

MEETING MATERIALS PACKET
LIFE ACTUARIAL (A) TASK FORCE
March 14-15, 2023
NAIC FALL NATIONAL MEETING

March 14 - 15, 2023

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Draft date: 3/4/24

2024 Spring National Meeting
Phoenix, Arizona

LIFE ACTUARIAL (A) TASK FORCE

Thursday, March 14, 2024

8:00 a.m. – 4:30 p.m.

Sheraton—Valley of the Sun Ballroom C–E—Level 2

Friday, March 15, 2024

8:00 a.m. – 11:00 a.m.

Sheraton—Valley of the Sun Ballroom C–E—Level 2

ROLL CALL

Member

Cassie Brown, Chair
Scott A. White, Vice Chair
Mark Fowler
Lori K. Wing-Heier
Ricardo Lara
Peni “Ben” Itula Sapini Teo
Andrew N. Mais
Dana Popish Severinghaus
Amy L. Beard
Doug Ommen
Vicki Schmidt
Timothy N. Schott
Grace Arnold
Chlora Lindley-Myers
Eric Dunning
D.J. Bettencourt
Justin Zimmerman
Adrienne A. Harris
Judith L. French
Glen Mulready
Michael Humphreys
Jon Pike

Representative

Rachel Hemphill
Craig Chupp
Sanjeev Chaudhuri
Sharon Comstock
Ahmad Kamil
Elizabeth Perri
Wanchin Chou
Vincent Tsang
Scott Shover
Mike Yanacheak
Nicole Boyd
Marti Hooper
Fred Andersen
William Leung
Michael Muldoon
Jennifer Li
Seong-min Eom
Bill Carmello
Peter Weber
Andrew Schallhorn
Steve Boston
Tomasz Serbinowski

State

Texas
Virginia
Alabama
Alaska
California
American Samoa
Connecticut
Illinois
Indiana
Iowa
Kansas
Maine
Minnesota
Missouri
Nebraska
New Hampshire
New Jersey
New York
Ohio
Oklahoma
Pennsylvania
Utah

NAIC Support Staff: Scott O’Neal/Jennifer Frasier



AGENDA

Thursday, March 14, 2024

- | | |
|--------------------|--|
| 8:00 – 8:15 a.m. | 1. Call to Order/Roll Call/Consider Adoption of its Minutes and Written Subgroup Reports— <i>Rachel Hemphill (TX)</i> |
| 8:15 – 9:15 a.m. | 2. Consider Adoption of the Report of the Valuation Manual (VM)-22 (A) Subgroup and Hear Update on the VM-22 Field Test— <i>Ben Slutsker (MN), Chris Conrad (American Academy of Actuaries—Academy), Angela McShane (Ernst and Young), and Sean Abate (Ernst and Young)</i> |
| 9:15 – 9:30 a.m. | Break |
| 9:30 – 10:30 a.m. | 3. Discuss Comments Received on Potential Group Annuity Mortality Experience Data Collection, and Consider Adoption of the Experience Reporting (A) Subgroup Report— <i>Fred Andersen (MN)</i> |
| 10:30 – 11:15 a.m. | 4. Hear a Presentation on Updated VM-21, Requirements for Principle-Based Reserves for Variable Annuities, Standard Projection Amount Assumptions, and Consider Adoption of the Variable Annuities Capital and Reserve (E/A) Subgroup Report— <i>Pete Weber (OH) and Joel Sklar (Society of Actuaries—SOA)</i> |
| 11:15 – 12:00 a.m. | 5. Discuss VM-20, Requirements for Principle-Based Reserves for Life Products, Historical and Future Mortality Improvement Factors— <i>Marianne Purushotham (SOA)</i> |
| 12:00 – 1:15 p.m. | Lunch |
| 1:15 – 2:15 p.m. | 6. Discuss Comments Received on the Generator of Economic Scenarios (GOES) Acceptance Criteria and Consider Adoption of the GOES (E/A) Subgroup Report— <i>Mike Yanacheak (IA)</i> |
| 2:15 – 2:30 p.m. | Break |
| 2:30 – 2:45 p.m. | 7. Discuss <i>Actuarial Guideline LIII—Application of the Valuation Manual for Testing the Adequacy of Life Insurer Reserves (AG 53)</i> — <i>Fred Andersen (MN)</i> |



- | | |
|------------------|--|
| 2:45 – 3:15 p.m. | 8. Hear a Presentation on Asset-Intensive Reinsurance Ceded Offshore— <i>Patricia Matson (Academy) and Alan Routhenstein (Academy)</i> |
| 3:15 – 4:30 p.m. | 9. Discuss a Proposal to Require Asset Adequacy Analysis for Certain Reinsurance— <i>Fred Andersen (MN)</i> |

Friday, March 15, 2024

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|-------------------|--|
| 8:00 – 8:20 a.m. | 10. Hear an Update on Society of Actuaries (SOA) Research and Education— <i>R. Dale Hall (SOA) and Ann Weber (SOA)</i> |
| 8:20 – 8:35 a.m. | 11. Hear an Update from the Academy Council on Professionalism and Education— <i>Lisa Slotznick (Academy, Committee on Qualifications), Laura Hanson (Actuarial Standards Board—ASB), and Shawna Ackerman (Actuarial Board for Counseling and Discipline—ABCD)</i> |
| 8:35 – 8:50 a.m. | 12. Consider Re-Exposure of Amendment Proposal Form (APF) 2024-01 |
| 8:50 – 9:05 a.m. | 13. Hear an Update from the Academy Life Practice Council — <i>Amanda Barry-Moilanen (Academy)</i> |
| 9:05 – 9:20 a.m. | Break |
| 9:20 - 9:40 a.m. | 14. Consider Re-Exposure of APF 2023-13 |
| 9:40 – 11:00 a.m. | 15. Discuss Any Other Matters Brought Before the Task Force |
| 11:00 a.m. | Adjournment |

Agenda Item 1
Consider Adoption of its Minutes
and Written Subgroup Reports

Life Actuarial (A) Task Force
Virtual Meeting
February 29, 2024

The Life Actuarial (A) Task Force met Feb. 29, 2024. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill (TX); Lori K. Wing-Heier represented by Sharon Comstock (AK); Mark Fowler represented by Sanjeev Chaudhuri (AL); Ricardo Lara represented by Ahmad Kamil and Thomas Reedy (CA); Andrew N. Mais represented by Wanchin Chou (CT); Dana Popish Severinghaus represented by Vincent Tsang (IL); Amy L. Beard represented by Scott Shover (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); D.J. Bettencourt represented by Jennifer Li (NH); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); Glen Mulready represented by Andrew Schallhorn (OK); Michael Humphreys represented by Steve Boston (PA); and Jon Pike represented by Tomasz Serbinowski (UT).

1. Adopted APF 2023-12

Andersen made a motion, seconded by Leung, to adopt amendment proposal form (APF) 2023-12.

2. Adopted APF 2024-02

Weber made a motion, seconded by Reedy, to adopt APF 2024-02.

Having no further business, the Life Actuarial (A) Task Force adjourned.

Life Actuarial (A) Task Force
Virtual Meeting
February 15, 2024

The Life Actuarial (A) Task Force met Feb. 15, 2024. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill (TX); Scott A. White, Vice Chair, represented by Craig Chupp (VA); Lori K. Wing-Heier represented by Sharon Comstock (AK); Mark Fowler represented by Sanjeev Chaudhuri (AL); Peni Itula Sapini Teo represented by Liz Perri (AS); Ricardo Lara represented by Ahmad Kamil (CA); Andrew N. Mais represented by Wanchin Chou (CT); Dana Popish Severinghaus represented by Vincent Tsang (IL); Amy L. Beard represented by Scott Shover (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); D.J. Bettencourt represented by Jennifer Li (NH); Justin Zimmerman represented by Seong-min Eom and David Wolf (NJ); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); Glen Mulready represented by Andrew Schallhorn (OK); Michael Humphreys represented by Steve Boston (PA) and Jon Pike represented by Tomasz Serbinowski (UT).

1. Discussed APF 2024-03

Andersen provided background on amendment proposal form (APF) 2024-03 (Attachment A), noting that the primary goals of the amendment were to: 1) provide state insurance regulators with what is needed to review the reserves and solvency of life insurers; 2) steer clear of conflict with reciprocal jurisdiction and covered agreement issues; and 3) avoid unnecessary work for U.S. ceding companies where there is an immaterial risk. Tsang noted the potential for companies having to calculate stand-alone asset adequacy testing (AAT) for many treaties where they are ceding business and asked whether a deficiency determined in the testing for one treaty would be able to be offset by sufficiency in another treaty. Andersen noted that could be one of the questions up for additional discussion at the upcoming Spring National Meeting. Yanacheak noted some skepticism that this issue could be appropriately addressed through asset adequacy analysis and said this seems to be more of a credit for reinsurance issue. Leung said that some asset adequacy analysis standards may not be applicable on a gross basis, as the reinsurer is likely to have different assumptions than the ceding company.

Brian Bayerle (American Council of Life Insurers—ACLI) said that it feels like the Task Force is moving toward a solution without first fully identifying the problem and that this may not be a problem for the Task Force to solve. Bayerle further stated that the ACLI felt that exposing APF 2024-03 would limit the discussion to a narrow set of solutions rather than a broader potential set. Hemphill replied that the purpose of exposing APF 2024-03 would be to promote additional discussion and that the exposure would allow progress toward a concrete solution rather than just speaking high-level about the issue. Hemphill suggested including questions in the exposure to facilitate additional discussion.

After further discussion, the Task Force did not elect to expose APF 2024-03 and instead planned to discuss the issue further during the Spring National Meeting.

Having no further business, the Life Actuarial (A) Task Force adjourned.

Life Actuarial (A) Task Force
Virtual Meeting
February 8, 2024

The Life Actuarial (A) Task Force met Feb. 8, 2024. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill and Francesco Ugo De Gobbi (TX); Scott A. White, Vice Chair, represented by Craig Chupp (VA); Lori K. Wing-Heier represented by Sharon Comstock (AK); Mark Fowler represented by Sanjeev Chaudhuri (AL); Ricardo Lara represented by Ahmad Kamil (CA); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Amy L. Beard represented by Scott Shover (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); D.J. Bettencourt represented by Jennifer Li (NH); Justin Zimmerman represented by Seong-min Eom and David Wolf (NJ); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); and Michael Humphreys represented by Steve Boston (PA).

1. Exposed APF 2024-02

De Gobbi walked through amendment proposal form (APF) 2024-02, which would correct an apparent omission to require documentation of governance in the VM-31, PBR Actuarial Report Requirements for Business Subject to a Principle-Based Valuation, for business subject to VM-21, Requirements for Principle-Based Reserves for Variable Annuities.

Chupp made a motion, seconded by Muldoon, to deem APF 2024-02 (Attachment A) non-substantive and expose for a seven-day public comment period ending Feb. 15. The motion passed unanimously.

2. Discussed a Proposal to Require Asset Adequacy Analysis for Life and Annuity Reinsurance Transactions

Wolf provided background on a proposal to require asset adequacy analysis for life and annuity reinsurance transactions (Attachment B). Wolf noted that over the past few years, regulators have seen an increase in reinsurance transactions both in the United States and offshore and that the proposal would require asset adequacy analysis on ceded business by treaty to give regulators more comfort in the solvency of their domiciled companies. Andersen added that this proposal was originally included in *Actuarial Guideline LIII—Application of the Valuation Manual for Testing the Adequacy of Life Insurer Reserves* (AG 53), but it was removed in order to expedite the adoption of the remaining requirements.

Tsang agreed that there was an issue with reinsurance, but he questioned how practical requiring asset adequacy analysis on ceded business would be to address the issue. Tsang added that the reinsurer would likely not manage a separate set of assets for a given cedent's business but instead would pool the business of multiple clients together. Bayerle said that he shared many concerns that were raised by Tsang and also questioned whether an assessment should be performed on AG 53 instead to see if the issues with reinsurance are already materially addressed. Andersen replied that there has been a lot of work reviewing the AG 53 reports, and there was a lot of room for improvement.

Having no further business, the Life Actuarial (A) Task Force adjourned.

Life Actuarial (A) Task Force
Virtual Meeting
February 1, 2024

The Life Actuarial (A) Task Force met Feb. 1, 2024. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill (TX); Scott A. White, Vice Chair, represented by Craig Chupp (VA); Mark Fowler represented by Sanjeev Chaudhuri (AL); Lori K. Wing-Heier represented by Sharon Comstock (AK); Ricardo Lara represented by Ahmad Kamil (CA); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Amy L. Beard represented by Scott Shover (IN); Vicki Schmidt represented by Nicole Boyd (KS); Timothy N. Schott represented by Marti Hooper (ME); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); D.J. Bettencourt represented by Jennifer Li (NH); Justin Zimmerman represented by Seong-min Eom (NJ); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); Glen Mulready represented by Andrew Schallhorn (OK); Michael Humphreys represented by Steve Boston (PA); and Jon Pike represented by Tomasz Serbinowski (UT).

1. Adopted its 2023 Fall National Meeting Minutes

Chupp discussed three editorial changes that he wanted to be addressed in the Task Force's 2023 Fall National Meeting minutes packet.

Yanacheak made a motion, seconded by Weber, to adopt the Task Force's Fall National Meeting minutes with the editorial changes suggested by Chupp (see *NAIC Proceedings - Fall 2023, Life Actuarial (A) Task Force*). The motion passed unanimously.

2. Re-Exposed APF 2023-12

Andersen introduced amendment proposal form (APF) 2023-12, which would require that the volatility of equity investments be reflected in asset adequacy analysis. Craig Morrow (American Academy of Actuaries—Academy), Brian Bayerle (American Council of Life Insurers—ACLI), and Martin Mair (MetLife) walked through their groups' respective comment letters (Attachments A-C).

Andersen made a motion, seconded by Chupp, to re-expose APF 2023-12 for a 15-day public comment period ending Feb. 16. The motion passed unanimously.

3. Re-Exposed APF 2023-13

After Leung introduced APF 2023-13, which would allow international mortality tables to be used for international business reinsured in the U.S., Bayerle and Connie Tang (Retired) walked through their respective comment letters (Attachment D and Attachment E). Hemphill noted some concerns with the potential for companies to utilize a foreign mortality table without margins in their principle-based valuations. Leung replied that this could be considered during an additional exposure period.

Leung made a motion, seconded by Schallhorn, to re-expose APF 2023-13 for a 21-day public comment period ending Feb. 23. The motion passed unanimously.

Having no further business, the Life Actuarial (A) Task Force adjourned.

Life Actuarial (A) Task Force
Virtual Meeting
January 25, 2024

The Life Actuarial (A) Task Force met Jan. 25, 2024. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill (TX); Scott A. White, Vice Chair, represented by Craig Chupp (VA); Lori K. Wing-Heier represented by Sharon Comstock (AK); Mark Fowler represented by Sanjeev Chaudhuri (AL); Peni 'Ben' Itula Sapini Teo represented by Liz Perri (AS); Ricardo Lara represented by Ahmad Kamil (CA); Andrew N. Mais represented by Wanchin Chou (CT); Dana Popish Severinghaus represented by Vincent Tsang (IL); Amy L. Beard represented by Scott Shover (IN); Vicki Schmidt represented by Nicole Boyd (KS); Timothy N. Schott represented by Marti Hooper (ME); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); D.J. Bettencourt represented by Jennifer Li (NH); Justin Zimmerman represented by Seong-min Eom (NJ); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); Glen Mulready represented by Andrew Schallhorn (OK); Michael Humphreys represented by Steve Boston (PA); and Jon Pike represented by Tomasz Serbinowski (UT).

1. Adopted APF 2023-11

Hemphill walked through amendment proposal form (APF) 2023-11, noting that the intention of the changes was to ensure that references in the *Valuation Manual* (VM) were consistent with the purpose of risk-based capital (RBC). Brian Bayerle (American Council of Life Insurers—ACLI) addressed the ACLI's comment letter (Attachment A), noting its support for adoption of APF 2023-11.

Chupp made a motion, seconded by Leung, to adopt APF 2023-11. The motion passed unanimously.

2. Exposed APF 2024-01

Hemphill introduced APF 2024-01, which would define the term “qualified actuary” in the VM. Rhonda Ahrens (Thrivent) stated she was concerned with the potential of the new definition requiring all qualified actuaries performing work on different lines of business to meet the appointed actuary requirements when that may not be necessary. Hemphill noted that was not the intention of the APF and that the Task Force was open to suggested edits.

Andersen made a motion, seconded by Chupp, to expose APF 2024-01 (Attachment B) for a 30-day public comment period ending Feb. 21. The motion passed unanimously.

3. Discussed a Memorandum on Permitted Practices

Hemphill walked through a memorandum (Attachment C) from the Statutory Accounting Principles (E) Working Group that clarified that permitted practices shall not be used to deviate below the VM minimums. Shover asked whether permitted practices that clarified a vague reserve standard would be allowed. Hemphill responded that a Valuation Analysis (E) Working Group meeting would be the appropriate forum to address those questions. Serbinowski noted the difficulty in determining what is included in the VM for purposes of the memorandum, providing the example of references to actuarial guidelines and whether permitted practices would be allowed by those actuarial guidelines. Hemphill replied that NAIC legal staff could look to provide a response on items referenced in the VM and whether permitted practices would be allowed on those items.

Tsang asked whether the restrictions on permitted practices for RBC applied to just the formula and associated factors or if they applied to any permitted practice that changed the required capital amount. Hemphill said that permitted practices were not allowed on any factor or formula that would directly alter the RBC framework.

Having no further business, the Life Actuarial (A) Task Force adjourned.

March 14, 2024

From: Fred Andersen, Chair
Indexed Universal Life (IUL) Illustration (A) Subgroup

To: Rachel Hemphill, Chair
The Life Actuarial (A) Task Force

Subject: The Report of the Indexed Universal Life (IUL) Illustration (A) Subgroup (IUL Illustration SG) to the Life Actuarial (A) Task Force

The IUL Illustration SG has not met since the adoption of group's main work product, revisions to Actuarial Guideline 49A, by the Life Actuarial (A) Task Force on December 11, 2022. The revisions to Actuarial Guideline 49A were subsequently adopted by the NAIC's Executive (EX) Committee and Plenary at the Spring National Meeting on March 25. Regulators are reviewing the impact of the Guideline revisions on the market.

March 14th, 2024

From: Seong-min Eom, Chair
The Longevity Risk (E/A) Subgroup

To: Rachel Hemphill, Chair
The Life Actuarial (A) Task Force

Subject: The Report of the Longevity Risk (E/A) Subgroup to the Life Actuarial (A) Task Force

The Longevity Risk (E/A) Subgroup has not met since the 2023 Fall National Meeting. The subgroup will resume the meetings once the currently exposed VM-22 PBR methodology is finalized and adopted to develop and recommend longevity risk factor(s) for the product(s) that were excluded from the application of the current longevity risk factors.

Agenda Item 2

Report of the Valuation Manual (VM)-22 Subgroup
and Hear Update on the VM-22 Field Test
(The Excel File in this Agenda item can be
Found on the LATF Webpage)

March 14, 2024

From: Ben Slutsker, Chairperson
Elaine Lam, Vice Chairperson
The VM-22 (A) Subgroup

To: Rachel Hemphill, Chair
The Life Actuarial (A) Task Force

Subject: The Report of the VM-22 (A) Subgroup to the Life Actuarial (A) Task Force

The NAIC VM-22 (A) Subgroup has met three times since the Fall meeting. The focus of these calls have continued to be on liability assumptions for the Standard Projection Amount (SPA) and VM-31 disclosures. In addition, the Subgroup has since welcomed Elaine Lam (CA) as Vice Chairperson of the Subgroup and Chairperson of the VM-22 SPA policyholder behavior assumptions drafting group.

For the SPA liability assumptions, recent discussions have primarily focused on mortality and dynamic lapse assumptions. Over December and January, there was an exposure of the drafting group dynamic lapse assumption proposal, with additional comparisons to an Academy proposal and the New York Special Considerations Letter methodology. The Subgroup anticipates discussing comments on this exposure in the coming month. In addition, the Subgroup also plans to hear a proposal from the drafting group on non-indexed fixed deferred annuity surrender assumptions. Once the remaining liability assumptions are discussed, there will be an exposure of the VM-22 SPA requirements with a full set of tentative assumptions. These assumptions will then be further tested during the VM-22 field test.

VM-31 disclosures, VM-G governance requirements, and a supplement blank for the Annual Statement have also been discussed in the VM-22 Subgroup recently. Comments from an exposure last fall will continue to be a key topic on upcoming calls. Some of the main issues being discussed are non-guaranteed element disclosures, a section on payout annuities that automatically pass the exclusion test, and whether to make a separate VM-31 section for non-variable annuities.

After VM-31 disclosures and SPA assumptions are discussed, the VM-22 Subgroup will turn its attention to the upcoming VM-22 field test. This is a joint field test sponsored by the NAIC, American Academy of Actuaries, and ACLI scheduled to take place this summer. EY has been hired as a consultant to manage the field test and help analyze results. Field test specifications will be further discussed during the Life Actuarial (A) Task Force session at the National Meeting in March.

The goal for the Subgroup continues to be adoption for an initial effective date of 1/1/2026, accompanied by a three year implementation period that ends on 1/1/2029, after which PBR will become mandatory for non-variable annuity contracts on a prospective basis.

Draft: 02/29/24

Valuation Manual (VM)-22 (A) Subgroup
Virtual Meeting
February 28, 2024

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met Feb. 28, 2024. The following Subgroup members participated: Ben Slutsker, Chair (MN); Elaine Lam, Vice-Chair (CA); Lei Rao-Knight (CT); Mike Yanacheak (IA); Vincent Tsang (IL); Nicole Boyd (KS); William Leung (MO); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill and Iris Huang (TX); and Tomasz Serbinowski (UT).

1. Discussed Comments Received on the VM-G Draft

Slutsker said the Subgroup would be discussing comments received on the VM-G, Appendix G – Corporate Governance Guidance for Principle-Based Reserves draft exposed with edits for VM-22, Requirements for Principle-Based Reserves for Non-Variable Annuities draft. Slutsker clarified that the VM-G draft exposed November 15, 2023, appeared to mark Section 4.A.3.b as new language, however it was a recent addition to the *2024 Valuation Manual* and was included in the draft along with the proposed edits to ensure VM-G was current. Slutsker discussed the American Council of Life Insurers (ACLI) comment that recommends removing the language regarding the responsibilities for qualified actuaries to notify senior management when the company may not be able to use the alternative methodology for all VM-21 business. Hemphill provided several situations where a qualified actuary may find in the coming years the company may become unable to use the alternative methodology and should be having conversations with management. Hemphill described how Sections 4.A.3.a and Sections 4.A.3.b would apply, noting the language in the draft is appropriate as written. Hemphill noted that drafting carve outs on governance should be done in a way that does not apply in situations where senior management should have awareness and oversight in ensuring adequate infrastructure. The Subgroup decided to retain the language in the VM-G draft.

2. Discussed Comments Received on the VM22 Reserves Supplement Blank

Brian Bayerle (ACLI) spoke to the ACLI's comment questioning whether the VM-22 reserving categories and the more granular categories in the VM-22 Reserve Supplement Blank (Supplement) may cause some confusion for companies. Slutsker recommended adding a footnote to clarify that the reserving categories for aggregation purposes are different than the categories requested in the Supplement. The Subgroup decided to add a footnote as suggested and discuss it at a future meeting.

Bayerle and Bruce Friedland (Academy) noted the line descriptions for accumulation type and payout type contract categories both use the term "deferred annuities" which may cause confusion. Carmello suggested using industry terminology such as deferred income annuities. The Subgroup agreed to update the line descriptions for payout annuities to refer to immediate and deferred income annuities.

Slutsker introduced ACLI's next comment that questioned if the Standard Projection Amount (SPA) column should instead be the Additional Standard Projection Amount (ASPA). Slutsker said the SPA column was intentionally included so regulators can see how the calculations work. Tim Ritter (Jackson)

noted that if the SPA for VM-22 worked the same way as in VM-21, then the comparison is not made directly between the stochastic reserve and the SPA. Ritter described the VM-21 SPA process and noted that the ASPA is what impacts the final reported reserve. Slutsker recommended changing the Supplement to report ASPA. Hemphill noted that for regulators reviewing PBR Actuarial Reports, it would be helpful to also have the Prescribed Projections Amount and Buffer Amount columns to make analysis easier. Slutsker noted that the size of the Supplement could get large and may require splitting across multiple pages. The Subgroup agreed to add additional columns to the draft and discuss on a future call.

3. Discussed Comments Received on the VM-31 Draft

Slutsker said the Subgroup would be discussing comments received on the VM-31: PBR Actuarial Report Requirements for Business Subject to a Principle-Based Valuation draft exposed with edits to include references to the proposed VM-22 draft.

Slutsker introduced ACLI's comment regarding the structure of the VM-31. Slutsker stated that while VM-21 and VM-22 products cannot be aggregated, there are a lot of the same required disclosures, and that was the intent behind having one annuities section in VM-31. Bayerle noted that while one annuity section may reduce duplication, it may cause confusion for companies with different qualified actuaries working on VM-21 and VM-22. Bayerle suggested it may be more practical to have the disclosure requirements for VM-22 separate from VM-21. Lam noted the substantial overlap in disclosure requirements may create challenges maintaining consistency across separate sections every time a change is made. The Subgroup decided to continue discussing the benefits during a future meeting.

Slutsker described the Academy's suggestion to modify the VM-22 changes in reserves table in the summary report to show the account value by separate account, general account, and total. Slutsker noted this information could be helpful to PBR Actuarial Report reviewers and Carmello agreed. The Subgroup decided to show the account value decomposition as described in the comment.

Bayerle stated that the contract loans disclosure requirement was in the liability section of VM-31 draft and suggested it be included in the assets section of the Annuity Report. Lam said that policy loans under VM-20 are disclosed in the assets section for life reports under VM-31. Carmello suggested VM-31 be consistent between the life and annuities sections regarding where to put the contract loans disclosures. The Subgroup agreed to be consistent with what was done for life under VM-31.

Slutsker said the Subgroup will discuss the remaining comments on the VM-31 draft during a future meeting.

Having no further business, the Valuation Manual (VM)-22 (A) Subgroup adjourned.

Draft: 03/01/24

Valuation Manual (VM)-22 (A) Subgroup
Virtual Meeting
December 13, 2023

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met Dec. 13, 2023. The following Subgroup members participated: Ben Slutsker, Chair (MN); Elaine Lam (CA); Lei-Rao Knight (CT); Nicole Boyd (KS); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill and Iris Huang (TX); Tomasz Serbinowski (UT); and Craig Chupp (VA).

1. Discussed the VM-22 SPA Draft

Slutsker said that the Subgroup would discuss comments received on the VM-22, Requirements for Principle-Based Reserves for Non-Variable Annuities Standard Projection Amount (SPA). Regarding the choice of withdrawal timing assumptions for the greatest actuarial present value (GAPV), Andrew Jenkins (American Academy of Actuaries—Academy) stated that actuarial judgement is appropriate. Carmello said that he would lean towards an approach where companies are required to assume that policyholder behavior gets more efficient over time, consistent with VM-21, Requirements for Principle-Based Reserves for Variable Annuities, to which Serbinowski and Huang agreed. After further discussion, the Subgroup decided to move forward with language that required increasing policyholder efficiency over time and withdrawal assumptions for the GAPV that would materially realize the value of the product.

Karl Lund (Academy) walked through the Academy's recommendation for a dynamic lapse formula and compared it to a proposal from the VM-22 SPA Policyholder Behavior Drafting Group (VM-22 SPA PHB DG). Lam stated that one of the key differences between the proposals was that the Academy's formula behaved in a more linear fashion while the VM-22 SPA PHB DG's formula had exponential characteristics that they felt made more sense. Lam also discussed the potential for adding a feature in the formula based off of the guaranteed minimum interest rate (GMIR), but noted that the additional complexity may not be worth it in the SPA. Lam also stated that the VM-22 SPA PHB DG preferred a higher buffer factor (that controls when the dynamic formula applies) than what the Academy recommended. Carmello said that he felt the GMIR should be factored into the dynamic lapse formula, and that the Academy proposal resulted in lapses that were too low. Hemphill asked whether updating the dynamic lapse formula to account for the GMIR would be able to be completed quickly, or if it would need to be changed in VM-22 down the line. Lam noted that the group would need to work to determine how the GMIR could be incorporated.

Slutsker, as Chair of the Subgroup, exposed the proposals for the dynamic lapse formula for a 59-day public commenter period ending Jan. 31.

2. Other Matters

Slutsker noted that Vincent Tsang (IL) would be stepping down as the Chair of the VM-22 SPA PHB DG and thanked him for the work that he had done. Slutsker then congratulated Lam on becoming the new Chair of the drafting group.

Having no further business, the Valuation Manual (VM)-22 (A) Subgroup adjourned.

Draft: 02/05/24

Valuation Manual (VM)-22 (A) Subgroup
Virtual Meeting
January 31, 2024

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met Jan. 31, 2024. The following Subgroup members participated: Ben Slutsker, Chair (MN); Elaine Lam, Vice-Chair (CA); Mike Yanacheak (IA); Vincent Tsang (IL); Nicole Boyd (KS); William Leung (MO); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill and Iris Huang (TX); and Craig Chupp (VA).

1. Heard Updates on Mortality Assumptions for the SPA

Eom said that the VM-22 SPA Mortality Drafting Group (drafting group), the American Academy of Actuaries (Academy) Annuity Reserves and Capital Work Group, the Society of Actuaries (SOA) Group Annuity Experience Committee (Group Annuity Committee), SOA Individual Annuity Experience Committee, state insurance regulators, and industry subject matter experts developed these VM-22, Requirements for Principle-Based Reserves for Non-Variable Annuities Standard Projection Amount (SPA) mortality assumptions. Eom emphasized that even if these assumptions are exposed, modified and adopted for the field test, there will be opportunities to finalize them for the VM-22 implementation.

2. Heard a Presentation on VM-22 Standard Projection Amount Group Annuity Mortality Assumptions

Kristin Gustafson (Society of Actuaries—SOA) presented the group annuity mortality joint recommendation (Attachment 1) of the SOA Group Annuity Experience Committee (Group Annuity Committee) and the American Academy of Actuaries (Academy) Annuity Reserves and Capital Work Group. Chupp asked if there would be separate tables for blue-collar and white-collar, and a total PRI 2012 Private Retirement Plans Mortality Table (PRI 2012). Gustafson clarified the recommendation for the blue-collar and white-collar guidance provided is referenced from the SOA Retirement Plans Experience Committee (RPEC) PRI-2012 Report. Gustafson said the proposal would allow companies to either assign blue-collar or white-collar on a contract-by-contract basis (or a weighted basis across the block based on company-specific inforce population) or use the total table. Eom noted the drafting group will need to refine the language to provide flexibility but allow for the opportunity to split depending on the population.

Carmello noted that the drafting group appears to be leaning towards blue-collar and white-collar splits even though there was not enough credibility to have such splits in SOA Group Annuity Committee studies. Gustafson said the Group Annuity Committee studies have had union and non-union identifiers as well as hourly and salary indicators in the data call specifications for years, but the data is generally blank for most participants. Gustafson explained the tables recommended here were developed by the RPEC based on ongoing retirement plans instead of terminated plans that purchased a group annuity. Gustafson stated the recommendation to use the PRI-2012 tables was because 1) RPEC had a broader set of data and was able to assign the union and salary categories better than the Group Annuity

Committee 2) the group annuity tables and retirement tables are similar in aggregate and 3) there is credibility to split mortality by blue-collar and white-collar indicators.

Eom suggested the Subgroup use the approach outlined because the current group annuity mortality tables (i.e., GAR) do not have distinctions such as blue-collar and white-collar splits or active employee and retiree splits.

3. Heard a Presentation on VM-22 Standard Projection Amount Proposed Mortality Adjustment Factors for Individual Annuities

Joel Sklar (SOA) presented the SOA Individual Annuity Experience Committee recommendations for mortality adjustment factors for fixed deferred annuities (including fixed indexed annuities), individual payout annuities, and structured settlement annuities (Attachment 2). Carmello asked how, if any, margins were included in the recommendations. Sklar clarified that these mortality adjustment factors do not include margins.

4. Next Steps

Slutsker said the mortality assumptions presented today for group annuities, fixed deferred annuities, payout annuities, and structured settlements will be the basis for the direction the Subgroup takes in terms of the next VM-22 exposure.

5. Other matters

Slutsker announced that Elaine Lam agreed to take on the role of Vice-Chair for the Subgroup. Having no further business, the Valuation Manual (VM)-22 (A) Subgroup adjourned.

SharePoint/NAIC Support Staff Hub/Member Meetings/A CMTE/LATF/2024-1-Spring/VM-22 Calls/01 31/Jan 31 Minutes.docx

VM-22 Field Test Specifications: A Presentation by the American Academy of Actuaries' Annuity Reserves and Capital Sub-Committee (ARCS)

NAIC Life Actuarial Task Force

March 14, 2024

Phoenix, AZ

Introduction

ARCS has been actively supporting LATF's efforts to implement PBR in VM-22

1. June 2020: Presentation to the NAIC VM-22 Subgroup on the preliminary framework elements for Fixed Annuity PBR
2. On more than 10 occasions, ARCS has submitted presentations and/or comment letters with discussions of VM-22 elements
3. In 2021-2022, ARCS engaged WTW to assist in developing reasonable assumptions for the Standard Projection Amount:
 - a) Final report of their work was presented to VM-22 work group in 2022.
 - b) ARCS and WTW representatives participated in meetings of the various workstreams of the VM-22 work group during 2022.

Now working to assist LATF in preparing for the field test of VM-22

- A. June 2022: ARCS drafted preliminary specifications for the field test, complete with a template for the collection of data
- B. December 2023: [LATF or VM-22 Subgroup) exposed the draft preliminary specifications for public comment
- C. December 2023: Academy joined with NAIC and ACLI in engaging EY to:
 - a) Assist all parties in the preparation for, conduct of, and analysis of the field test results.
 - b) EY will also develop a model office implementation of the VM-22 specifications, using results from that model office to compare results with those from the field test and to assess products and/or scenarios which might be difficult for participants in the field test.

Introduction (cont.)

First Task: prepare field test specifications for presentation to LATF and public exposure

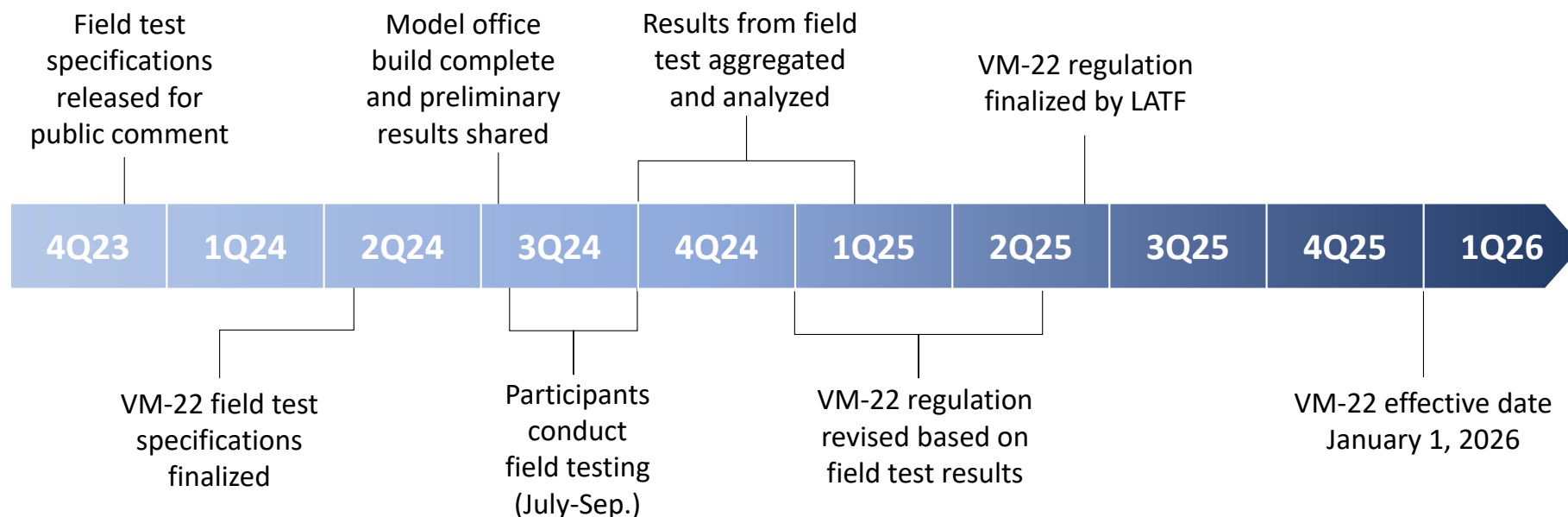
January 2024: EY reviews preliminary draft specifications from ARCS, providing comments and suggestions to the three parties.

February 2024: NAIC, ACLI, Academy and EY representatives meet weekly to review specifications and seek consensus.

- The draft specifications circulated with the materials for this meeting are the product of those meetings.
- We will now hear from EY which, after introducing the overall timeline expected for this VM-22 work, will talk through the highlights of the specifications which ARCS has submitted for LATF's consideration.

Target VM-22 Timeline

VM-22 field test timeline and key milestones are provided below:



Overview of Field Test Specifications

Key objectives of the field test include the following items:



Measurement of Business Impacts

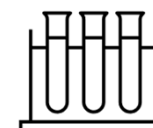
Measure the impact on actual business of the proposed reserve and capital frameworks relative to the current standards to ensure frameworks are working as intended.



Uphold Principles

At a high-level, ensure pillars of framework are met:

- Appropriate Reflection of Risk
- Comprehensive
- Consistency Across Products
- Practicality and Appropriateness



Assess Open Design Decisions

Test the impact of key open VM-22 design decisions:

- Aggregation
- Reinvestment guardrail mix
- Stochastic Exclusion Ratio Test threshold
- Standard Projection Amount (SPA) assumptions

Overview of Field Test Specifications (cont.)



In-scope product classes:

Deferred Annuities with Guaranteed Living Benefits	Deferred Annuities without Guaranteed Living Benefits	Payout Annuities
<ul style="list-style-type: none"> Fixed Indexed Annuities (FIAs) with GLBs Fixed Deferred Annuities (FDAs) with GLBs 	<ul style="list-style-type: none"> FIAs without GLBs FDAs without GLBs 	<ul style="list-style-type: none"> Single Premium Immediate Annuities (SPIAs) Pension Risk Transfer (PRT) Deferred Income Annuities (DIAs) Structured Settlement Contracts (SSCs)

All results should be consolidated and summarized in total and by each of these three product categories

Overview of Field Test Specifications (cont.)

Other Specifications:



Populations

- At least 10 years of actual in-force business
- 12/31/2023 valuation date



Assumptions

- Asset assumptions as outlined currently in draft VM-22
- Companies must set prudent estimate assumptions for mortality, policyholder behavior, expenses, hedging, etc.
- Companies must set and disclose margins, or use suggested margins provided
- Standard Projection Amount assumptions and GOES scenarios to be determined before field test begins



Required Metrics

- CARVM and C3P1
- Scenario reserves
- Exclusion test
- Standard projection amount
- Sensitivities
- Survey questions
- Projected reserves (if possible)

Overview of Model Office

EY will be developing a Moody's AXIS-based model office to support the field test



Overview

Model office specifications were recently finalized, after rounds of discussions between EY, NAIC, ACLI and Academy personnel. The specifications were also refined as per feedback provided by ACLI member companies and ARCS.



Objectives

- Produce results to analyze VM22 framework on a **representative set of products**, under various sensitivities and scenarios
- Provide **first cut of analysis** in advance of field test commencement, to get ahead of any unexpected test-related results or issues
- Perform further ad-hoc analysis and sensitivities to **lighten the load** on the number of runs being demanded of industry participants
- **Establish a forum** with industry participants while field test is in progress, to triage emerging issues and provide support
- Assess products, scenarios or projections **which may not be feasible** for participants in the field test

Overview of Model Office (cont.)

Model office specifications

The table below provides a summary of the model office product chassis that will be built, as per the agreed-upon specifications:

Product Class	Product Features	Notable BE Assumptions	Common Elements
FDA	<ul style="list-style-type: none"> 5-year surrender charge period, with MVA Crediting based on Treasury minus spread, subject to GMIR 	<ul style="list-style-type: none"> Dynamic lapses based on rate competitiveness 	<ul style="list-style-type: none"> Valuation date: 12/31/2023 10 years of in-force business modeled (2014-2023) Standard Projection Amount assumptions modeled as currently proposed/specified The following will be built as per field test specs: <ul style="list-style-type: none"> Asset assumptions and investment guardrails Prudent margins Hedging Exclusion testing Pre-PBR measures for comparison No reinsurance will be modeled
	<ul style="list-style-type: none"> 10-year surrender charge period, no MVA Guaranteed Lifetime Withdrawal Benefit (GLWB) with 10-year rollup period and explicit charges Crediting based on Treasury minus spread, subject to GMIR 	<ul style="list-style-type: none"> Dynamic lapses based on WB ITM WB utilization distributed by attained age, duration and Q/NQ 	
FIA	<ul style="list-style-type: none"> 5-year surrender charge period, no MVA Crediting based on 1 year S&P PtP, with OB equal to Treasury minus spread 	<ul style="list-style-type: none"> Dynamic lapses based on rate competitiveness 	
	<ul style="list-style-type: none"> 10-year surrender charge period, no MVA GLWB with 10-year rollup period and explicit charges Crediting based on 1 year S&P PtP, with OB equal to Treasury minus spread 	<ul style="list-style-type: none"> Dynamic lapses based on WB ITM WB utilization distributed by attained age, duration and Q/NQ 	
SPIA	<ul style="list-style-type: none"> 10 year period certain, with life thereafter 	<ul style="list-style-type: none"> 2012 IAM mortality, with 0.5% improvement from 2012 base 	
PRT	<ul style="list-style-type: none"> Multiple sub-blocks representing different mixes of deferred and retirees 	<ul style="list-style-type: none"> Group mortality table from SPA assumptions to be used 	

Next steps and how to prepare

Next steps for the VM-22 field test

- Field test specifications will be released for another public comment period through April 15th
- The NAIC will be requesting company participation in the field test, beginning now through April 28th
- EY will continue working with the NAIC, ACLI, and the Academy to develop a model office

Companies should begin preparing for the field test if they haven't already

- How much of your business will be in scope?
- Do you have a plan and the resources needed to participate in the field test?
- What existing models can you leverage (VM-21, pricing, etc.)?
- What assumptions and margins will you use?
- How will you model hedging?
- Do you have projected reserve capabilities?
- How will you educate your teams about VM-22?
- How will you communicate expected impacts to company leadership?

Questions or Comments?

Please contact:

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American Academy of Actuaries

Annuity Reserves and Capital Subcommittee Reserves & Capital Field Testing Description & Specifications March 6, 2024

Primary Contacts:

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Section I: Field Study Overview

Objectives

- 1) Measure the impact on actual business of the proposed reserve and capital frameworks relative to the current standards to ensure frameworks are working as intended.
 - Conduct field test to inform decisions related to the proposed fixed annuity principle-based reserving (PBR) methodology:
 - Test exclusion testing, allocation, proposed treatment for hedging indexed credit, aggregation, and other methodology elements.
 - Whenever this document references the PBR methodology, it means the framework documented in the most recent exposure draft: [VM-22 Draft – July 2023](#).
- 2) At a high-level, ensure pillars of framework are met:
 - Appropriate Reflection of Risk—All else equal, greater risk in **adverse conditions** requires greater statutory reserves/capital, and vice-versa.
 - Comprehensive—The statutory reserve accounts for all **material risks covered in the Valuation Manual and inherent in product features and potential management actions** associated with the policies or contracts being valued.
 - Consistency Across Products—Statutory reserves between two contracts with **similar features and risks are consistent** given the same anticipated experience, regardless of product type.
 - Practicality and Appropriateness—**Balance principles above with an approach that is practical**, auditable, and able to be implemented.
- 3) Test the impact of key open VM-22 design decisions:
 - Aggregation
 - Reinvestment guardrails
 - Exclusion test
 - Standard Projection Amount assumptions

Tentative Timeline: July – September 2024

Structure

- Propose exploring a coordinated effort between Academy, the National Association of Insurance Commissioners (NAIC), and American Council of Life Insurers (ACLI)
- Propose to hire an external consultant who can:

- Provide companies, collectively and individually, with information on calculations requested;
 - Help design field test and communicate with companies;
 - Work with Academy Research staff to help aggregate and summarize results; and
 - Potentially supplement the analysis of the field test results with analysis of factors affecting certain calculations, and/or assessing separate impacts on elements that are less feasible for companies to test.
- These specifications, and associated appendices, serve as a guide for purposes of responding to the RFP.

Products Covered (companies can choose which of their products to field test)

- Deferred Annuities
 - Fixed Indexed Annuities (FIAs) with Guaranteed Living Benefits (GLBs)
 - FIAs without GLBs
 - Fixed Deferred Annuities (FDAs) with GLBs (if at least five participating companies to ensure anonymity)
 - FDAs without GLBs (if at least five participating companies to ensure anonymity)
- Payout Annuities
 - Single Premium Immediate Annuities (SPIAs)
 - Pension Risk Transfer (PRT)
 - Deferred Income Annuities (DIAs) (if at least five participating companies to ensure anonymity)
 - Structured Settlement Contracts (SSCs) (if at least five participating companies to ensure anonymity)
- Potential Survey Questions
 - Does your company have “longevity reinsurance,” as defined in VM-01?
 - Does your company have “modified guaranteed annuities,” as defined in VM-A-255? If so, would you value them as variable or fixed annuities?
 - Are you planning on providing projected reserve results as part of your field test submission?

Population

- For time = 0, test at least 10 years of inforce for all non-variable annuity products included in your testing scope
 - Participants must provide output by policy duration or issue year to provide a sense of the durational impact.
 - At option of the participant, may test using all past inforce business.

Time Zero Valuation Date

- 12/31/2023 valuation date

Model Type

- Use a model that can project future cash flows over the contract life for the modeled block.
 - Can be based on valuation model or pricing model.
- Encourage use of a model that can re-project reserves at future time periods if possible.
 - See Section V in this document for additional requirements on projecting future reserves.

- If unable to project, proxy future durations by considering historical inforce product calculations for similar products at the associated duration.
- Seek feedback from potential participants and consider recommendations from consultant.

Section II: Assumption Specifications

Asset Assumptions

- Use asset assumptions found in Valuation Manual (VM)-22 draft instructions.
- Participants should disclose methodology for asset allocation when providing results.
- Investment guardrail for fixed income investment strategy set to 5% Treasury, 15% AA, 40% AAA, 40% BBB, unless company-specific investment strategy would result in a higher reserve.
- Set index-based hedging program error to the maximum of the company assumption and 1.5%, which is deducted from hedge payoffs relative to index credits.
 - All other hedging program error set to 5% of the difference between “best efforts” run and the “adjusted run” Conditional Tail Expectation (CTE)₇₀ amounts. This amount is added to the CTE₇₀ “best efforts” run.
- Include margins on company experience assumptions (see subsection below).

Liability Assumption & Margin Requirements

- Prudent estimate assumptions for the VM-22 deterministic reserve.
 - Set, and disclose with results, margins on mortality, policyholder behavior, expenses, hedging, non-guaranteed elements (NGEs), withdrawals, and other assumptions as deemed necessary.
 - If a company does not wish to use its own margins, then use margins below:
 - +/-10% mortality on plus/minus segments, +5% maintenance expenses, +/- 10% on lapses (depending on lapse-supportedness), 150% dynamic lapses (capped at 100% lapse), 5% shift from no withdrawals to 10-year GLB withdrawals, index hedging error at 5%? Each margin must increase the reserve.

Metrics / Output

- Provide following metrics at time zero:
 - Scenario level reserves
 - Commissioners’ Annuity Reserve Valuation Method (CARVM) at valuation (VM-22, Actuarial Guideline (AG)33, AG35, etc.)
 - C3P1 at valuation date
 - Standard Projection Amount
 - Exclusion test results by scenario

Aggregation

- Calculate in the following three buckets, if possible:
 1. Deferred annuities with GLBs (FIAs or FDAs)
 2. Deferred annuities without GLBs (FIAs or FDAs)
 3. Payout annuities (SPIAs, DIAs, SSC, PRT, longevity reinsurance as applicable)

- Optional: Split out SPIAs and PRT if not managed together
- 4. Longevity reinsurance
 - Provide mapping for which blocks meet aggregation criteria in current VM-22 framework draft.
 - If unable to supply results in this manner, please provide a detailed explanation about why.

Section III: Supplemental Testing

Exclusion test exercise

- Time points tested: Year 0 (required) and year 10 (optional).
- For time = 0, test at least 10 years of inforce for all non-variable annuity products included in your testing scope.
- For time = 10, test the same population used for projected results described in section IV below.
- Scenarios Tested: 16 VM-20 economic scenarios for each mortality scenario specified below.
- Mortality Scenarios: +/- 5%.
- Exclusion Testing Aggregation: For only the exclusion test, test each of the following subcategories and provide mapping for how products would be aggregated in current VM-22 framework draft:
 - Deferred Annuities
 - a. FIAs with GLBs
 - b. FIAs without GLBs
 - c. FDAs with GLBs
 - d. FDAs without GLBs
 - Payout Annuities
 - e. Individual and joint life-contingent SPIA/DIAs
 - f. Individual non-life-contingent SPIA
 - g. Pension risk transfer contracts (split out as a separate group for deferred benefits as deemed appropriate)
 - h. Optional to test structured settlements separately or combine into above sections
 - Longevity reinsurance
 - All other
 - i. Please provide brief description of product for other in-scope products not specified above for which results are provided.

Indicate whether or not a hedging program exists for each block, and if so provide responses to the hedging survey questions below for each block.

Survey Questions

- Hedging
 - Identify the type of hedging you do for products in VM-22 scope, for example,
 - hedge only index credits for index products;
 - For index credit hedging, are the hedges static, dynamic, or a blend of the two?

- hedge GLBs and/or other guaranteed benefits;
- other hedging (e.g., asset-liability matching (ALM) interest rate risk hedging);
- type of hedging strategic objective or target (GAAP / Stat / Economic);
- use of capital preservation hedges (i.e. macro hedges);
- Do you have any concerns with following the VM-21 hedging approach for VM-22?
- Allocation
 - Confirm whether you are able apply the allocation methodology as described in VM-22 for all products in scope.
 - Identify any concerns with this allocation methodology.

Standard Projection Amount (SPA)

Test the SPA as described in the latest exposure draft:

- Follow same aggregation approach as above.
- Test current draft VM-22 proposed assumptions and inputs to ensure the calculation is working as intended and producing reasonable results.

Section IV: Projections

Projection Metrics and Future Valuation Nodes

- Project following metrics at projection years 10 and 20:
 - Account value and cash surrender value
 - CARVM (VM-22, AG33, AG35, etc.)
 - CTE70, CTE90, CTE95, CTE98, Median (specify whether margins are included)
 - For value at risk (VaR)/CTE runs, if available, provide:
 - Actuarial present value of benefits, expenses, and related amounts less the actuarial present value of premiums and related amounts plus the balance of any separate account assets at each valuation time node.
 - Present values are calculated using the discount factors implied by the NAER vector under the path of discount rates specified by the economic scenario.
- For shorter-duration contracts, such as deferred annuities without guarantees and surrender charges < 10 years or annuities certain < 10 years, request projection years 5 and 10. If run-time is hindered, optionally provide only year 10 (year 5 for shorter-duration contracts).

Population

- For projections, either create a population using inforce population based on the most recent issue year or use a pricing population (pricing cells) for a single year of issue business based on recent historical inforce business.

Outer Loop Scenario Requirements

- The outer loop requirements should be based on unmarginated PBR experience assumptions.
- Use scenario 9 for interest rates and equities from scenario generator for outer loop assumptions:
 - Interest rate and equity scenario assumptions will be provided to field testing participants.
 - Three sets of 200 scenarios, 600 in total (if including time 0, time 10, time 20), will be provided for field testing participants at each valuation point.

- Assume 0.5% mortality improvement and 2% expense inflation.
- Assume the company's inforce portfolio mix and reinvestment strategy (ignoring any VM guardrails).
- Use VM prescribed long-term spreads and defaults.

Section V: Sensitivities

- Remove each assumption margin (mortality, lapse, withdrawal, expense and other) and provide results (summary at minimum, but all detail including capital is preferred).

Appendix 1: Instructions for Life Risk Based Capital Formula

Scope: All products in scope for the VM22 field test are also in scope for the C-3 RBC field test. GICs, Funding Agreements, Stable Value Contracts and Single Premium Life Insurance are not in scope for the field test. Use, at minimum, the same issue years tested for reserves should be in scope (participants may test more years if desired).

Disclosure: Guidance is provided for the purposes of the Field Test, but these changes below do not represent an exposure draft. Any changes to LR027 after or during the field test should supersede the guidance herein.

Methodology:

The C-3 RBC is calculated as follows:

A. CTE (XX) is calculated as follows (please see the field test specifications for XX testing values): Apply the CTE methodology described in NAIC Valuation Manual VM-22 and calculate the CTE (XX) as the numerical average of the (100-XX) percent largest values of the Scenario Reserves, as defined by Section 4 of VM-22. In performing this calculation, the process and methods used to calculate the Scenario Reserves use the requirements of VM-22 and should be the same as used for the reserve calculations. The effect of Federal Income Tax should be handled following one of the following two methods:

1. If using the Macro Tax Adjustment (MTA): The modeled cash flows will ignore the effect of Federal Income Tax. As a result, for each individual scenario, the numerical value of the scenario reserve used in this calculation should be identical to that for the same scenario in the Aggregate Reserve calculation under VM-22. Federal Income Tax is reflected later in the formula in paragraph B.1.
2. If using Specific Tax Recognition (STR): At the option of the company, CTE After-Tax (XX) (CTEAT (XX)) may be calculated using an approach in which the effect of Federal Income Tax is reflected in the projection of Accumulated Deficiencies, as defined in Section 4.A. of VM-22, when calculating the Scenario Reserve for each scenario. To reflect the effect of Federal Income Tax, the company should find a reasonable and consistent basis for approximating the evolution of tax reserves in the projection, taking into account restrictions around the size of the tax reserves (e.g., that tax reserve must equal or exceed the cash surrender value for a given contract). The Accumulated Deficiency at the end of each projection year should also be discounted at a rate that reflects the projected after-tax discount rates in that year. In addition, the company should add the Tax Adjustment as described below to the calculated CTEAT (XX) value.
3. A company that has elected to calculate CTEAT (XX) using STR may not switch back to using MTA in the projection of Accumulated Deficiencies without prominently disclosing that change in the certification and supporting memorandum. The company should also disclose the methodology adopted, and the rationale for its adoption, in the documentation required by paragraph J below.
4. Application of the Tax Adjustment: Under the U.S. IRC, the tax reserve is defined. It can never exceed the statutory reserve nor be less than the cash surrender value. If a company is using STR and if the company's actual tax reserves exceed the projected tax reserves at the beginning of the projection, a tax adjustment is required.

The CTEAT (XX) must be increased on an approximate basis to correct for the understatement of modeled tax expense. The additional taxable income at the time of claim will be realized over the projection and will be approximated using the duration to worst, i.e., the duration producing the lowest present value for each scenario. The method of developing the approximate tax adjustment is described below.

The increase to CTEAT (XX) may be approximated as the corporate tax rate times f times the difference between the company's actual tax reserves and projected tax reserves at the start of the projections. For

this calculation, f is calculated as follows: For the scenarios reflected in calculating CTE (98), the ~~Scenario~~ ~~Greatest Present Value~~ scenario reserve is determined and its associated projection duration is tabulated. At each such duration, the ratio of the number of contracts in force (or covered lives for group contracts) to the number of contracts in force (or covered lives) at the start of the modeling projection is calculated. The average ratio is then calculated over all CTE (XX) scenarios and f is one minus this average ratio..

B. Determination of RBC amount using stochastic modeling:

1. If using the MTA: Calculate the RBC Requirement by the following formula in which the statutory reserve is the actual reserve reported in the Annual Statement. in the second term – i.e., the difference between statutory reserves and tax reserves multiplied by the Federal Income Tax Rate – may not exceed the portion of the company’s non-admitted deferred tax assets attributable to the same portfolio of contracts to which VM-21 is applied in calculating statutory reserves:

$$YY\% \times ((CTE (XX) + [Additional Standard Projection Amount] - \text{Statutory Reserve}) \times (1 - \text{Federal Income Tax Rate}) - (\text{Statutory Reserve} - \text{Tax Reserve}) \times \text{Federal Income Tax Rate})$$

2. If the company elects to use the STR: The C-3 RBC is determined by the following formula:

$$YY\% \times (CTEAT (XX) + [Additional Standard Projection Amount] - \text{Statutory Reserve})$$

(TBD) The Additional Standard Projection Amount is calculated using the methodology outlined in Section TBD of VM-22.If the Statutory Reserve does not include an Additional Standard Projection Amount then the calculation above will also omit that amount.

Aggregation

Aggregation levels should be the same as those used for reserves.

Interest Rate Risk vs. Market Risk

The objective is to assign a value for the risk of unexpected market shocks comparable to that assigned to variable products. This risk may result from optionality in either the product or the supporting assets.

The C-3 RBC amount above should be split into interest rate risk and market risk components using a method developed by the company, and sample methods are listed below. If the method was developed by the company, please provide details.

Method 1: Perform a single model run that reflects both (a) and (b) below:

- (a) Model no interest rate variation, by either (1) holding the Treasury curve on the valuation date constant over the projection for all scenarios or (2) use the expected forward curve for all scenarios or (3) use identical interest rate scenarios corresponding to the AIRG with all random variables set to zero
- (b) Model stochastic separate account returns in the usual way across all scenarios.

Compute the resulting C-3 RBC TAR and call this the C-3c component (market risk). Subtract this value from the true C-3 RBC TAR to determine the C-3a component (interest rate risk).

Method 2: Companies could also consider applying Stochastic Exclusion Test scenarios to bifurcate market and interest rate risk. The model run approach would be similar as Method 1.

Appendix 2: VM-22 Field Test Template Definitions

Unless otherwise specified, the section references below are from Valuation Manual VM-22.

Reserves – Summary

Commissioners Annuity Reserve Valuation Method (CARVM) Reserve = the current minimum reserve valuation standard for non-variable annuities as determined by CARVM

CSV = Cash Surrender Value means, the amount available to the contract holder upon surrender of the contract. Generally, it is equal to the account value less any applicable surrender charges, where the surrender charge reflects the availability of any free partial surrender options. However, for contracts where all or a portion of the amount available to the contract holder upon surrender is subject to a market value adjustment, the cash surrender value shall reflect the market value adjustment consistent with the required treatment of the underlying assets. That is, the cash surrender value shall reflect any market value adjustments where the underlying assets are reported at market value, but it shall not reflect any market value adjustments where the underlying assets are reported at book value.

VM-22 Reserve = the upcoming minimum reserve valuation standard for non-variable annuity contracts as defined by the Valuation Manual (VM-22). It is equal to the aggregate reserve as defined in Section 3.A. The aggregate reserve for contracts falling within the scope of these requirements shall equal the stochastic reserve (following the requirements of Section 4) plus the additional standard projection amount (following the requirements of Section 6) less any applicable pretax interest maintenance reserve (PIMR) for all contracts not valued under applicable requirements in VM-A and VM-C the Alternative Methodology (Section 7), plus the reserve for any contracts determined using the Alternative Methodology valued under applicable requirements in VM-A and VM-C (following the requirements of Section 7).

Reserves - Detail Segment

FIA = Fixed Indexed Annuity as defined in Section 1.D. An annuity with an account value where the contract holder has the option for a portion or all of the account value to grow at a rate linked to an external index, typically with guaranteed principal.

FA = Fixed Annuity: Flexible Premium Deferred Annuity (FPDA), Multiple Year Guaranteed Annuity (MYGA) and Single Premium Deferred Annuity (SPDA), all as defined in Section 1.D. **FPDA** = An annuity with an account value established with a premium amount but allows for additional deposits to be paid into the annuity over time, resulting in an increase to the account value. The contract also has a guaranteed interest rate during the accumulation phase and has guaranteed mortality and interest rates applicable at the time of conversion to the payout phase. **MYGA** = A type of fixed annuity that provides a pre-determined and contractually guaranteed interest rate for specified periods of time, after which there is typically an annual reset or renewal of a multiple-year guarantee period. **SPDA** = An annuity with an account value established with a single premium amount that grows with a guaranteed interest rate during the accumulation phase and has guaranteed mortality and interest rates applicable at the time of conversion to the payout phase. May also include cases where the premium is accepted for a limited amount of time early in the contract life, such as only in the first duration.

SPIA = Single Premium Immediate Annuity as defined in Section 1.D. An annuity purchased with a single premium amount which guarantees a periodic payment for the life of the annuitant or a term certain and payments begin within one year after (or from) the issue date.

PRT = Pension Risk Transfer Annuity as defined in Section 1.D. An annuity, typically a group contract or reinsurance agreement, issued by an insurance company providing periodic payments to annuitants receiving immediate or deferred benefits from one or more retirement plans. Typically, the insurance company holds the assets supporting the benefits, which may be held in the general or separate account, and retains not only longevity risk but also asset risks (e.g., credit risk and reinvestment risk).

DIA = Deferred Income Annuity as defined in Section 1.D. An annuity which guarantees a periodic payment for the life of the annuitant or a term certain and payments begin one year or later after (or from) the issue date if the contract holder survives to a predetermined future age.

SSC = Structured Settlement Contract as defined in Section 1.D. A contract that provides periodic benefits and is purchased with a single premium amount stemming from various types of claims pertaining to court settlements

or out-of-court settlements from tort actions arising from accidents, medical malpractice, and other causes. Adverse mortality is typically expected for these contracts.

Type

Base (Non-GLB) = contracts without guaranteed living benefits

GLB – All = GLB – SL + GLB – JL = contracts with guaranteed living benefits, both single and joint life

GLB – SL = contracts with guaranteed living benefits that do not have a joint life option

GLB – JL = contracts with guaranteed living benefits that have a joint life option

Add additional categories for material benefits.

For each Segment/Type category, the calculations below should be performed only across the policies in that specific category.

Total Account Value = represents the current value of the contract, and it includes both the fixed account value, and any index account values, as applicable. It is generally equal to the premium paid net of any premium taxes minus any gross withdrawals, plus any earned interest credited by the fixed account and any index accounts. It is the contract value prior to application of surrender charges or market value adjustment. For GLB riders, this will be the Account Value of the base contract. For SPIAs, or other products that offer no surrender benefits, no value is expected.

Fixed Account = an option under the contract funded by the general account of the company offering guaranteed interest rates. Not an explicit field.

Index Account = an option under the contract funded by the general account of the company offering crediting of earnings at specified times based upon the performance of an index. Not an explicit field.

Fixed Account Value = the account value of the fixed account.

Cash Surrender Value – See Reserves Summary above

Market Value Adjustment (MVA) = an adjustment paid at the time of a withdrawal or surrender based on, typically, interest rates or index returns. It can be positive (increasing the value of a withdrawal/surrender) or negative.

Policies In Force = the total number of policies in force as of the valuation date

CARVM Reserve – See Reserves Summary above for definition

VM-22 Reserve – See Reserves Summary above for definition

Average Years In Force = the average policy duration at the valuation date across all policies in force within the category as of the valuation date

Average Issue Age = the average issue age across all policies in force within the category as of the valuation date

Average Attained Age = the average attained age as of the valuation date across all policies in force within the category as of the valuation date

% Female = the percent of single policies, female, among all the policies in force as of the valuation date

% JL = the percent of joint-life policies among all the policies in force as of the valuation date

Income Base (should this be average?) = the total benefit base as of valuation date for policies with a guaranteed living benefit in force as of valuation date, where

Benefit Base = the amount used to calculate the maximum lifetime income benefit payments for policies with a guaranteed living benefit rider

Average In-The-Moneyness (ITM-ness) = the average ITM-ness as of the valuation date for all policies with a guaranteed living benefit rider in force as of the valuation date, where ITM-ness is defined as either (please note the method used): $\text{Benefit Base}/\text{AV} - 1$ or $\text{PV}(\text{GLWB})/\text{AV} - 1$.

% Contracts Receiving Withdrawals/Payouts = percent of policies with a living benefit rider that took a withdrawal under the rider in the past 12 months.

Weighted Average Withdrawal/Payout Amt = the average income as of the valuation date across all policies with a living benefit rider that are in income phase as of the valuation date, weighted by the benefit base and expressed as an amount.

Weighted Average Credited Rate / Option Budget = the weighted average across all fixed account credited rates and hedge budgets as of the valuation date across all policies in force as of the valuation date using total account value as weight. If a policy has both a fixed account and/or one or more index account, first calculate the Weighted Average Credited Rate / Option Budget for that policy using the fixed account value and/or each index account value as weights, then use this calculated value and the total account value in the weighted average across all policies.

Reserves - Detail Stoch.

CTExx = Conditional Tail Expectation is equal to the numerical average of the (100-xx) percent worst values of a set of values.

CTExx Amount = is the CTExx of the Scenario Reserve across all scenarios following the requirements of Section 4

Median Amount = is the median Scenario Reserve across all scenarios following the requirements of Section 4

CTExx APV Benefits & Expense = for each scenario that comprises the CTExx Amount, the average of each's scenario's greatest present value of benefits and expenses that are part of the CTExx Amount calculation above

CTE xx APV Premiums, etc. = average of the present value of premiums that are part of the CTExx Amount calculation above

Asset Balance = starting asset amount

Capital

The following terms are defined in the NAIC Life Risk-Based Capital (RBC) formula instructions under LR027, section Cash Flow Modeling for C-3 RBC Requirements for Variable Annuities and Similar Products:

Macro Tax Adjustment (MTA) = If using the MTA, the modeled cash flows will ignore the effect of Federal Income Tax. As a result, for each individual scenario, the numerical value of the scenario reserve used in this calculation should be identical to that for the same scenario in the Aggregate Reserve calculation under VM-22. Federal Income Tax is reflected later in the formula.

Specific Tax Recognition (STR) = If using STR, CTE After-Tax (98) (CTEAT (98)) may be calculated using an approach in which the effect of Federal Income Tax is reflected in the projection of Accumulated Deficiencies, as defined in Section 4 of VM-22, when calculating the Scenario Reserve for each scenario. To reflect the effect of Federal Income Tax, the company should find a reasonable and consistent basis for approximating the evolution of tax reserves in the projection, taking into account restrictions around the size of the tax reserves (e.g., that tax reserve must equal or exceed the cash surrender value for a given contract). The Accumulated Deficiency at the end of each projection year should also be discounted at a rate that reflects the projected after-tax discount rates in that year. In addition, the company should add the Tax Adjustment as described below to the calculated CTEAT (98) value.

Additional Standard Projection Amount (ASPA) = is calculated using the methodology outlined in Section 6 of VM-22.

OLD Factor-Based Calculation (enter after-tax amounts) = Lines 2-32 of the NAIC RBC instructions under LR027.

- For company results, use line 32 (but enter an after-tax amount)
- For individual product results, use the individual lines 2-31, as appropriate (after-tax)

OLD C3P1 (enter after tax amounts) = C-3 RBC Cash Flow Testing Interest Rate Risk as defined in the NAIC RBC instructions under LR027.

- For company results, use line 33 (but enter an after-tax amount)
- For individual product results, redo the calculation from line 33 assuming that particular product is the only product subject to C-3 RBC cash flow testing, so there is no aggregation benefit with other products (enter an after-tax amount)

Issue Year	Cash Surrender Value	CARVM Reserve	VM-22 Reserve
All			
2021			
2020			
2019			
2018			
2017			
2016			
2015			
2014			
2013			
2012			

(or as far back as tested)

By Policy Duration	Cash Surrender Value	CARVM Reserve	VM-22 Reserve
All			
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			

(important if submitting all inforce)

Attachment Two
 Life Actuarial (A) Task Force
 3/14-3/15

Issue Year	Segment	Type	Total Account Value	Fixed Account Value	Cash Surrender Value	Market Value Adjustment	Policies Inforce	CarVM Reserve	VM-22 Reserve	Average Years Inforce	Average Issue Age	Average Attained Age	% Female	% of IL	Income Base	Average ITM-net	% of Contracts Receiving Withdrawals/Payouts	Weighted Average Withdrawal/Payout Amt	Weighted Average Credited Rate / Option Budget	
All	FIA	Base																		
All	FIA	GLB - All																		
All	FIA	GLB - SL																		
All	FIA	GLB - JL																		
All	FA	Base																		
All	FA	GLB																		
All	Payout	SPIA - All																		
All	Payout	SPIA - SL																		
All	Payout	SPIA - JL																		
All	Payout	PKT																		
All	Payout	DIA																		
All	Payout	SSC																		
... (provide by issue year if possible)																				

Issue Year	Segment	Type	Reserve	CTE 70				CTE 90				CTE 98				Median		
				Amount	APV Benefits & Expense	APV Premiums, etc.	Asset Balance	Amount	APV Benefits & Expense	APV Premiums, etc.	Asset Balance	Amount	APV Benefits & Expense	APV Premiums, etc.	Asset Balance	Amount	APV Benefits & Expense	APV Premiums, etc.
All	FIA	Base																
All	FIA	GLB																
All	FA	Base																
All	FA	GLB																
All	Payout	SPA																
All	Payout	PRT																
All	Payout	DIA																
All	Payout	SSC																

... (provide by issue year if possible)

Issue Year	Segment	Type	Scenario	Reserve	Amount	APV Benefits & Expense	APV Premiums, etc.	Asset Balance
All	FIA	Base		1				
All	FIA	Base		2				
All	FIA	Base		3				
All	FIA	Base		4				
All	FIA	Base	...					
All	FIA	GLB		1				
All	FIA	GLB		2				
All	FIA	GLB		3				
All	FIA	GLB		4				
All	FIA	GLB	...					
All	FA	Base						
All	FA	GLB						
All	Payout	SPIA						
All	Payout	PRT						
All	Payout	DIA						
All	Payout	SSC						

Issue Year	Aggregation Group	Cash Surrender Value	CARVM Reserve	VM-22 Reserve
All	All			
All	DA with GLB			
All	DA without GLB			
All	Payout Annuities			

... (provide by issue year if possible)

Contract	Type	Policy Year	Account Value	Cash Surrender Value	Reserve Base	CRVM Reserve	Death	Type Withdrawal	Derivative Instrument				VM 22												
									Option Acquisition	Account Option	Other Benefits Utilized	Source	Amount	APV Benefits & Expense, APV Premiums, etc.	Asset Balance	Amount	APV Benefits & Expense, APV Premiums, etc.	Asset Balance	Amount	APV Benefits & Expense, APV Premiums, etc.	Asset Balance				
IAA	Surv	0																							
IAA	Surv	5																							
IAA	Surv	10																							
IAA	Surv	20																							

- Growth by block if possible

C-3 RBC New Capital Amount Calculation

(only one of the two methods below is required)

If using Macro Tax Adjustment (MTA):

$$YY\% \times ((CTE (XX) + [Additional Standard Projection Amount] - \text{Statutory Reserve}) \times (1 - \text{Federal Income Tax Rate}) - (\text{Statutory Reserve} - \text{Tax Reserve}) \times \text{Federal Income Tax Rate})$$

If using Specific Tax Recognition (STR):

$$YY\% \times (CTEAT (XX) + [Additional Standard Projection Amount] - \text{Statutory Reserve})$$

XX	YY	MTA CTE (XX)	STR CTEAT (XX)	ASPA	If using MTA				Old Factor-Based Calculation	Old C3P1
					Stat Reserve based on		Tax Reserve based on			
					CARVM Reserve	VM-22 Reserve	CARVM Reserve	VM-22 Reserve	CARVM Reserve	VM-22 Reserve
98	25									
98	30									
98	20									
95	30									
95	25									
95	20									

Do the above calculations at each segment level (FIA, FA, Payouts) as well as in aggregate (if possible, first combine all the cash flows, then determine the CTE amounts above. If not, combine the final CTE's).

For the first line only (98/25), and for the FIA business only, the C-3 RBC amount above should be split into interest rate risk and a market risk components using a method developed by the company, or the provided sample methods.

If the method was developed by the company, please provide details.

C-3 RBC	Interest Rate Risk	
	Interest Rate Risk	Market Risk

Segment	Econ Scenario	Mortality Scenario	Hedged?	Result at t=0	Result at t=10
Deferred Annuities		1 Mortality +5%			
Deferred Annuities		2 Mortality +5%			
Deferred Annuities		3 Mortality +5%			
Deferred Annuities		4 Mortality +5%			
Deferred Annuities		5 Mortality +5%			
Deferred Annuities		6 Mortality +5%			
Deferred Annuities		7 Mortality +5%			
Deferred Annuities		8 Mortality +5%			
Deferred Annuities		9 Mortality +5%			
Deferred Annuities		10 Mortality +5%			
Deferred Annuities		11 Mortality +5%			
Deferred Annuities		12 Mortality +5%			
Deferred Annuities		13 Mortality +5%			
Deferred Annuities		14 Mortality +5%			
Deferred Annuities		15 Mortality +5%			
Deferred Annuities		16 Mortality +5%			
Payout Annuities		1 Mortality +5%			
Payout Annuities		2 Mortality +5%			
Payout Annuities		3 Mortality +5%			
Payout Annuities		4 Mortality +5%			
Payout Annuities		5 Mortality +5%			
Payout Annuities		6 Mortality +5%			
Payout Annuities		7 Mortality +5%			
Payout Annuities		8 Mortality +5%			
Payout Annuities		9 Mortality +5%			
Payout Annuities		10 Mortality +5%			
Payout Annuities		11 Mortality +5%			
Payout Annuities		12 Mortality +5%			
Payout Annuities		13 Mortality +5%			
Payout Annuities		14 Mortality +5%			
Payout Annuities		15 Mortality +5%			
Payout Annuities		16 Mortality +5%			
All Other		1 Mortality +5%			
All Other		2 Mortality +5%			
All Other		3 Mortality +5%			
All Other		4 Mortality +5%			
All Other		5 Mortality +5%			
All Other		6 Mortality +5%			
All Other		7 Mortality +5%			
All Other		8 Mortality +5%			
All Other		9 Mortality +5%			
All Other		10 Mortality +5%			
All Other		11 Mortality +5%			
All Other		12 Mortality +5%			
All Other		13 Mortality +5%			
All Other		14 Mortality +5%			
All Other		15 Mortality +5%			
All Other		16 Mortality +5%			
<i>...for Mortality -5%</i>					

Agenda Item 3

Comments Received on Potential Group
Annuity Mortality Experience Data Collection
and Consider Adoption of the Experience
Reporting (A) Subgroup Report

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February 12, 2024

Rachel Hemphill
Chair, NAIC Life Actuarial (A) Task Force (LATF)

Re: LATF's Request for Feedback on Mandatory Experience Reporting for Group Annuity Mortality.

Dear Chair Hemphill:

The American Council of Life Insurers (ACLI) appreciates the opportunity to submit comments to LATF regarding their request for feedback on potential group annuity mortality mandatory experience reporting.

ACLI conceptually supports mandatory experience reporting to help ensure appropriate mortality assumptions, to get regulators comfortable with using such assumptions in statutory reserve calculations, and to help create a consistent and level regulatory environment. Such requirements could be developed from existing reporting concepts from VM-50 and VM-51.

As this effort develops, we have several questions and clarifications we would like to see addressed:

- For business subject to third party administration and reinsurance, it would be helpful to clarify which entity is responsible for the data submission.
- Minimum exposure thresholds should also be established to avoid significant effort for immaterial blocks of business and these thresholds may have to be defined by administrator, depending on the response to the first point.
- The availability of certain data elements should be discussed, and companies should be given adequate time to prepare for the data collection should this process occur annually. ACLI suggests that regulators request specific information from companies before determining the data to be collected.

Overarching guidance on scope is critical as well:

American Council of Life Insurers | 101 Constitution Ave, NW, Suite 700 | Washington, DC 20001-2133

The American Council of Life Insurers is the leading trade association driving public policy and advocacy on behalf of the life insurance industry. 90 million American families rely on the life insurance industry for financial protection and retirement security. ACLI's member companies are dedicated to protecting consumers' financial wellbeing through life insurance, annuities, retirement plans, long-term care insurance, disability income insurance, reinsurance, and dental, vision and other supplemental benefits. ACLI's 275 member companies represent 93 percent of industry assets in the United States.

accli.com

- Some states issue business solely under a group contract; are these certificates intended to be in scope?
- Will group VAs be included, or are only fixed annuities in scope?
- Will there be sub-categories to distinguish between other types of business?

While it is premature to determine what data elements should be collected, we would encourage regulators to discuss with companies the availability of data and how they treat certain aspects (such as collars). The following data elements should be considered:

- Identifiers: Contract number, etc.
- Beneficiary information: Age, Gender, Date of Birth, Date of Death, Date of Retirement, Date of Issuance, disability status, ZIP code.
- Recipient type: Annuitant or Beneficiary.
- Benefit Information: Benefit amount, Minimum and Maximum Effective date of payments in calendar year.
- Different definition of collars if used, level of granularity (i.e., life level vs. group cohorts within the liabilities)

Finally, our perspective on the timing of implementation is highly dependent on the substance of the request. The more fields and granularity in the data request, the more time that will be required to prepare the mortality experience. We suggest aligning the timing of implementation with the VM-22 effective date or after to allow companies time to build the infrastructure needed. Industry would suggest annual reporting consistent with existing VM-51 requirements (including the 1-year lag); greater frequency of data collection would create operational challenges for companies. Further, consistent with VM-51, there should be an allowance for smaller companies to be exempt from the data request.

Thank you once again for the opportunity to provide feedback on this topic and we look forward to continuing conversations at future sessions of LATF.

Sincerely,



Colin Masterson

cc: Scott O'Neal, NAIC; Fred Andersen, Minnesota Department of Commerce

To: Scott O'Neal
From: LIMRA
Date: March 1, 2024
Subject: Experience Reporting for Group Annuity Mortality

The Life Actuarial Task Force has requested comments by March 1, 2024 on the following:

- Initial thoughts on having mandatory experience reporting for group annuity mortality.
- Any high-level guidance on the general content and granularity of data to be collected for group annuity mortality.
- Feasible timing of implementing the experience reporting.

LIMRA respectfully submits these comments to the Life Actuarial Task Force (LATF) of the National Association of Insurance Commissioners (NAIC) in response to this request.

LIMRA does not believe that mandatory experience reporting to the NAIC for U.S. insurers on group annuity mortality is necessary for the following reasons:

1. LIMRA and the SOA Research Institute have partnered to produce future experience studies for group annuity mortality and currently have a means to collect and disseminate group annuity mortality results to industry and regulators.
2. The SOA Group Annuity Experience Committee (GAEC), which provides oversight to LIMRA and SOA Research Institute studies, consists of company representatives with deep group annuity knowledge. With the GAEC's guidance, comprehensive data formats and definitions for these studies have been developed and implemented. The GAEC also provides study peer review and guidance on interpretation of results.
3. Implementation of an additional mandatory data call will result in duplicative effort on the part of companies and lead to additional costs for both industry and the NAIC.
4. The SOA Research Institute and LIMRA have a well-tested process and structure in place for conducting these studies as updates are requested by industry and regulators over time. The output is made available to regulators for their work and includes both a detailed report outlining the study analysis as well as a data tool that allows for greater user analysis of study data and results.
5. Participation in past SOA Research Institute group annuity mortality studies has been growing, and the studies have been meeting the industry's needs.

LIMRA appreciates the opportunity to provide comments on this matter. We are available to respond to any questions you might have on these comments. Feel free to contact Marianne Purushotham at mpurushotham@limra.com or (860) 249-3366 at any time.

Sincerely,



Marianne Purushotham, FSA, MAAA
Corporate Vice President, Research Data Services
LIMRA



To: Scott O'Neal
From: Society of Actuaries Research Institute
Date: March 1, 2024
Subject: Experience Reporting for Group Annuity Mortality

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The Life Actuarial Task Force has requested comments by March 1, 2024 on the following:

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- Any high-level guidance on the general content and granularity of data to be collected for group annuity mortality.
- Feasible timing of implementing the experience reporting.

The Society of Actuaries (SOA) Research Institute, along with its Group Annuity Experience Committee (GAEC) respectfully submits these comments to the Life Actuarial Task Force (LATF) of the National Association of Insurance Commissioners (NAIC) with respect to several items related to experience reporting for Group Annuity mortality.

The SOA Research Institute does not believe that mandatory experience reporting to the NAIC for U.S. life insurers on group annuity mortality is necessary.

In recent years, the SOA Research Institute and LIMRA have partnered to produce experience studies and have built an infrastructure to bring experience studies to the U.S. life industry and industry regulators on an efficient and timely basis. The results of these studies are made available to provide valuable insights to the industry and state regulators. Participation in past SOA Research Institute group annuity mortality studies has been growing, and the studies have been meeting the industry's needs. We intend to continue future collection of group annuity data from industry to periodically update mortality trends.

Recent pre-pandemic mortality experience has tracked reasonably closely with the established bases of 1994 GAM projected with Scale AA. Population mortality analysis conducted by the SOA and described in a [2023 Mortality Improvement Update](#) has indicated that retirement-aged mortality in the U.S. population has largely reverted back to close to pre-pandemic levels.

The GAEC has been actively producing several recent studies of Group Annuity mortality (<https://www.soa.org/research/topics/group-ann-exp-study-list/>), with the [most recent study](#) published in March 2022. These studies have historically provided information that is relevant for regulators to assess the adequacy of valuation tables. This study continued to build on industry knowledge of group annuity mortality with updated experience years of 2015-2018 and included over 372,000 deaths from data provided by 13 companies (an increase over the 8-9 companies that have participated in previous studies). The main purposes of the study were to compare recent annuitant mortality experience with valuation tables and to analyze recent annuitant mortality experience by age and sex with respect to various characteristics, such as annuity benefit types, income levels, and retirement classes.

The primary expected basis to which mortality experience has been compared in recent SOA studies is the 1994 Group Annuitant Mortality Table (1994 GAM) projected with mortality improvement Scale AA. Recent studies have yielded the following actual-to-expected (A/E) ratios when comparing group annuity mortality experience to 1994 GAM with Scale AA.

Table 1

INCOME-WEIGHTED ACTUAL-TO-EXPECTED MORTALITY RATIOS, SOA GROUP ANNUITY MORTALITY DATASET COMPARED TO 1994 GAM PROJECTED WITH SCALE AA

Study Years	A/E Ratio
2003-2010	100.5%
2011-2014	95.3%
2015-2018	97.2%

With each study, the GAEC has determined that actual experience had not strayed significantly enough from the 1994 GAM / Scale AA basis to merit the implementation of a new valuation standard. The most recent study also compared the 2015-2018 experience to the [Pri-2012 Mortality Tables](#) projected with Mortality Improvement Scale MP-2020. The Pri-2012 study was issued in 2019 and is commonly referenced by pension actuaries as a robust source of mortality information across many demographic categories of pensioners. The A/E ratios of the SOA Group Annuity study data using each of these bases were quite similar.

Table 2

GROUP ANNUITY MORTALITY A/E RATIOS 2015-2018

Expected Basis	Actual-to-Expected Ratios (2015-2018)	
	By Lives	By Income
1994 GAM Basic with Projection Scale AA	103.5%	97.2%
Pri-2012 Projected with MP-2020	102.7%	97.2%

The Pri-2012 study analyzed a broader dataset of pensioners in private pension systems and determined that collar type was a very significant predictor of annuitant mortality. Participants were categorized as “blue collar” if they were either hourly or union employees and categorized as “white collar” if they were both salaried and nonunion. If these distinctions were not known at the individual participant level, plans were characterized as blue collar or white collar if at least 70 percent of the plan’s participants met these criteria.

The GAEC attempted to analyze collar type for its most recent study by collecting information on whether the covered lives were hourly or salaried, as well as whether they were union or nonunion. Only 41 percent of the data collected contained a union indicator, and almost all the populated responses were “nonunion”. The remaining 59 percent had an unknown union indicator. Further challenging was that 95 percent of the data received was provided without an hourly or salaried indicator. It seems that this information has not been reliably collected and retained by insurance companies holding group annuity contracts. This could imply that collar would be difficult to provide in mandatory data calls.

As part of the 2015-2018 study, the GAEC reviewed group annuitant mortality by pension income amount and, per Section 3.4 of that study, did observe lower mortality for groups with higher pension amount. It is worth noting, however, that the Pri-2012 study has observed a decreasing relationship between pension income and mortality over time. In particular, the freezing of benefits in private pension plans in recent decades has reduced the

correlation between pension income and socioeconomic status such that collar type has become a stronger predictor of mortality.

The SOA Research Institute and the GAEC would like to express appreciation for the opportunity to comment on these important matters. Staff of the SOA Research Institute and RPEC would be available to discuss any questions you might have on these comments at your convenience. Please contact Patrick Nolan of the SOA Research Institute at pnolan@soa.org or (847) 273-8860 with any questions regarding this response letter.

Sincerely,



Patrick Nolan
Senior Experience Studies Actuary
Society of Actuaries Research Institute



Kristin Gustafson
Chair, Group Annuity Experience Committee
Society of Actuaries Research Institute

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Agenda Item 4

Hear a Presentation on Updated VM-21

Variable Annuity Capital and Reserve (E/A) Subgroup Report

Pete Weber, Chair

March 14, 2024

VM-21 Standard Projection Amount (SPA) Assumptions

- Require monitor and update
- VA Framework Recommendation 14:
 - Refresh prescribed actuarial assumptions to align with experience
- VM-21 section 6.C.2:
 - *Guidance Note: The framework adopted by the Variable Annuities Issues (E) Working Group includes the review and possible update of these assumptions every three to five years.*

SPA Assumptions to be Considered for Update

- Mortality
 - Based on SOA Report
- Expense
 - To Reflect Historic Inflation
- Policy Holder Behavior
 - Based on LATF Survey

Next Steps

- VACR SG will schedule a meeting in late March or early April
- Develop and Expose an APF
- Goal is Implementation for the 2025 VM

Life Actuarial (A) Task Force

VM-21 SPA Assumptions—Mortality Proposed Update to Mortality Adjustment Factors

Joel Sklar, MAAA, ASA
Chairperson, SOA Individual Annuity Experience Committee
March 14, 2024

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The American Academy of Actuaries is a 20,000-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

VM-21: SPA Assumptions—Mortality Adjustment Factor update

- The Mortality Adjustment Factors (MAFs) presented here are being proposed as an update to the current Standard Projection Amount (SPA) assumptions in VM-21.
- The Base Mortality Adjustment Factors have been developed based on an industry study covering variable annuities (VAs) during the 2011-2015 experience period.
- A basis for historical mortality improvement (HMI) has been developed, and was used to bring the factors up to 12/31/2022.
- Compared to the current MAFs in VM-21, the current proposal has the following structural changes:
 - Distinct factors are being proposed for female and male lives, driven by the HMI differences.
 - Factors were developed for a wider range of ages, i.e., starting at age 50 versus 65 in the current VM-21.
 - The non-Guaranteed Living Benefit (non-GLB) factors are split between the Basic and Enhanced Death Benefits; the current VM-21 only has a GLB/non-GLB split.

VM-21: SPA Assumptions—Mortality Adjustment Factor update, continued

- Enhanced Death Benefits are defined as those that include a Roll-up; everything else was categorized with Basic Death Benefits. Therefore, Enhanced DBs include Roll-ups and Roll-up/Ratchet combinations, while Basic DBs consist of contracts with no DBs, minimal DBs such as waiver of surrender charges, Return of Premium DBs, and Ratchets without Roll-ups.
- The updated factors proposed here are intended to be applied using the same formula as the current Standard Projection Amount (SPA) assumptions in VM-21, i.e., tied to an expected basis using the 2012 Individual Annuity Mortality (IAM) Basic Table and the G2 Mortality Improvement Scale.
- The base mortality adjustment factors are comparable to the current VM-21 MAFs, except for the bifurcation of the death benefit categories. This can be seen in slides 6 and 7. Note that in the industry experience study, the Basic Death Benefit has more exposure than the Enhanced Death Benefit, so on a blended basis the non-GLB results were quite similar to the current VM-21 SPA mortality assumptions.
- HMI has generally been below that predicted by the G2 improvement scale, and that is the primary reason the updated factors are higher than the current VM-21 factors.

Base Adjustment Factors for VAs

VA Base Mortality Adjustment Factors*

Age	VA non-GLB Enhanced DB	VA non-GLB Basic DB	VA GLB
	Female and Male	Female and Male	Female and Male
52	150%	105%	95%
57	150%	105%	90%
62	150%	95%	80%
67	145%	95%	83%
72	145%	105%	95%
77	140%	108%	98%
82	125%	108%	105%
87	112%	108%	108%
92	112%	110%	110%
97	110%	110%	110%
102	104%	104%	104%
105	100%	100%	100%

*These Base Mortality Adjustment Factors were developed based on an industry study covering the 2011-2015 experience period.

Base Adjustment Factor Comparison—non-GLB

Age	VA non-GLB Enhanced DB	Current VM-21 non-GLB MAFs	Difference	Age	VA non-GLB Basic DB	Current VM-21 non-GLB MAFs	Difference
	Female and Male*	Female and Male	Female and Male		Female and Male*	Female and Male	Female and Male
52	150%	100%	50%	52	105%	100%	5%
57	150%	100%	50%	57	105%	100%	5%
62	150%	100%	50%	62	95%	100%	-5%
67	145%	104%	41%	67	95%	104%	-9%
72	145%	114%	31%	72	105%	114%	-9%
77	140%	118%	22%	77	108%	118%	-10%
82	125%	113%	12%	82	108%	113%	-5%
87	112%	110%	2%	87	108%	110%	-2%
92	112%	110%	2%	92	110%	110%	0%
97	110%	108%	2%	97	110%	108%	2%
102	104%	103%	1%	102	104%	103%	1%
105	100%	100%	0%	105	100%	100%	0%

*These Base Mortality Adjustment Factors were developed based on an industry study covering the 2011-2015 experience period.

Base Adjustment Factor Comparison—GLB

Age	VA GLB	Current VM-21 GLB MAFs	Difference
	Female and Male*	Female and Male	Female and Male
52	95.0%	80.0%	15.0%
57	90.0%	80.0%	10.0%
62	80.0%	80.0%	0.0%
67	83.0%	83.0%	0.0%
72	95.0%	90.5%	4.5%
77	98.0%	98.0%	0.0%
82	105.0%	105.5%	-0.5%
87	108.0%	110.0%	-2.0%
92	110.0%	110.0%	0.0%
97	110.0%	108.0%	2.0%
102	104.0%	103.0%	1.0%
105	100.0%	100.0%	0.0%

*These Base Mortality Adjustment Factors were developed based on an industry study covering the 2011-2015 experience period.

Development of Basis for Historical Mortality Improvement

- Our objective is to set a baseline mortality as of 12/31/2022, to serve as the new “jumping-off” point.
- Historical Mortality Improvement is needed to bring mortality up from the 2013 mid-point of the industry study.
- We split the historical era into **two periods**, first the pre-pandemic era through 2019, and then 2020–2022.
- Historical Mortality Improvement through 2019
 - We used data from the SOA’s report on Mortality by Socioeconomic Category, authored by Magali Barbieri, to generate improvement rates by quinquennial age groups.
 - U.S. counties were assigned to one of 10 deciles, based on various socioeconomic criteria.
 - The 10th decile (highest socioeconomic category) aligned with the VA mortality experience.
 - Mortality data for this study was sourced from the National Center for Health Statistics (NCHS), which had a good alignment with Social Security data except at older ages (above age 80).

Development of Basis for Historical Mortality Improvement, continued

- Historical Mortality Improvement for 2020 through 2022
 - Actual experience was severely impacted by the pandemic.
 - Even if specific COVID-19 related deaths could be identified with precision and factored out, other aspects of the pandemic environment affected overall mortality drivers.
 - **Decision was made to assume 0% improvement for 2020 through 2022**
 - Mortality rates at the end of 2022 had not yet improved to 2019 levels post-pandemic, but were getting close, especially at the older ages relevant for the VAs.

Annual Rates of Historical Mortality Improvement applied for VAs covering 2013-2019

Female

	G2	Current	Difference
Age	Scale	HMI	(2) - (1)
	(1)	2013-2019	(3)
52	1.10%	1.97%	0.87%
57	1.20%	0.95%	-0.25%
62	1.30%	0.62%	-0.68%
67	1.30%	1.16%	-0.14%
72	1.30%	1.38%	0.08%
77	1.30%	1.15%	-0.15%
82	1.20%	0.71%	-0.49%
87	0.80%	0.48%	-0.32%
92	0.50%	0.30%	-0.20%
97	0.30%	0.18%	-0.12%
102	0.10%	0.06%	-0.04%
105	0.00%	0.00%	0.00%

Male

	G2	Current	Difference
Age	Scale	HMI	(2) - (1)
	(1)	2013-2019	(3)
52	1.10%	0.96%	-0.14%
57	1.40%	0.92%	-0.48%
62	1.50%	0.95%	-0.55%
67	1.50%	0.47%	-1.03%
72	1.50%	0.79%	-0.71%
77	1.50%	1.07%	-0.43%
82	1.30%	0.79%	-0.51%
87	0.90%	0.55%	-0.35%
92	0.60%	0.36%	-0.24%
97	0.30%	0.18%	-0.12%
102	0.10%	0.06%	-0.04%
105	0.00%	0.00%	0.00%

Mortality Adjustment Factor Development

- The Base Adjustment Factors, representative of the central point of the industry study (mid-2013), are brought up to 12/31/2022 using the HMI basis just covered.
- The Mortality Adjustment Factors were developed for the quinquennial age groups by averaging the raw factors for the five consecutive ages, and then rounding and smoothing the results.
- We propose using linear interpolation for generating the factors for the individual ages.
- The G2 Improvement Scale would remain the mortality improvement basis for future mortality improvement (FMI).
- Slide 12 below shows a summary of the proposed revision of Mortality Adjustment Factors by the central age in the quinquennial groupings for the Enhanced Death Benefit, Basic Death Benefit, and GLB bases.
- Slides 13-15 show the development combining the base factors with the HMI impacts, along with a comparison to the current VM-21 factors.

Mortality Adjustment Factors for VM-21

Variable Annuity Mortality Adjustment Factors

Age	VA non-GLB Enhanced DB		VA non-GLB Basic DB		VA GLB	
	Female	Male	Female	Male	Female	Male
52	150%	160%	105%	110%	95%	100%
57	160%	160%	110%	110%	95%	95%
62	160%	160%	105%	105%	88%	88%
67	155%	160%	100%	105%	88%	93%
72	150%	160%	108%	115%	98%	103%
77	145%	150%	113%	115%	105%	105%
82	135%	135%	115%	115%	113%	113%
87	120%	120%	113%	113%	113%	113%
92	115%	115%	113%	113%	113%	113%
97	110%	110%	110%	110%	110%	110%
102	105%	105%	105%	105%	105%	105%
105	100%	100%	100%	100%	100%	100%

Mortality Adjustment Factors for VM-21

VA non-GLB Enhanced DB—Female

Age	Base Adj Factors	HMI Impact	Factors thru 2022	Current VM-21	Diff from VM-21
52	150.0%	97.7%	150%	100.0%	50.0%
57	150.0%	105.3%	160%	100.0%	60.0%
62	150.0%	108.6%	160%	100.0%	60.0%
67	145.0%	104.9%	155%	104.0%	51.0%
72	145.0%	103.4%	150%	114.0%	36.0%
77	140.0%	105.0%	145%	118.0%	27.0%
82	125.0%	106.9%	135%	113.0%	22.0%
87	112.0%	104.6%	120%	110.0%	10.0%
92	112.0%	102.8%	115%	110.0%	5.0%
97	110.0%	101.7%	110%	108.0%	2.0%
102	104.0%	100.6%	105%	103.0%	2.0%
105	100.0%	100.0%	100%	100.0%	0.0%

VA non-GLB Enhanced DB—Male

Age	Base Adj Factors	HMI Impact	Factors thru 2022	Current VM-21	Diff from VM-21
52	150.0%	104.3%	160%	100.0%	60.0%
57	150.0%	107.5%	160%	100.0%	60.0%
62	150.0%	108.3%	160%	100.0%	60.0%
67	145.0%	111.8%	160%	104.0%	56.0%
72	145.0%	109.4%	160%	114.0%	46.0%
77	140.0%	107.5%	150%	118.0%	32.0%
82	125.0%	107.4%	135%	113.0%	22.0%
87	112.0%	105.1%	120%	110.0%	10.0%
92	112.0%	103.4%	115%	110.0%	5.0%
97	110.0%	101.7%	110%	108.0%	2.0%
102	104.0%	100.6%	105%	103.0%	2.0%
105	100.0%	100.0%	100%	100.0%	0.0%

Mortality Adjustment Factors for VM-21

VA non-GLB Basic DB—Female

Age	Base Adj Factors	HMI Impact	Factors thru 2022	Current VM-21	Diff from VM-21
52	105.0%	97.7%	105%	100.0%	5.0%
57	105.0%	105.3%	110%	100.0%	10.0%
62	95.0%	108.6%	105%	100.0%	5.0%
67	95.0%	104.9%	100%	104.0%	-4.0%
72	105.0%	103.4%	108%	114.0%	-6.0%
77	108.0%	105.0%	113%	118.0%	-5.0%
82	108.0%	106.9%	115%	113.0%	2.0%
87	108.0%	104.6%	113%	110.0%	3.0%
92	110.0%	102.8%	113%	110.0%	3.0%
97	110.0%	101.7%	110%	108.0%	2.0%
102	104.0%	100.6%	105%	103.0%	2.0%
105	100.0%	100.0%	100%	100.0%	0.0%

VA non-GLB Basic DB—Male

Age	Base Adj Factors	HMI Impact	Factors thru 2022	Current VM-21	Diff from VM-21
52	105.0%	104.3%	110%	100.0%	10.0%
57	105.0%	107.5%	110%	100.0%	10.0%
62	95.0%	108.3%	105%	100.0%	5.0%
67	95.0%	111.8%	105%	104.0%	1.0%
72	105.0%	109.4%	115%	114.0%	1.0%
77	108.0%	107.5%	115%	118.0%	-3.0%
82	108.0%	107.4%	115%	113.0%	2.0%
87	108.0%	105.1%	113%	110.0%	3.0%
92	110.0%	103.4%	113%	110.0%	3.0%
97	110.0%	101.7%	110%	108.0%	2.0%
102	104.0%	100.6%	105%	103.0%	2.0%
105	100.0%	100.0%	100%	100.0%	0.0%

Mortality Adjustment Factors for VM-21

VA GLB—Female

VA GLB—Male

	Base Adj	HMI	Factors	Current	Diff from		Base Adj	HMI	Factors	Current	Diff from
Age	Factors	Impact	thru 2022	VM-21	VM-21	Age	Factors	Impact	thru 2022	VM-21	VM-21
52	95.0%	97.7%	95%	80.0%	15.0%	52	95.0%	104.3%	100%	80.0%	20.0%
57	90.0%	105.3%	95%	80.0%	15.0%	57	90.0%	107.5%	95%	80.0%	15.0%
62	80.0%	108.6%	88%	80.0%	8.0%	62	80.0%	108.3%	88%	80.0%	8.0%
67	83.0%	104.9%	88%	83.0%	5.0%	67	83.0%	111.8%	93%	83.0%	10.0%
72	95.0%	103.4%	98%	90.5%	7.5%	72	95.0%	109.4%	103%	90.5%	12.5%
77	98.0%	105.0%	105%	98.0%	7.0%	77	98.0%	107.5%	105%	98.0%	7.0%
82	105.0%	106.9%	113%	105.5%	7.5%	82	105.0%	107.4%	113%	105.5%	7.5%
87	108.0%	104.6%	113%	110.0%	3.0%	87	108.0%	105.1%	113%	110.0%	3.0%
92	110.0%	102.8%	113%	110.0%	3.0%	92	110.0%	103.4%	113%	110.0%	3.0%
97	110.0%	101.7%	110%	108.0%	2.0%	97	110.0%	101.7%	110%	108.0%	2.0%
102	104.0%	100.6%	105%	103.0%	2.0%	102	104.0%	100.6%	105%	103.0%	2.0%
105	100.0%	100.0%	100%	100.0%	0.0%	105	100.0%	100.0%	100%	100.0%	0.0%

Agenda Item 5

Discuss VM-20, Requirements for Principle-Based Reserves for Life Products, Historical and Future Mortality Improvement Factors



Update on Life Insured Mortality Improvement Recommendation

Mortality Improvement Life Working Group
of the SOA Mortality and Longevity Oversight Advisory Council

MARCH | 2024

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Update on MILWG 2024 Work Plan

- Mortality improvement (MI) recommendation for limited underwriting business
 - 2023 work: review sources of data
 - Determined additional data sources required
 - Options
 - Stand-alone, new voluntary data call for limited underwriting business
 - Consider revision to the valuation manual to include both limited underwriting and fully underwritten business as part of VM-51
 - Need to consider applicability of planned new underwriting data elements for limited underwriting purposes
- MI Recommendation for fully underwritten business

MI Recommendation – Fully Underwritten Business

- Where we started
 - Assumption that there was too much noise in the industry experience data on insured lives to be used to measure insured MI results
 - Reviewed SOA general population socioeconomic decile work
 - Is there a decile that that can be used as a proxy for the life insurance population?
- Initial Considerations
 - Is there a new baseline level of MI post-pandemic?
 - Should the impact of COVID be included/excluded? If excluded, method of exclusion?
 - How much do drug/opioid and smoking status impact the insurance population?
 - Drug/opioid issue (may be more important for key concentration of insured ages)
 - Smoker/nonsmoker differential

MI Recommendation – Fully Underwritten Business

Overview of Work (2023-2024)

- Predictive modeling
 - To identify and quantify the primary factors impacting mortality improvement results in the insured population data
- MI analysis tool developed
 - Excel-based tool that allows for normalization of data for factors identified in predictive modeling work
 - Allows for comparison to general population deciles
 - Allows for better understanding of true biometric mortality improvement levels



MI Recommendation – Fully Underwritten Business Predictive Modeling

- Goal: Determine the primary factors impacting insured mortality
- Data: 2011-2017 fully insured mortality data provided by SOA
- Separate models developed by product
 - Term business – excluding post level term
 - Post level term business only
 - Permanent products
 - Differences by product in order of factor importance
- Results: confirmed group's hypothesis regarding primary factors impacting MI for insured population
 - Changes in underwriting
 - Changes in risk class structure
 - Changes in face amount

MI Recommendation – Fully Underwritten Business

MI Analysis Tool

- Data
 - General population data from socioeconomic decile study
 - Insured data from NAIC/NYDFS data calls – 2009-2019 period
 - Included all fully underwritten, standard underwriting business (no substandard)
 - Potential additional update for finalized Valuation Basic Table (VBT) Team dataset
- Methodology
 - Insured data distribution was normalized across years for factors having greatest effect
 - Informed by predictive modeling work (underwriting, risk class, face amount changes)
 - Normalized insured data was compared to population data
- Results
 - Have not reached final conclusions but normalized insured data appears reasonably consistent with population trends



Issues to be Addressed for Initial Recommendation

- Recommend base dataset to measure insured MI
 - Options
 - Use normalized insured data directly, or
 - Select a general population decile as a proxy for insured
- Issues with each option
 - Lag time in data updates
 - General population decile updates would need to be maintained
 - Granularity and credibility of data (e.g., smokers/non-smokers)
- Is the biometric component of MI adequately isolated in the normalized insured data?

MI Recommendation - Fully Underwritten Business

Next Steps

- Peer review of MI Analysis Tool & Predictive Models
- Continue investigation of patterns in insured versus general population experience generated by MI analysis tool
- Plan to provide updates throughout 2024

Contact Information

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Agenda Item 6

Comments Received on the Generator of Economic
Scenarios (GOES) Acceptance Criteria and Consider
Adoption of the GOES (E/A) Subgroup Report
(Six-B Excel File can be found on the LATF Page)

Generator of Economic Scenarios (GOES) Subgroup Report

Mike Yanacheak
Chair, GOES Subgroup

March 15th, 2024

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

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Agenda



1. Review Decisions made by GOES (E/A) Subgroup
 - a) Equity-Treasury Linkage
 - b) Corporate Model Decision
 - c) Scenario Stratification
 - d) DR and SERT Scenario Methodology
 - e) Treasury Flooring Methodology
2. Unaggregated Field Test Details
3. Timeline and Next Steps

Appendix: American Council of Life Insurers
Suggested Field Test Scenario Sets

GOES Subgroup Discussions

- The GOES Subgroup held eight meetings since the NAIC Fall National Meeting to:
 - Reach key decisions necessary to provide Conning guidance on a new calibration of the GOES,
 - Review a model office approach for testing new scenario sets, and
 - Plan for the upcoming unaggregated GOES field test.

Timing	Meeting Discussion Topic
12/18/2023	Kick-off Call for GOES (E/A) Subgroup
1/10/2024	Scenario Stratification and Statistics
1/17/2024	Equity-Treasury Linkage
1/24/2024	Corporate Model Quantitative Comparison
1/31/2024	1. SERT Scenario Methodology 2. Treasury Flooring Methodology
2/7/2024	Preliminary Model Office Testing Results
2/14/2024	1. Equity-Treasury Linkage 2. Corporate Model Discussion
2/21/2024	Valuation Dates and Other Field Test Parameters

Equity-Treasury Linkage

Background

- In GEMS® there is a functional linkage between the Overnight Treasury Yield and the drift factor for the equity fund price. Therefore, the expected equity fund total returns will rise and fall with changes to the starting short maturity interest rate levels.
- This is a departure from the currently prescribed Academy Interest Rate Generator (AIRG) that does not have this functional equity-Treasury linkage.
- It is difficult to see strong relationships between equities and Treasuries because the equity market is so volatile. However, investors typically demand equity returns in excess of those offered by risk-free assets to compensate for bearing risk.

GOES (E/A) Subgroup Decisions

- The American Council of Life Insurers (ACLI) proposed an approach to include a positive correlation between Treasury and equity movements to achieve regulator's desire for scenarios that were reflective of low rate/low equity returns and high rate/low equity returns.
- Rachel Hemphill also suggested modifying the equity acceptance criteria developed by the Academy to use an average of the results of the reference models that were utilized in development of the criteria, rather than a "least-restrictive" approach.
- The Subgroup elected to move forward with the recommendations from the ACLI and Rachel Hemphill for the unaggregated field test.

Corporate Model Decisions

Background

- The GEMS® Corporate Model captures the key dynamics that influence bond returns, including stochastic spreads, credit rating transitions, and defaults.
- However, due to the proprietary nature of the GEMS® Corporate model, there are limits to the extent of documentation that can be shared publicly.
- The Academy developed an alternative model that is fully documented.
- After regulator acceptance criteria related to the corporate model were released and the GEMS® Corporate Model was recalibrated, results from both the models were compared for a variety of different starting spread conditions were reviewed at a Subgroup meeting.

GOES (E/A) Subgroup Decisions

- Many of the Subgroup members were sympathetic to the need for documentation.
- However, several regulators expressed a preference for the GEMS® Corporate Model given the level of research and development that Conning will continue to provide going forward.
- The Subgroup elected to move forward with the GEMS® Corporate Model for the unaggregated field test.

Scenario Stratification

Background

- Currently the prescribed scenario generator (AIRG) has an embedded scenario picker tool that creates representative scenario subsets solely based off of a significance measure calculated from the 20-year UST.
- Other methodologies to select scenarios may be more appropriate for companies exposed to other risks - for example, the writer of variable annuity products may be more exposed to equity risk.
- The Valuation Manual allows for companies to use alternative scenario selection methodologies provided they meet certain requirements (e.g. documentation that reserves or TAR are not materially understated).

GOES (E/A) Subgroup Decisions

- Conning developed an Excel-based tool to create scenario subsets. The tool is able to select scenarios based off of the same methodology used in the AIRG. It also has the functionality to select scenarios using gross wealth factors (GWFs) determined from the Large Capitalization (S&P 500) equity fund.
- Conning will calculate the UST significance measure and the Large Capitalization GWFs by scenario, and provide that information with each scenario set to use as input for the tool.
- The Subgroup elected to move forward with field test participants utilizing the Conning scenario selection tool.

DR and SERT Scenario Methodology

Background

- The VM-20 stochastic exclusion ratio test (SERT) and deterministic reserve (DR) scenarios are currently created using functionality built into the AIRG that is specific to the AIRG model form.
- To reproduce the stylistic characteristics of the SERT and DR scenarios produced by the AIRG in the Conning model, Conning recommended a percentile-mapping approach.
- Some commenters noted issues with the percentile mapping approach, including 1) deviations from the results of the AIRG, and 2) potential runtime burdens when companies need to perform reserve projections.
- Matt Kauffman proposed an alternative methodology for generating the UST SERT and DR scenarios to overcome the issues noted above.

GOES (E/A) Subgroup Decisions

- The Subgroup decided to move forward with the approach recommended by Matt Kauffman for the UST SERT and DR scenarios.
- For the equity model, the percentile mapping approach will be employed. As the linkage from the Treasury model to the equity model was removed, the equity scenarios will now be static from period to period. Therefore, the reserve projection runtime issues will be eliminated as static equity SERT and DR scenarios can be used at each future valuation period, regardless of the starting conditions.

Treasury Flooring Methodology

Background

- The Conning GEMS® Treasury model has the capability of producing negative interest rates, which have been a feature prevalent in other countries currently and in recent history.
- For the first GOES field test, two versions of flooring had been applied to the Treasury scenarios to control the frequency and severity of negative Treasury rates while meeting other regulatory objectives:
 - Generalized Fractional Floor with multiplicative factor and threshold components
 - Shadow-Rate Floor which employed a similar base formula as the generalized fractional floor but employing a shadow-rate model to preserve the arbitrage-free nature of the unfloored Conning GEMS® Treasury model

NAIC Staff Recommendation

- To utilize the shadow-rate floor methodology, an additional step has to be employed during the calibration of the Treasury model.
- The flooring methodology was discussed at the GOES (E/A) Subgroup, but a direction on which methodology to employ was not decided.
- For expediency, NAIC Staff recommends utilizing the Generalized Fractional Floor methodology for the unaggregated GOES field test using the same parameters as the prior field test.
- If additional testing using the Shadow-Rate Floor is desired, this could be done using the NAIC's model office.

Unaggregated Field Test Details

Valuation Dates

- GOES (E/A) Subgroup recommended testing both high and low interest and high and low spread starting conditions
- NAIC Staff recommendation:
 - 12/31/23 - "high" starting interest rates
 - 12/31/21 - low starting interest, low starting spread
 - 12/31/23 high-spread sensitivity - alter starting spread environment to be consistent with close to worst in history high spreads

Scenario Subsets

- Companies should use a consistent scenario selection approach and number of scenarios between a field test scenario set and the scenario set used in the baseline.
- Conning excel tool to create subsets will be made available for companies to create desired subsets from full 10k scenario set.

Inforce

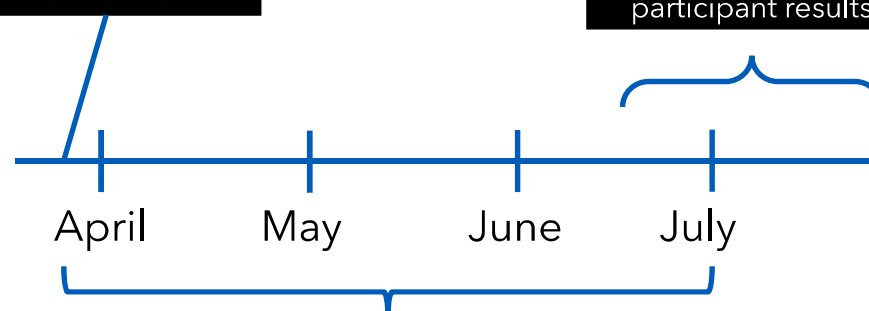
- The participants' 12/31/23 inforce should be used for each field test run.
- As necessary, participants should modify their inforce to account for changes in starting conditions.
- Participants are encouraged to run additional sensitivities to share with regulators to help explain their results. For example, a participant with a block of variable annuities with guaranteed minimum benefits may want to test different starting levels of moneyness.

Timeline and Next Steps

- Conning is working on developing the next calibration of the GOES to be used in the unaggregated field test and model office testing.
- Scenarios with the latest calibration will be released ahead of a 3/27 call of the GOES (E/A) Subgroup, where the results will be reviewed and considered by Subgroup members for inclusion in the unaggregated field test.
- **If confirmed, the field test will be performed from March 27 to June 30.**
- Model office analysis will be performed and shared at public GOES (E/A) Subgroup calls.
- Confidential, regulator-only sessions will be held for individual participants to share their results starting in June as participants finish.

3/27 GOES SG call to review and confirm field test scenarios

Confidential, regulator-only meetings held to review individual participant results



1. Field test participants produce results using field test scenarios
2. Model office analysis performed by NAIC and Oliver Wyman
3. GOES (E/A) Subgroup calls held to review model office results and finalize implementation of GOES

Appendix

American Council of Life Insurers Suggested Field Test Scenario Sets

Field Test Run	Sensitivity	Treasury Rates	Equity Markets	Credit Spreads	Run Type
Baseline	N/A	12/31/2023	12/31/2023	12/31/2023	Required - All
Low rate shock	Standalone	3/9/2020	12/31/2023	12/31/2023	Required - All
Up rate shock	Standalone	10/31/1989	12/31/2023	12/31/2023	Required - All
Normal yield curve	Standalone	12/31/2004	12/31/2023	12/31/2023	Required - All
Down equity shock	Standalone	12/31/2023	12/31/2023 - 25%	12/31/2023	VM-21 only, VUL
Low equity / low rate	Combined	3/9/2020	12/31/2023 - 25%	12/31/2023	Model Office & Provide Scenarios
Low equity / high rate	Combined	10/31/1989	12/31/2023 - 25%	12/31/2023	Model Office & Provide Scenarios
Up equity shock	Standalone	12/31/2023	12/31/2023 + 25%	12/31/2023	Model Office & Provide Scenarios
High credit spread	Standalone	12/31/2023	12/31/2023	12/31/2008	Model Office & Provide Scenarios
Low credit spread	Standalone	12/31/2023	12/31/2023	12/31/2021	Model Office & Provide Scenarios
Inverted Curve	Standalone	7/3/2023	12/31/2023	12/31/2023	Model Office & Provide Scenarios
Extreme rate up with inversion	Standalone	3/31/1980	12/31/2023	12/31/2023	Model Office & Provide Scenarios
"Average Scenario"	Standalone	Average	12/31/2023	12/31/2023	Model Office & Provide Scenarios

Generator of Economic Scenarios (GOES) (E/A) Subgroup
Virtual Meeting
February 21, 2024

The GOES (A) Subgroup of the Life Risk-Based Capital (E) Working Group and Life Actuarial (A) Task Force met Feb. 21, 2024. The following Subgroup members participated: Mike Yanacheak, Chair (IA); Peter Weber, Vice Chair (OH); Ted Chang (CA); Wanchin Chou (CT); Philip Barlow (DC); Scott Shover (IN); William Leung (MO); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill (TX); and Craig Chupp (VA).

1. Discussed the Corporate Model

Hal Pedersen (American Academy of Actuaries—Academy) noted that although the Conning corporate model is robust in capturing the key credit dynamics, it also is complex, requiring extensive documentation for users to understand. Pedersen further noted limitations on the public discussion of the model, given the requirement for those with access to the full documentation to sign a non-disclosure agreement (NDA). Jason Kehrborg (Academy) stated that the Academy's position is that the best approach is to move forward with the Academy corporate model.

Carmello asked what the request for proposal (RFP) indicated regarding the completeness of the documentation. Scott O'Neal (NAIC) stated that the RFP required "full documentation," to which Carmello replied he was concerned that Conning was not following the terms of the RFP.

Weber stated that Conning would be able to provide sufficient support if state insurance regulators decided to move forward with the Academy corporate model, including being able to leverage their expertise to make updates as needed. Carmello noted that although he had concerns about the level of documentation, he felt that the Subgroup should stick with Conning's model, as it is the selected vendor. Barlow, Leung, and Hemphill said that part of the reason that the GOES project was initiated in the first place was due to the Academy no longer being able to maintain and develop its scenario generators; therefore, the Subgroup should stick with a fully supported model. Eom and Chou supported the Academy corporate model, given the lack of documentation provided for the Conning model.

Barlow made a motion, seconded by Leung, to move forward with the Conning corporate model for the upcoming field test. The motion passed with New Jersey opposing.

2. Discussed Unaggregated GOES Field Test Specifications

O'Neal walked through a series of questions (Attachment A) regarding the unaggregated GOES field test specifications. On the question of having only mandatory runs versus including more optional runs, Hemphill noted that she would be okay with including optional runs focused on certain products, to which Carmello and Yanacheak agreed. After O'Neal asked the Subgroup what starting conditions should be included in the field test, Yanacheak noted that a high and low starting spread environment would be good to include in addition to a high and low starting level of interest rates.

Randall McCumber (Lincoln Financial Group) suggested that companies include different starting inforces with varying in-the-moneyness levels. On the question of other field test variations to include, Carmello suggested including an equity model with a full equity-treasury linkage. Yanacheak suggested testing that using the NAIC's model office.

Having no further business, the GOES (A) Subgroup adjourned.

Generator of Economic Scenarios (GOES) (E/A) Subgroup
Virtual Meeting
Feb 14, 2024

The GOES (E/A) Subgroup of the Life Actuarial (A) Task Force met Feb. 14, 2024. The following Subgroup members participated: Mike Yanacheak, Chair (IA); Judith French and Pete Weber, Vice Chair (OH); Ted Chang (CA); Wanchin Chou (CT); Philip Barlow (DC); Scott Shover (IN); William Leung (MO); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill (TX); and Craig Chupp (VA).

1. Discussed the GOES Equity-Treasury Linkage

Jason Kehrberg (American Academy of Actuaries—Academy) presented proposed “quadrant” criteria for the joint distribution of interest rates and equity returns (Attachment 1). Brian Bayerle (American Council of Life Insurers—ACLI) then discussed a proposal for a correlation approach for the relationship between expected equity returns and interest rate levels (Attachment 2). Weber asked how complicated the implementation of the ACLI proposal would be in the Conning model. Daniel Finn (Conning) replied that the software already has the capability, however this functionality is not currently used. Finn added that to fully implement the ACLI proposal, the correlation will have to be extended to the other equity indices to ensure that the relationship between them is appropriate. French asked Bayerle to describe how the ACLI approach was different from the Academy’s approach. Bayerle replied that the key difference is that the Academy approach was not specifically outlining a particular approach to how the linkage would be implemented in the GOES itself, whereas the ACLI defines a correlation approach.

Hemphill reviewed the approach the Academy used to develop equity acceptance criteria, noting that the Academy utilized multiple reference models and took the least binding of these at various gross wealth factor percentiles to determine the criteria. Hemphill said that the least binding approach reduced the dispersion of the equity returns, and instead suggested that a set of criteria be used that are based on an average of the results of the reference models.

Hemphill made a motion, seconded by Weber, to move forward with the ACLI approach for the equity-Treasury correlation in tandem with her suggested equity acceptance criteria for the upcoming unaggregated field test. The motion passed unanimously.

2. Corporate Model Discussion

Yanacheak asked Finn to describe the level of support Conning would provide for the Academy’s corporate model if approved by regulators. Finn replied that they would provide maintenance of the Academy model, but would not actively be developing the model with additional improvements as they do with the Conning corporate model. Yanacheak then asked how a company actuary could obtain a level of documentation to be able to understand the model. Finn replied that Conning had allowed previously for clients and companies undergoing a free trial that have signed a non-disclosure agreement (NDA) to access the comprehensive documentation. Additionally, Finn noted that Conning was now willing to companies that are not competitors of Conning to sign an NDA and get access to the comprehensive documentation, even if they are not clients or participating in a free trial. Bayerle commented that if only those that have signed an NDA are able to access the comprehensive documentation, that could severely limit the public discussion of the model, which ACLI views as a concern.

Having no further business, the GOES (E/A) Subgroup adjourned.

Generator of Economic Scenarios (GOES) (E/A) Subgroup
Virtual Meeting
February 7, 2024

The GOES (E/A) Subgroup of the Life Risk-Based Capital (E) Working Group and Life Actuarial (A) Task Force met Feb. 7, 2024. The following Subgroup members participated: Mike Yanacheak, Chair (IA); Peter Weber, Vice Chair (OH); Ted Chang (CA); Wanchin Chou (CT); Scott Shover (IN); William Leung (MO); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill (TX); and Craig Chupp (VA).

1. Heard a Presentation on the VA Model Office

Scott O’Neal (NAIC) presented some background on variable annuity (VA) model office testing and invited Dylan Strother (Oliver Wyman) and Carson Cook (Oliver Wyman) to present the NAIC GOES model office analysis results (Attachment 1) that they prepared. Jason Kehrberg (American Academy of Actuaries—Academy) asked whether there is any intention to look at the different makeup of existing assets, different reinvestment strategies, and alternative hedging methodologies. Strother noted that the current asset mix and reinvestment strategy are simplified. However, Strother noted that the model is flexible and can be readily updated to the extent that the Subgroup wants to test different scenarios or asset mixes. Strother further stated that since explicit hedging methodologies can vary by company, it was decided that implicit hedging would be appropriate for the model office.

Connie Tang (Retired) echoed the need to use the model office to understand asset modeling variations. Steve Strommen (Blufftop LLC) suggested additional uses of the model office, including: 1) addressing the question of equity risk premium; and 2) understanding how policy owners are investing their cash value, which could be explored using mixed equity and fixed income asset mixture. Yanacheak agreed. Yanacheak noticed that for certain model office archetypes, the reserve increased more on those hedged versus those unhedged. Cook replied that for this particular archetype, the guaranteed benefit reserve changed more on a percentage basis for the hedged archetype; however, the relationship flipped when looking at the total reserve. Strother added that the key here was the size of the reserves relative to the cash surrender value (CSV). Tang suggested looking at other metrics besides the total and excess reserves. Randall McCumber (Lincoln Financial Group) asked whether any sensitivities were done on the error factor for the hedged runs. Cook replied that they could easily perform sensitivities on different E-factor levels.

Having no further business, the GOES (E/A) Subgroup adjourned.

Generator of Economic Scenarios (GOES) (E/A) Subgroup
Virtual Meeting
January 31, 2024

The GOES (A) Subgroup of the Life Actuarial (A) Task Force met Jan. 31, 2024. The following Subgroup members participated: Mike Yanacheak, Chair (IA); Pete Weber, Vice Chair (OH); Ted Chang (CA); Wanchin Chou (CT); Philip Barlow (DC); Scott Shover (IN); Ben Slutsker (MN); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill (TX); and Craig Chupp (VA).

1. Discussed SERT Scenarios and DR Scenario Methodology

Scott O’Neal (NAIC) started by providing some background information on the stochastic exclusion ratio test (SERT) and deterministic reserve (DR) scenarios and decisions that were made by the GOES Technical Drafting Group (Attachment A). Matt Kauffman (Moody’s Analytics) then discussed an alternative approach to producing the SERT scenarios using the base functionality of the Conning model rather than applying a percentile mapping approach. O’Neal stated that although regulators on the GOES Technical Drafting Group had expressed interest in field testing both the Conning and Kauffman approaches, subsequent discussions had pointed towards using the methodology proposed by Kauffman. Several Subgroup members then voiced support for moving forward with the Kauffman approach to producing SERT scenarios.

2. Discussed Treasury Flooring Methodology

O’Neal provided background for the Treasury model flooring discussion, noting that the Conning Treasury model has the capability of producing negative interest rates, which have been a feature prevalent in other countries currently and in recent history. O’Neal stated that for the first GOES field test, two different versions of a floor had been applied to the Treasury scenarios to control the frequency and severity of negative Treasury rates while meeting other regulatory objectives. For next steps, O’Neal said that the subgroup needed a decision on which flooring methodology to use along with deciding the appropriate flooring parameters to control the frequency and severity of negative interest rates. Jason Kehrberg (American Academy of Actuaries—Academy) noted concerns with the amount of overriding that is occurring in the scenarios in terms of frequency and duration. Hal Pedersen (Academy) said that the 3-Factor Cox-Ingersoll-Ross model used by Conning did have some challenges, similar to other models, in modeling interest rates in a low starting interest rate environment. The meeting concluded without a decision on the direction for flooring.

Having no further business, the GOES (A) Subgroup adjourned.

Generator of Economic Scenarios (GOES) (E/A) Subgroup
Virtual Meeting
January 24, 2024

The GOES (A) Subgroup of the Life Actuarial (A) Task Force met Jan. 24, 2024. The following Subgroup members participated: Mike Yanacheak, Chair (IA); Peter Weber, Vice Chair (OH); Ted Chang (CA); Wanchin Chou (CT); Philip Barlow (DC); Scott Shover (IN); Ben Slutsker (MN); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill (TX); and Craig Chupp (VA).

1. Discussed Quantitative Comparisons Between the Conning and Academy Corporate Models

Scott O'Neal (NAIC) provided some background information on a quantitative comparison of the American Academy of Actuaries (Academy) and Conning Asset Management (Conning) corporate models. Dan Finn (Conning) presented comparisons of four alternative start dates when both the Academy and Conning models were calibrated to some of the same targets and used the same underlying treasury rates. Connie Tang (Retired) asked what targets were revised as part of the latest Conning corporate model calibration. Finn replied that the only targets that have been revised for the Conning model are the initial and long-term spreads, along with the net excess return.

Iouri Karpov (Academy) noted that the two corporate models were now producing broadly more similar results than before the recalibration of the Conning model. However, Karpov stated that there were still differences in the results, particularly in the high-spread starting conditions, which were challenging to understand without complete model documentation. Finn clarified that the Conning GEMS model calibration is fully documented. However, the documentation is available only to clients or companies participating in a free trial that have signed a non-disclosure agreement (NDA). Brian Bayerle (American Council of Life Insurers—ACLI) noted that the best practice for documentation would be to make everything publicly available to any practitioner.

Yanacheak asked the Subgroup what additional information it would need to decide which corporate model to utilize for field and model office testing. Weber noted that the group should not seek the hypothetical perfect solution but instead focus on moving forward with the most reasonable approach. Tang and Karpov raised concerns that there are differences between the excess returns in the Conning and Academy corporate models, and more time would be needed to understand the source of differences. Hal Pedersen (Academy) raised the same concerns that the ACLI did about documentation and wanted more time for the Academy to review the results and provide feedback.

Subgroup members discussed the potential for deciding which corporate model to use for field testing but ultimately decided to take more time reviewing the results from the Academy and Conning models before arriving at a conclusion.

Having no further business, the GOES (A) Subgroup adjourned.

Generator of Economic Scenarios (GOES) (E/A) Subgroup
Virtual Meeting
January 17, 2024

The GOES (E/A) Subgroup of the Life Actuarial (A) Task Force met Jan. 17, 2024. The following Subgroup members participated: Mike Yanacheak, Chair (IA); Pete Weber, Vice Chair (OH); Ted Chang (CA); Wanchin Chou (CT); Philip Barlow (DC); Scott Shover (IN); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill (TX); and Craig Chupp (VA). Also participating was: D.J. Bettencourt.

1. Discussed the Equity-Treasury Linkage and Relevant Comments Received

Scott O’Neal (NAIC) walked through a presentation (Attachment A) that provided background on the equity-Treasury linkage and summarized relevant comments that had been received at the Life Actuarial (A) Task Force session at the 2023 Fall National Meeting. Brian Bayerle (American Council of Life Insurers—ACLI) stated that the ACLI felt that achieving an appropriate reflection of low interest rates paired with low equity returns could be achieved through acceptance criteria without the need for a functional equity-Treasury linkage. Bayerle further stated that a functional equity-Treasury linkage could result in too few high interest rate and low-equity scenarios. D.J. Bettencourt (New Hampshire) noted that he had some concern about the potential for unrealistic scenarios well outside the bounds of history resulting from the inclusion of a functional equity-Treasury linkage. Steve Strommen (Blufftop LLC) stated that including a functional equity-Treasury linkage in the GOES would cause undue volatility in the statutory reserve and capital requirements.

2. Discussed Joint Equity-Treasury Linkage Acceptance Criteria

Jason Kehrberg (American Academy of Actuaries—Academy) noted that the relationship between equities and interest rates should be reflected via a long-term difference in return expectation set during the calibration of the GOES, rather than a structural linkage. Kehrberg then discussed how joint interest and equity “quadrant” criteria could be used to include a sufficient number of low-interest/low-equity and high-interest/low-equity scenarios.

3. Discussed Equity Calibration Approach

O’Neal walked through the results of two different potential approaches for the equity model calibration that built on the Treasury calibration that was released at the 2023 Fall National Meeting. The first approach, O’Neal said, was based off the 2022 Field Test 1A approach, where the equity targets are altered with each valuation date to reduce the impact of the equity-Treasury linkage in the Conning model. O’Neal also discussed the second approach where the equity scenarios would meet the existing static acceptance criteria under a starting interest environment that matched the long-term average, but that would move higher or lower depending on alternative starting interest conditions. Carmello, noting a previous comment letter from Nationwide Financial that stated there were no major problems with the currently prescribed equity model, said that he remembered differently that there was an issue that regulators were seeking to address in the equity model. Hemphill said that the equity-Treasury relationship in the scenario generator had been brought up during the Variable Annuity Reform project and was tabled for later consideration by regulators as part of that process.

Having no further business, the GOES (E/A) Subgroup adjourned.

Generator of Economic Scenarios (GOES) (E/A) Subgroup
Virtual Meeting
January 10, 2024

The GOES (E/A) Subgroup of the Life Actuarial (A) Task Force met Jan. 10, 2024. The following Subgroup members participated: Mike Yanacheak, Chair (IA); Pete Weber, Vice Chair (OH); Wanchin Chou (CT); William Leung (MO); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill (TX); and Craig Chupp (VA).

1. Discussed Scenario Stratification

Scott O'Neal (NAIC) provided some background information on scenario stratification and reviewed relevant decisions that the GOES Technical Drafting Group had made (Attachment 1). Yanacheak noted that despite Conning providing a means to stratify scenarios, it was still the responsibility of the actuary to meet the relevant principle-based reserve requirements to not materially understate the reserve. Dan Finn (Conning) then walked through a proposal for an Excel-based scenario selection tool that could create custom scenario stratifications. Finn noted that the prototype could select scenarios based either on a significance measure calculated on the 20-year Treasury rates or a gross wealth factor determined from the large capitalization equity fund. Finn said that these two measures could be provided with each monthly scenario release and used as input for the Excel-based tool to select the number of scenarios desired by the user.

Link Richardson (Corebridge Financial) noted that the GOES Technical Drafting Group had recommended providing the ability to stratify scenarios on both equity and interest rates simultaneously and asked whether that was still being considered. Finn stated that it would be possible to include an additional metric in the scenario stratification tool. Carmello stated that he preferred that any scenario selection methodology used by companies be provided by Conning due to the potential for companies to artificially lower the reserve or capital amount by choosing alternative scenario selection methodologies. Yanacheak replied that he understood Carmello's concern but that companies with different risk profiles could likely benefit from different scenario selection methodologies. Hemphill said that she supported allowing companies to use alternative scenario selection methodologies, as companies using these alternative methodologies typically demonstrate that they meet the *Valuation Manual* requirements by doing an off-cycle valuation using the full set of scenarios and comparing them to the results using the smaller set.

After a brief discussion, regulators noted support for moving forward with the scenario selection tool with the ability to stratify based on interest rates or equity returns.

Having no further business, the GOES (E/A) Subgroup adjourned.

Generator of Economic Scenarios (GOES) (E/A) Subgroup
Virtual Meeting
December 18, 2023

The GOES (E/A) Subgroup of the Life Risk-Based Capital (E) Working Group and Life Actuarial (A) Task Force met Dec. 18, 2023. The following Subgroup members participated: Mike Yanacheak, Chair (IA); Peter Weber, Vice Chair (OH); Wanchin Chou (CT); William Leung (MO); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill (TX); and Craig Chupp (VA).

1. Discussed 2024 GOES Subgroup Meetings Plan

Scott O’Neal (NAIC) provided a walkthrough of the plan for various milestones to be met during 2024 GOES (E/A) Subgroup meetings (Attachment 1). Regarding the milestone of reviewing the statistics against the criteria, Brian Bayerle (American Council of Life Insurers—ACLI) asked a question about the process of determining whether a particular scenario set has adequately met the criteria. Yanacheak replied that the process is not yet formalized, and the plan is to have the Subgroup formalize it.

2. Discussed the VA Model Office Testing Plan

Yanacheak provided background that the NAIC has engaged Oliver Wyman, an actuarial consulting firm, to assist with the model building and analysis of the variable annuity (VA) model office testing. O’Neal presented some background on the project and the advantages of performing model office testing before passing it off to Dylan Strother (Oliver Wyman) and Carson Cook (Oliver Wyman) to complete the presentation (Attachment B) on the AXIS model design.

Connie Tang (Retired) wanted to learn whether the separate account asset mix (bond fund versus equity fund) could be tested to understand the impact on reserves and capital. Tang also asked if multiple hedging strategies could be tested. O’Neal responded that only implicit hedging strategies would be modeled but noted that field test participants employed both implicit and explicit hedging strategies almost equally. Regarding separate account asset modeling, O’Neal said the most impactful testing would be pursued, but not every variation would be captured due to resource limitations. Yanacheak added that the hope is that companies will be willing to provide feedback when the model office results do not reflect company impacts because of differences in product design, asset strategy, or some other feature of the model. Eom asked about the timing and plan to expose various sensitivity tests. O’Neal replied that additional testing would be performed once Conning releases new scenario sets.

Having no further business, the GOES (E/A) Subgroup adjourned.

Updated ACLI Proposal on E2.T (joint interest-equity distribution)

The American Academy of Actuaries has updated the Gross Wealth Factors for GOES acceptance criteria. ACLI’s proposed joint distribution has been updated to reflect this update, using the average of the 4 Academy reference models. The without correlation GWF between the average of the 4 reference models versus the ACLI model were close, so we applied a ratio to true-up to the ACLI’s GWF with correlation.

Current Recommendation:

Tail GWF Target	10 Years	30 Years
Low Rate/Low Equity quadrant	0.81 ² - 0.87 ¹	1.82 - 2.12 ¹
High Rate/Low Equity quadrant	0.87 ¹ - 1.02	2.12 ¹ - 2.71

Prior Recommendation:

Tail GWF Target	10 Years	30 Years
Low Rate/Low Equity quadrant	0.82 - 0.89	1.88 - 2.18
High Rate/Low Equity quadrant	0.89 - 1.04	2.18 - 2.79

¹: 0.87 and 2.12 are based on Academy’s recent update

²: 0.81 = ACLI’s GWF with correlation (=0.82) * Ratio (=98%), where Ratio = Academy’s GWF without correlation using average of the 4 reference models/ACLI’s GWF without correlation = 0.87/0.89 = 98%

The average CTE90 for the 4 reference models without correlation is close to the ACLI model, so the ratio was applied to adjust with 20% correlation.

Quadrant	Horizon	AIRG	Avg 4 Ref Models	Ratio
Low Rate -- W/ Corr	10	0.82	0.80	
High Rate -- W/ Corr	10	1.04	1.02	
All Rate -- W/O Corr	10	0.89	0.87	98%
Low Rate -- W/ Corr	30	1.88	1.83	
High Rate -- W/ Corr	30	2.79	2.71	
All Rate -- W/O Corr	30	2.18	2.12	97%

January 2, 2024

Dear Mr. O'Neal,

These comments are submitted to the Life Actuarial (A) Task Force in response to the request for comments on the "Updated Generator of Economic Scenarios (GOES) Targeting Criteria and Evaluation Statistics". My comments are limited to T4.T (low for long) and C3 (corporate model credit-related losses).

T4.T (low for long)

The target for low-for-long behavior is expressed with reference to the starting yield curve on 12/31/2020 and in terms of the geometric average of 20-year interest rates over the first 10 to 30 years.

- a) At least 7.5% of scenarios need a 10-year geometric average of the 20-year UST below **1.45%**
- b) At least 3.75% of scenarios need a 30-year geometric average of the 20-year UST below **1.95%**

These targets are very far from any actual historical experience in the US. The lowest 10-year geometric average in the last 70 years is over 2.4% (not under 1.45%) and the lowest 30-year geometric average is over 4.3% (not under 1.95%). If the proposed targets are adopted and used, the resulting calibration will not produce scenarios that resemble the historical record.

One of the principles underlying the principle-based approach is that any stochastic process used for simulation is to be calibrated based on historical experience. Only then will the statistical measures such as CTE level be meaningful. If the stochastic process (the generator in this case) is calibrated using targets far outside historical experience, the statistical measures such as CTE lose their meaning and the principle-based approach loses its value.

Regulatory concern over the risk of a low-for-long scenario is justified. But such a scenario is often called a "Japan scenario" for a reason – it occurred in Japan, a country with very different economic and demographic characteristics. Such a scenario could occur in the US, but only with a significant change in the economic environment that would justify a significant recalibration of the generator. One cannot calibrate a generator to simulate both the US and Japan at the same time. If that is attempted, the result will resemble neither the US nor Japan. Another approach is needed to address regulatory concern about a low-for-long scenario.

I suggest dropping the targets in T4.T in favor of a different approach to the issue. I suggest that a single deterministic scenario be defined as the "low-for-long" scenario. Recall that there is already a deterministic scenario defined for use in setting minimum reserves. A new "low-for-long" deterministic scenario could be used to set a new minimum total asset requirement (adding to, but not replacing, existing requirements). It would define a path of future interest rates lower than those in the existing deterministic scenario for reserves. When starting from the 12/31/2020 yield curve, the scenario would have a 10-year geometric average of the 20-year UST below 1.45% and a 30-year geometric average of the 20-year UST below 1.95%. One could think of that scenario as being the deterministic scenario for

reserves but recalibrated to reflect a potential significant change in the economic and demographic environment.

Such a “low-for-long” deterministic scenario could be defined in the same manner as the existing deterministic scenario¹, but with one difference. The generator would use a lower mean reversion point when generating the “low-for-long” deterministic scenario. The exact value of the lower mean reversion point would be set so that when starting from the 12/31/2020 yield curve the generated deterministic scenario meets the target 10-year and 30-year geometric averages. It would be a straightforward exercise to determine the required value for the mean reversion point. That value would be fixed and would not change over time. When developing scenarios from any future starting yield curve, the “low-for-long” deterministic scenario would be calculated using that fixed mean reversion point. The scenario would differ for each starting yield curve in a reasonable fashion, always reflecting the regulatory concern about the risk of a potential low-for-long scenario.

I put this idea forward to address regulatory concerns over a low-for-long scenario while allowing the GOES to be calibrated based on historical behavior of interest rates in the US, behavior which does not include low-for-long. Clearly some testing of this approach would be needed, focused on the level of the minimum total asset requirement based on the proposed deterministic low-for-long scenario. Some fine-tuning of the T4.T targets could be debated based on the results of such testing.

C3 (credit-related losses)

A metric was requested regarding the episodic nature or “lumpiness” of credit-related losses. Such a metric could be used to develop a criterion for calibration targeting or acceptance.

The issue is that credit-related losses are not constant; they fluctuate. A simple criterion would be a minimum target for the top of the range in which they fluctuate.

In the model proposed by the Academy of Actuaries, credit-related losses are called “frictional costs”. Frictional costs tend to average less than the credit spread (OAS). In Targeting Criteria C1.T their average is implicitly targeted as the excess of the target OAS over the target excess return. That target for the average is much less than 100% of the target OAS. One could stipulate that frictional costs should fluctuate so that on some occasions (some monthly time steps) they exceed 100% of the target OAS. On those occasions, securities with credit risk would provide lower total returns than risk-free government securities. The generator should create scenarios where that happens in some monthly time steps.

I believe the Academy’s calibration of its corporate model already meets that criterion.

Stephen J. Strommen FSA, CERA, MAAA

¹ At least two different procedures have been proposed for creating the deterministic scenario using the Conning model. I strongly recommend the procedure suggested by the Academy of Actuaries rather than the procedure implemented by Conning for the first field test. The Academy’s procedure is much more consistent with the way the scenarios in the Stochastic Exclusion Ratio Test (SERT) were originally defined and successfully tested.



January 31, 2024

Rachel Hemphill
Chair, Life Actuarial (A) Task Force (LATF)

Philip Barlow
Chair, Life Risk-Based Capital (E) Working Group (Life RBC)

Mike Yanacheak
Chair, Generator of Economic Scenarios (E/A) Subgroup (GOES Subgroup)
National Association of Insurance Commissioners (NAIC)

Re: Updated Generator of Economic Scenarios (GOES) Targeting Criteria and Evaluation Statistics

Dear Chairs Hemphill, Barlow, and Yanacheak,

On behalf of the Economic Scenario Generator Subcommittee (the subcommittee) of the American Academy of Actuaries,¹ I appreciate the opportunity to offer comments on the Updated GOES Targeting Criteria and Evaluation Statistics exposed on 12/21/23.

The subcommittee strongly supports the targeting criteria and evaluation statistics in the exposure as a foundation for going forward. At the same time, the subcommittee believes the scope of what has been exposed is too limited. The subcommittee strongly recommends that additional targeting criteria and evaluation statistics be adopted to enhance the foundation provided in the exposure. The subcommittee believes that additional criteria and statistics are necessary to achieve a robust set of targeting criteria and evaluation statistics.

The subcommittee's November 2023 [comment letter](#) and 2023 presentation at the NAIC's Fall National Meeting include specific details on what we believe represent a robust set of targeting criteria and evaluation statistics.

Thank you for the opportunity to review and provide comments on the exposure. If you have any questions or would like further dialogue, please contact Amanda Barry-Moilanen, life policy analyst, at barrymoilanen@actuary.org.

Sincerely,

Hal Pedersen
Chairperson, Economic Scenario Generator Subcommittee
American Academy of Actuaries

¹ The American Academy of Actuaries is a 20,000-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

January 30, 2024

Honorable Rachel Hemphill
Chair, Life Actuarial (A) Task Force (LATF)
Re: Generator of Economic Scenarios (GOES) Targeting Criteria and Evaluation Statistics.

Dear Ms. Rachel Hemphill,

Please accept this comment on the Generator of Economic Scenarios (GOES) Targeting Criteria and Evaluation Statistics.

If there was a single document containing the mathematical specification in standard equation format of the entire model to be calibrated and evaluated, then it would make the development of targeting criteria and evaluation statistics go faster. This would help with the linkages of treasury, corporate and equity models.

One of the stated goals of the exposure is: "2) that the GOES provides the appropriate incentives for sound risk management programs at insurance organizations. " This is not possible if the risk premia do not bear a rational relationship to the risks in the model. If the model contains stochastic volatility and jumps then this is even more necessary.

Only full disclosure and documentation of the model can make it possible to rationally calibrate risk premia among equity portfolios and across asset classes. This will go beyond a constant Sharpe ratio to appropriate risk premia for each stochastic risk factor including stochastic volatility, jumps and correlation to the interest rate state variables.

The stochastic model including the risk premium for each exposure to risk and the exposure to each risk at each time point in each scenario will approximate the result of the full set of calculations. Thus the risk premium for each exposure to risk is key to the results. If the risk premia for the exposures are not rational, then the model will not lead to rational behavior by the companies in choosing their net exposure to risk in the scenarios at each time node. The measures of reserves and capital will likewise be skewed. The correlation of equities and bonds are part of the net exposures to risk. Errors in correlation modeling will then feed into errors in the net exposures to risk and then into the overall model output measures.

The NAIC GOES work has been extremely good and is on its way to setting a milestone in financial risk regulation.

Sincerely yours,

Mark S. Tenney

1 Treasury Targeting Criteria

The research of James Bullard of the St. Louis Fed is helpful for all of the targeting criteria for treasuries. This is cited at the end.

1.1 Targeting criteria T1.T:

a) The scenario set should reasonably reflect history, with some allowance for more extreme high and low interest rate environments

b) Upper Bound:

i. 18and no more than 0.5

ii. 17and no more than 0.5

Evaluation statistics T1.E:

Review maximum sojourn length for high interest rates (> 17)

Note 1.1 (Are these feasible if rates start at the high boundary?) *If the current system and calibration are started at the high boundary points, will it satisfy these criteria? If not, it may be that this should apply to starts at some point below this.*

Note 1.2 (Long run stationary points can be used as well.) *The long run distribution after the start up point no longer has an impact can also be used to help specify this type of requirement.*

Note 1.3 (Regime switching research may support wider spread) *Regime switching in treasury rates may support more of a tail at high rates.*

Note 1.4 (Limiting high rates is reasonable for this application) *A concern that too many high rate scenarios could lead to under-estimating risk of low rates is reasonable. However, if the ability of rates to spike up is under-weighted, it could lead companies to take risks that are not appropriate or regulators to miss seeing them. The linkage of the equity and interest rate models may enter into this as well.*

1.2 Targeting criteria T2.T:

Apply the following guidance for negative interest rates:

a) Maturities less than 20 years could experience negative interest rates

b) Interest rates may remain negative for multi-year time periods

c) 1Y rates should not be lower than -1.0

d) 20Y rates should not be lower than 0.0

These are a reasonable set for negative rates at this time. Over time, there may be lower negative rates as indicated in my prior comments that the Taylor Rule teaches deep negative rates and this is widely taught in universities and will become part of certification exams in financial services.

The Bullard research could support lower values. Bullard also has citations to the work of others on these matters.

1.3 Evaluation statistics T2.E:

- e) Frequency of low rates:
 - i. Review the frequency of negative rates for 1Y rate
 - ii. Review the frequency of negative rates and rates below 1
- f) Review Maximum sojourn length for low interest rates (< 0)

The influence of the Taylor Rule may cause these to become more negative for longer. Bullard's research indicates there may be some deeper negative regimes that could appear in the future.

1.4 Targeting criteria T3.T:

- a) Review initial actual vs. fitted spot curve differences for a sampling of 5 dates representing different shapes and rate levels for the entire curve and review fitted curves qualitatively to confirm they stylistically mimic the different actual yield curve shapes
- b) The frequency of different yield curve shapes in early durations should be reasonable considering the shape of the starting yield curve (e.g., a flatter yield curve leads to more inversions).
- c) The steady state curve has normal shape (not inverted for short maturities, longer vs shorter maturities, or between long maturities)

Starting the state variables from their extreme values is another way to calibrate or at least understand the behavior of the model during the period that the initial starting point matters.

The steady state distribution should be part of the calibration process, at least to understand it. The steady state distribution will also help with linkages between the models and the risk, hedging, return relationships among asset classes.

1.5 Evaluation statistics T3.E:

- d) Review upper and lower bound for 20Y-1Y in low, moderate, and high interest rate environments. Compare to historical.
- e) Review worse-than-history frequencies for 20Y-1Y in low, moderate, and high interest rate environments. Compare to historical.

In addition to these environments, the steady state distribution should be part of the comparison.

1.6 Targeting criteria T4.T:

- a) At least 7.5 average of the 20-year UST below 1.45
- b) At least 3.75 average of the 20-year UST below 1.95

Note: As part of the model acceptance process, a given calibration of the GOES will be tested at multiple starting dates. This criteria is relevant for the 12/31/20 starting yield curve.

Understanding the steady state distribution would help understand whether these are difficult criteria to meet. The distribution of rates over some long period of time can be compared to the steady state distribution and these statistics as well.

1.7 Targeting criteria T5.T:

- a) For each scenario, calculate the geometric average of the [20-year] UST yield over the first [10] and [30] years of the projection.
- b) Calculate the [1st] and [99th] percentiles of the distribution of geometric average rates (for both the 10 and 30-year horizons).
- c) Look up criteria based on the starting level of the 20-year UST yield (interpolate if necessary).

The steady state distribution should also be included in this list. So calculate these geometric averages from a point at which the starting value doesn't matter. Another way to do this is to generate starting values using the steady state distribution.

1.8 Evaluation statistics T5.E:

- d) Use the Academy approach to determine parameters for 15th and 85th percentiles to expand the criteria table to also include conditions on moderate rate.

The steady state distribution and the empirical distribution over some time period should be compared to see how their shapes compare. This would help understand how the curves are shaped and where there are points of change in convexity of these curves. That would help in finding the key points to include. The 15th and 85th are likely to be important points in such an approach.

1.9 Evaluation statistics T6.E:

Mean reversion benchmark:

- i. 50th percentile 1.31
- ii. 50th percentile 3.35

Ranges based on 15 year half-life for consistency with AAA recommendation.

Evaluation statistics T7.E:

Note that the buckets refer to starting yield level and the desired range percentages refer to the annualized standard deviation of monthly yield changes.

The Fed and economists linked to it continue to insist on a 2 percent inflation target. But there is skepticism from other observers like Greg Mankiw that 3 percent inflation may be good enough. However, for much of the post-2008 period, inflation was around 1 percent.

Bullard of the St. Louis Fed finds that r-star is regime switching.

See page 29 of the following.

https://www.stlouisfed.org/-/media/project/frbstl/stlouisfed/files/pdfs/bullard/remarks/2018/bullard_nabe_washington_dc_26_february_2018.pdf

His variable, r-dagger can be as low as -1.27 percent and as high as 4.8 percent.

He also discusses Taylor type rules on page 39.

<https://www.stlouisfed.org/news-releases/2018/02/26/bullard-natural-real-rate-interest>

Bullard has an update in 2019 on r-star.

https://www.stlouisfed.org/from-the-president/-/media/project/frbstl/stlouisfed/files/pdfs/bullard/remarks/2019/bullard_dnb_ecb_workshop_amsterdam_16_may_2019.pdf

Page 17 has an interesting graph on the return of all capital as being around 8 percent.

St. Louis Fed sees the economy as being regime switching.

<https://www.stlouisfed.org/-/media/project/frbstl/stlouisfed/files/pdfs/bullard/papers/regime-switching-forecasts-17june2016.pdf>

<https://www.stlouisfed.org/annual-report/2017/regime-based-view-of-the-economy>

Latest views on regime switching and inflation from St. Louis Fed.

https://www.stlouisfed.org/-/media/project/frbstl/stlouisfed/files/pdfs/bullard/remarks/2023/bullard-hoover-12-may-2023.pdf?sc_lang=en&hash=57F46D16C205FF0EE116DFE0F7239C8

2 Equity model

Targeting criteria E1.T:

Use the former C3 Phase II equity model Calibration Criteria as a rough placeholder.

Sharpe ratios for equities other than S&P should be within 5% of S&P Sharpe ratio.

Evaluation statistics E1.E:

Review 0.5th percentile, comparing to [0.54/0.58/0.62] for 1/5/10-year WF.

Request for Targeting Criteria E2.T:

Regulators want to ensure that: 1) there is an adequate representation of scenarios with low-for-long Treasury rates and low accumulated equity returns, and 2) that the GOES provides the appropriate incentives for sound risk management programs at insurance organizations. Comments are requested on targeting criteria that could address these concerns.

The Sharpe ratio is one way to try to create a consistent approach to risk. However, the first of the two Cox, Ingersoll, and Ross papers derives more general expressions than the Sharpe ratio. The types of risk premia found in that paper and the related literature contain mathematical relationships for risk that are different than the equality of Sharpe ratios between different asset classes, even ones that are related such as equity portfolios.

Instead, they recognize risk premia due to hedging changes in the investment opportunity set. The

Sharpe ratio does not reflect such hedging. The expressions in the CIR papers reflect the more sophisticated risk, return, and hedging relationships in asset returns.

The goal of sound risk management programs at insurance organizations may be hampered by the use of Sharpe ratios for equity portfolios. Insurance companies are among the long term investors who should be looking at hedging changes in the investment opportunity set.

If there is stochastic equity volatility, then there should be a risk premium for exposure to it. As this exposure varies among equity portfolios their expected return should vary as well as their Sharpe ratio.

The same applies to exposure to interest rates. The interest rate is stochastic in this model. Stochastic interest rates are part of the investment opportunity set. So the varying correlation of different equity portfolios will receive a varying risk premium compensation.

If there are jumps in equity portfolios, and if jump risk is compensated, then this too will cause the Sharpe ratio to vary among portfolios.

Theorem 2 of the first Cox, Ingersoll, and Ross papers gives a multi-factor risk premia equation. See page 374, formula (20) of An Intertemporal General Equilibrium Model of Asset Prices. See also equation (11c) page 370 of that paper.

Stochastic volatility of equity returns and jumps in equity prices or indices requires risk premia for those risks. This means that the Sharpe ratios will differ because of different exposures and correlations to these additional risk factors as well as to interest rates.

The primary determinant of the results of the model are the specification of the stochastic model itself including the risk premium for each risk exposure and the net risk exposure at each time node in each scenario. The risk premia for the risk exposures have to be rational or the model will not provide accurate measures of risk or of risk and return.

The correlation of equity returns to bond returns and the other state variables such as the interest rate state variables, stochastic volatility variables and jump variables is critical to the model. Capturing correlation correctly is a key part of calculating net exposures to each stochastic variable. The risk premium for each stochastic variable then determines the incremental expected return for the net exposure to each stochastic variable.

2.1 Equity Bonds Correlation

2.1.1 Remarks on equity bond correlation

We seem now to be in a period of positive correlation of bond and stock price returns. This reduces asset diversification for insurance companies and so is of importance to regulators.

Calibrating the bond equity price correlation with this model is tricky. The three interest rate state variables are assumed uncorrelated so that the standard CIR bond price formulas can be used. If one thinks in terms of a Cholesky decomposition matrix, the first 3 variables are the interest rate variables. The unexpected stock returns can have non-zero coefficients in that matrix for those 3 interest rate state variables. That does not induce any correlation among the 3 interest rate variables but does create a correlation between stock price returns and bond price returns. This is because both will have a weighting on these 3 interest rate variables.

The stock bond correlation could also be introduced in a second stage by a correlation between stock returns and bond portfolio returns. So the model would be built around the interest rate model but with a consistent structure. Interest rates are generated first, then bond portfolio returns calculated and then a correlation of those to stock returns. Perhaps they do something like that now, I'm not quite sure on the details of their method on this.

The more conservative choice from a regulator perspective is a positive correlation between bond and stock price returns. This is assuming the model does not have a regime to allow this correlation to change. So if regulators have to pick a single correlation, positive correlation between price returns would be more conservative.

2.1.2 References on equity bond price or return correlation

This article by Antti Ilmanen from 2003 is used by several of the links.

Stock-Bond Correlations September 1, 2003 - Antti Ilmanen

<https://www.aqr.com/Insights/Research/Journal-Article/Stock-Bond-Correlations>

You can download the paper with the download arrow on the right of their page.

https:

[//www.aqr.com/-/media/AQR/Documents/Journal-Articles/Stock-Bond-Correlations.pdf?sc_lang=en](https://www.aqr.com/-/media/AQR/Documents/Journal-Articles/Stock-Bond-Correlations.pdf?sc_lang=en)

<https://www.aqr.com/Insights/Research/Journal-Article/A-Changing-Stock-Bond-Correlation>

Drivers and Implications Q1 2023 - Alfie Brixton Jordan Brooks Peter Hecht Antti Ilmanen Thomas Maloney Nicholas McQuinn

They introduce the phrase "golden parameter". Several other sources have picked up on this phrase. The search: "golden parameter" stock bond correlation, or equity bond correlation picks up other articles discussing the AQR article.

Their full article can be downloaded from the link on the left saying download.

https://www.aqr.com/-/media/AQR/Documents/Alternative-Thinking/A-Changing-Stock-Bond-Correlation_JPM.pdf?sc_lang=en

<https://russellinvestments.com/us/blog/is-the-stock-bond-correlation-positive-or-negative>

I might have put the following graph up during the discussion period at the Fall National Meeting.

https://russellinvestments.com/-/media/images/us/blogs/images/mortensenoct26_1.png

This shows the changing sign and size of the correlation between bond returns and stock returns. The interest rate change correlation will be opposite in sign, of course.

A more economics oriented discussion is here.

The correlation of equity and bond returns BIS Quarterly Review | 04 December 2023 by Marco Jacopo Lombardi and Vladyslav Sushko

[https://www.bis.org/publ/qtrpdf/r_qt2312v.htm#:~:text=The%20correlation%20between%20US%](https://www.bis.org/publ/qtrpdf/r_qt2312v.htm#:~:text=The%20correlation%20between%20US%20)

20equity,prolonged%20period%20with%20positive%20correlations.

" Amid a generalised increase in the volatility in fixed income markets and in sync with the inflation surge, the correlation between equity and bond returns has turned from negative to increasingly positive. A departure from the negative correlation between equity and bond returns, the typical configuration for the past two decades, weakens the diversification in the classical long-only asset allocation strategies of pension and investment funds. Specifically, it undermines the role of bonds as a hedge for the portfolio's equity portion. This box documents the recent persistence of positive correlations and explains it with reference to the inflation environment and the attendant uncertainty icon.

The correlation between US equity and government bond returns switched sign in mid-2021. Since then, the monthly realised correlation of the daily returns has become positive (Graph A1.A). One has to go back to the 1980s and the early 1990s to find a prolonged period with positive correlations.icon"

https://www.bis.org/publ/qtrpdf/r_qt2312x.htm

Life insurance companies – the missing relief from rising interest rates

Sean Markowicz article is also valuable to understand the linkages.

https://mybrand.schroders.com/m/6662cf1f5d2d8543/original/202202_what-drives-the-equity-bond-correlation.pdf

Figure 8 on page 6 is a very helpful summary of 3 scenarios for equity bond correlation. This figure may be the easiest visual to explain this that I have found.

Following has useful data, although Google chrome has a problem downloading it for me.

This is monthly data

http://www.econ.yale.edu/~shiller/data/ie_data.xls

<http://www.econ.yale.edu/~shiller/data.htm>

3 Corporate model

Targeting criteria C1.T:

- a) Set steady state excess return targets for each bond fund according to the criteria below.
- b) Average annualized excess returns for each bond fund in years 20 through 30 of the projection should be no greater than the steady state excess returns, but no less than the steady state excess returns minus a buffer

Evaluation statistics C2.E:

Request for criteria or statistics C3:

On the Corporate model, Steve Strommen raised: Stylized fact 1a says "Credit-related losses tend to be "lumpy" or episodic." This increases risk for insurers of significant risk in a short period. Nothing in the criteria or statistics reflect this.

We need a recommended metric if this is to be evaluated.

Default rates over NBER recessions could be used as one measure to target. Although this may not be the best based on the research cited below.

https://www.nber.org/system/files/working_papers/w15848/w15848.pdf

CORPORATE BOND DEFAULT RISK: A 150-YEAR PERSPECTIVE Kay Giesecke Francis A. Longstaff
Stephen Schaefer Ilya Strebulaev

We find that over the long term, credit spreads are roughly twice as large as default losses, resulting in an average credit risk premium of about 80 basis points. We also find that credit spreads do not adjust in response to realized default rates.

From the abstract.

The worst event occurred in the 1870s when the railroad boom of the 1860s was followed by a disastrous decade of defaults. During the three-year period from 1873 to 1875, the annual default rates total to 35.90 percent of the total par value of the corporate bond market. Several other three-year periods in the study period experience comparable default rates. Surprisingly, the worst three year period during the Great Depression with default rates totaling to 12.88 percent barely makes it into the top five credit events for nonfinancials.² On average, the annual corporate default rate during the sample period is about 1.50 percent. Corporate defaults, however, cluster significantly in time and the default rate is very persistent. Curiously, the correlation between credit events and NBER business downturns is only about 26 percent.

page 4 of pdf.

This covers 1866 to 2008. It also gives value weighted default rates instead of issuer weighted default rates.

https://www.nber.org/system/files/working_papers/w17854/w17854.pdf

MACROECONOMIC EFFECTS OF CORPORATE DEFAULT CRISES: A LONG-TERM PERSPECTIVE
Kay Giesecke Francis A. Longstaff Stephen Schaefer Ilya Strebulaev

https://www.nber.org/system/files/working_papers/w25317/w25317.pdf

LOW INFLATION: HIGH DEFAULT RISK AND HIGH EQUITY VALUATIONS Harjoat S. Bhamra
Christian Dorion Alexandre Jeanneret Michael Weber

https://fraser.stlouisfed.org/files/docs/publications/frbny_ci/ci2-6.pdf?utm_source=direct_download
Understanding Aggregate Default Rates of High Yield Bonds Jean Helwege and Paul Kleiman

Corporate defaults spike during times of low expected inflation. But so do firms' equity valuations, despite increased default risk. Figure 1 documents these two stylized facts for the U.S. over the period 1970Q2–2016Q4. Panel A illustrates the strong negative relation between expected inflation and the number of quarterly defaults in the U.S., whereas Panel B shows a similar negative relation between expected inflation and price-dividend ratios.

These types of linkages or correlations are important to a comprehensive model of risk in financial markets such as the NAIC GOES model.

Fred Graph data on corporate bonds. <https://fred.stlouisfed.org/tags/series?t=bonds%3Bcorporate>

NAIC corporate report. https://content.naic.org/sites/default/files/naic_archive/corporate.pdf

<https://content.naic.org/capital-markets-bureau>

Also of interest is this page.

<https://www.msci.com/research-and-insights/insights-gallery/probabilities-of-default-in-the-corporate-bond-market>

Patricia Matson, FSA, MAAA
1 Mott Avenue
New London, CT 06320

January 31, 2024

Ms. Rachel Hemphill, FSA, MAAA, FCAS
Life Actuarial Task Force

Dear Ms. Hemphill,

The purpose of this letter is to provide my comments to the Life Actuarial Task Force (LATF) regarding the recently exposed Targeting Criteria and Evaluation Statistics for the GOES that is intended for use within principle-based valuations.

I appreciate the opportunity to offer my comments. Please note that these comments are my own, and are not meant to represent views of my employer or any industry committees in which I participate.

I applaud the significant efforts made by the GOES Subgroup, LATF, the Life Risk-Based Capital Working Group, and the NAIC on identifying an appropriate set of economic scenarios for use in principle-based valuations. I have monitored these activities over the past several years, and understand that balancing the needs of a wide range of stakeholders is challenging. I also recognize the significance of appropriate scenarios to ensure that the insurance industry is holding adequate reserves and capital for policyholder protection, while also ensuring the results are not excessively conservative, which can result in the inability to provide well priced products to consumers.

In light of these considerations, I offer the following high-level comments. I realize that these comments extend beyond the scope of the exposure, but I would like to offer them at this time based on the cumulative set of information that has become available regarding the planned use of Conning's GEMS™ generator, including the recent exposure.

General Comments

1. The first piece of guidance in Actuarial Standard of Practice No. 56, Modeling (ASOP 56), states "When the actuary designs, develops, or modifies the model, the actuary should confirm, in the actuary's professional judgment, that the capability of the model is consistent with the intended purpose." In this case the intended purpose for the GOES is to create a scenario set that is suitable for actuaries to use to set reserves and capital. Some of the criteria that should be considered, per ASOP 56, are the level of detail of the model, the dependencies recognized, and the model's ability to identify possible volatility of output, such as volatility around expected values. Considering the challenges faced to date in calibrating the generator for its intended purpose, I suggest that LATF consider whether the ASOP 56 criteria are being met. Although I recognize the significant efforts spent to date, I suggest a reevaluation of fitness for purpose.
2. The Appointed Actuary's (AA) and Qualified Actuary's opinions on reserves play a critical role in the overall reserving process. I believe that the current regulatory approach to Principle Based Reserves (PBR), which combines prescription and judgment, results in a reserve setting process

January 31, 2024

Page 2

that both incorporates appropriate conservatism and allows for consideration of company-specific risks. Because of the significance of the opinion provided by the qualified actuary and the level of judgment that underlies it, I believe it is important for the AA to have a complete understanding of results from the PBR projection models, including the economic scenarios. I believe that use of a GOES that does not include full transparency for the user is inappropriate. It may result in unintended consequences, such as understated reserves, since the actuary developing those reserves will not be able to fully understand projection results. I suggest that LATF pursue a GOES for principle based reserving that will allow the actuary preparing reserve analysis full transparency into the generator mechanics. If this does not occur, the result is likely to be PBR reporting with a variety of caveats and limitations in the report, since such disclosures are required under actuarial standards of practice.

3. I am generally supportive of using the American Academy of Actuaries (AAA) Alternative Corporate Model presented to LATF on 10/27/2022 based on its transparency for the user and the fact that it appears to meet the desired criteria. However, I have some concern that use of a "mix and match" approach to the overall scenario generation (in which corporate bonds use one generator and other asset classes use a different one) could create unintended consequences, since it may be challenging in the longer term to ensure that different models used for different asset classes are calibrated in a consistent way, which will be important to properly capture asset risks. The NAIC may wish to consider whether the work of the AAA may be leverageable for other asset classes as well.

Specific Comments

4. Regarding the exposed criteria, it appears that in some cases the criteria are designed to try to correct for issues that are created due to the GOES lack of fitness for purpose described in my comment 1 above. A generator that was originally developed for purposes other than PBR may not be easy to calibrate to meet specific desired outputs. It may be worthwhile to reconsider whether the generator meets fitness for purpose criteria before proceeding further on the targeting criteria and evaluation statistics.

Thank you for the opportunity to provide comments on this important topic. I can be reached at 860-305-0701 or tricia.matson@outlook.com if you or other members have any questions.

Sincerely,



Patricia Matson, FSA, MAAA

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February 2, 2024

Rachel Hemphill
Chair, Life Actuarial (A) Task Force (LATF)
Mike Yanacheak
Chair, Generator of Economic Scenarios (GOES) (E/A) Subgroup

Re: Updated GOES Targeting Criteria and Evaluation Statistics

Dears Chair Hemphill and Yanacheak:

The American Council of Life Insurers (ACLI) appreciates the opportunity to submit feedback on LATF's exposure of updated GOES Targeting Criteria and Evaluation Statistics.

We appreciate the inclusion of some of the ACLI recommendations in the Targeting Criteria and Evaluation Statistics. We would seek clarification as to how exactly the Targeting Criteria and Evaluation Statistics will work together to develop acceptable scenario calibrations. Additional guidance should include details on how Conning will use this information in their calibration process and how regulators intend to use this information to accept or reject the resulting calibrated scenarios. It may also be beneficial to develop guidelines for how many criteria or statistics need to be met for scenario calibration acceptance and whether some criteria will be prioritized over others.

Additionally, it would be beneficial for companies to receive updated scenarios as soon as possible to better understand their statistics, features, and impacts to assess if additional changes are warranted. That way, we can assess whether the current set of criteria are effective in capturing sufficient moderate and tail scenarios across the spectrum of potential risks, without excessively overweighting either. The scenarios can also be used to assess whether an evaluation statistic should be changed to a targeting criterion that would impact the model calibration. To support this robust assessment, we would recommend producing scenarios across varying initial starting conditions to ensure the calibration produces scenarios that are reasonable. Those economic environments would include, but are not limited to, a high interest rate environment, low interest

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The American Council of Life Insurers is the leading trade association driving public policy and advocacy on behalf of the life insurance industry. 90 million American families rely on the life insurance industry for financial protection and retirement security. ACLI's member companies are dedicated to protecting consumers' financial wellbeing through life insurance, annuities, retirement plans, long-term care insurance, disability income insurance, reinsurance, and dental, vision and other supplemental benefits. ACLI's 275 member companies represent 93 percent of industry assets in the United States.

accli.com

rate environment and inverted yield curve, and higher and lower starting equity market levels vs. the baseline.

Regarding the Evaluation Statistics, many of the criteria say to review, but do not set a particular target or threshold(s) associated with the review. The review would be more meaningful to see if the criteria were within specified metric(s) (for example, in T1.E and T2.E the review of the sojourn length should have a target of 4 years or less based on ACLI prior comments). Alternatively, guidance may need to be developed for adjusting certain criteria or evaluation statistics, such as mean reversion parameters for interest rates, as initial conditions change, ideally in a formulaic way.

The following comments are on the specific Targeting Criteria and Evaluation Statistics within each of the Treasury, Equity, or Corporate models.

Treasury Model:

- T1.E and T2.E: Add a target of 4 years or less to the sojourn requirements for the review.
- T2.E: We suggest the frequency of negative rates be a Targeting Criterion. ACLI previously proposed that the 99th percentile on the steady state should $\geq 0\%$ for 1Y and 1% for 20Y. Were this to be retained as an Evaluation Statistic, we would suggest these values should still be the targets for the review.
- T3.E: We suggest slope statistic should be a Targeting Criterion; the values should be the Academy proposed boundaries. Were this to be retained as an Evaluation Statistic, we would suggest these values should still be the targets for the review.
- T4.T: There is an indirect conflict between criteria T4 and criteria T5. We interpret both criteria as setting a minimum number of scenarios that should exceed/be lower than a certain threshold; criteria T5 varies based on starting conditions at the 1st and 99th percentile, while T4 is fixed no matter what the initial conditions are or would require each calibration to also generate scenarios for a different valuation date to review this criterion. Therefore, we continue to believe T4 is unnecessary given the more comprehensive T5, which already considers low for long conditions.
- T5.T: We would recommend that the American Academy of Actuaries (the Academy) develop the 15th and 85th percentile parameters on this criterion.
- T6.E: We would recommend that the regulators retain the ACLI proposed criteria on mean reversion. The version included in the exposure had lower rates.
 - A- Mean reversion target:
 - i. 50th percentile $2.0\% < 1Y \text{ rate} < 3.5\%$
 - ii. 50th percentile $4.0\% < 20Y \text{ rate} < 5.5\%$
 - B - Retain Academy Rate median reversion criteria with half-life of 10-20 years. We believe a range of years is more appropriate for this criterion.

Equity Model:

- E1.T and E1.E: We would request clarification from the Academy if the criteria should apply regardless of initial rates. We understood the criteria to apply in all interest rate environments because this is consistent with the original usage and evaluation of the criteria in C-3 Phase II and the targeting criteria document did not indicate an intention for variation in different initial conditions as it did for other targeting criteria. Further, if targets are adjusted as conditions change, it is preferable to have objective thresholds to how criteria should shift as drivers, such as interest rates change, ideally based on more than one model. If criteria would be adjusted due to changes in starting conditions, we would

like to see examples of how the criteria would evolve over a wide range of starting conditions.

- E1.E: This criterion should be a Targeting Criterion to better align with the equity stylized fact such that the wealth factor will not be less than or equal to the specified levels to control the frequency of worse than historical low equity returns, which is consistent with the intent of the criterion. We would also note the intention of this criterion was that the wealth factors in the scenarios under consideration for this criterion would be greater than or equal to instead of less than or equal to the specified levels to control the frequency of worse than history low equity returns. It may also be helpful to extend this criterion out to 20 and 30 years. To develop a proposed factor, we used the ACLI proposed 0.5th percentile over the Academy 1st percentile at 10 years times Academy proposal for 1st percentile at 20 years: $0.64/0.71*0.99 = 0.86$. A similar approach could be applied to 30 years, using the Academy proposal for the 1st percentile at 30 years: $0.64/0.71*1.55=1.40$.
- E2.T:

Question:

Regulators want to ensure that: 1) there is an adequate representation of scenarios with low-for-long Treasury rates and low accumulated equity returns, and 2) that the GOES provides the appropriate incentives for sound risk management programs at insurance organizations.

ACLI Response:

ACLI believes that adequate coverage of low/low is achievable without linkage. Linkage may result in challenges with the equity distribution and variances in capital levels.

ACLI would propose modeling the interest rate and equity relationship through introducing positive correlation as an alternative to the GEMS positive linkage. A positive correlation would emulate partial linkage by adjusting the number of scenarios that would be classified into the low/low and high/low interest rate/equity return quadrants, maintain a stable equity distribution regardless of initial interest rates, remove the need to recentralize the distribution due to interest rate changes, incentivize hedging and sound risk management, and avoid potential undue volatility in capital in changing rates. The proposal would create additional C3P2 criteria to reflect heavier tails for low interest/low equity and high interest/low equity.

ACLI's proposed criteria is based on analysis of the ACLI reference model (calibrated to the latest AAA criteria) and the AIRG equity model. The AIRG model was run assuming no correlation to rates, as well as a 20% correlation (which roughly is the correlation from 2000-2022).

To develop ranges, we expressed quadrant criteria in terms of L4L and H4L rates at 10% and 90% percentile respectively:

- Pick 1k scenarios out of 10k corresponding to L4L and H4L rates criteria.
- Use 10yr and 30yr time horizon

Using these scenarios for L4L and H4L, we average equity GWFs in bottom 10%:

- Using baseline AIRG equity (already in ACLI model) – 0% correlation
- Adding 20% correlation between log long rate and equity processes
- Compute average of bottom 10% equity distribution corresponding to scenarios identified above.

The proposed ranges from the analysis would reflect the ranges with and without the correlation. For low/low, we propose a range of gross wealth factors using the low rates with 20% correlation in the lowest decile to 0% correlation for the full 10,000 scenarios (0.82-0.89 for 10 years, 1.88-2.18 for 30 years). For high/low, we propose a range of gross wealth factors using the full 10,000 scenarios with 0% correlation to high rates with 20% correlation in the lowest decile (0.89-1.04 for 10 years, 2.18-2.79 for 30 years).

Average GAVG Rates (bottom and top decile)			
	Low rates	High rates	
10yr	1.3%	4.9%	
30yr	1.7%	6.8%	
Average GWF (bottom decile): 20% correlation			
	Low rates	High rates	
10yr	0.82	1.04	
30yr	1.88	2.79	

A summary approach for the criteria would be as follows:

For the Low rate/Low equity:

- (1) Select bottom 10% of interest rates, out of 10K scenarios, based on the geometric average of UST20Y over the first 10 and 30 years
- (2) Within the bottom 10% of interest rate scenarios, calculate the CTE(90) of gross wealth factors of the bottom docile,
- (3) The CTE(90) gross wealth factors with and without correlation for years 10, and 30 should be within the proposed ACLI criteria as mentioned above (i.e., 0.82-0.89 for 10 years, 1.88-2.18 for 30 years)

For the High rate/Low equity:

- (1) Select top 10% of interest rates, out of 10K scenarios, based on the geometric average of UST20Y over the first 10 and 30 years
- (2) Within the top 10% of interest rate scenarios, calculate the CTE(90) of gross wealth factors of the bottom docile,
- (3) The CTE(90) gross wealth factors with and without correlation for years 10, and 30 should be within the proposed ACLI criteria as mentioned above (i.e., 0.89-1.04 for 10 years, 2.18-2.79 for 30 years)

Corporate Model:

Question:

On the Corporate model, Steve Strommen raised: Stylized fact 1a says “Credit-related losses tend to be “lumpy” or episodic.” This increases the risk for insurers of significant risk in a short period. Nothing in the criteria or statistics reflect this.

ACLI response:

ACLI proposes developing tail annualized excess returns based on historical highs and lows over a relevant time horizon, e.g., 1st 5Y given faster mean reversion of credit spreads. Additionally, there may be benefits from defining a maximum or minimum sojourn length.

ACLI would like to thank regulators once again for the opportunity to submit our feedback and we look forward to continuing discussions on the GOES project at future sessions of LATF and the GOES (E/A) Subgroup.

Sincerely,

A handwritten signature in cursive script that reads "B Banfuli Colin Masterson". The signature is written in black ink and is positioned below the word "Sincerely,".

cc: Scott O’Neal (NAIC) and Craig Chupp (Vice-Chair, LATF)

Proposed “quadrant” criteria for the joint distribution of interest rates and equity returns

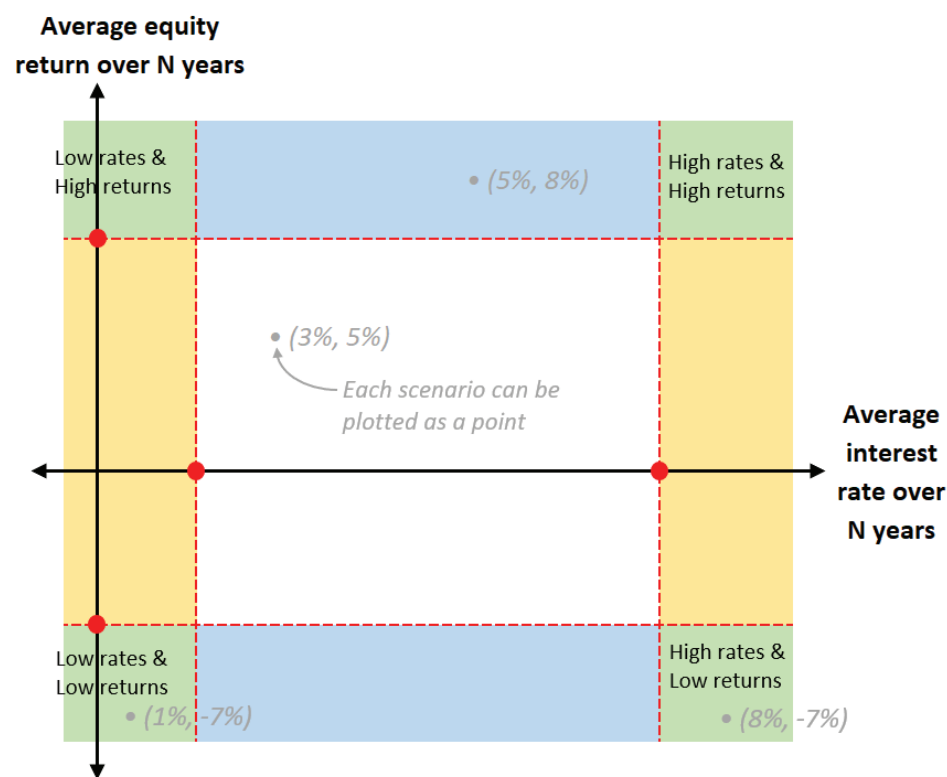
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Member, Economic Scenario Generator Subcommittee (ESGS)

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National Association of Insurance Commissioners (NAIC)
Generator of Economic Scenarios (GOES) (E/A) Subgroup—February 14, 2024

“Quadrant” criteria can be used to evaluate the frequency and severity of scenarios in the “four corners” of the joint distribution of interest rates and equity returns



- Proposed quadrant criteria are focused on deciles of the joint distribution of geometric average rates and returns over a horizon.
- Two forms of this criteria are proposed
 - **“Frequency” quadrant criteria:**
 - Quadrants are defined by explicit bounds (red lines) based on deciles from reference model(s).
 - Relevant statistic is the number of scenarios in a quadrant.
 - **“Severity” quadrant criteria:**
 - Quadrants are defined using deciles from the scenario set being evaluated, first interest rates then equity returns (number of scenarios in a quadrant is always $10,000 * 10\% * 10\% = 100$).
 - Relevant statistic is the average geometric average across scenarios in a quadrant (for both rates and returns).
 - Implied interest rate / equity return linkage can also be estimated.

Frequency quadrant criteria — Interest rate bounds

- LATF’s exposed “T5” criteria for interest rates (i.e., the low-for-long and high-for-long criteria) were proposed by the ESGS in our [9/14/23 presentation to LATF](#).
- “T5” uses 1st and 99th percentiles as criteria for low-for-long and high-for-long interest rates, but such percentiles are rather severe as quadrant criteria for the *joint* distribution of interest rates and equity returns.
 - 10,000 scenarios * 1% * 1% → about 1 scenario per quadrant.
- The “T5” table was expanded by adding 10th and 90th percentiles using the same methodology as before, i.e., the least-binding scenario set percentile from a range of identified reference models (see our 9/14/23 presentation for additional detail).
 - 10,000 scenarios * 10% * 10% → about 100 scenarios per quadrant.
- For any given scenario set, interest rate bounds for frequency quadrant criteria are determined by noting the starting level of the 20-year Treasury rate (UST20) and then interpolating 10th and 90th percentiles from the expanded “T5” table.

Expanded “T5” Table — Percentile criteria for the distribution of geometric average UST20 rates (use 10th and 90th percentiles as the low and high interest rate bounds for the frequency quadrant criteria).

Starting UST20	First 10 years of projection				First 30 years of projection			
	1st	10th	90th	99th	1st	10th	90th	99th
1%	0.9%	1.3%	2.4%	3.4%	1.5%	2.1%	4.2%	6.2%
2%	1.2%	1.7%	3.7%	5.0%	1.7%	2.4%	5.1%	7.7%
3%	1.6%	2.3%	4.8%	6.6%	1.9%	2.6%	6.0%	8.7%
4%	2.1%	2.9%	5.9%	7.7%	2.1%	2.9%	6.8%	9.6%
5%	2.7%	3.5%	6.9%	8.9%	2.3%	3.2%	7.6%	10.5%
6%	3.1%	4.2%	7.9%	10.0%	2.5%	3.6%	8.2%	11.2%
7%	3.6%	4.7%	8.9%	11.0%	2.8%	4.0%	8.7%	11.6%
8%	4.1%	5.4%	9.8%	12.1%	3.1%	4.3%	9.2%	12.0%
9%	4.6%	6.0%	10.7%	13.1%	3.3%	4.7%	9.7%	12.3%
10%	5.2%	6.7%	11.6%	14.0%	3.6%	5.1%	10.0%	12.6%

Interpolated values for starting UST20 at 1.94% (12/31/21) and 4.24% (12/31/19 + 200bps)

Starting UST20	First 10 years of projection				First 30 years of projection			
	1st	10th	90th	99th	1st	10th	90th	99th
1.94%	1.22%	1.70%	3.61%	4.95%	1.67%	2.34%	5.08%	7.62%
4.24%	2.27%	3.07%	6.18%	8.01%	2.11%	2.98%	6.98%	9.82%

Note: The highlighted values are the interest rate bounds used to apply the frequency quadrant criteria to field test scenario sets 1a, 5a, and 6 (starting UST20 of 1.94%) and 2a, 6a, and 5b (starting UST of 4.24%).

Frequency quadrant criteria — Equity return bounds

- The ESGS is currently only proposing quadrant criteria for low equity returns (quadrant criteria for high equity returns could be developed if regulators are interested).
- As with interest rates, the bound for low equity returns is based on the 10th percentile of the distribution of geometric average equity returns over the first 10 and 30 years of the projection.
- Unlike interest rates, equity return bounds do not depend on the starting level (no interpolation required).
- The proposed equity bounds are simply the 10th percentile from the 10,000 S&P 500 scenarios produced by the NAIC's currently prescribed ESG (AIRG):

<i>Low equity return bounds for the frequency quadrant criteria (based on the 10,000 AIRG S&P 500 scenarios)</i>		
Horizon	10th Percentile	
	Geometric average return	Gross wealth factor (GWF)
First 10 years of projection	1.14%	1.12
First 30 years of projection	3.83%	3.09

Note: GWFs are simply an alternative way to express geometric average returns, e.g., $(1 + 1.14\%)^{10} = 1.12$.

Note: There are other reasonable bases for this criteria besides the AIRG's 10,000 equity scenarios, such as the least-binding (slightly less extreme) reference model basis used to develop C3 Phase II equity GWF criteria. For example, compared to the 10-year 10th percentile of 1.14% (1.12 GWF) above:

- *LATF's exposed "E1" criteria (the former C3 Phase II equity GWF criteria, based on data through 2005) would correspond to a 10-year 10th percentile of 1.50% (1.16 GWF).*
- *The updated C3 Phase II equity GWF criteria in the Academy's 11/22/23 letter to LATF (based on data through 2022) would correspond to a 10-year 10th percentile of 2.01% (1.22 GWF).*

Illustrative application of quadrant criteria

The following slides use these scenario sets to illustrate the proposed quadrant criteria:

Scenario Set	Equity — Model / Calibration / Linkage Approach	Starting Date	Starting UST20
1a 2a	GEMS / NAIC / Constant mean equity risk premium with recentering	12/31/21 12/31/19 + 200 bps	1.94% 4.24%
1a-AIRG 2a-AIRG	AIRG / AIRG / Constant mean equity return	12/31/21 12/31/19 + 200 bps	1.94% 4.24%
5a 5b	GEMS / Conning / Constant mean equity risk premium	12/31/21 12/31/19 + 200 bps	1.94% 4.24%
6 6a	GEMS / ACLI / Constant mean equity return	12/31/21 12/31/19 + 200 bps	1.94% 4.24%

Notes:

1. All scenario sets listed in this table use the GEMS Interest Model with the Generalized Fractional Floor.
2. Scenario sets 1a, 2a, 5a, 5b, and 6 were part of the NAIC's ESG field test (1a-AIRG, 2a-AIRG, and 6a were not).
3. All scenario sets are comprised of 10,000 scenarios.

Frequency quadrant criteria – Illustrative application

Horizon	Scenario set	1a	2a	1a-AIRG	5a	5b	6	6a
	Starting rate level	1.94%	4.24%	1.94%	1.94%	4.24%	1.94%	4.24%
Linkage approach	Const mean ERP		Const mean return		Const mean ERP		Const mean return	

(with recentering)

IR & EQ Quadrant Frequency	10 years	Low IR / Low EQ	307	283	194	179	539	354	184	164
			High IR / Low EQ	91	22	164	119	211	52	171
Frequency	30 years	Low IR / Low EQ	528	562	232	189	972	629	225	170
		High IR / Low EQ	12	4	142	110	87	19	120	104

IR Tail Frequency	10 years	Low IR	1,951	1,834	1,951	1,834	1,951	1,834	1,951	1,834
			High IR	1,723	1,252	1,723	1,252	1,723	1,252	1,723
Frequency	30 years	Low IR	2,389	1,900	2,389	1,900	2,389	1,900	2,389	1,900
		High IR	1,312	1,047	1,312	1,047	1,312	1,047	1,312	1,047

EQ Tail Frequency	10 years	Low EQ	1,227	928	1,000	1,000	2,136	1,226	933	933
			Low EQ	1,175	1,324	1,000	1,000	2,648	1,754	940

IR & EQ Bounds (geometric average rate/return)	10 years	Low IR bound	1.70%	3.07%	1.70%	3.07%	1.70%	3.07%	1.70%	3.07%
			High IR bound	3.61%	6.18%	3.61%	6.18%	3.61%	6.18%	3.61%
	30 years	Low IR bound	2.34%	2.98%	2.34%	2.98%	2.34%	2.98%	2.34%	2.98%
		High IR bound	5.08%	6.98%	5.08%	6.98%	5.08%	6.98%	5.08%	6.98%
	10 years	Low EQ bound	1.14%	1.14%	1.14%	1.14%	1.14%	1.14%	1.14%	1.14%
		Low EQ bound	3.83%	3.83%	3.83%	3.83%	3.83%	3.83%	3.83%	3.83%

Observations:

1. Constant mean ERP approaches tend to oversample the Low IR / Low EQ quadrant and undersample the High IR / Low EQ quadrant (often an important source of risk, e.g., disintermediation).

Notes:

1. Quadrants are determined as the scenarios with geometric average rates / returns falling within the specified bounds based on deciles.
2. Interest Rate (IR) is the 20-year Treasury (UST20). Equity Return (EQ) is the S&P 500 index.

Severity quadrant criteria – Illustrative application

		Scenario set								
		1a	2a	1a-AIRG	5a	5b	6	6a		
		Starting rate level		1.94%	4.24%	1.94%	1.94%	4.24%	1.94%	4.24%
		Linkage approach		Const mean ERP <i>(with recentering)</i>		Const mean return		Const mean ERP		Const mean return
Horizon										
IR & EQ Quadrant Severity (geometric average equity return in quadrant)	10 years	Low IR / Low EQ	-2.2%	-2.3%	-0.8%	-6.2%	-4.7%	-1.1%	-1.3%	
		High IR / Low EQ	0.9%	3.1%	-1.0%	-2.0%	1.4%	-1.5%	-1.4%	
	30 years	Low IR / Low EQ	1.3%	0.7%	2.9%	-1.7%	-1.1%	3.0%	2.9%	
		High IR / Low EQ	6.0%	7.0%	2.6%	3.2%	5.6%	2.5%	2.6%	
IR Tail Severity (geometric average interest rate in tail)	10 years	Low IR	1.1%	2.2%	1.1%	1.1%	2.2%	1.1%	2.2%	
		High IR	4.8%	7.4%	4.8%	4.8%	7.4%	4.8%	7.4%	
	30 years	Low IR	1.5%	2.1%	1.5%	1.5%	2.1%	1.5%	2.1%	
		High IR	6.5%	8.4%	6.5%	6.5%	8.4%	6.5%	8.4%	
Implied IR & EQ Linkage (in low EQ tail)	10 years	Low EQ	88%	104%	-7%	122%	121%	-9%	-1%	
	30 years	Low EQ	90%	97%	-6%	95%	103%	-9%	-5%	

Notes:

1. Quadrants are determined by selecting the 1,000 scenarios (out of 10,000) with the lowest or highest geometric average interest rate, and then selecting the 100 scenarios (out of those 1,000) with the lowest equity return (i.e., quadrants are always comprised of 100 scenarios).
2. Interest Rate (IR) is the 20-year Treasury (UST20). Equity Return (EQ) is the S&P 500 index.
3. Implied IR & EQ Linkage = $\ln((1 + \text{High IR \& Low EQ geom avg return}) / (1 + \text{Low IR \& Low EQ geom avg return})) / (\text{High IR geom avg rate} - \text{Low IR geom avg rate}) = (\ln(\text{High IR \& Low EQ GWF} / \text{Low IR \& Low EQ GWF}) / \text{horizon in years}) / (\text{High IR geom avg rate} - \text{Low IR geom avg rate})$.

Observations:

1. Under the constant mean ERP approaches, average equity returns in the High IR / Low EQ 30-year quadrant are rather high and may not sufficiently capture the risk of lower returns in that quadrant (e.g., 6.0 %, 7.0%).
2. In the 1a and 2a (constant mean ERP with recentering) Low IR / Low EQ quadrant, it is unintuitive that the average equity return decreases (e.g., 1.3% → 0.7%) when the starting rate level increases (i.e., exhibits negative linkage when the goal for 1a and 2a was positive linkage).

*New slide not in
2/14/24 presentation*

Update to 2/14/24 presentation

Addition of proposed target to accompany severity quadrant criteria

February 29, 2024

*New slide not in
 2/14/24 presentation*

Proposed target to accompany severity quadrant criteria

- The 2/14/24 presentation proposed a quadrant severity statistic and compared that statistic across scenario sets from the field test but did not propose an associated target for those quadrant severity statistics.
- The proposed target to accompany severity quadrant criteria is based on the same four reference models (i.e., Heston, SLV2, RSLN2, and Heston + Jump) used to develop our previously proposed update to equity gross wealth factor (GWF) criteria (i.e., calibrated to returns on the S&P 500 index from 1957-2022, then adjusted to constrain the geometric average return over 30 years to 8.75%).
- The proposed target is based on the average, rather than least binding, statistic across reference models given regulators have indicated that is their preferred method for the updated equity GWF criteria.

Proposed target for quadrant severity statistics					
Reference model	Include	Average GWF in bottom decile		Average GAVG in bottom decile	
		10 years	30 years	10 years	30 years
Heston	1	0.87	2.05	-1.4%	2.4%
SLV1	0	0.76	1.65	-2.7%	1.7%
SLV2	1	0.98	2.63	-0.2%	3.3%
SLV3	0	0.99	2.68	-0.1%	3.3%
RSLN2	1	0.78	1.70	-2.4%	1.8%
RSDD2	0	1.06	3.22	0.5%	4.0%
LN	0	0.92	2.19	-0.8%	2.7%
Heston + Jump	1	0.87	2.08	-1.4%	2.5%
AIRG	0	0.89	2.18	-1.1%	2.6%
Average of included models		0.87	2.12	-1.3%	2.5%

Given regulators have expressed a preference for equity-rate linkage in the form of positively correlated changes, it may be reasonable to see lower equity returns when interest rates are low, and higher equity returns when interest rates are high. As such, it may make sense to express these targets as a range, e.g.:

	10 years	30 years
Low rates	$(0.87 - a)$ to 0.87	$(2.12 - c)$ to 2.12
High rates	0.87 to $(0.87 + b)$	2.12 to $(2.12 + d)$

where a , b , c , and d indicate the size of the desired range (i.e., one-way buffers based on the expected impact of correlation).

Severity quadrant criteria — Illustrative application (updated to show target)

New slide not in
2/14/24 presentation

Horizon	Scenario set	1a	2a	1a-AIRG	5a	5b	6	6a	Target
	Starting rate level	1.94%	4.24%	1.94%	1.94%	4.24%	1.94%	4.24%	
Linkage approach		Const mean ERP (with recentering)		Const mean return	Const mean ERP		Const mean return		

IR & EQ Quadrant Severity (geometric average equity return in quadrant)	10 years	Low IR / Low EQ	-2.2%	-2.3%	-0.8%	-6.2%	-4.7%	-1.1%	-1.3%	-1.3%
	30 years	Low IR / Low EQ	1.3%	0.7%	2.9%	-1.7%	-1.1%	3.0%	2.9%	2.5%
		High IR / Low EQ	0.9%	3.1%	-1.0%	-2.0%	1.4%	-1.5%	-1.4%	-1.3%
		High IR / Low EQ	6.0%	7.0%	2.6%	3.2%	5.6%	2.5%	2.6%	2.5%

IR Tail Severity (geometric average interest rate in tail)	10 years	Low IR	1.1%	2.2%	1.1%	1.1%	2.2%	1.1%	2.2%
	30 years	Low IR	1.5%	2.1%	1.5%	1.5%	2.1%	1.5%	2.1%
		High IR	4.8%	7.4%	4.8%	4.8%	7.4%	4.8%	7.4%
		High IR	6.5%	8.4%	6.5%	6.5%	8.4%	6.5%	8.4%

Implied IR & EQ Linkage (in low EQ tail)	10 years	Low EQ	88%	104%	-7%	122%	121%	-9%	-1%
	30 years	Low EQ	90%	97%	-6%	95%	103%	-9%	-5%

Notes:

1. Quadrants are determined by selecting the 1,000 scenarios (out of 10,000) with the lowest or highest geometric average interest rate, and then selecting the 100 scenarios (out of those 1,000) with the lowest equity return (i.e., quadrants are always comprised of 100 scenarios).
2. Interest Rate (IR) is the 20-year Treasury (UST20). Equity Return (EQ) is the S&P 500 index.
3. Implied IR & EQ Linkage = $\ln((1 + \text{High IR \& Low EQ geom avg return}) / (1 + \text{Low IR \& Low EQ geom avg return})) / (\text{High IR geom avg rate} - \text{Low IR geom avg rate}) = (\ln(\text{High IR \& Low EQ GWF} / \text{Low IR \& Low EQ GWF}) / \text{horizon in years}) / (\text{High IR geom avg rate} - \text{Low IR geom avg rate})$.

Observations:

1. Under the constant mean ERP approaches, average equity returns in the High IR / Low EQ 30-year quadrant are rather high and may not sufficiently capture the risk of lower returns in that quadrant (e.g., 6.0%, 7.0%).
2. In the 1a and 2a (constant mean ERP with recentering) Low IR / Low EQ quadrant, it is unintuitive that the average equity return decreases (e.g., 1.3% → 0.7%) when the starting rate level increases (i.e., exhibits negative linkage when the goal for 1a and 2a was positive linkage).

Questions?

For further information, please contact Amanda Barry-Moilanen, life policy analyst, at barrymoilanen@actuary.org.

Treasury Model

Targeting criteria T1.T:

- a) The scenario set should reasonably reflect history, with some allowance for more extreme high and low interest rate environments
- b) Upper Bound:
 - i. [18%] is \geq [99.5%]-tile on the 1Y yield fan chart, and no more than [0.5%] of scenarios have 1Y yields that go above [18%] in the first 30 years
 - ii. [17%] is \geq [99.5%]-tile on the 20Y yield fan chart, and no more than [0.5%] of scenarios have 20Y yields that go above [17%] in the first 30 years

Evaluation statistics T1.E:

Review maximum sojourn length for high interest rates ($> 17\%$)

Targeting criteria T2.T:

Apply the following guidance for negative interest rates:

- a) Maturities less than 20 years could experience negative interest rates
- b) Interest rates may remain negative for multi-year time periods
- c) 1Y rates should not be lower than -1.0%
- d) 20Y rates should not be lower than 0.0%

Evaluation statistics T2.E:

- e) Frequency of low rates:
 - i. Review the frequency of negative rates for 1Y rate
 - ii. Review the frequency of negative rates and rates below 1% for 20Y rate
- f) Review Maximum sojourn length for low interest rates ($< 0\%$)

Targeting criteria T3.T:

- a) Review initial actual vs. fitted spot curve differences for a sampling of 5 dates representing different shapes and rate levels for the entire curve and review fitted curves qualitatively to confirm they stylistically mimic the different actual yield curve shapes
- b) The frequency of different yield curve shapes in early durations should be reasonable considering the shape of the starting yield curve (e.g., a flatter yield curve leads to more inversions).
- c) The steady state curve has normal shape (not inverted for short maturities, longer vs shorter maturities, or between long maturities)

Evaluation statistics T3.E:

- d) Review upper and lower bound for 20Y-1Y in low, moderate, and high interest rate environments. Compare to historical.
- e) Review worse-than-history frequencies for 20Y-1Y in low, moderate, and high interest rate environments. Compare to historical.

Targeting criteria T4.T:

- a) At least 7.5% of scenarios need a 10-year geometric average of the 20-year UST below **1.45%**
- b) At least 3.75% of scenarios need a 30-year geometric average of the 20-year UST below **1.95%**

Note: As part of the model acceptance process, a given calibration of the GOES will be tested at multiple starting dates. This criteria is relevant for the 12/31/20 starting yield curve.

Targeting criteria T5.T:

- a) For each scenario, calculate the geometric average of the [20-year] UST yield over the first [10] and [30] years of the projection.
- b) Calculate the [1st] and [99th] percentiles of the distribution of geometric average rates (for both the 10 and 30-year horizons).
- c) Look up criteria based on the starting level of the 20-year UST yield (interpolate if necessary).

Evaluation statistics T5.E:

- d) Use the Academy approach to determine parameters for 15th and 85th percentiles to expand the criteria table to also include conditions on moderate rate.

Evaluation statistics T6.E:

Mean reversion benchmark:

- i. 50th percentile 1.31% < 1Y rate < 3.35%
- ii. 50th percentile 3.35% < 20Y rate < 4.89%

Ranges based on 15 year half-life for consistency with AAA recommendation.

Evaluation statistics T7.E:

Note that the buckets refer to starting yield level and the desired range percentages refer to the annualized standard deviation of monthly yield changes.

		Historical		
Rate	Bucket (BOM)	Stat	Desired Range	
[Chg1Y]	<= [3%]	0.59%	0.30%	to 0.89%
	> [3%] to <= [8%]	1.16%	0.58%	to 1.73%
	> [8%]	3.35%	1.67%	to 5.02%
[Chg20Y]	<= [3%]	0.61%	0.31%	to 0.92%
	> [3%] to <= [8%]	0.75%	0.37%	to 1.12%
	> [8%]	1.56%	0.78%	to 2.33%

Equity Model

Targeting criteria E1.T:

Use the former C3 Phase II equity model Calibration Criteria as a rough placeholder.

Large Cap (S&P 500) Gross Wealth Factors

Percentile	1 year	5 years	10 years	20 years
2.5%	0.78	0.72	0.79	
5.0%	0.84	0.81	0.94	1.51
10.0%	0.9	0.94	1.16	2.1
90.0%	1.28	2.17	3.63	9.02
95.0%	1.35	2.45	4.36	11.7
97.5%	1.42	2.72	5.12	

Sharpe ratios for equities other than S&P should be within 5% of S&P Sharpe ratio.

Evaluation statistics E1.E:

Review 0.5th percentile, comparing to [0.54/0.58/0.62] for 1/5/10-year WF.

Request for Targeting Criteria E2.T:

Regulators want to ensure that: 1) there is an adequate representation of scenarios with low-for-long Treasury rates and low accumulated equity returns, and 2) that the GOES provides the appropriate incentives for sound risk management programs at insurance organizations. Comments are requested on targeting criteria that could address these concerns.

Corporate Model

Targeting criteria C1.T:

- a) Set steady state excess return targets for each bond fund according to the criteria below.

Criteria

Steady state targets (bps)	IG 1-5	IG 5-10	IG Long	HY
Target OAS (avg. VM-20 ult. spread at [12/31/21])	107	141	163	448
Target Excess Return (Target OAS * Excess Return % of OAS)	80	79	66	240
Criteria for avg. annualized Excess Return in years [20-30]	80 -[10]	79 -[10]	66 -[10]	240 -[20]

- b) Average annualized excess returns for each bond fund in years 20 through 30 of the projection should be no greater than the steady state excess returns, but no less than the steady state excess returns minus a buffer

Evaluation statistics C2.E:

Bond Fund	Median			Midpoint month Desired Range
	Month [0]	Month [1200]	Midpoint	
IG 1-5	Median _[0]	Median _[1200]	Avg(Median _[0] , Median _[1200])	[22] to [26]
IG 5-10	Median _[0]	Median _[1200]	Avg(Median _[0] , Median _[1200])	[22] to [26]
IG Long	Median _[0]	Median _[1200]	Avg(Median _[0] , Median _[1200])	[22] to [26]
HY	Median _[0]	Median _[1200]	Avg(Median _[0] , Median _[1200])	[22] to [26]

Request for criteria or statistics C3:

On the Corporate model, Steve Strommen raised: Stylized fact 1a says "Credit-related losses tend to be "lumpy" or episodic." This increases risk for insurers of significant risk in a short period. Nothing in the criteria or statistics reflect this.

We need a recommended metric if this is to be evaluated.



[The Academy's 11/22/23 comment letter to LATF containing updated equity GWFs](#)

This spreadsheet provides backup for the updated equity GWFs contained in the Academy's comment letter linked above

The GWFs in that comment letter were based on the "least binding" GWF from selected reference models

Based on regulator feedback, this spreadsheet also shows GWFs based on the "average" GWF from selected reference models

Cells highlighted in yellow on the "criteria" tab can be changed

GAVG = geometric average return over a horizon of N years

GWF = gross wealth factor over a horizon of N years (i.e., accumulated value of \$1 invested over a horizon of N years)

$$\text{GWF} = (1 + \text{GAVG})^N$$



Centimale mean GAISG lower 50
Narrow for: **10%**

Compare monthly bridge percentage

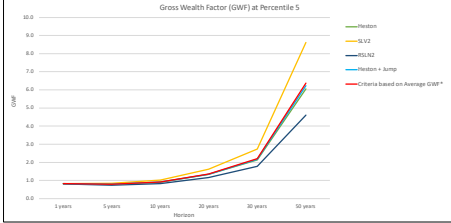
Percentage: **10%**

Model	Includes in column	Gross Wealth Factor (GWF)					Geometric Average Return (GAR)				
		1 years	5 years	10 years	20 years	50 years	1 years	5 years	10 years	20 years	50 years
Median		0.81	0.79	0.80	1.15	1.11	0.21%	-0.26%	-0.26%	1.2%	-2.0%
95%		1.27	1.11	1.02	1.12	1.70	0.41%	-0.01%	-0.21%	0.8%	-1.0%
90%		0.83	0.64	1.02	1.12	2.73	8.6%	-0.8%	-0.4%	2.2%	1.4%
85%		0.86	0.61	1.03	1.20	3.80	8.6%	-0.5%	-0.3%	2.2%	1.5%
80%		0.80	0.75	0.82	1.10	1.79	8.1%	-0.9%	-0.6%	-0.2%	0.7%
75%		0.80	0.87	1.30	1.80	3.18	11.1%	-0.5%	-0.7%	-0.1%	4.1%
70%		0.84	0.83	0.95	1.44	2.30	11.5%	-0.7%	-0.5%	1.8%	2.3%
65%		0.83	0.80	0.91	1.34	2.26	11.1%	-0.7%	-0.4%	-0.1%	2.0%
60%		0.83	0.80	0.91	1.40	2.17	11.1%	-0.7%	-0.4%	-0.1%	2.0%
55%		0.82	0.80	0.91	1.38	2.20	11.1%	-0.7%	-0.4%	-0.1%	2.0%
50%		0.82	0.80	0.91	1.35	2.18	11.1%	-0.7%	-0.4%	-0.1%	2.0%
45%		0.81	0.84	1.07	1.62	2.79	11.1%	-0.6%	-0.3%	0.7%	1.4%
40%		0.81	0.84	1.07	1.62	2.79	11.1%	-0.6%	-0.3%	0.7%	1.4%
35%		0.81	0.84	1.07	1.62	2.79	11.1%	-0.6%	-0.3%	0.7%	1.4%
30%		0.81	0.84	1.07	1.62	2.79	11.1%	-0.6%	-0.3%	0.7%	1.4%
25%		0.81	0.84	1.07	1.62	2.79	11.1%	-0.6%	-0.3%	0.7%	1.4%
20%		0.81	0.84	1.07	1.62	2.79	11.1%	-0.6%	-0.3%	0.7%	1.4%
15%		0.81	0.84	1.07	1.62	2.79	11.1%	-0.6%	-0.3%	0.7%	1.4%
10%		0.81	0.84	1.07	1.62	2.79	11.1%	-0.6%	-0.3%	0.7%	1.4%

Criteria based on Average GAR**

Criteria based on Average GWF**

Criteria based on Least Bridge**



Criteria based on Average GWF**

Percentile	Gross Wealth Factor (GWF)					Geometric Average Return (GAR)				
	1 years	5 years	10 years	20 years	50 years	1 years	5 years	10 years	20 years	50 years
1	0.66	0.21	0.21	0.26	0.26	-56.4%	-26.1%	-14.1%	-6.0%	-4.0%
5	0.70	0.58	0.60	0.79	1.12	-28.8%	-10.4%	-5.2%	-1.3%	0.5%
10	0.82	0.80	0.91	1.35	2.20	-2.0%	-4.1%	-0.8%	1.2%	2.6%
15	0.88	0.93	1.12	1.80	3.05	-11.7%	-1.5%	1.1%	3.0%	3.8%
20	0.92	1.02	1.27	2.10	3.82	-7.9%	-0.6%	2.8%	5.0%	4.0%
25	0.99	1.17	1.54	2.81	5.23	-5.0%	3.8%	4.4%	5.3%	5.7%
30	1.01	1.24	1.66	3.12	6.05	-3.7%	5.1%	4.8%	5.2%	6.0%
35	1.09	1.48	2.15	4.47	9.23	30.9%	9.3%	8.1%	7.9%	7.7%
40	1.17	1.74	2.71	6.30	14.12	48.6%	17.2%	11.7%	10.2%	9.0%
45	1.19	1.82	2.89	6.93	15.88	50.2%	18.4%	11.7%	11.2%	10.2%
50	1.25	2.02	3.16	8.80	21.60	53.1%	24.8%	15.0%	13.2%	11.4%
60	1.28	2.15	3.71	10.58	25.20	147.0%	28.4%	16.6%	14.0%	12.2%
65	1.34	2.37	4.30	12.33	30.10	247.0%	34.7%	18.8%	15.7%	14.4%
70	1.45	2.82	5.43	18.09	53.28	394.7%	45.3%	23.1%	18.9%	16.2%
75	1.76	4.10	8.68	36.02	109.00	538.9%	75.8%	33.0%	28.6%	24.8%
80	1.92	4.92	11.01	45.00	139.50	41.9%	8.3%	8.0%	8.2%	8.7%

Criteria based on Average GWF**

Percentile	Gross Wealth Factor (GWF)					Geometric Average Return (GAR)				
	1 years	5 years	10 years	20 years	50 years	1 years	5 years	10 years	20 years	50 years
1	0.70	0.58	0.60	0.79	1.12	-28.8%	-10.4%	-5.2%	-1.3%	0.4%
5	0.82	0.80	0.91	1.35	2.20	-2.0%	-4.1%	-0.8%	1.2%	2.6%
10	0.88	0.93	1.12	1.80	3.05	-11.7%	-1.5%	1.1%	3.0%	3.8%
15	0.92	1.02	1.27	2.10	3.82	-7.9%	-0.6%	2.8%	5.0%	4.0%
20	0.99	1.17	1.54	2.81	5.23	-5.0%	3.8%	4.4%	5.3%	5.7%
25	1.01	1.24	1.66	3.12	6.05	-3.7%	5.1%	4.8%	5.2%	6.0%
30	1.09	1.48	2.15	4.47	9.23	30.9%	9.3%	8.1%	7.9%	7.7%
35	1.17	1.74	2.71	6.30	14.12	48.6%	17.2%	11.7%	10.2%	9.0%
40	1.19	1.82	2.89	6.93	15.88	50.2%	18.4%	11.7%	11.2%	10.2%
45	1.25	2.02	3.16	8.80	21.60	53.1%	24.8%	15.0%	13.2%	11.4%
50	1.28	2.15	3.71	10.58	25.20	147.0%	28.4%	16.6%	14.0%	12.2%
55	1.34	2.37	4.30	12.33	30.10	247.0%	34.7%	18.8%	15.7%	14.4%
60	1.45	2.82	5.43	18.09	53.28	394.7%	45.3%	23.1%	18.9%	16.2%
65	1.76	4.10	8.68	36.02	109.00	538.9%	75.8%	33.0%	28.6%	24.8%
70	1.92	4.92	11.01	45.00	139.50	41.9%	8.3%	8.0%	8.2%	8.7%

Criteria based on Least Bridge**

Percentile	Gross Wealth Factor (GWF)					Geometric Average Return (GAR)					Least Bridge model (of those included)				
	1 years	5 years	10 years	20 years	50 years	1 years	5 years	10 years	20 years	50 years	1 years	5 years	10 years	20 years	50 years
1	0.66	0.21	0.21	0.26	0.26	-55.1%	-27.7%	-15.6%	-6.0%	-3.9%	Not met	Not met	Not met	Not met	Not met
5	0.71	0.64	0.71	0.99	1.55	-38.7%	-9.7%	-5.0%	-1.5%	0.9%	Not met	Not met	Not met	Not met	Not met
10	0.83	0.87	0.88	1.20	2.20	-18.0%	-3.6%	0.2%	2.4%	3.4%	Not met	Not met	Not met	Not met	Not met
15	0.89	0.98	1.12	1.70	3.10	-10.0%	-0.8%	2.0%	3.8%	4.5%	Not met	Not met	Not met	Not met	Not met
20	0.93	1.07	1.28	2.00	4.00	-6.0%	3.1%	3.8%	4.8%	5.2%	Not met	Not met	Not met	Not met	Not met
25	0.99	1.22	1.64	3.11	6.00	16.0%	4.4%	5.1%	5.8%	6.2%	Not met	Not met	Not met	Not met	Not met
30	1.02	1.28	1.79	3.41	6.80	27.0%	5.3%	5.8%	6.3%	6.5%	Not met	Not met	Not met	Not met	Not met
35	1.09	1.48	2.15	4.47	9.23	50.9%	9.3%	8.1%	7.9%	7.7%	Not met	Not met	Not met	Not met	Not met
40	1.17	1.74	2.71	6.30	14.12	78.6%	17.2%	11.7%	10.2%	9.0%	Not met	Not met	Not met	Not met	Not met
45	1.19	1.82	2.89	6.93	15.88	80.1%	18.4%	11.7%	11.2%	10.2%	Not met	Not met	Not met	Not met	Not met
50	1.25	2.02	3.16	8.80	21.60	103.1%	24.8%	15.0%	13.2%	11.4%	Not met	Not met	Not met	Not met	Not met
55	1.28	2.15	3.71	10.58	25.20	147.0%	28.4%	16.6%	14.0%	12.2%	Not met	Not met	Not met	Not met	Not met
60	1.34	2.37	4.30	12.33	30.10	247.0%	34.7%	18.8%	15.7%	14.4%	Not met	Not met	Not met	Not met	Not met
65	1.45	2.82	5.43	18.09	53.28	394.7%	45.3%	23.1%	18.9%	16.2%	Not met	Not met	Not met	Not met	Not met
70	1.76	4.10	8.68	36.02	109.00	538.9%	75.8%	33.0%	28.6%	24.8%	Not met	Not met	Not met	Not met	Not met
75	1.92	4.92	11.01	45.00	139.50	41.9%	8.3%	8.0%	8.2%	8.7%	Not met	Not met	Not met	Not met	Not met
80	1.97	5.02	11.01	45.00	139.50	46.7%	8.3%	8.0%	8.2%	8.7%	Not met	Not met	Not met	Not met	Not met

Market/Policy (Year)		Actuarial Values										Contingency Values										Contingency Values																			
Market	Policy	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Market 1	Policy 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Agenda Item 7

Discuss Actuarial Guideline LIII—Application of the Valuation Manual for Testing the Adequacy of Life Insurer Reserves (AG 53)

Updates on Actuarial Guideline 53

Fred Andersen, FSA, MAAA

3/14/2024



3/14/2024

AG 53 provides uniform guidance for the asset adequacy testing applied to life insurers and is effective for reserves reported with respect to the Dec. 31, 2022, and subsequent annual statutory financial statements. A statement of actuarial opinion on the adequacy of the reserves and assets supporting reserves after the operative date of the Valuation Manual is required under Section 3B of the NAIC Standard Valuation Law (#820) and VM-30 of the Valuation Manual. Section 14A of Model #820 provides that actuarial opinions and related documents, including an asset adequacy analysis, are confidential information, while Section 14B provides that such confidential information may be shared with other state regulatory agencies and the NAIC. The asset adequacy analyses required under AG 53 reviewed in the preparation of this report were shared with the Valuation Analysis (E) Working Group and the NAIC in accordance with these requirements and continue to remain confidential in nature.

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Notice Regarding Confidentiality

AG 53 provides uniform guidance for the asset adequacy testing, and is effective for reserves reported with respect to the Dec. 31, 2022, and subsequent annual statutory financial statements. A statement of actuarial opinion on the adequacy of the reserves and assets supporting reserves after the operative date of the Valuation Manual is required under Section 3B of the NAIC Standard Valuation Law (#820) and VM-30 of the Valuation Manual. Section 14A of Model #820 provides that actuarial opinions and related documents, including an asset adequacy analysis, are confidential information, while Section 14B provides that such confidential information may be shared with other state regulatory agencies and the NAIC. The asset adequacy analyses required under AG 53 reviewed in the preparation of this report were shared with the Valuation Analysis (E) Working Group and the NAIC in accordance with these requirements, and continue to remain confidential in nature.

Data Limitations

- Asset information shown in the slides that follow rely on data submitted by companies in their AG 53 templates. The NAIC took steps to review the data for reasonableness. However, the accuracy and reliability of the results are ultimately dependent on the quality of participant submissions.
- Some of the submitted data was adjusted to make it useable and help ensure greater consistency of reporting across companies. For example: 1) units were changed from dollars to millions where necessary; 2) asset types were mapped to those listed in the standard AG 53 template for companies that substituted different asset descriptions; 3) aggregated initial asset summary templates were created for companies that provided templates by segment but not in total; 4) templates submitted as PDFs were converted to Excel.
- Some companies did not submit AG 53 templates or did not complete all of the AG 53 template tabs.

AG 53 Reviews - Progress

- Net yield assumptions
 - Most cases:
 - Companies will add all the recommended conservatism
 - Will be removed from outlier list.
 - Several other cases:
 - Company will significantly increase the conservatism
 - OK for year-end 2023 but will re-address for year-end 2024
 - A few exceptions
 - e.g., financial exams currently in place
 - Will follow up on these cases

AG 53 Reviews - Progress

- Reinsurance collectability
 - Coordinate with potential reinsurance ceded asset adequacy analysis project
 - e.g., : US stat reserve of \$100 -> \$70 after reinsurance ceded
 - Asset adequacy analysis would help ensure \$70 is adequate under:
 - Moderately adverse conditions and
 - Reasonable and transparent assumptions
 - e.g., on asset returns, guarantee utilization, mortality / longevity
 - Collectability is more focused on, e.g., \$70 is adequate reserve under reasonable assumptions but assuming company has very low amount of capital
 - Inquiries note that ceding companies are relying on monitoring, analysis, and asset requirements to determine any collectability issues

AG 53 Reviews - Progress

- Investment Expenses
- Analyzing two aspects:
 - Are investment expenses sufficiently modeled in asset adequacy analysis?
 - If trending towards more complex assets with more attention and expertise needed, future investment expenses will likely be higher and should be modeled that way
 - Is the amount of investment expenses leaving the insurer reasonable?
 - Is there appropriate value being returned?
 - Arms-length
 - Coordinating with other NAIC groups on this aspect of the review

AG 53 Reviews - Progress

- Attribution Analysis
 - Observations of assignment of excess spread to:
 - Credit risk
 - Illiquidity risk
 - Other risks

Attribution Analysis related to Assumptions on Projected High Net Yield Assets (PHNY)

AG 53, Section 5.B:

For projected high net yield assets for non-equity-like instruments, either currently held or in assumed reinvestments, perform and disclose the following attribution analysis steps at the asset type level associated with the templates in Section 6:

- i. State the assumed **Guideline Excess Spread**.
- ii. Estimate the **proportion of the Guideline Excess Spread attributable to the following factors:**
 - (a) Credit risk
 - (b) Illiquidity risk
 - (c) Deviations of current spreads from long-term spreads defined in Appendix 1
 - (d) Volatility and other risks (identify and describe these risks in detail)
- iii. **Provide commentary** on the results of Section 5.B.ii. Also, where judgment is applied, provide supporting rationale of how the expected return in excess of the Investment Grade Net Spread Benchmark is estimated.

Guidance Note: A best-efforts approach is expected for the year-end 2022 attribution analysis.

Guideline Excess Spread = Max (Net Market Spread - Investment Grade Net Spread Benchmark, 0)

Section 5b: Attribution for Asset Adequacy Testing Guideline Excess Spreads - Initial Assets										
Excess Spread Components Related to Each Risk										
Asset Type	Net Market Spread	IG Net Spread Benchmark ¹	Guideline Excess Spread	Credit Risk	Illiquidity Risk	[Other Risk Component #1]	[Other Risk Component #2]	[Other Risk Component #3]	[Other Risk Component #4]	[Other Risk Component #5]
Treasuries and Agencies	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public Non-Callable, Non-Convertible Corporate Bonds ²	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Callable Bonds	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Convertible Securities ³	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Floating Rate Corporate Notes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Municipal Bonds	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Private Bonds	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Convertible Preferred Stock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Agency Mortgage Backed Securities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Agency Commercial Mortgage Backed Securities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Agency Residential Mortgage Backed Securities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Collateralized Loan Obligations	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Asset Backed Securities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Equities or Equity-Like Instruments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Real Estate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mortgage Loans	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Schedule BA Assets - Equity-Like Instruments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Schedule BA Assets - Non-Equity-Like Instruments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Derivative Instruments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other - Not Covered Above	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

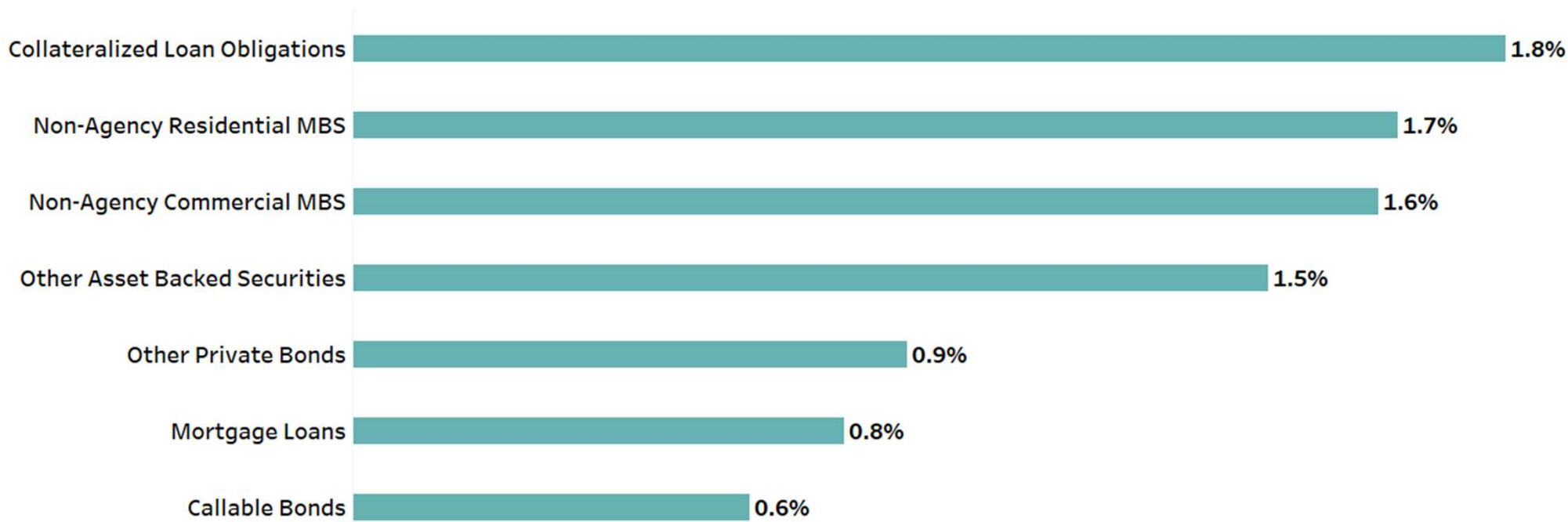
(1) "IG Net Spread Benchmark" = Investment Grade Net Spread Benchmark
 (2) Only include public non-convertible, fixed-rate corporate bonds with no or immaterial callability
 (3) Convertible securities include convertible preferred stock



3/14/2024

AG 53 provides uniform guidance for the asset adequacy testing applied to life insurers and is effective for reserves reported with respect to the Dec. 31, 2022, and subsequent annual statutory financial statements. A statement of actuarial opinion on the adequacy of the reserves and assets supporting reserves after the operative date of the Valuation Manual is required under Section 3B of the NAIC Standard Valuation Law (#820) and VM-30 of the Valuation Manual. Section 14A of Model #820 provides that actuarial opinions and related documents, including an asset adequacy analysis, are confidential information, while Section 14B provides that such confidential information may be shared with other state regulatory agencies and the NAIC. The asset adequacy analyses required under AG 53 reviewed in the preparation of this report were shared with the Valuation Analysis (E) Working Group and the NAIC in accordance with these requirements and continue to remain confidential in nature.

Average Guideline Excess Spreads for Initial Assets at Year-end 2022



Notes:
 Includes companies with PHNY > 0 and Guideline Excess Spread > 0
 Each asset type shown has a company count of 75 or more
 Average Guideline Excess Spread is weighted by PHNY
 MBS = Mortgage-Backed Securities



3/14/2024

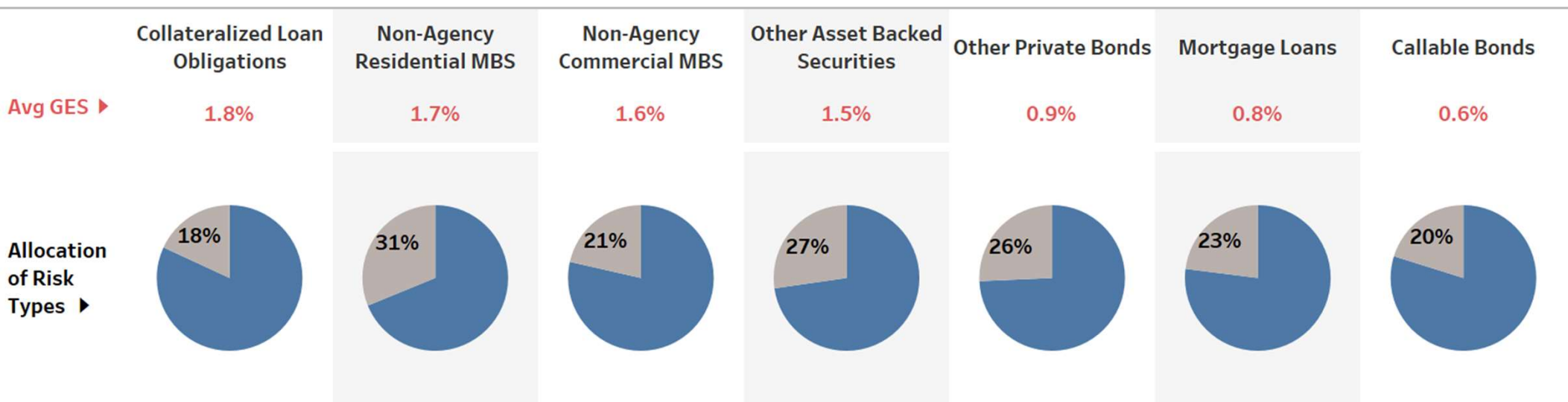
AG 53 provides uniform guidance for the asset adequacy testing applied to life insurers and is effective for reserves reported with respect to the Dec. 31, 2022, and subsequent annual statutory financial statements. A statement of actuarial opinion on the adequacy of the reserves and assets supporting reserves after the operative date of the Valuation Manual is required under Section 3B of the NAIC Standard Valuation Law (#820) and VM-30 of the Valuation Manual. Section 14A of Model #820 provides that actuarial opinions and related documents, including an asset adequacy analysis, are confidential information, while Section 14B provides that such confidential information may be shared with other state regulatory agencies and the NAIC. The asset adequacy analyses required under AG 53 reviewed in the preparation of this report were shared with the Valuation Analysis (E) Working Group and the NAIC in accordance with these requirements and continue to remain confidential in nature.

Attribution of Guideline Excess Spreads (GES)

for Initial Assets

Across all asset types, **less than 1/3** of companies attributed the excess spread to **more than one risk type**.

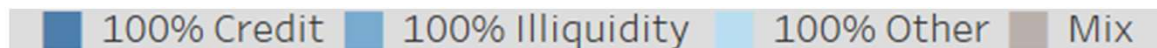
■ Allocated to **more than one** risk type ■ Allocated to **one** risk type



Attribution of Guideline Excess Spreads (GES)

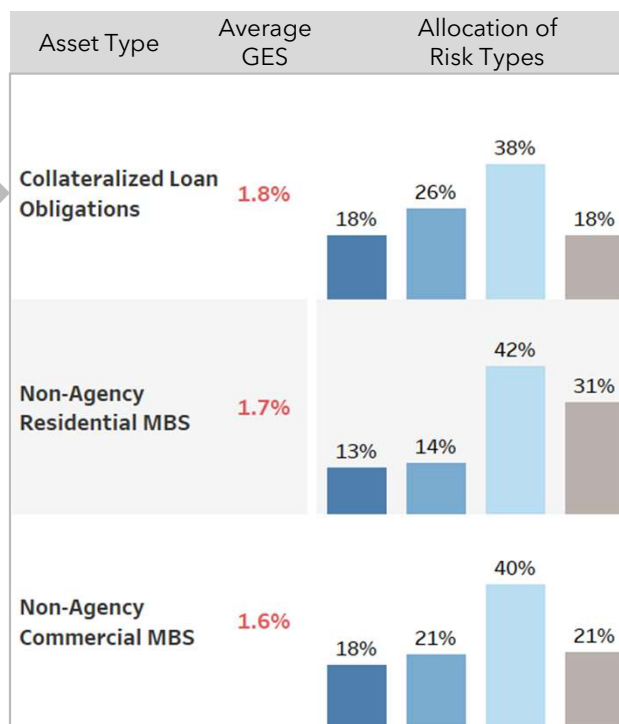
for Initial Assets

For many asset types, **30% - 40%** of companies are attributing all of the GES to the **Other Risk** category



For companies with Collateralized Loan Obligation PHNY assets and GES > 0:

- 18% of the companies attributed all of the GES to Credit Risk
- 26% of the companies attributed all of the GES to Illiquidity Risk
- 38% of the companies attributed all of the GES to Other Risk
- 18% of the companies attributed all of the risk to a mix of Credit Risk, Illiquidity Risk, and/or Other Risk



3/14/2024

AG 53 provides uniform guidance for the asset adequacy testing applied to life insurers and is effective for reserves reported with respect to the Dec. 31, 2022, and subsequent annual statutory financial statements. A statement of actuarial opinion on the adequacy of the reserves and assets supporting reserves after the operative date of the Valuation Manual is required under Section 3B of the NAIC Standard Valuation Law (#820) and VM-30 of the Valuation Manual. Section 14A of Model #820 provides that actuarial opinions and related documents, including an asset adequacy analysis, are confidential information, while Section 14B provides that such confidential information may be shared with other state regulatory agencies and the NAIC. The asset adequacy analyses required under AG 53 reviewed in the preparation of this report were shared with the Valuation Analysis (E) Working Group and the NAIC in accordance with these requirements and continue to remain confidential in nature.

Agenda Item 8

Hear a Presentation on Asset-Intensive
Reinsurance Ceded Offshore

Asset Intensive Reinsurance Ceded Offshore from U.S. Life Insurers (with focus on Bermuda)

Patricia Matson, MAAA, FSA

Chairperson, Asset Adequacy and Reinsurance Issues Task Force

Motivations for Offshore Reinsurance

2

- Reserving, Hedging, Capital, and Accounting Efficiencies
- Investment Flexibility
- Localized Expertise and Innovation
- Tax Efficiency
- Strong regulatory framework (Bermuda)

Existing Actuarial Guidance

3

- Under current statutory rules, the cedant's Appointed Actuary must perform asset adequacy testing (AAT) for all direct business (including reinsured)
- There is no prescribed methodology, but ASOP No. 22 provides the following examples of AAT approaches:
 - Cash flow testing
 - Gross premium reserve test
 - Demonstration of conservatism
 - Demonstration of immaterial variation
 - Risk theory techniques
 - Loss ratio methods
- ASOP No. 11 states that the actuary should take into account counterparty risks that impact the asset adequacy analysis report

AAT Approaches

4

Approach	Considerations
Perform cash flow testing	<ul style="list-style-type: none"> • Whether cedant's analysis can reliably extend to reinsured business • Whether data is available • Potential to leverage existing cash flow projections used for other purposes (e.g. enterprise risk management (ERM)) • Still important to consider counterparty risk (and required by ASOP No. 11)
Leverage reinsurer SBA	<ul style="list-style-type: none"> • May include sufficient information to assess asset adequacy under moderately adverse conditions • Some adjustments may be necessary to meet the purpose of the analysis • ASOP No. 22 requires consideration of any cash flow differences • Still important to consider counterparty risk
Assess counterparty risk	<ul style="list-style-type: none"> • Important regardless of the AAT method • Reinsurance receivable is the asset being tested for adequacy • Consider reinsurer credit rating, default and recovery probabilities, and specifics of the reinsurance program

Additional Counterparty Risk Considerations

5

- Significant guidance in ASOP No. 11 and ASOP No. 7
- Additional information in the [Credit for Reinsurance Practice Note](#)
- Treaty provisions can be used to reduce counterparty risks
 - Collateral requirements
 - Investment guidelines
 - Recapture provisions
- Regulatory notice requirements for concentration risks

Collateral Provisions

6

- Collateral is used to secure the obligations of the reinsurer
- Most common forms of collateral are:
 - Funds withheld
 - Collateral trust
 - Letter of credit
- Historically, unauthorized reinsurers required to hold collateral, but this has changed for certified and reciprocal jurisdiction reinsurers
- Collateral may bring its own risks:
 - Insufficient level of collateral
 - Illiquid collateral unavailable when needed
 - Under funding by the counterparty

Aggregation

7

- Under AAT, the Appointed Actuary may aggregate blocks together.
- Per ASOP No. 22, “When performing this aggregation, the actuary should not use assets or cash flows from one block of business to discharge the reserves and other liabilities of another block of business if those assets or cash flows cannot be used for that purpose.”
- Depending on the reinsurance structure, assets from a reinsurance treaty may not be available for use for another block of business, and therefore aggregation would not be allowed.
- Bermuda also does not allow aggregation unless the insurer demonstrates that the assets can be used across those lines of business (in both normal and adverse scenarios).

Recapture/Termination

8

Most agreements allow cedant to recapture, and ASOP No. 11 identifies the following risks that should be reflected in the actuary's financial report:

- Impact of potential termination, including post-termination obligations
- How the following factors affect risk of termination
 - Agreement terms and conditions
 - Regulatory and financial reporting regime
 - Known business practices of counterparties
 - Current and potential internal and external environments
- Actuary should consider performing scenario testing to quantify the impact of a potential termination event

Retrocession

9

- Common in the reinsurance industry
- Bermuda Monetary Authority (BMA) monitors this and may correspond with home regulator
- Treaty terms may require disclosure, but unusual
- Management of the risk by the cedant includes:
 - Insolvency considerations
 - Disclosure requirements
 - Relationship management
 - Risk diversification

Questions?

10

For further information, please contact Amanda Barry-Moilanen, life policy analyst, at barrymoilanen@actuary.org.

Agenda Item 9

Discuss a Proposal to Require Asset
Adequacy Analysis for Certain
Reinsurance

Reinsurance Ceded Cash Flow Testing Discussion Items

Fred Andersen, FSA, MAAA

3/14/2024

What is the issue? What are state regulators trying to accomplish?

- State regulators oversee the reserves and solvency of US insurers.
- Reinsurance activity is taking place where reserves are held lower than US statutory standards.
 - In some cases, reserves are substantially lower, disappear, or can even be negative
- It is important to know if the lower reserve amounts are adequate.
- One way to evaluate reserve adequacy is with asset adequacy analysis using appropriate assumptions.
 - For example, is reserve adequacy achieved only with aggressive asset return, guarantee utilization, or mortality / longevity assumptions?
- Whether reserves are adequate using appropriate assumptions is important for US regulators to know when the reserves and supporting assets are impacting US insurers.

Goals

- Provide US state regulators what is needed to review the reserves & solvency of US life insurers.
- Steer clear of conflict with reciprocal jurisdiction / covered agreement issues.
 - Regarding treating certain reinsurance arrangements differently than others.
- Prevent work by US ceding companies where there's immaterial risk.

Basic Considerations

- Considerations re: whether cash-flow testing should be performed on ceded business:
 - Does the assuming company not submit a VM-30 actuarial memorandum to a US state regulator?
 - Consider carve out when reinsurer submits VM-30 in US
 - Does the assuming company hold reserves lower than US statutory reserves?
 - Does the assuming company not have substantially high capital (or other safeguards in place) to minimize collectability risk?
 - Should this risk be handled separately, as part of reinsurance collectability inquiries?
 - Should capital level be considered if higher than US even if reserves are less than US?
 - Is the assuming company affiliated with the ceding company?
 - Potentially signaling reserve reduction as a driver of the transaction

Specific Considerations to Drive Discussion

- Terminology “Gross of reinsurance” testing
- Materiality determination
- Aggregation level / prior approval
- Retrospective or prospective application
- Asset assumption guardrails / lessen need to have knowledge of assets
- Other assumption guardrails
- Considerations for holding additional AAT reserves
- Sensitivity testing versus baseline testing

Example of Cession of U.S. Asset Intensive Reinsurance Offshore/Captive

In the example below, AIR is ceded via 100% coinsurance to either an offshore reinsurer or a U.S. captive that is not subject to the requirements of the valuation manual

Item	US Statutory	Offshore/Captive
Formula Reserves	\$100	NA
Total Reserves*	\$100	\$64
Total Capital	\$6	\$2
Total Asset Requirement	\$106	\$66

When cash flow testing (CFT) is run standalone for this business, it shows that \$80 of reserves are needed to runoff liabilities under moderately adverse conditions, and \$70 under best estimate conditions (this is *before* consideration of required capital)

Significant reduction in total policyholder funds due to regime differences

*US total reserves are formula reserves plus AAT reserves

Reserves are insufficient but even more concerning, even TAR is insufficient even in a best estimate scenario

Appendix - Example of VM or AG Wording

Example of Wording re: Gross of Reinsurance AAT

- Language like the following could be added as subsection 2.C.4 “Liabilities To Be Covered” in VM-30 or similar language could be incorporated in an Actuarial Guideline:
 - All business written or assumed by a United States life insurer shall be subject to the standards of asset adequacy analysis, as described in Section 2.B. Therefore, in addition to other applicable requirements in VM-30, asset adequacy analysis shall be completed on a gross of reinsurance basis for any *[material]* blocks of business that are reinsured, whether through an alien reinsurance transaction or a domestic reinsurance transaction.
 - For any *[material]* blocks of business that are reinsured, the business ceded shall be tested on a standalone basis.

(continued)

Example of Wording re: Gross of Reinsurance AAT

- Sample language, continued...
 - *[For the purposes of this standalone testing, reinsurance arrangements with the same legal entity serving as the counterparty (but by line of business / with similar risk profile) may be aggregated.] [Additional aggregation, for example across affiliated legal entities, may be permissible if supported and with prior approval of the domiciliary commissioner, who will consult with the NAIC's Valuation Analysis Working Group when reviewing the request.]*
 - *[The domiciliary commissioner may also accept standalone testing performed by the counterparty, if it is made available to the domiciliary commissioner and is otherwise compliant with these requirements.] [This requirement applies to all reinsurance transaction executed on or after XX/XX/XXXX.]*

Questions and Considerations: Concepts in Wording Example

- All business written or assumed by a United States life insurer shall be subject to the standards of asset adequacy analysis, as described in Section 2.B. Therefore, in addition to other applicable requirements in VM-30, asset adequacy analysis shall be completed on a **gross of reinsurance** basis for any material blocks of business that are reinsured, whether through an alien reinsurance transaction or a domestic reinsurance transaction.
- “Gross of reinsurance” terminology:
 - The most accurately descriptive terminology?
 - Or should the focus be on the starting assets being the amount actually held, including by the assuming company?

Questions and Considerations: Concepts in Wording Example

- For any **material** blocks of business that are reinsured, the business ceded shall be tested on a standalone basis.
- Materiality determination could be based on:
 - Judgment but with general guidance of:
 - 10-20% of reserves ceded to single reinsurer?
 - % of surplus?
 - Cap at the largest 3 or so material asset intensive reinsurance treaties per ceding company?

Questions and Considerations: Concepts in Wording Example

- For the purposes of this standalone testing, reinsurance arrangements with the same legal entity serving as the counterparty may be **aggregated**. Additional aggregation, for example across affiliated legal entities, may be permissible if supported and with **prior approval** of the domiciliary commissioner, who will consult with the NAIC's Valuation Analysis Working Group when reviewing the request.
- What aggregation level makes sense?
 - Will assets from Treaty A cover a shortfall on Treaty B?
 - Amount of regulator discretion?
 - What sort of regulator coordination is needed to ensure a level playing field?
 - Note that an insolvent counterparty won't use surplus from other counterparties.

Questions and Considerations: Concepts in Wording Example

- This requirement applies to all reinsurance transaction executed on or after XX/XX/XXXX.
- Retrospective (including past treaties) or Prospective application?
 - Focus on recent years' transactions?

Example Addition of Asset Documentation for Gross AAT

- Language like the following could be added as subsection 3.B.10.f and 3.B.10.g in VM-30 or similar language could be incorporated in an Actuarial Guideline:
 - f. If, under the terms of a reinsurance agreement, some of the assets supporting the reserve are held by the counterparty or by another party:
 - i. A description of the degree of linkage between the portfolio performance and the calculation of the reinsurance cash flows.
 - ii. The sensitivity of the valuation result to the asset portfolio performance.

(continued on next slide)

Example Addition of Asset Documentation for Gross AAT

- Language like the following could be added as subsection 3.B.10.f and 3.B.10.g in VM-30 or similar language could be incorporated in an Actuarial Guideline:
 - g. To the extent that asset adequacy analysis is necessary pursuant to Section 2.C.4:
 - i. A comparison of the amount of assets held by the counterparty or other party to the assets included in asset adequacy analysis (note that these amounts should be the same).
 - ii. The investment strategy of the company holding the assets, as codified in the reinsurance agreement or otherwise based on current documentation provided by that company. *[If this information is not available, a discussion of why the investment strategy modeled by the cedant for the gross analysis is prudent and appropriate.] [If this information is not available, asset modeling shall comply with the relevant asset modeling requirements and guardrails in VM-20 and VM-21.]*
 - iii. Actions that may be taken by either party that would affect the net reinsurance cash flows (e.g., a conscious decision to alter the investment strategy within the guidelines).

Questions and Considerations

- The investment strategy of the company holding the assets, as codified in the reinsurance agreement or otherwise based on current documentation provided by that company. *[If this information is not available, a discussion of why the investment strategy modeled by the cedant for the gross analysis is prudent and appropriate.] [If this information is not available, asset modeling shall comply with the relevant asset modeling requirements and guardrails in VM-20 and VM-21.]*
- Assumption guardrails
 - Asset assumption guardrails can make it unnecessary to know the actual assets
 - Will reserves be adequate under reasonable asset return assumptions?
 - Actual assets or proxy can be used if known, otherwise apply VM-20 guidance
 - Guarantee utilization and mortality are among other key assumptions
 - Differences between VM-30 or formulaic / PBR assumptions from those underlying the assuming company's reserves should be discussed

Example Addition of Gross of Reinsurance AAT

- Language like the following could be added as subsection 2.C.5 in VM-30 or similar language could be incorporated in an Actuarial Guideline:
 - If the appointed actuary determines, as the result of gross standalone asset adequacy analysis for any business that is reinsured by an entity outside the scope of VM-30, that a reserve should be held in addition to the aggregate reserve held by the company and calculated in accordance with the requirements set forth in the Valuation Manual, the company shall establish the additional reserve. *[Considerations to be evaluated when determining whether an additional reserve is needed shall include but not be limited to:*
 - *Where applicable, do the assuming company's standalone cash-flow testing results (whether produced by the assuming company or the ceding company) show deficiencies?*
 - *Are any assuming company standalone cash-flow testing deficiencies offset by other assuming company's blocks' sufficiencies?]*

Questions and Considerations

- *[Considerations to be evaluated when determining whether an additional reserve is needed shall include but not be limited to:*
 - *Where applicable, do the assuming company's standalone cash-flow testing results (whether produced by the assuming company or the ceding company) show deficiencies?*
 - *Are any assuming company standalone cash-flow testing deficiencies offset by other assuming company's blocks' sufficiencies?]*
- Regarding holding additional asset adequacy analysis reserves in relation to the ceded block of business:
 - Where applicable, do the assuming company's standalone cash-flow testing results show deficiencies?
 - Whether produced by the assuming company or the ceding company.
 - Are any assuming company standalone cash-flow testing deficiencies offset by other assuming company's blocks' sufficiencies?

Agenda Item 10

Hear an Update on Society of Actuaries (SOA)
Research and Education



SOCIETY OF ACTUARIES RESEARCH UPDATE TO LATF

March 14, 2024

Dale Hall, FSA, MAAA, CERA
Managing Director of Research

Presentation Disclaimer

The material and information contained in this presentation is for general information only. It does not replace independent professional judgment and should not be used as the basis for making any business, legal or other decisions. The Society of Actuaries assumes no responsibility for the content, accuracy or completeness of the information presented.

2015-2021 Universal Life Lapse and Surrender

- Study was published in November 2023
- First part of a Premium Persistency/Lapse and Surrender analysis
- Public report is available
- For access to full report and detailed study results in Tableau, companies must purchase the Standard Data Package (SDP)



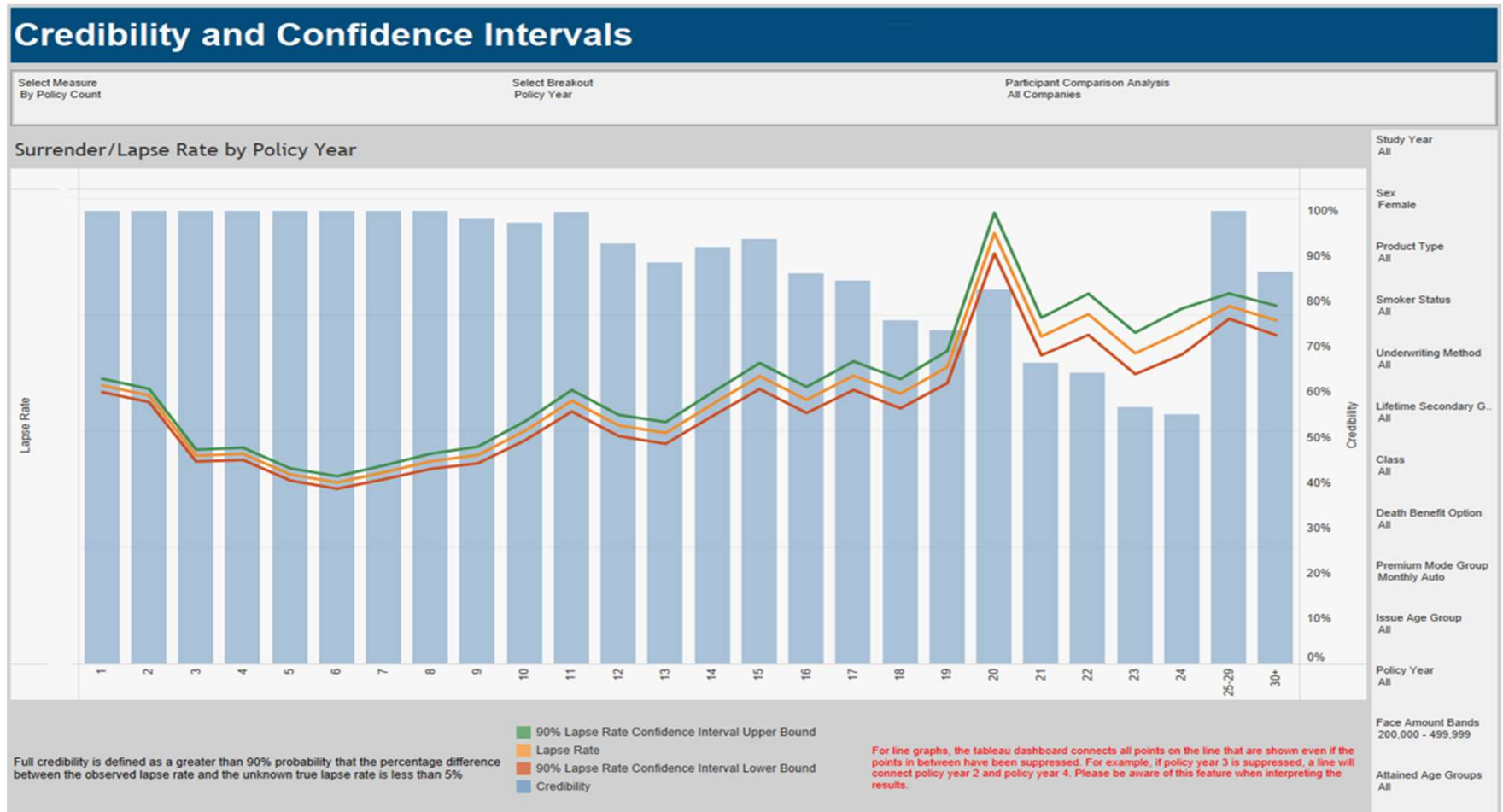
Robust/Credible Data

Metric	Current Study	Previous Study
Release date	November 2023	September 2018
Contract years studied	2015-2021	2009-2013
Policy exposures	33.5 million	8.9 million
Face amount exposures	\$8.5 trillion	\$2.8 trillion
Number of companies	24	11

Available Data Elements

- Product types
 - Traditional Universal Life
 - Universal Life with a Secondary Guarantee
 - Indexed Universal Life
 - Indexed Universal Life with a Secondary Guarantee
 - Variable Universal Life
 - Variable Universal Life with a Secondary Guarantee
- Other data dimensions
 - Sex, policy year, study year, issue age, face amount, risk class

New Metrics



2019-2021 Variable Annuity Contract Owner Behavior Study

- Study was published in November 2023
- This is the third study released under Experience Studies Pro, the partnership between the SOA Research Institute and LIMRA
- For access to full report and detailed study results in Tableau, companies must purchase the Standard Data Package (SDP); state regulators access
- A short report with high-level insights is available to the public
- Link to study: <https://www.soa.org/resources/experience-studies/2023/19-21-va/>

2019-2021 Variable Annuity Contract Owner Behavior Study

- High-level summary:
 - Observation years studied: 2019-2021
 - Exposure by contract count: 10.5 million
 - Exposure by contract amount: \$1.4 trillion
 - Number of surrenders: 500,000
 - Number of companies: 15
 - Market share: 64%
- Contract owner characteristics and behavior studied:
 - Business mix
 - Withdrawal activity, including under various GLBs (GLWB, GMIB, Hybrid Rider, RILAs, No Rider)
 - Premium deposit activity
 - Surrender activity

2019-2021 Variable Annuity Contract Owner Behavior Study

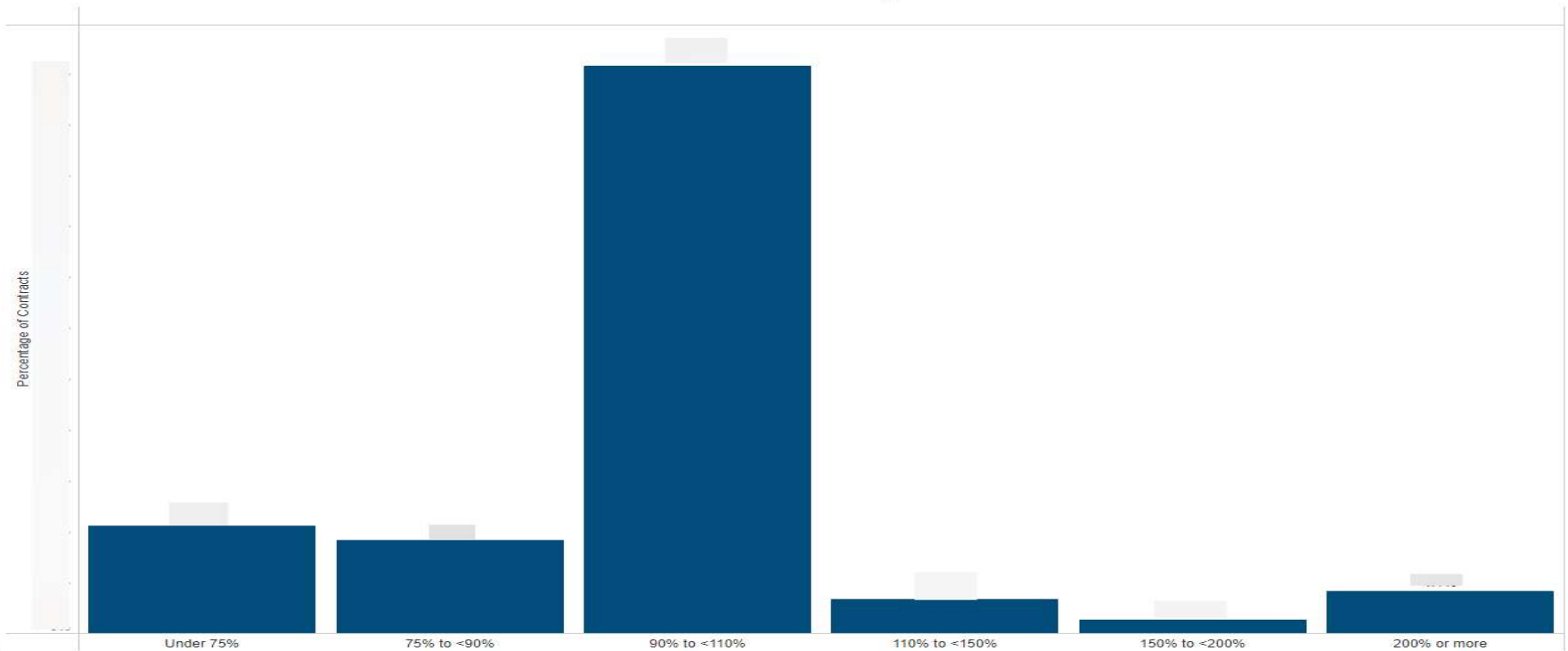
Detailed results available in Tableau:

1. Annuitant Profiles	2. Equity Market Experience GLB
3. APV vs. Contract Value	4. Comparison of ITM GLWB
5. Withdrawal Activity	6. Withdrawal Amounts
7. First Withdrawals GLWB	8. Withdrawal Rates by Issue Age and Contract Year GLWB
9. Benefit Utilization - Total GLWB	10. Benefit Utilization - Age GLWB
11. Withdrawal Ratios GLWB	12. Withdrawal Rates
13. Withdrawal Ratios Beginning and End of Year GLWB	14. Additional Premium
15. Surrender Rate Analysis	16. Surrender Rates by Surrender Charge
17. Surrender Rates by Utilization	18. Surrender Rates by Withdrawal Method
19. Surrender Rates by Benefit Base to Contract Value Ratio GLWB	20. Methodology and Definitions

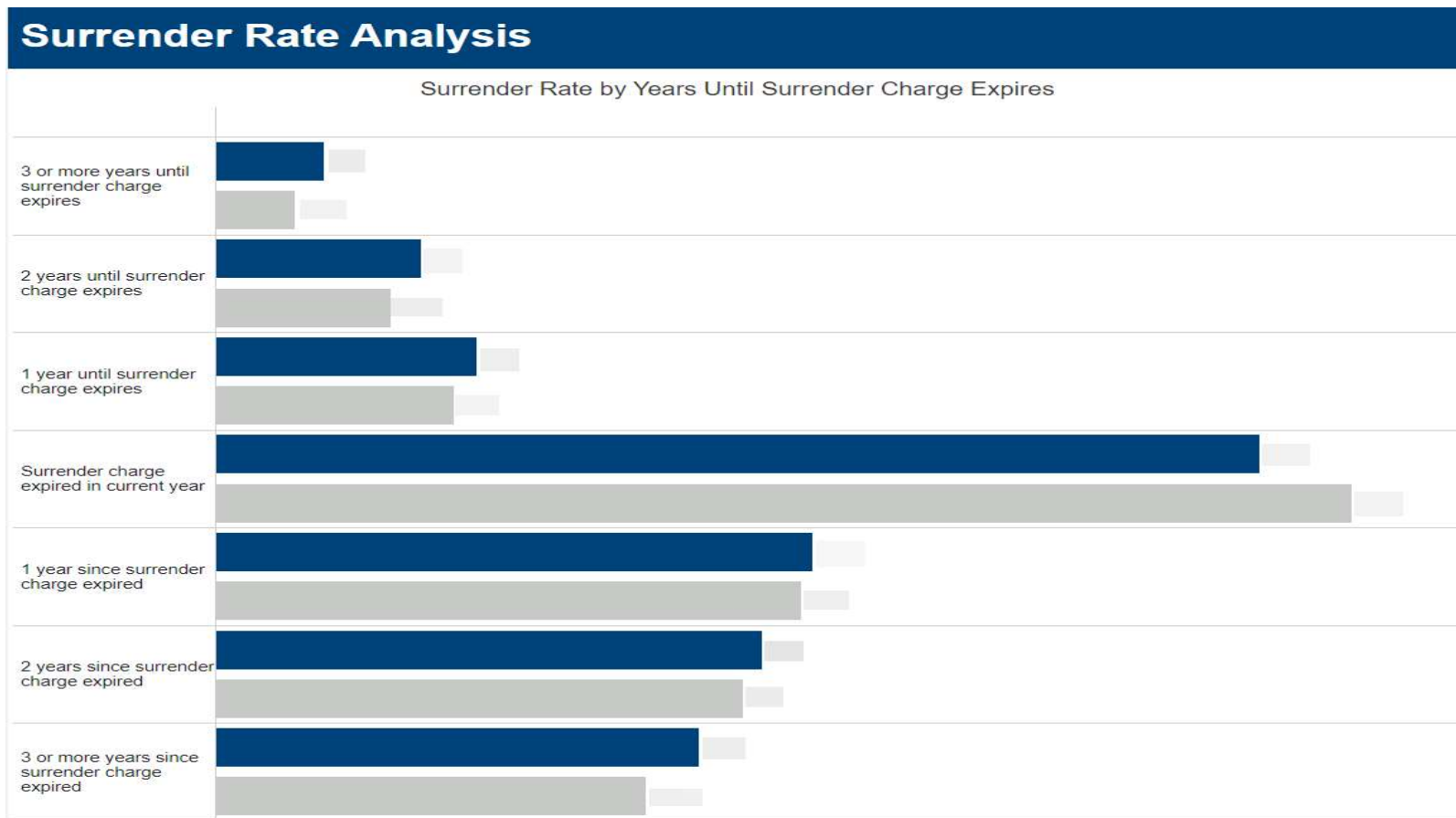
Data Visualization Examples

Benefit Utilization - Total | GLWB

Distribution of Withdrawals as a Percentage of Maximum Benefit

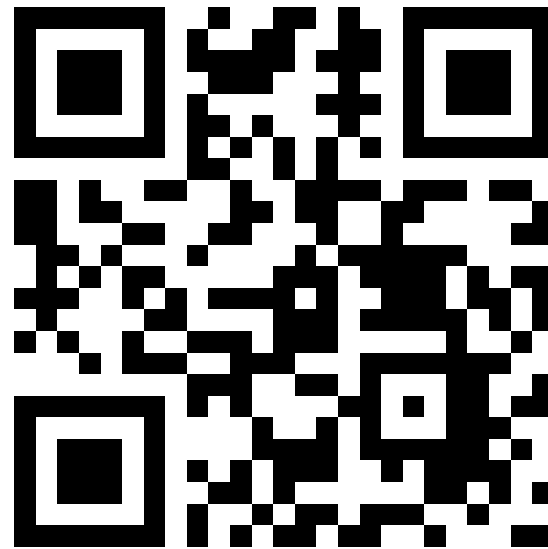


Data Visualization Examples



Available on SOA website

<https://www.soa.org/resources/experience-studies/2023/19-21-va/>



Group Annuity Mortality Response Letter

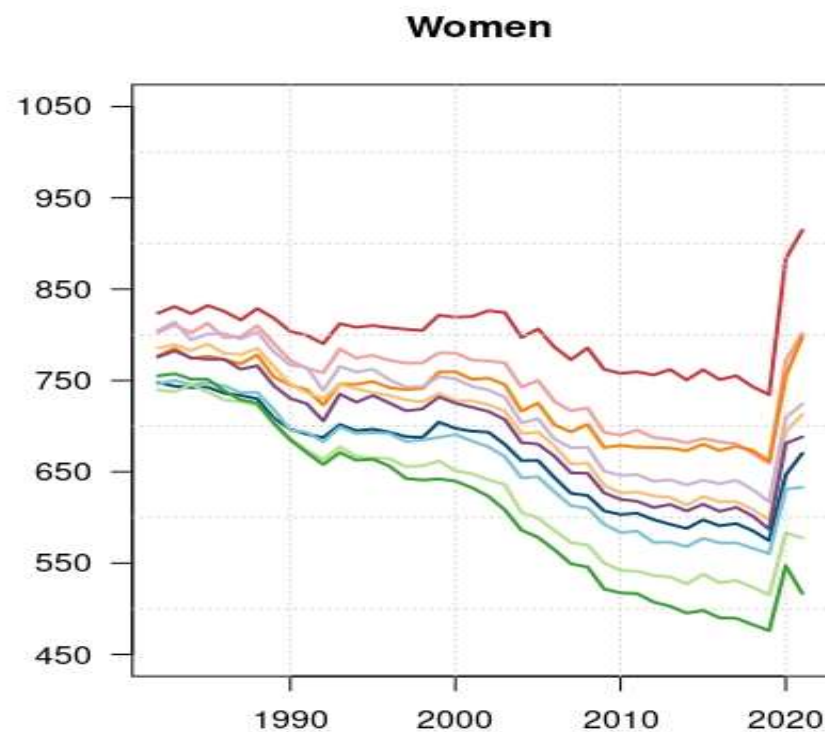
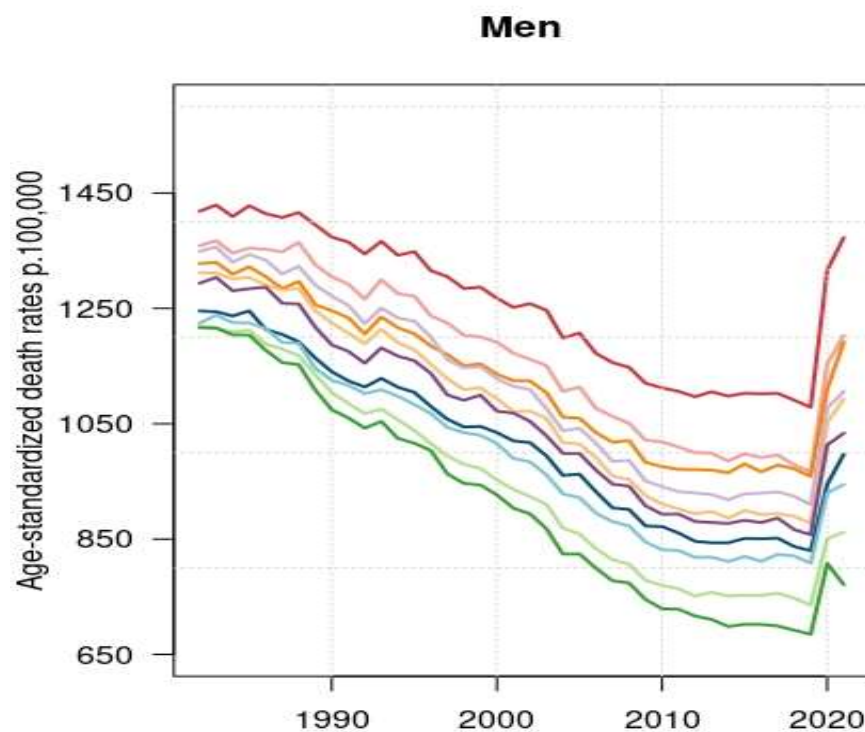
- SOA Research Institute does not believe mandatory experience reporting is necessary
- SOA and LIMRA have built infrastructure to produce efficient and timely experience studies
- SOA group annuity studies have met industry and valuation needs
- Industry may not have desired collar experience easily accessible for a mandatory data call

2020-2021 Mortality by Socioeconomic Category Update

1. Update mortality by socioeconomic category series for 2020 and 2021.
2. Investigate how COVID-19 impacted different socioeconomic groups within the U.S. population.
3. Examine non-COVID-19 causes of death by socioeconomic groups
4. Identify future research needed

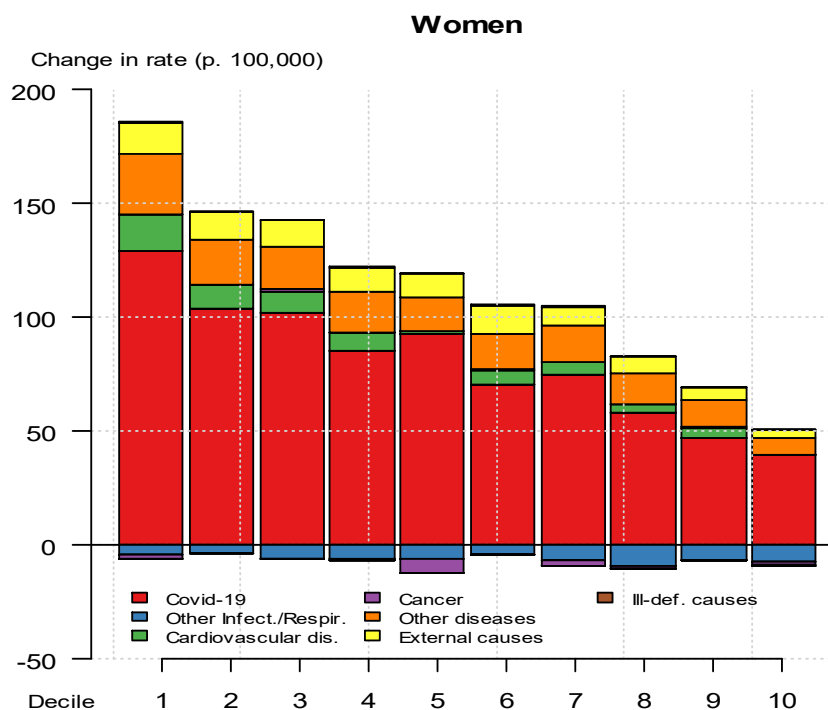
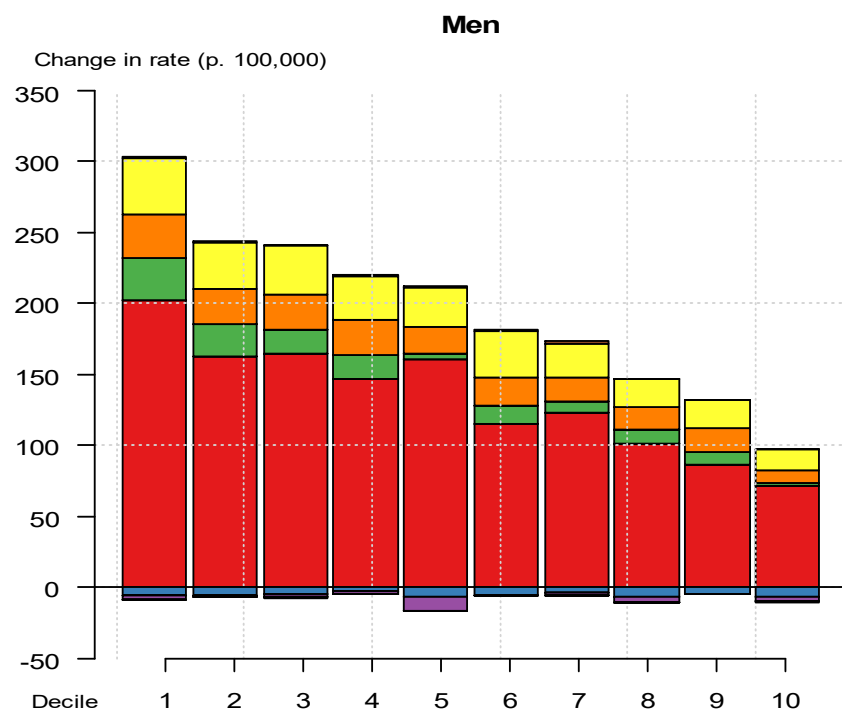
Increasing Gap in Mortality

Age-standardized death rate (all causes of death) by Socioeconomic Status decile (1982-2021)



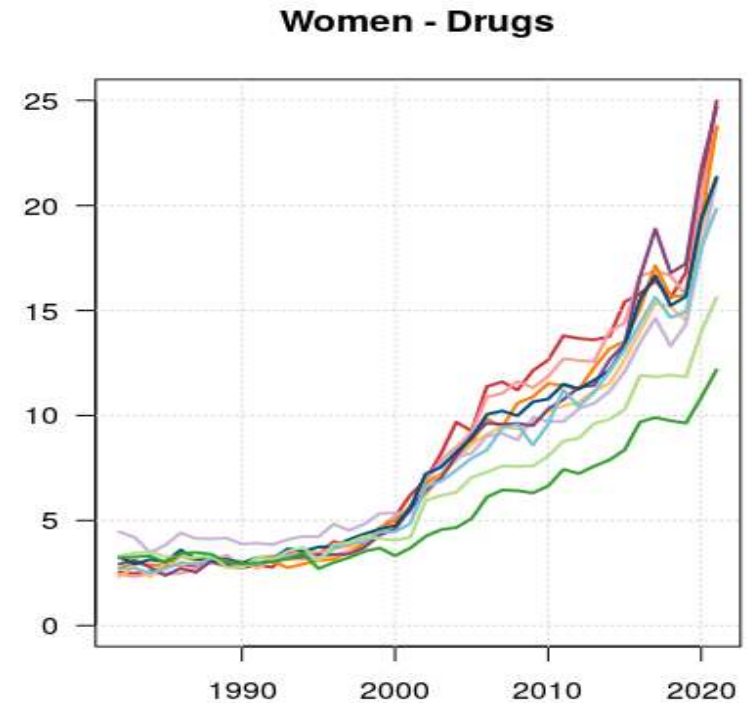
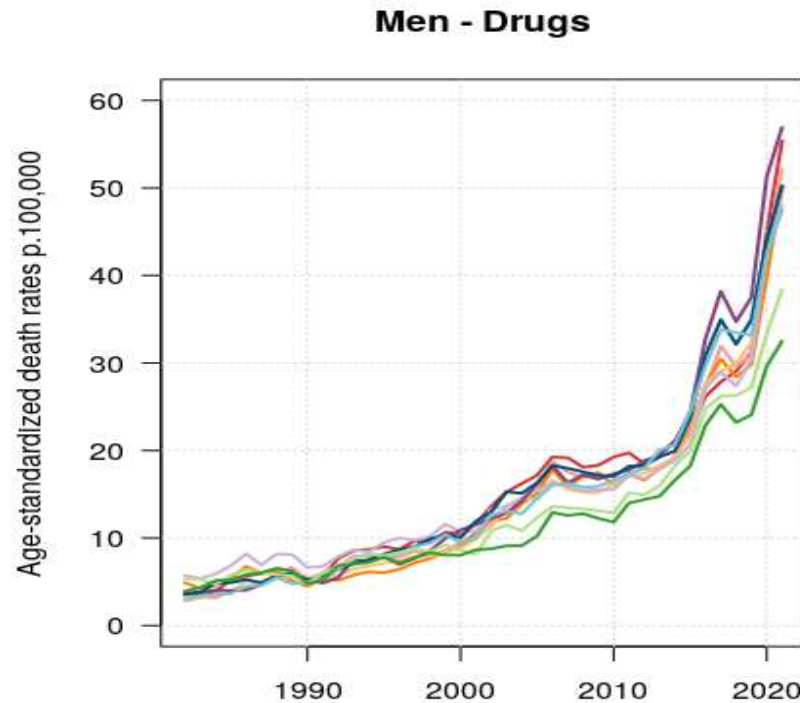
NON-Covid-19 Causes Also Played a Role in Excess

Cause-of-death contributions to the increase in the age-standardized death rates between 2019 and 2021 in each decile



Not much difference by socioeconomic category when looking at drug overdoses

Age-standardized death rates for drug overdoses by decile and sex



Next Steps

- Report Available by end of the month on SOA website
- Investigate how to address methodology for estimating single age mortality for 85 and over.
- Investigate implications of the research for MIM-2021
- Extend data series for 2022 NCHS



Additional Life Research

Experience Studies

Project Name	Objective	Link/Expected Completion Date
2015-21 Universal Life Lapse Surrender - Report	Analyze the premium persistency for universal life products - Data collection and validation phase	https://www.soa.org/resources/experience-studies/2023/15-21-ulls/
2023 Life Mortality Improvement	Develop AG38 mortality improvement assumptions for YE 2023	https://www.soa.org/resources/research-reports/2023/ind-life-mort-imp-scale/
COVID-19 Reported Claims Study - 2Q 2023 Update	Draft a research study reviewing Covid-19 reported deaths by quarter	https://www.soa.org/resources/research-reports/2023/us-ind-life-covid-rca-landing/
Economic Scenario Generator - 2024 Update	Update the AAA Economic Scenario Generator Annually.	3/29/2024
Life Predictive Mortality Model	The theme is around the sharing and warehousing of PA tools and information, similar to a data science environment.	3/31/2024
US Population Mortality Observations: Updated with 2022 Experience	Explore observations from the release of the 2022 U.S. population mortality data.	4/15/2024
ILEC Mortality Experience Report Update for 2018 - 2019	Draft a report updating the ILEC mortality experience reporting for 2019	4/25/2024
2015-21 Fixed Rate Deferred Surrender Study - Report	Complete a study of fixed rate deferred annuity surrender rates.	4/30/2024
2015-21 Universal Life Premium Persistency Study - Report	Analyze the premium persistency for universal life products - Data collection and validation phase	5/15/2024
Group Life COVID-19 Mortality Survey Update - 1Q24 Report	Complete an update on a mortality study assessing the impact of COVID-19 on Group Life Insurance.	5/31/2024



Practice Research

Project Name	Objective	Link/Expected Completion Date
2023 Living to 100	Produce body of research to help with old age mortality modeling and projection and research to support the needs of an increasing aging population.	https://www.soa.org/resources/essays-monographs/2023-living-to-100-compendium/
Accelerated Underwriting Survey and Impact of COVID in Underwriting	Update prior survey and explore the way insurers have adapted their underwriting practices	https://www.soa.org/resources/research-reports/2023/acc-underwriting-practices-survey/
Behavioral economic in practice - Retirement	Study the economic and behavioral economic factors that influence Deferred Retirement Option Plans (“DROP”) choices by plan participants	https://www.soa.org/resources/research-reports/2024/behavioral-econ-individual-discounting/
2022 Mortality by socioeconomic category update	Update mortality by socioeconomic lifetables with 2020 and 2021 data and examine the impact of COVID 19 on socioeconomic mortality trends	https://www.soa.org/resources/research-reports/2024/covid-socioeconomic-mortality/
Modeling and Forecasting Premature Cardiovascular Mortality	Examine cardiovascular disease mortality trends	https://www.soa.org/resources/research-reports/2024/modeling-premature-cardiovascular-mortality/
Challenges and Opportunities with Rethinking Fairness Metrics for Life Insurance Processes: An Actuarial Perspective	Summarize the challenges and complexities with defining and measuring fairness for life insurance products and processes.	https://www.soa.org/resources/research-reports/2023/fairness-metrics-life-insurance/
Mortality and Race	Summarize available literature on mortality and race and discuss actuarial aspects.	3/22/2024
Maternal Mortality	Study maternal mortality in US and compare to other countries	3/22/2024
Ethics and AI 2023 Update		3/27/2024
Using Behavioral Science to Improve Consumers' Comprehension and Appreciation of Life Insurance Products - RGA	Test and improve the life insurance communication using BE	3/31/2024
Redesigning the Life Insurance Underwriting Journey with Behavioral Economics - Scor	Test BE wording for underwriting questions to improve honesty in answers and address under-disclosure of medical conditions	3/31/2024
Statistical Approaches for Imputing Race and Ethnicity	Outline the various approaches for statistically imputing race and ethnicity in the U.S. along with their strengths and weaknesses to help familiarize actuaries with these techniques.	4/1/2024





Agenda Item 11

Hear an Update from the Academy Council
on Professionalism and Education
(No Materials)

Agenda Item 12

Consider Re-Exposure of Amendment
Proposal Form (APF) 2024-01

Brian Bayerle
Chief Life Actuary
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Colin Masterson
Policy Analyst
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February 29, 2024

Rachel Hemphill
Chair, NAIC Life Actuarial (A) Task Force (LATF)

Re: Amendment Proposal Form (APF) 2024-01 (Qualified Actuary Standard)

Dear Chair Hemphill:

The American Council of Life Insurers (ACLI) appreciates the opportunity to submit comments on APF 2024-01 which aims to add additional language to the VM-01 definition of “Qualified Actuary”.

ACLI agrees with the need for robust educational and professionalism standards for actuaries. Qualified Actuaries requirements should be tailored to the appropriate needs of their role. The Specific Qualification Standards, while appropriate for Appointed Actuaries, may require Qualified Actuaries to have knowledge beyond the scope of their day-to-day work in terms of product type/focus to meet the requirements.

ACLI believes that a better solution would be the development of Knowledge Statements specific to the Qualified Actuary. Our understanding is that a similar effort for Appointed Actuaries is underway and may provide a better avenue to address appropriate requirements for Qualified Actuaries.

Thank you very much for the opportunity to submit comments on such an important issue for our industry and the actuarial profession and we look forward to conversation at future sessions of LATF.

Sincerely,



cc: Scott O’Neal, NAIC

American Council of Life Insurers | 101 Constitution Ave, NW, Suite 700 | Washington, DC 20001-2133

The American Council of Life Insurers is the leading trade association driving public policy and advocacy on behalf of the life insurance industry. 90 million American families rely on the life insurance industry for financial protection and retirement security. ACLI’s member companies are dedicated to protecting consumers’ financial wellbeing through life insurance, annuities, retirement plans, long-term care insurance, disability income insurance, reinsurance, and dental, vision and other supplemental benefits. ACLI’s 275 member companies represent 93 percent of industry assets in the United States.

accli.com

Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force Amendment Proposal Form*

1. Identify yourself, your affiliation, and a very brief description (title) of the issue.

Identification:

Rachel Hemphill, PhD, FSA, FCAS, MAAA

Title of the Issue:

Qualified Actuaries should meet the special qualification standards, in addition to Appointed Actuaries.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

VM-01 definition of “Qualified Actuary”

January 1, 2024 NAIC Valuation Manual

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted, or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

VM-01 definition of “Qualified Actuary”:

- The term “qualified actuary” means an individual who is qualified to sign the applicable statement of actuarial opinion in accordance with the Academy qualification standards for actuaries signing such statements and who meets the requirements specified in the Valuation Manual.

A qualified actuary must meet the basic education, experience and continuing education requirements of the Specific Qualification Standard for Statements of Actuarial Opinion, NAIC Life, Accident & Health, and Fraternal Annual Statement, as set forth in the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* (U.S. Qualifications Standards), promulgated by the Academy. An individual qualified actuary only must be qualified with respect to the area(s) that they are providing a certification and/or opinion. For example, if there are separate life and variable annuity qualified actuaries providing the relevant certifications for VM-20 and VM-21, they each need only be qualified in their own respective area.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

For reference, the Model 820 Definition of qualified actuary is:

- The term “qualified actuary” means an individual who is qualified to sign the applicable statement of actuarial opinion in accordance with the American Academy of Actuaries qualification standards for actuaries signing such statements and who meets the requirements specified in the valuation manual.

Currently, the VM-01 definition of qualified actuary just reiterates that definition. But, as Model 820 specifically calls out “who meets the requirements specified in the valuation manual” adding the specific language is consistent with Model 820.

It is surprising that this is not already the requirement. The complexity of PBR and the reliance on the PBR actuary calls for this requirement, but the United States Qualification Standard (USQS) currently only requires the specific qualification standard for an appointed actuary, not a qualified actuary. The American Academy of Actuaries noted the USQS states that the NAIC or individual states may have additional

requirements. So, a change to the Valuation Manual is needed to ensure PBR actuaries have the 15 hours of specific continuing education and the more detailed basic education (which can be based on exams or self-study). While most qualified actuaries likely already are satisfying this requirement and some may have interpreted this as the current requirement (and some serve as appointed actuaries as well), this clarification is important where regulators have identified some companies whose qualified actuaries are not as knowledgeable as they need to be. This change will be consistent with feedback given by regulators to those qualified actuaries regarding ongoing education.

Similarly, VM-30 allows the appointed actuary to rely on memoranda that are prepared and signed by actuaries that are “qualified actuary within the meaning of the VM-01 definition thereof, with respect to the areas covered in such memoranda”.

Specific sections of the USQS are included below; note that all included topics are broadly applicable to PBR qualified actuaries and actuaries that the appointed actuary is relying on for sections of their own memoranda, as well as appointed actuaries. Therefore, while we have revised the edits to reflect that “individual qualified actuary only must be qualified with respect to the area(s) that they are providing a certification and/or opinion” to absolutely ensure that no actuary is being held responsible for areas outside the scope of their work, this may be unnecessary due to the broad applicability of the general topic areas required by the specific qualification standard.

For reference, Section 3.1.1.1 of the USQS regarding Specific Qualification Standard basic education requirement:

An actuary should successfully complete relevant examinations administered by the American Academy of Actuaries or the Society of Actuaries on the following topics: (a) policy forms and coverages, (b) dividends and reinsurance, (c) investments and valuations of assets and the relationship between cash flows from assets and related liabilities, (d) statutory insurance accounting, (e) valuation of liabilities, and (f) valuation and nonforfeiture laws.

For reference, Section 3.1.2 of the USQS regarding Specific Qualification Standard basic education requirement being satisfied through self-study:

An actuary may also satisfy this basic education requirement by acquiring comprehensive knowledge of the applicable topics through responsible work and/or self-study. To comply with the basic education requirement through self-study, an actuary must obtain a signed statement from another actuary who is qualified to issue Statements of Actuarial Opinion under the specific qualification standard being met. This statement must indicate that the writer is familiar with an actuary’s professional history and that an actuary has obtained sufficient alternative education to satisfy the basic education requirement for the specific qualification standard. A sample statement appears in appendix 2. This statement should be obtained before an actuary issues a Statement of Actuarial Opinion and should be retained by the actuary.

For reference, Section 3.3 of the USQS regarding Specific Qualification Standard continuing education requirement:

To satisfy the Specific Qualification Standards, an actuary must obtain sufficient continuing education to maintain current knowledge of applicable standards and principles in the area of actuarial practice of the Statement of Actuarial Opinion. At a minimum, an actuary must complete 15 credit hours per calendar year of continuing education that is directly relevant to the topics identified in section 3.1.1. A minimum of 6 of the 15 hours must be obtained through experiences that involve interactions with outside actuaries or other professionals, such as seminars, in-person or online courses, or committee work that is directly relevant to the topics identified in section 3.1.1. Hours that satisfy the continuing education requirement of the Specific Qualification Standards may also be used to satisfy the continuing education requirement of the General Qualification Standard. Hours of continuing education in excess of the annual requirement may be carried forward one year.

Dates: Received	Reviewed by Staff	Distributed	Considered
12/08/2023	K.K		
Notes: 2024-01			

Agenda Item 13

Hear an Update from the Academy
Life Practice Council

Academy Life Practice Council Update

Life Actuarial Task Force (LATF) Meeting
March 15, 2024

Amanda Barry-Moilanen
Policy Analyst, Life

Recent Activity

2

The Life Experience Committee released a [Resource and Discussion Guide](#) on Dynamic Lapses.

In collaboration with the Academy’s Risk Management and Financial Reporting Council, the Asset Adequacy and Reinsurance Issues Task Force released [*Asset-Intensive Reinsurance Ceded Offshore From U.S. Life Insurers \(With Focus on Bermuda\)*](#).

The Economic Scenario Generator Subcommittee [presented](#) to the GOES (E/A) Subgroup on proposed “quadrant” criteria for the joint distribution of interest rates and equity returns.

Recent Activity

3

Delivered [comments](#) to LATF on the re-exposure of APF 2023-12 concerning equity return volatility in VM-30 cash-flow testing.

Delivered [comments](#) to LATF, the Life RBC (E) Working Group, and the GOES Subgroup on the Dec. 12 exposure of the updated GOES Targeting Criteria and Evaluation Statistics.

Delivered [comments](#) to LATF's Valuation Manual (VM)-22 (A) Subgroup on the Nov. 2023 exposure of VM-31, VM-G, and the VM-22 PBR Supplement Blank.

Ongoing Activity

4

- ❑ Ongoing support for the VM-22 Field Test
- ❑ Educational material on economic scenario generators and continued support for the GOES project
- ❑ Updating the Model Governance Practice Note
- ❑ Updating the Credit for Life Reinsurance Practice Note
- ❑ Updating the Asset Adequacy Analysis Practice Note
- ❑ Developing a Non-Guaranteed Elements Practice Note

Academy Webinars and Events

5

Recent

- [PBR Bootcamp: VM-31 as Seen by Regulators](#)
- [Group Annuity Contracts for Pension-Risk Transfer](#)

Upcoming

- In-person [PBR Bootcamp](#) (June 11-13, Philadelphia)

Thank you

6

Questions?

For more information, please contact the Academy's life policy analyst,
Amanda Barry-Moilanen (barrymoilanen@actuary.org)

Agenda Item 14

Consider Re-Exposure of APF 2023-13

**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force
Amendment Proposal Form***

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

Linda Lankowski, RGA, William Leung, MO DCI

Annuity mortality tables and non-US lives mortality.
2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:
 - VM-M Sections 1 and 2
 - VM-31 Section 3.D.3 and Section 3.F.3.i
 - VM-20 Sections 3.C.1, 9.C.3.b and , 9.C.3.g
 - VM-21 Sections 6.C.3.h, 7.C.9.b and c, 11.B.3 and 11.C.1
3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

VM-M: Section 1: Valuation and Nonforfeiture Mortality Tables

J. 2012 Individual Annuity Reserve Valuation Table

1. Definitions
 - a. “2012 IAR Table” means that generational mortality table developed by the Joint Academy/SOA Payout Annuity Table Team and containing rates, q^{2012+n} , derived from a combination of the 2012 IAM Period Table and Projection Scale G2, using the methodology stated in the “Application of the 2012 IAR Mortality Table” paragraph of Appendix A-821 of the AP&P Manual.
 - b. “2012 Individual Annuity Mortality Period Life (2012 IAM Period) Table” means the Period Table containing loaded mortality rates for calendar year 2012. This table contains rates, q^{2012} , developed by the Joint Academy/SOA Payout Annuity Table Team and is shown in Appendices 1–2 of Appendix A-821 of the AP&P Manual.
 - c. “Projection Scale G2 (Scale G2)” is a table of annual rates, $G2_x$, of mortality improvement by age for projecting future mortality rates beyond calendar year 2012. This table was developed by the Joint Academy/SOA Payout Annuity Table Team and is shown in Appendices 3–4 of Appendix A-821 of the AP&P Manual.

K. 2017 Commissioners Standard Guaranteed Issue Mortality Tables

1. “2017 Commissioners Standard Guaranteed Issue Mortality Table” (2017 CSGI) means that 2017 Guaranteed Issue basic ultimate mortality table with 75% loading, consisting of separate rates of mortality for male and female lives, as well as combined unisex rates, developed from the experience of 2005–2009 collected by the SOA. This table was adopted by the NAIC on Aug. 7, 2018 and is included in the NAIC Proceedings of the 2018 Summer National Meeting.

L. 1994 Group Annuity Reserving (1994 GAR) Table

1

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1. “1994 GAR Table” means that mortality table developed by the Society of Actuaries Group Annuity Valuation Table Task Force and shown on pages 866-867 of Volume XLVII of the Transactions of the Society of Actuaries (1995).

M. 1983 Table a

1. “1983 Table ‘a’” means that mortality table developed by the Society of Actuaries Committee to Recommend a New Mortality Basis for Individual Annuity Valuation and adopted as a recognized mortality table for annuities in June 1982 by the National Association of Insurance Commissioners. [See 1982 Proceedings of the NAIC II, page 454.]

VM-M: Section 2: Industry Experience Valuation Basic Tables

A. 2008 Valuation Basic Table (2008 VBT)

B. 2015 Valuation Basic Table (2015 VBT) The 2015 Valuation Basic Table is a valuation table without loads jointly developed by the Academy and SOA for use in determining a company’s prudent estimate mortality assumption for valuations of Dec. 31, 2015, and later. The table consists of the Primary table (Male, Female, Smoker, Nonsmoker and Composite), 10 Relative Risk tables for nonsmokers (Male and Female) and four Relative Risk tables for smokers (Male and Female). Rates for juvenile ages are included in the composite tables. The tables are on a select and ultimate and ultimate-only basis and are available on an age nearest and an age last birthday basis.

C. “2012 Individual Annuity Mortality Basic (2012 IAM Basic) Table” means the unloaded mortality table underlying the 2012 IAM Period Table. This was developed from the 2002 experience table, projected with improvement factors to 2012. The 2000-2004 Payout Annuity Mortality Experience Study includes experience for immediate annuities, annuitizations and life settlement options of individual life insurance and annuity death claims. The experience analyzed excluded substandard annuities, structured settlement annuities and variable payout annuities. The experience represented 16 companies over the exposure period. The result of these efforts was a 2002 experience table.

D. The 1994 Group Annuity Mortality Basic (GAM-94 Basic) Table, developed by the Society of Actuaries Group Annuity Valuation Table Task Force and shown on pages 886-887 of Volume XLVII of the Transactions of the Society of Actuaries (1995), is a static mortality table containing unloaded mortality rates for calendar year 1994. The central calendar year of the modified mortality experience is 1988. Mortality experience is projected from the central experience year of 1988 to central year 1994, to produce a 1994 Basic Table.

VM-31: Section 3.D.3: Life Report Mortality

p. Non-US Mortality – Description and rationale for mortality tables used to value non-US blocks of business, pursuant to VM-20 Section 3.C.1.h and VM-20 Section 9.C.3.b.

Commented [CC1]: s/b Section 3.D.3.p

VM-31: Section 3.F.3.i: Variable Annuity Report Mortality

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- xiv. Non-US Mortality – Description and rationale for mortality tables and mortality improvement rates used to value non-US blocks of business, pursuant to VM-21 Section 6.C.3.h.

VM-20:

Section 3.C: Net Premium Reserve Assumptions

Section 3.C.1.h (new):

For a group of policies or certificates covering insureds who are not residents of the United States:

- i. The company shall use a valuation mortality table based on a non-US industry mortality table developed as described in Section 9.C.3.b.i.
- ii. Appropriate mortality improvement factors should be used to bring the non-US industry table forward or backward to the same as of date of the corresponding CSO table.
- iii. Margins consistent with the purpose of US statutory reserve methods shall then be added to the (adjusted) unloaded mortality table. For example, the margins in the non-US valuation rate could be determined by a formula such as CSO rate/unloaded CSO rate x non-US (adjusted) industry rate.
- iv. When a company uses such non-US valuation mortality table for one block of non-US business, the company should consistently use the same or similarly developed non-US valuation tables for other non-US business.
- v. The provisions in Section 3.C.1.f and 3.C.1.g still apply to the non-US valuation mortality table.

Section 9.C.3 Determination of Applicable Industry Basic Tables

- b. A modified industry basic table is permitted in a limited number of situations where an industry basic table does not appropriately reflect the expected mortality experience, such as joint life mortality, simplified underwriting, ~~or~~ substandard or rated lives, or non-US residence. In cases other than modification of the table to reflect joint life mortality, the modification must not result in mortality rates lower than those in the industry basic table without approval by the insurance commissioner.

For blocks of policies or certificates covering insureds who are not residents of the United States:

- i. the company shall use a relevant no load mortality table developed by the regulatory authority or the local actuarial society for the life insurance industry in the country of residence. When a relevant non-US industry table developed by the regulatory authority or the local actuarial society is not available, the company shall use any well-established industry table that is based on the experience of policies having the appropriate risk characteristics or create an industry table based on the lives having the appropriate risk characteristics.

Adjustments shall be made to include margins consistent with those included in the relevant VBT. These Margins for industry experience tables are meant to cover lack of credibility, estimation error, and similar data risks, rather than conservatism. Such mortality tables must be approved by the insurance department of the state of domicile before being used for reserve purposes.

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- ii. When a company uses such non-US Industry mortality table for one block of non-US business, the company should consistently use the same or similarly developed non-US Industry tables for other non-US business.

g. Mortality improvement shall not be incorporated beyond the valuation date in the industry basic table. However, historical mortality improvement from the date of the industry basic table (e.g., Jan. 1, 2008, for the 2008 VBT and July 1, 2015, for the 2015 VBT) to the valuation date shall be incorporated using the improvement factors for the applicable industry basic table as determined by the SOA, adopted by the Life Actuarial (A) Task Force and published on the SOA website, <https://www.soa.org/research/topics/indiv-val-exp-study-list/> (Individual Life Insurance Mortality Improvement Scale – for Use with AG38/VM20 – 20XX) for US business. For blocks of policies or certificates covering insureds who are not residents of the United States, appropriate mortality improvement factors should be used to bring the non-US industry table forward to the valuation date; such mortality improvement factors must be approved by the insurance department of the state of domicile before being used for reserve purposes.

VM-21: Section 6: Requirements for the Additional Standard Projection Amount

C. Prescribed Assumptions

3. Guarantee Actuarial Present Value

h. **For US business**, the mortality assumption used shall follow the 2012 IAM Basic Mortality Table, improved to Dec. 31, 2017, using Projection Scale G2 but not applying any additional mortality improvement in the projection.

For a group of contracts or certificates covering insureds who are not residents of the United States:

- i. The company shall use a non-US basic individual annuitant mortality table based on a relevant unloaded mortality table developed by the regulatory authority or the local actuarial society for the life insurance industry in the country of residence. When a relevant non-US table developed by the regulatory authority or the local actuarial society is not available, the company shall use any well-established industry table that is based on the experience of policies having the appropriate risk characteristics or create an industry table based on the lives having the appropriate risk characteristics. Adjustments shall be made as necessary to include margins consistent with those included in the 2012 IAM Basic table used to value contracts or certificates covering US lives. These margins are intended to cover lack of credibility, estimation error, and similar data risks, rather than conservatism. Appropriate mortality improvement factors should be used to bring the non-US industry table forward or backward to the same as of date of the 2012 IAM Basic table.
- ii. Mortality improvement shall be applied to improve the table to Dec. 31, 2017, using an appropriate scale developed by the regulatory authority or the local actuarial society for the

4

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life insurance industry in the country of residence with appropriate adjustments where necessary to ensure consistent conservatism. When such mortality improvement scale is not available, the company shall use any well-established projection scale that is based on the experience of policies having the appropriate risk characteristics or create a projection scale based on the lives having the appropriate risk characteristics.

- iii. Such mortality table and projection scale must be approved by the insurance department of the state of domicile before being used for determining reserve or capital requirements.
- iv. When a company uses such non-US mortality table for one block of non-US business, the company should consistently use the same or similarly developed non-US tables for other non-US business.

9. Mortality

For US business, the mortality rate for a contract holder with age x in year $(2012 + n)$ shall be calculated using the following formula, where q_x denotes mortality from the 2012 IAM Basic Mortality Table, multiplied by the appropriate factor (F_x) from Table 6.9 and $G2_x$ denotes mortality improvement from Projection Scale G2:

$$q_x^{2012+n} = q_x^{2012}(1-G2_x)^n * F_x$$

For non-US business, the mortality rate for a contract holder shall similarly be multiplied by the appropriate factor (F_x) from Table 6.9 after applying appropriate mortality improvement described in Section 6.C.3.h.ii.

Section 7: Alternative Methodology

C. Calculation of the GC Component

9. Adjusting GC for Mortality Experience

The factors that have been developed for use in determining GC assume male mortality at 100% of the 1994 Variable Annuity MGDB ALB Mortality Table. Females use a five-year age setback. Companies electing to use the Alternative Methodology that have not conducted an evaluation of their mortality experience shall use these factors, or they shall adjust the factors using the methodology below to apply the mortality defined in Section 11.C. for products without VAGLB. Other companies should use the procedure described below to adjust for the actuary's prudent estimate of mortality. The development of prudent estimate mortality shall follow the requirements and guidance of Section 11. Once a company uses the modified method for a block of business, the option to use the unadjusted factors is no longer available for that part of its business. In applying the factors to actual in-force business, a five-year age setback should be used for female annuitants.

a. Calculate two sets of NSPs at each attained age:

a. One using 100% of the 1994 Variable Annuity MGDB Age Last Birthday (ALB) Mortality Table (with the aforementioned five-year age setback for females); and

b. A second using either:

i. The prudent estimate mortality if that has been established by the company.

ii. For companies that have not established a prudent estimate mortality assumption, the appropriate percentage of the 2012 IAM Basic Table or the non-US table in in Section 6.C.3.h (if applicable) with Projection Scale G2 ALB (as described in Section 12.B.3).

These calculations shall assume an interest rate of 3.75% and a lapse rate of 7% per year.

b. The *GC* factor is multiplied by the ratio, for the specific attained age being valued, of the NSP calculated using the prudent estimate mortality for blocks with those assumptions or the NSP calculated using the adjusted 2012 IAM Basic Table or the non-US table in in Section 6.C.3.h (if applicable) for blocks without a prudent estimate assumption to the NSP calculated using the 1994 Variable Annuity MGDB ALB Mortality Table. The base factors for females use the values (with the aforementioned five-year age setback).

Section 11: Guidance and Requirements for Setting Prudent Estimate Mortality Assumptions

B. Determination of Expected Mortality Curves

3. No Data Requirements

When little or no experience or information is available on a business segment, the company shall use expected mortality curves that would produce expected deaths no less than the appropriate percentage (F_x) from Table 1 of the 2012 IAM Basic Table with Projection Scale G2 or the non-US table and mortality improvement where applied pursuant to Section 6.C.3.h for contracts with no VAGLBs and expected deaths no greater than the appropriate percentage (F_x) from Table 1 of the 2012 IAM Basic Mortality Table with Projection Scale G2 or the non-US table and mortality improvement where applied pursuant to Section 6.C.3.h for contracts with VAGLBs. If mortality experience on the business segment is expected to be atypical (e.g., demographics of target markets are known to have higher [lower] mortality than typical), these “no data” mortality requirements may not be adequate.

C. Adjustment for Credibility to Determine Prudent Estimate Mortality

c. Adjustment for Credibility

The expected mortality curves determined in Section 11.B shall be adjusted based on the credibility of the experience used to determine the curves in order to arrive at prudent estimate mortality. The adjustment for credibility shall result in blending the expected mortality curves with a mortality table consistent with a statutory valuation mortality table. For contracts with no VAGLBs, the table shall be consistent with the appropriate percentage (F_x) from Table 1 of the 2012 IAM Basic Table with Projection Scale G2 or the non-US table and mortality improvement where applied pursuant to Section 6.C.3.h; and for contracts with VAGLBs, the table shall be consistent with the appropriate percentage (F_x) from Table 1 of the 2012 IAM Basic Mortality Table with Projection Scale G2 or the non-US table and mortality improvement where applied pursuant to Section 6.C.3.h. The approach used to adjust the curves shall suitably account for credibility.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

1994 GAR and 1983 Table a will be needed for valuations using (proposed) VM-22 methodology.

Life insurance that is sold internationally is reinsured into the United States. Mortality for international insureds may vary significantly from that of US insurance markets. The Valuation Manual should be updated to allow for international mortality tables.

* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
11/15/23, 11/17/23	S.O.		
Notes: 2023-13			

Agenda Item 15

Discuss Any Other Matters
Brought Before the Task Force
(No Materials)