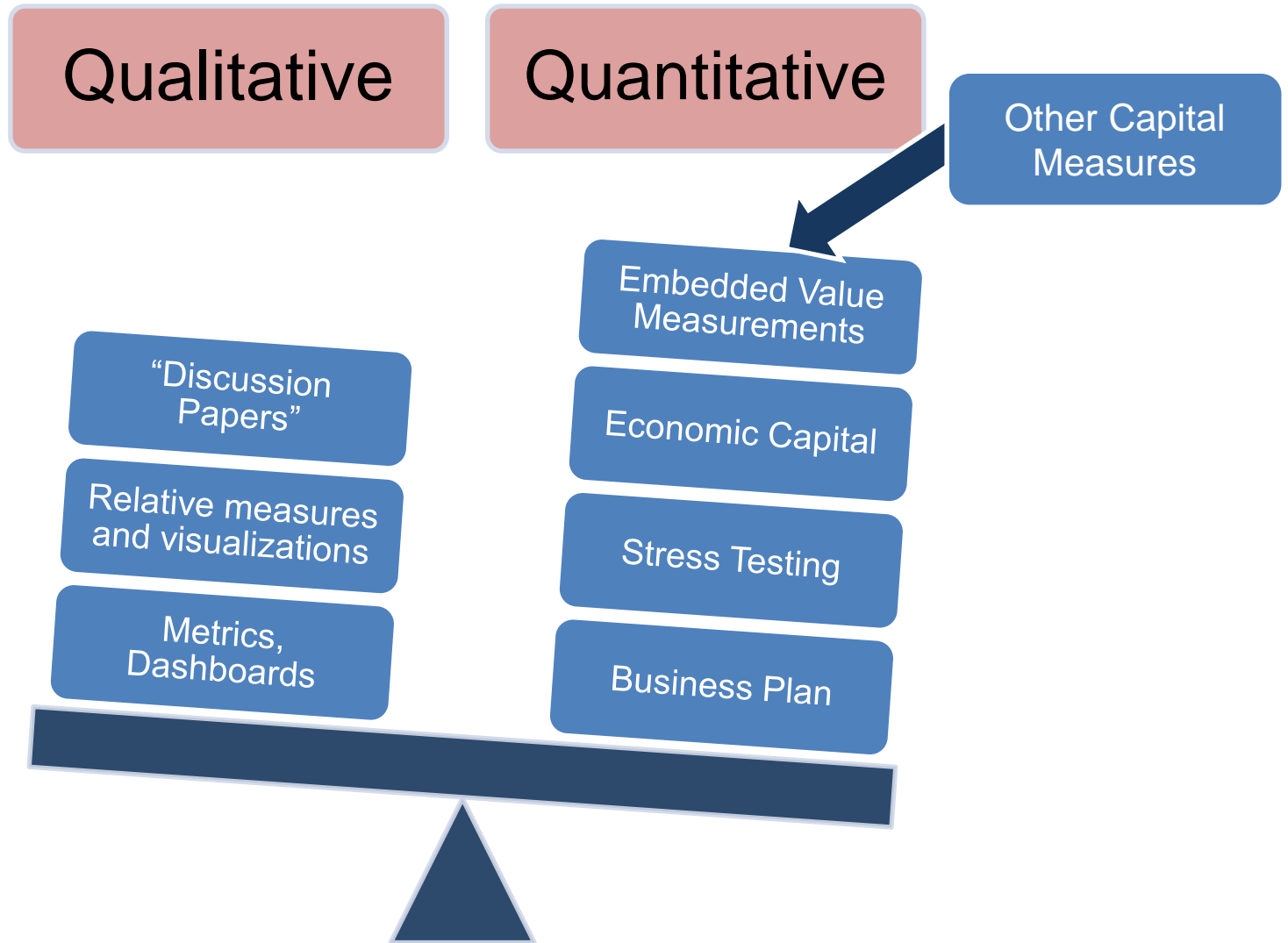


Promotes consistent risk decisions and provides the framework to link strategy and management actions throughout the organization.

Risk appetite defines risk tolerances across the following three key dimensions:

- **Capital**
 - Seeks to maintain a capital level of []% or higher on a consolidated basis and a minimum of []% on a legal entity basis.
 - Seeks to maintain cash or equivalents at the holding company level of \$[] million under normal conditions and \$[] million under stressed conditions.
- **Earnings**
 - Seeks to pay annual statutory dividends in the range of [] or higher.
 - Seeks to earn GAAP net operating income of at least []% of prior year.
- **Franchise Value**
 - Seeks to achieve sales growth greater than the industry average.
 - Seeks to increase the value of the business year over year.
 - Acknowledges it is necessary to accept a reasonable level of operational risk. However, monitor and manage its operational risk through a suite of metrics and controls with risk budget of [].
 - Seeks to manage the impact and risk associated with external factors, including legal, regulatory and environmental factors.
 - Seeks to protect its reputation through proactive management of underlying risks.

Components of the ERM Message





- Real Risk of Your Company
- Real Management of Risk at Your Company
- Real Concerns Related to Risks at Your Company
- Real Measures and Tools to Illustrate Risk
- Real Tools to Monitor and Score Risk Movements
- Real Assessment on Performance of the Risk Construct

Scenario/Stress Testing

Jim Stoltzfus, FSA, MAAA, CERA
Milliman, Inc.





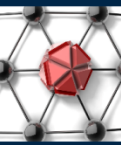
- Each type of business is exposed to different risks
- It is important to understand the risks
 - Likelihood
 - Impact
 - Materiality
- Important to understand risks to enterprise
- “Real Knowledge is to know the extent of one’s ignorance”



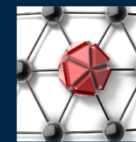
- Uncertainty of assumptions
- Materiality of assumption differences
- How much capital is needed?
- Where should risk mitigation be focused?
- Required but not prescribed



- Key LTC Risks
 - Longevity – Lapse, Mortality, Benefit Exhaust
 - On claim
 - Active Life
 - Improvement
 - Demographics
 - Morbidity



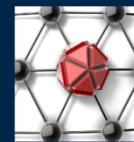
- Key LTC Risks
 - Interest
 - Credit Risk
 - Asset Type Risk
 - Interest Rate Risk
 - Market Risk



- Key LTC Risks
 - Pricing Risk including rate increases
 - Operating
 - Expense
 - Counterparty
 - Model Risk
 - Others



- ORSA Requirements
 - When evaluating a risk, the insurer should analyze the results under both normal and stressed environments
 - The insurer's risk assessment should consider the impact of stresses on capital



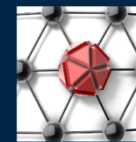
- Key approaches utilized now
 - Sensitivity/Scenario Testing – Testing impacts of change in one assumption
 - Multivariate/Stochastic Scenario Testing – Testing impacts of changes to multiple assumptions
 - Reverse Scenario Testing – “What assumptions or combination of assumptions breaks the bank”



- Common Uses of Sensitivity/Scenario Testing
 - Cash Flow Testing
 - Actuarial Appraisals
 - Reinsurance
 - ORSA Assessments



- Examples of Sensitivity/Scenario Testing
 - 0.25% reduction in voluntary lapse
 - Mortality improvement/no morbidity improvement
 - 5% higher morbidity
 - Deterministic interest scenarios



- Sample Table for Sensitivity/Scenario Testing

SAMPLE LTC INSURANCE COMPANY		
<u>Scenario</u>	<u>Present Value at AT NIER Rate</u>	<u>Change from Baseline</u>
Level	314.2	
Rising	508.9	194.8
Up-Down	407.7	93.5
Pop-Up	485.6	171.4
Falling	241.3	(72.9)
Down-Up	274.4	(39.7)
Pop-Down	239.1	(75.0)
Forward Interest Curve	354.3	40.1
Level Scenario with 0.25% Lower New Money Rate Spread	295.3	(18.8)
Level Scenario with 90% of Lapse on LTC	303.4	(10.8)
Level Scenario with 105% Morbidity on LTC	258.7	(55.5)
Level Scenario with 105% expenses	305.2	(9.0)
Level Scenario with 80% of Mortality on LTC	175.1	(139.1)
Level Scenario with 90% of Mortality on LTC	254.4	(59.8)



- Common Uses of Multivariate/Stochastic Scenario Testing
 - PBR
 - ORSA
 - Economic Capital
 - Deterministic Cash Flow Testing
 - Hedging
 - Reinsurance



- Multivariate
 - Deterministic Scenario with multiple changes
 - 5% higher morbidity, 10% lower mortality and interest rate scenarios



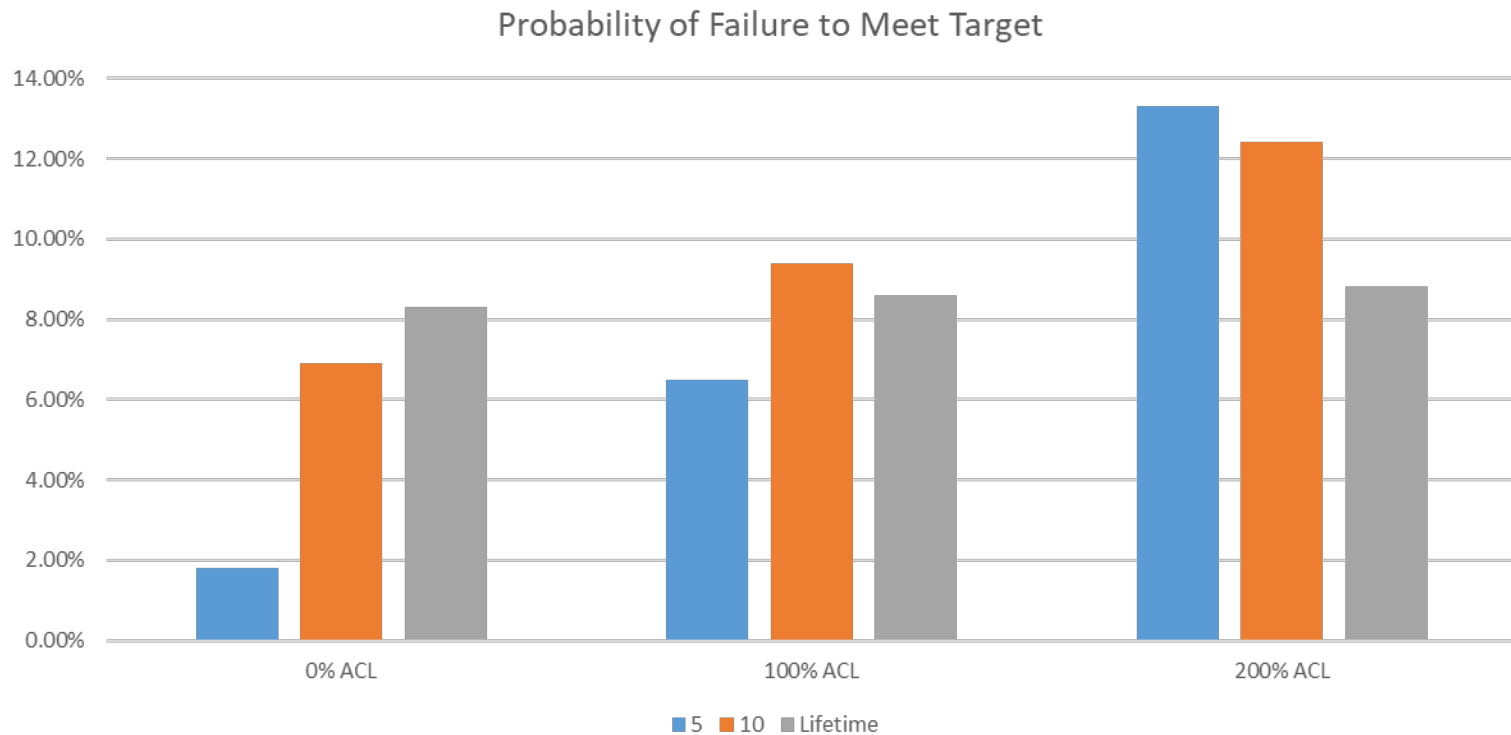
- Stochastic
 - Often requires a distribution in order to generate stochastic scenarios
 - For example, voluntary lapses with a standard deviation of 0.25% reflecting variations in actual experience
 - Computer intensive
 - Alternative is synthetic scenarios



- Example of Multivariate/Stochastic Testing
 - 4 assumptions tested
 - Interest, Lapse, Morbidity, Mortality
 - Based on distribution generated using 225k scenarios



- Example of Multivariate/Stochastic Testing





- Reverse Scenario Testing
 - Understanding what the worst desired outcome is and a combination of assumptions to get there



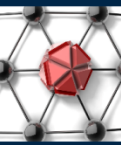
- Common Uses for Reverse Scenario Testing
 - ORSA
 - Risks where confidence in the likelihood, impact, or materiality are not clear
 - Operational risks
 - Determining maximum impacts



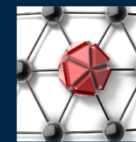
- Examples of Reverse Scenario Testing
- What forces “failure” of Risk Appetite Statement?
- What is the maximum expense that could be incurred in any year?



- Single Variable Test
- LTC Morbidity Example
- In order to maintain 200% RBC in all future years
 - Current Best Estimate assumptions
 - No future rate increases
 - 5.65% increase in all years before reinsurance
 - 35% increase in all years after reinsurance



- Single Variable Test
- LTC Interest Example
- In order to maintain 200% RBC in all future years
 - Current Best Estimate assumptions
 - Forward Interest Rates
 - 1.25% decrease in earned rates in all future years



- Multi-Variable Test
- LTC Morbidity and Interest Example
- In order to maintain 200% RBC in all future years

Morbidity	Interest	Resulting RBC	Benchmark RBC
<u>Increase</u>	<u>Reduction</u>	<u>Ratio</u>	<u>Ratio</u>
0.00%	1.25%	203	200
1.10%	1.00%	202	200
2.17%	0.75%	201	200
3.20%	0.50%	205	200
4.25%	0.25%	203	200
5.25%	0.00%	203	200
6.20%	-0.25%	200	200
7.10%	-0.50%	201	200

Economic Capital & LTC

Dana Hunt, FSA, MAAA, FRM
PwC



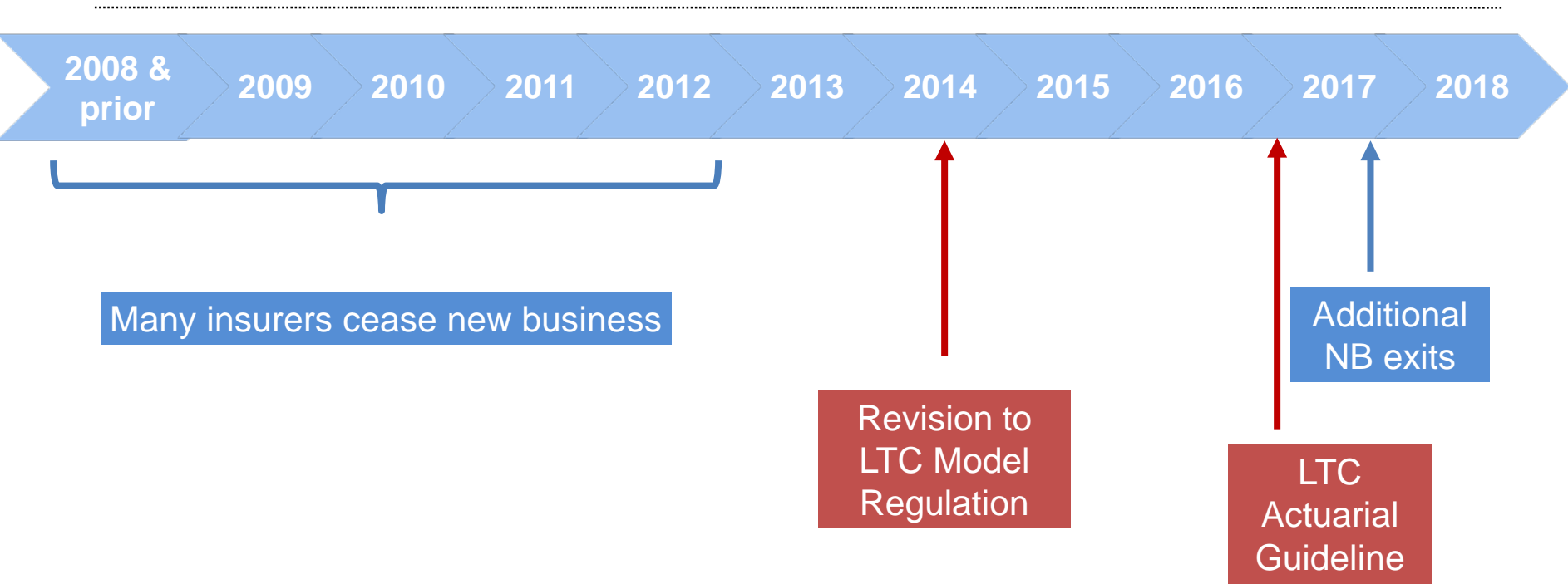
LTC Recent History



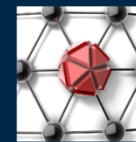
Successive Rounds of Rate Increases filed with DOIs

Substantial reserve increases by LTC insurers

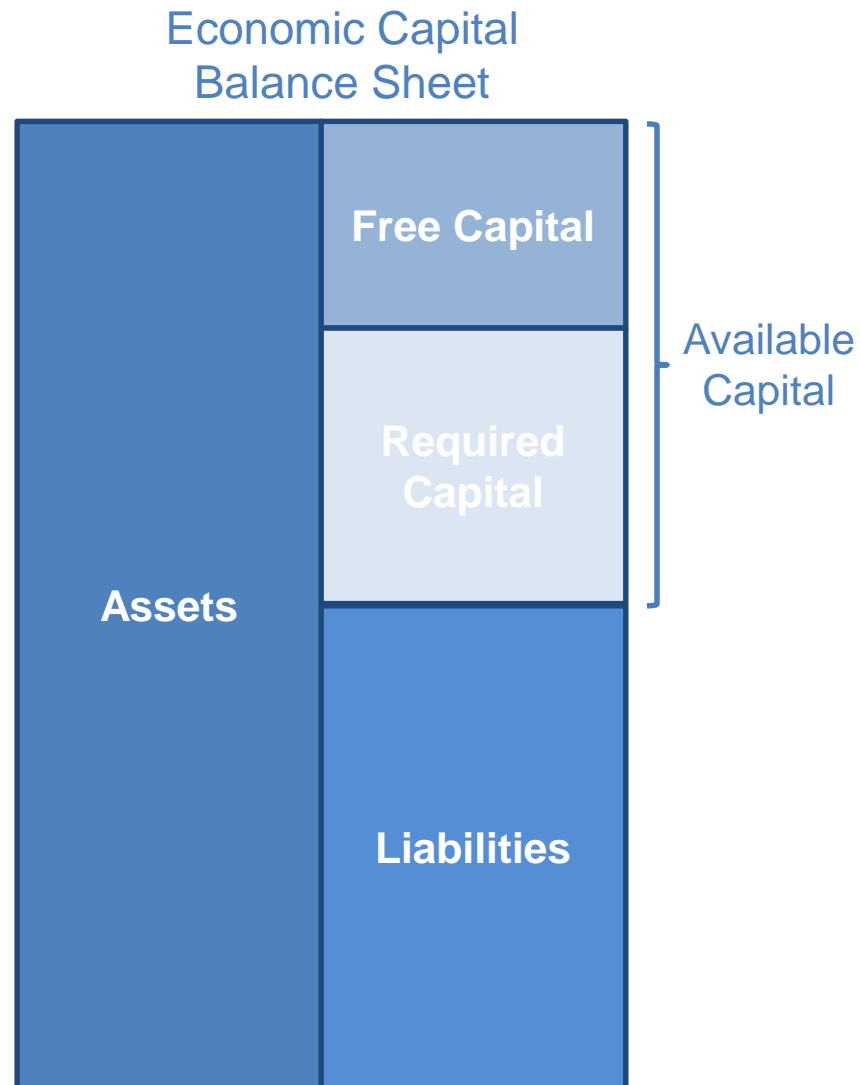
LTC blocks on the market



Economic Capital Overview



- **Required Economic capital (REC):** is the amount of capital that a firm needs to ensure that the company stays solvent given its risk profile. It is a risk measure first and foremost.
- **Available Economic Capital (AEC):** is the amount of capital available in the balance sheet.
- Both AC and REC are based on some definition of the balance sheet. The definition of the balance sheet may be market consistent, real world based, or another measure (i.e. stressing a local valuation basis).
- **Free Capital** is the excess of Available over Required Capital



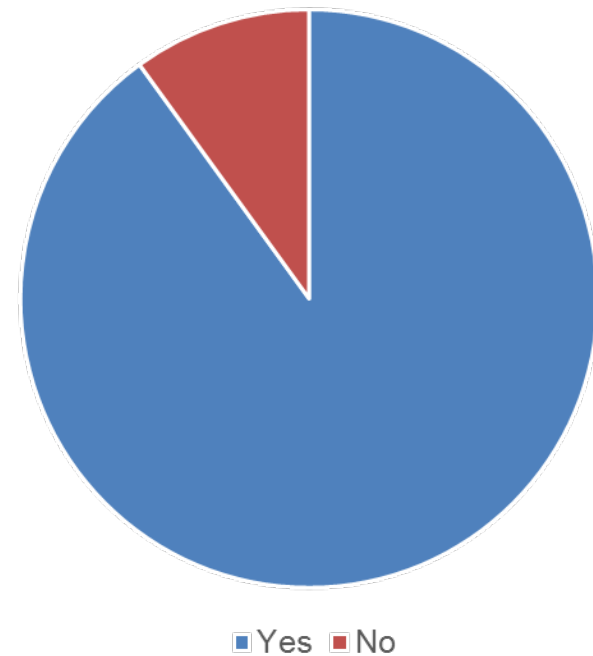
Why Calculate Economic Capital



- Many Boards and Executive teams consider calculation of Economic Capital as **table stakes**
- Recent PwC EC usage survey of US life insurance companies: Nearly all participants (90%) agreed.

Common uses of Economic Capital:

- Capital allocation to the business lines
- Performance targets
- Acquisitions and disposals
- Risk appetite
- Setting limits for management actions
- Incorporation in pricing metrics
- Business planning
- Asset allocation
- Hedging
- Reinsurance decisions



How to calculate Required Capital



Simple example (LTC):

Two risk factors:

Risk Factor	Required economic capital (Standalone)
Mortality	1,200
Interest rates	1,300

Correlation Matrix:

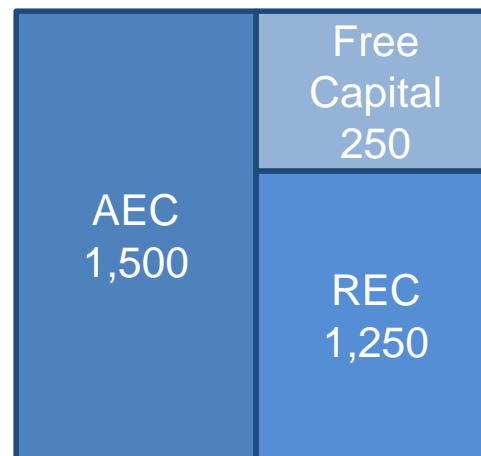
	Mortality	Interest rates
Mortality	100%	-50.24%
Interest rates	-50.24%	100%

How to calculate Required Capital

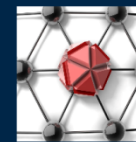


Simple example (LTC) continued:

	Required economic capital (Standalone)	Required economic capital (Diversified)	Diversification benefit (arising from correlations)
Mortality	1,200	525	56.25%
Interest Rates	1,300	725	44.23%
Total	2,500	1,250	50.00%



Product Assumptions Heat Map

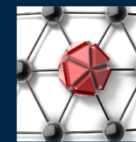


	Whole Life	Term	ULSG	VUL	IUL	LTC
Actuarial Assumptions						
Mortality – Standard	M	H	H	H	H	H
Mortality - Substandard	M	H	H	M	M	M
Lapse/Surrender	M	H	H	M	M	H
Partial Withdrawals			L	L	L	
Dynamic Lapse	L		L	L	L	M
Premium Persistency			H	M	M	
Benefit Utilization						H
Claim Termination			L			H
Rate Increase Approval			L			H
Morbidity Improvement			L			H
Morbidity (including LTC Riders)	L	L	L	L	L	H



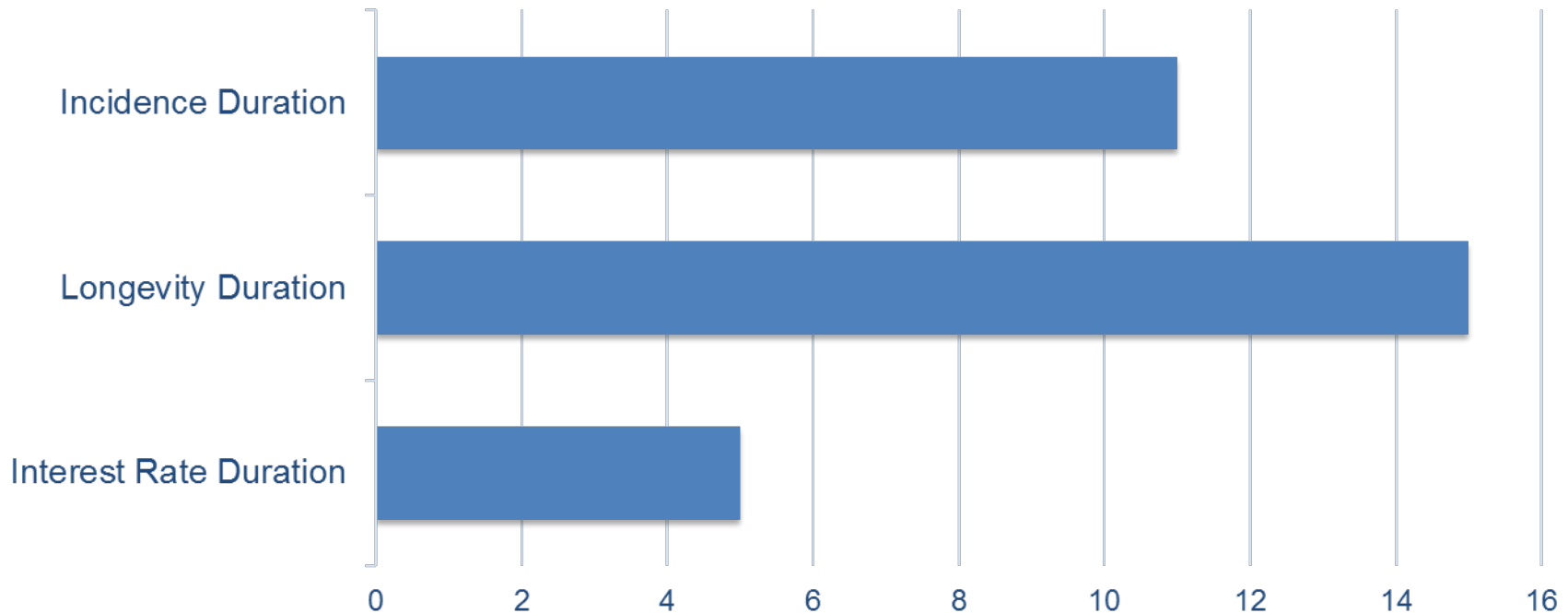
The sample heat map illustrates the number of critical assumptions for Long Term Care as compared to typical insurance products

Relevance to Long Term Care Insurance



Factors to Consider

Lapse	Claim Terminations
Mortality	Interest Rates
Mortality Improvement	Asset Credit Risk
Incidence Rates	Counterparty Risk
Morbidity	Equity Risk
Morbidity Improvement	Expenses
Utilization & Salvage	Rate increases (current & future)
Correlations	Other Management Actions



Assumptions:

- 1) Sensitivities based on 80 year cash flow projections for both active and disabled lives
- 2) Projected cash flow are discounted at Treasury forwards and include benefits, expenses and premiums
- 3) Longevity/incidence durations represent percentage changes in present value of cash flows for a 1 basis point parallel shift in longevity/incidence



Looking back:

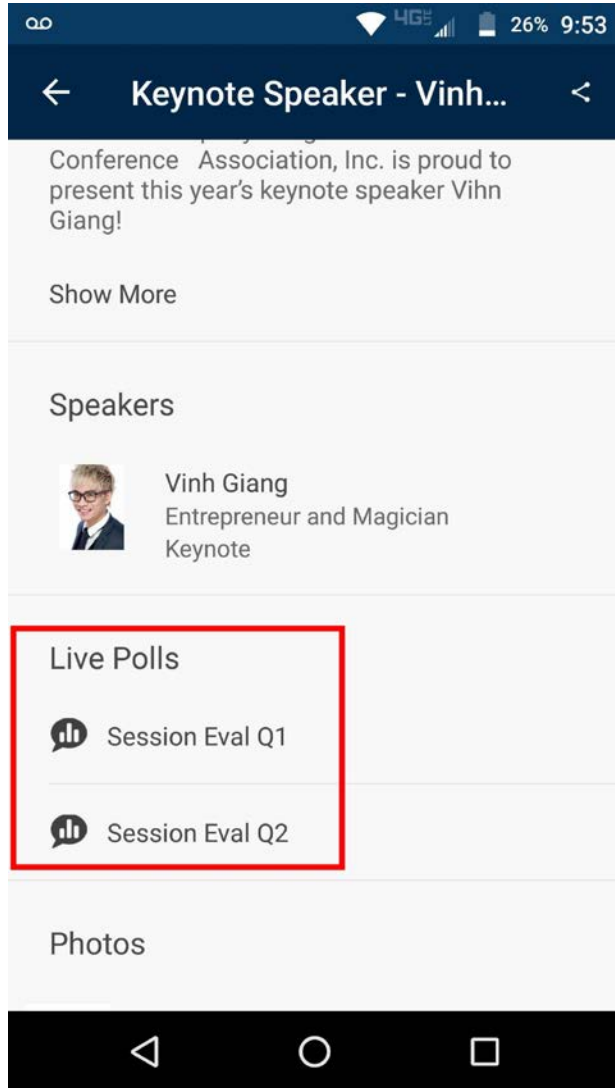
- Earlier recognition events
- Faster strategic decisions
- Earlier repricing
- Earlier requests for rate increases

Looking forward:

- Active involvement from LTC actuaries in EC assumptions
- Greater understanding of the risks and “what if’s”
- View of LTC position relative to rest of business
- New potential strategic decisions

EC’s benefits include review and challenge from the enterprise and potential new solutions.

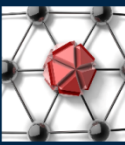
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