

Draft: 9/28/21

Health Actuarial (B) Task Force
Virtual Meeting
September 14, 2021

The Health Actuarial (B) Task Force met Sept. 14, 2021. The following Task Force members participated: Eric A. Cioppa, Chair, represented by Marti Hooper (ME); Andrew N. Mais, Co-Vice Chair, represented by Paul Lombardo (CT); Jonathan T. Pike, Co-Vice Chair, represented by Jaak Sundberg (UT); Jim L. Ridling represented by Jennifer Li (AL); Ricardo Lara represented by Lan Brown (CA); Michael Conway represented by Eric Unger (CO); Colin M. Hayashida represented by Kathleen Nakasone (HI); Dean L. Cameron represented by Weston Trexler (ID); Dana Popish Severinghaus represented by Eric Anderson (IL); Amy L. Beard represented by Stephen Chamblee (IN); Anita G. Fox represented by Kevin Dyke (MI); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); Marlene Caride represented by Seong-min Eom (NJ); Russell Toal (NM); Glen Mulready represented by Andrew Schallhorn (OK); Jessica K. Altman represented by Tracie Gray (PA); Carter Lawrence (TN); Doug Slape represented by Barbara Snyder (TX); Scott A. White represented by David Shea (VA); and Mike Kreidler represented by Lichiou Lee (WA).

1. Adopted its April 23 and April 6 Minutes, and the May 17 and March 29 Minutes of the Long-Term Care Actuarial (B) Working Group

Mr. Toal made a motion, seconded by Mr. Leung, to adopt the Task Force's April 23 (Attachment) and April 6 (Attachment) minutes, and the May 17 (Attachment) and March 29 (Attachment) minutes of the Long-Term Care Actuarial (B) Working Group. The motion passed unanimously.

2. Adopted a Motion to Disband the Health Care Reform Actuarial (B) Working Group and the State Rate Review (B) Subgroup

Mr. Shea said the functions of the Health Care Reform Actuarial (B) Working Group and the State Rate Review (B) Subgroup can be performed at the Task Force level. He made a motion, seconded by Mr. Dyke, to disband both the Working Group and the Subgroup. The motion passed unanimously.

3. Adopted its Proposed 2022 Charges

Ms. Eom made a motion, seconded by Mr. Shea, to adopt its proposed 2022 Charges (Attachment Proposed 2022 HATF Charges 9-14-21_clean.docx) . The motion passed unanimously.

4. Discussed its Proposal to Revise Instructions for the Health Annual Statement SAO

Mr. Sundberg said the Task Force needs to revisit its proposal to revise the language in Section 4, Section 5, Section 7 and Section 9 of the instructions for the health Statement of Actuarial Opinion (SAO) to ensure that all items—actuarial assets and liabilities—within the scope of the SAO are treated consistently, and provide a final recommendation to the Blanks (E) Working Group. Ms. Hooper said the Task Force will begin work on this.

Having no further business, the Health Actuarial (B) Task Force adjourned.

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SOA HEALTH EXPERIENCE STUDIES RESEARCH IN PROGRESS - December 2021

Project Name	Objective	Expected Completion Date
2006-2014 Individual Disability Income - Termination Report Update	Complete a study of claim termination for individual disability and release an updated report with the findings and an aggregated database of the experience data.	Complete. On SOA web site. ¹
LTC COVID19 Survey - 2021 Update	Perform a survey of the LTC industry on the impact of COVID-19 on U.S. Long-Term Care Insurance Mortality and Morbidity.	Complete. On SOA web site. ²
2006-2015 Individual Disability Income - Experience Modifications to the 2013 Individual Disability Income Valuation Table Claim Termination Rates	Complete a study of claim termination for individual disability and release a report of Experience Modifications to the 2013 Individual Disability Income Valuation Table Claim Termination Rates.	11/18/2021
2000-2011 LTC Lapse and Mortality Valuation Assumptions	Develop a replacement mortality LTC valuation table and a proposal to replace the current LTC voluntary lapse parameters. Work done in conjunction with the AAA.	11/30/2021

¹ <https://www.soa.org/resources/experience-studies/2021/analysis-claim-termination/>

² <https://www.soa.org/resources/research-reports/2021/covid-19-impact-ltc/>

SOA HEALTH PRACTICE RESEARCH IN PROGRESS - DECEMBER 2021

Project Name	Objective	Expected Completion Date
Clarification of Health Uninsured Rates	Analyze different measurements of the uninsured rate and will attempt to provide explanations for these different measures.	Complete. On SOA web site. ¹
Oral Health in US Children and Its Impact on Disparities of Overall Health and Health Expenditures	Using machine learning methods, assess the oral health of US children, by subgroup, and its impact on disparities of overall health and health expenditures over time.	Complete. On SOA web site. ²
2022 Health Care Cost Model v3.0	Release a model that will enable users to estimate health care cost levels in insured plans across a wide variety of Return Stage scenarios. (Robert Wood Johnson Foundation funded project.)	11/18/2021
Modeling the Individual Costs of Kidney Disease	Build a model to track the progression of kidney disease to help actuaries estimate future kidney costs.	12/2/2021
Financial Wellness and Health Care	A research team of actuaries, data scientists and sociologists will examine the impact of disparities in healthcare access, cost and quality of care on financial wellness across various racial, ethnic, socioeconomic groups.	1/31/2022
Initiative 18/11 - 5/50 Project - Analyzing Characteristics of the top 5% members by cost who drive 50% of Medical Expenses	Validate the 5/50 Premise through % of total costs and average allowed annual costs by percentile grouping. Analyze ability to predict the 5% based on prior claims and risk factors. Calculate Transition probabilities between different groups.	1/31/2022
Emerging Impact of Long COVID on HealthCare Costs and Medical Conditions	A study that will examine the impact of a COVID 19 diagnosis on patient claims and medical conditions.	2/28/2022
Medicaid Underwriting Gain	Build on a previous project designed to provide a theoretical methodology for Medicaid rate setting actuaries to determine the appropriate way to evaluate the risk associated with Managed Medicaid on the carriers underwriting this risk.	3/31/2022

¹ <https://www.soa.org/resources/research-reports/2021/uninsured-rate-measurements/>

² <https://www.soa.org/resources/research-reports/2021/2021-oral-health-children/>

American Academy of Actuaries Health Practice Council 2021 Updates

Barbara Klever, MAAA, FSA
Vice Chairperson, Health Practice Council
American Academy of Actuaries



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The Academy, through its public policy work, seeks to address pressing issues that require or would benefit from the application of sound actuarial principles. The Academy provides unbiased actuarial expertise and advice to public policy decision-makers and stakeholders at the state, federal, and international levels in all areas of actuarial practice.



Key Health Policy Priorities for 2021

- COVID-19: Implications for Health Care Utilization and Spending
- Health Insurance Coverage and the Affordable Care Act
- Health Equity
- Long-Term Care
- Medicare Sustainability



COVID-19: Implications for Health Care Utilization and Spending

- Issue Briefs / Papers:
 - ▣ [COVID-19's Impacts on Long-Term Care Insurance](#)
 - ▣ [Telehealth After COVID-19](#)
 - ▣ [Medicaid Managed Care Plan Rate Setting as Impacted by COVID-19](#)
- Comment Letters:
 - ▣ [Comments to Treasury, DOL, and HHS on Insurance and Health Plan Coverage of COVID-19 Testing](#)



Health Insurance Coverage and the Affordable Care Act

- Issue Briefs:
 - ▣ [Drivers of 2022 Health Insurance Premium Changes](#)
- Comment Letters:
 - ▣ [Health Practice Council \(HPC\) Comments on Review of Agency Actions Related to the Affordable Care Act and Medicaid](#)
 - ▣ [Comments to HHS, DOL, and the Treasury on the No Surprises Act](#)
 - ▣ [Comments to CMS on Updating Payment Parameters Proposed Rule](#)



Health Equity

- Discussion Briefs:
 - ▣ [Health Equity From an Actuarial Perspective](#)
 - ▣ [Health Equity and Premium Pricing](#)
 - ▣ [Health Equity and Health Plan Benefit Design](#)
 - ▣ [Health Equity and Provider Contracting/Network Development](#)
 - ▣ [Health Equity and Managing Population Health](#)
- Comment Letters:
 - ▣ Comment Letters on Colorado Senate Bill 21-169 ([March](#) and [April](#) 2021), a bill to protect consumers from unfair discrimination in insurance practices.
- [Request for Information \(RFI\) on Assessing Whether or How Actuarial Practices Affect Health Disparities](#)—information due to the Academy by Jan. 14, 2022



Long-Term Care

- Issue Briefs
 - ▣ [Regulatory Options for Long-Term Care \(LTC\) Insurance Innovation](#)
 - ▣ [Long-Term Care Financing Reform Proposals Involving Public Programs](#)
- Reports
 - ▣ [Long-Term Care Insurance Mortality and Lapse Study](#)
 - Request from NAIC Long-Term Care Actuarial Working Group (LTCAWG)
- Practice Notes
 - ▣ [Long-Term Care Insurance](#)



Medicare Sustainability

- Issue Briefs:
 - ▣ [Medicare's Financial Condition: Beyond Actuarial Balance](#)



Additional Academy HPC Updates

- Practice Note: Actuarial Standard of Practice (ASOP) No. 6—*Development of Age-Specific Retiree Health Cost Assumptions, Including Applications to Pooled and Non-Pooled Health Plans*
 - ▣ Oct. 2021 Presentation at the CCA Annual Meeting
- The Academy formed the Climate Change Joint Task Force in Oct. 2021, and membership is comprised of the HPC, the Casualty Practice Council (CPC), and the Risk Management and Financial Reporting Council (RMFRC).



HPC NAIC Workstreams—HATF

- Health Actuarial (B) Task Force
 - Request for comments on proposal to modify the definition of “actuarial assets” as used in the instructions for the Health Statement of Actuarial Opinion
 - [April](#) and [May](#) 2021 Academy comment letters



HPC NAIC Workstreams—HRBC

- Health Risk-Based Capital (E) Working Group
 - Request for Analysis to Incorporate Investment Income into the Underwriting Risk Component of the Health Risk-Based Capital Formula
 - [Jan. 2021](#), [Feb. 2021](#), and [April 2021](#) Academy comment letters
 - Request for Comprehensive Review of the H2—Underwriting Risk Component and Managed Care Credit Calculation in the Health Risk-Based Capital Formula
 - [July 2021](#) Academy comment letter



HPC NAIC Workstreams—LTC (EX)

- NAIC Long-Term Care Insurance (EX) Task Force Long-term Care Insurance MSA Framework. Academy comments on:
 - ▣ [Long-Term Care Insurance \(LTCI\) Multistate Rate Review Framework](#)
 - ▣ [Actuarial Sections](#)
 - ▣ [Operational and Actuarial Sections, Sept. 2021 Exposures](#)
- Long-Term Care Insurance Reduced Benefit Options (EX) Subgroup
 - ▣ [Academy comments](#) on exposure draft, *Issues Related to LTC Wellness Benefits*



HPC NAIC Workstreams—Special (EX) R&I Workstream #5

- NAIC Special (EX) Committee on Race and Insurance—Workstream 5 (Health)
 - ▣ [Comments on Exposure Draft of White Paper on *Provider Network Outline*](#)
 - ▣ [Comments on the Revised Exposure Draft of *Principles for Data Collection*](#)



2021 HPC Virtual Hill Visits

- April 15 and 16, 2021, via Zoom
- More than 20 Academy volunteers took part in 24 meetings with Hill and agency staffers
- Issues discussed included: Medicaid and Medicare, health equity, telehealth, COVID-19, surprise billing, prescription drug prices, long-term care (LTC), and the Affordable Care Act (ACA)



Academy Presentations

- Feb. 2021 Senior Health Fellow [presentation](#) on “Medicare Solvency Projections and Potential Policy Solutions” webinar sponsored by the Alliance for Health Policy.
- April 2021 [presentation](#) to Columbus Actuarial Club on “Long-Term Care Insurance: Public Policy Update”
- May 2021 Academy [webinar](#) on “Health Equity: An Actuarial Perspective”
- June 2021 presentation to the SOA on “Health Equity: How Actuaries Are Contributing to Efforts to Reduce Health Disparities”
- Oct. 2021 presentations to the CCA on “Social Determinants of Health & Health Equity” and “ASOP No. 6 Practice Note”



Academy 2021 Annual Meeting and Public Policy Forum

- Nov. 4 and 5, 2021, annual conference
- Three health-specific breakout sessions
 - “Addressing the Risk of Medicare Insolvency”
 - “Regulating the Affordable Care Act: What’s New for 2022” — Presentation from CMS/CCIIO
 - “Expanding Access to Health Insurance Coverage”
- Plenaries covering cross-practice equity and COVID-19 issues



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Under the Public Policy tab,
access Academy:

- ▣ Comments and letters
- ▣ Issue briefs
- ▣ Policy papers
- ▣ Presentations
- ▣ Reports to the NAIC
- ▣ Testimony



The screenshot shows the American Academy of Actuaries website. At the top, there is a logo consisting of three triangles forming a larger triangle, with the text "AMERICAN ACADEMY of ACTUARIES" and the tagline "Objective. Independent. Effective.™". To the right of the logo are links for "Logout", "Contact Us", and "Member Page", along with a "HOME" link and a search bar with a "SEARCH" button. Below the logo is a navigation bar with two main tabs: "PUBLIC POLICY" (which is highlighted) and "PROFESSIONALISM". Under "PUBLIC POLICY", there are sub-tabs: "ABOUT US", "MEMBERSHIP", "NEWSROOM", "INTERNATIONAL", and "PUBLIC DISCIPLINE". The main content area features a "Printer-friendly version" link, a welcome message, and a notice about staff working remotely. A large banner for the "Property/Casualty Loss Reserve Law Manual" is visible, with the text "AVAILABLE TO ORDER ONLINE NOW". On the right side, there are logos for the "Actuarial Board for Counseling and Discipline" and the "Actuarial Standards Board", along with a "QUICK LINKS" section containing links to "Find an Academy Member", "Academy Committees", "Board Election Center", "Code of Professional Conduct", and "U.S. Qualification Standards".



Thank You

Questions?

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Long-Term Care Insurance Mortality and Lapse Study

Attachment Four
Health Actuarial (B) Task Force
11/29/21

Developed by the Long-Term Care Valuation Work Group
of the American Academy of Actuaries
and the Society of Actuaries Research Institute

Warren Jones, MAAA, FSA, FCA
Chairperson, Long-Term Care Valuation Work Group

Bob Yee, MAAA, FSA
Lapse Subgroup Leader

Bruce Stahl, MAAA, ASA
Mortality Subgroup Leader



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Long-Term Care Insurance (LTC) Mortality and Lapse Study

- [Study Released November 2021](#)
- Developed by the Long-Term Care Valuation Work Group of the American Academy of Actuaries and the Society of Actuaries Research Institute



Requests of the LTC Valuation Work Group

- Develop a replacement mortality table for LTC active life reserves
 - Based on the 2012 Individual Annuity Mortality Table
 - Recommend a margin for conservatism
- Develop a replacement lapse table
 - Recommend a margin for conservatism
- Consider developing tables for valuation on total lives basis as well as active lives basis



Executive Summary

- Developed valuation mortality table
 - Mortality is select and ultimate; all previous valuation mortality tables have been aggregate
 - Optional factors are provided for marital status and risk class
 - Mortality tables are provided for both total lives and active lives (off-claim) exposures
 - Margin for valuation mortality tables is included
 - Tables are included in the report as an Excel file



Executive Summary

- Developed valuation lapse table
 - Valuation lapse tables are developed separately for individual and group coverages; current valuation lapse tables vary for group coverage only for durations 5+ (3% v 2%)
 - Optional factors are provided for marital status and risk class for individual coverages only
 - Lapse tables are provided for both total lives and active lives (off-claim) exposures
 - Margin for valuation lapse tables is included



Recommended Mortality Tables (Total Lives)



Death Counts (Total Lives)

By Sex, Risk Class, Attained Age, and Marital Status

Attained Age	Female: Preferred Risk			Female: Standard Risk			Male: Preferred Risk			Male: Standard Risk		
	Married	Single	Total	Married	Single	Total	Married	Single	Total	Married	Single	Total
Under 60	217	113	330	373	184	557	180	69	249	384	113	497
60-64	393	194	587	708	357	1,065	407	106	513	887	192	1,079
65-69	670	346	1,016	1,329	839	2,168	795	177	972	1,720	425	2,145
70-74	1,022	716	1,738	2,402	1,670	4,072	1,375	370	1,745	3,331	934	4,265
75	270	252	522	650	520	1,170	414	115	529	938	293	1,231
76	266	288	554	717	562	1,279	454	148	602	1,112	332	1,444
77	272	296	568	786	675	1,461	515	132	647	1,167	342	1,509
78	243	304	547	868	779	1,647	485	190	675	1,261	460	1,721
79	330	415	745	937	904	1,841	527	163	690	1,436	520	1,956
80	304	442	746	951	999	1,950	527	186	713	1,426	594	2,020
81	313	459	772	984	1,129	2,113	542	169	711	1,541	652	2,193
82	338	509	847	999	1,224	2,223	527	218	745	1,534	666	2,200
83	337	591	928	1,008	1,290	2,298	546	228	774	1,557	748	2,305
84	307	602	909	925	1,345	2,270	526	208	734	1,549	762	2,311
85	344	694	1,038	954	1,395	2,349	515	241	756	1,451	735	2,186
86	316	757	1,073	868	1,506	2,374	487	276	763	1,460	756	2,216
87	308	727	1,035	791	1,520	2,311	434	254	688	1,302	799	2,101
88	258	803	1,061	725	1,452	2,177	397	208	605	1,184	733	1,917
89	248	745	993	624	1,362	1,986	356	198	554	964	589	1,553
90-94	590	2,605	3,195	1,543	4,483	6,026	943	625	1,568	2,467	1,911	4,378
95 and over	112	914	1,026	266	1,542	1,808	199	171	370	360	463	823
Total	7,458	12,772	20,230	19,408	25,737	45,145	11,151	4,452	15,603	29,031	13,019	42,050



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Recommended Marital Status Adjustment Factors for Mortality Table (Total Lives)

Representative rates shown

		Married Adjustment Factors																
Issue Age		Duration												Ultimate	Attained Age			
		1	2	3	4	5	*	*	*	26	27	28	29			30		
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
45	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	75		
46	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	76		
47	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	77		
48	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	78		
49	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	79		
50	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	80		
51	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	81		
52	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	82		
53	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	83		
54	0.90	0.90	0.90	0.90	0.90	0.90	*	*	*	0.95	0.96	0.97	0.98	0.99	1.00	84		
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
80	0.95	0.95	0.95	0.95	0.95	0.95	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	110		
81	0.96	0.96	0.96	0.96	0.96	0.96	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	111		
82	0.96	0.96	0.96	0.96	0.96	0.96	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	112		
83	0.97	0.97	0.97	0.97	0.97	0.97	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	113		
84	0.97	0.97	0.97	0.98	0.98	0.98	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	114		
85	0.98	0.98	0.98	0.98	0.99	0.99	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	115		
86	0.98	0.98	0.98	0.99	0.99	0.99	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	116		
87	0.99	0.99	0.99	0.99	0.99	0.99	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	117		
88	0.99	0.99	0.99	0.99	0.99	0.99	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	118		
89	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	119		
90	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	120		

		Not Married Adjustment Factors															
Issue Age		Duration												Ultimate	Attained Age		
		1	2	3	4	5	*	*	*	26	27	28	29			30	
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
45	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	75	
46	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	76	
47	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	77	
48	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	78	
49	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	79	
50	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	80	
51	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	81	
52	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	82	
53	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	83	
54	1.28	1.28	1.28	1.28	1.28	1.28	*	*	*	1.14	1.11	1.08	1.06	1.03	1.00	84	
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
80	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	110	
81	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	111	
82	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	112	
83	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	113	
84	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	114	
85	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	115	
86	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	116	
87	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	117	
88	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	118	
89	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	119	
90	1.00	1.00	1.00	1.00	1.00	1.00	*	*	*	1.00	1.00	1.00	1.00	1.00	1.00	120	

Recommended Lapse Tables

(Total Lives and Active Lives)



Recommended Individual Lapse Table— Total Lives (With Margins)

Policy Year	Issue Age Group						Marital Status Adjustment Factor			Underwriting Class Adjustment Factor		
	Under 55	55-59	60-64	65-69	70-74	75 & Over	Married	Single	Unknown	Preferred	Standard	Sub-standard
1	5.2%	2.9%	3.9%	3.7%	4.6%	6.6%	0.89	1.47	1.00	1.04	0.88	1.16
2	4.5%	2.6%	2.5%	2.6%	3.2%	4.8%	0.88	1.49	1.00	1.07	0.84	1.14
3	3.9%	2.2%	2.0%	2.1%	2.6%	4.1%	0.87	1.52	1.00	1.08	0.82	1.12
4	3.4%	2.0%	1.6%	1.9%	2.3%	3.6%	0.86	1.53	1.00	1.09	0.82	1.11
5	2.9%	1.7%	1.4%	1.7%	2.1%	3.2%	0.85	1.54	1.00	1.09	0.82	1.09
6	2.6%	1.5%	1.3%	1.5%	2.0%	3.0%	0.84	1.55	1.00	1.09	0.84	1.07
7	2.2%	1.4%	1.2%	1.4%	1.8%	2.8%	0.83	1.55	1.00	1.07	0.88	1.05
8	1.9%	1.2%	1.1%	1.4%	1.7%	2.6%	0.82	1.54	1.00	1.05	0.92	1.03
9	1.6%	1.0%	1.0%	1.3%	1.6%	2.6%	0.82	1.53	1.00	1.03	0.98	1.02
10	1.4%	0.9%	0.9%	1.2%	1.5%	2.4%	0.81	1.52	1.00	0.99	1.06	1.00
11	1.3%	0.8%	0.9%	1.2%	1.4%	2.3%	0.81	1.50	1.00	0.95	1.14	0.98
12	1.1%	0.7%	0.9%	1.1%	1.4%	2.2%	0.80	1.48	1.00	0.95	1.14	0.98
13	0.9%	0.6%	0.8%	1.1%	1.4%	2.1%	0.80	1.45	1.00	0.95	1.14	0.98
14	0.8%	0.5%	0.8%	1.0%	1.3%	2.0%	0.79	1.41	1.00	0.95	1.14	0.98
15	0.7%	0.5%	0.8%	1.0%	1.3%	2.0%	0.79	1.37	1.00	0.95	1.14	0.98
16 & Over	0.6%	0.4%	0.7%	0.9%	1.2%	2.0%	0.79	1.33	1.00	0.95	1.14	0.98



Recommended Group Lapse Table—Total Lives (With Margins)

Policy Year	Issue Age Group						
	Under 35	35-39	40-44	45-49	50-54	55-59	60 & Over
1	19.4%	13.8%	11.2%	9.0%	7.8%	8.0%	6.9%
2	16.7%	11.4%	9.4%	7.6%	6.5%	6.5%	5.6%
3	14.2%	9.5%	7.8%	6.4%	5.4%	5.2%	4.5%
4	12.0%	7.9%	6.5%	5.4%	4.5%	4.2%	3.6%
5	9.9%	6.5%	5.5%	4.5%	3.8%	3.4%	2.9%
6	8.1%	5.4%	4.6%	3.8%	3.1%	2.8%	2.3%
7	6.5%	4.5%	3.8%	3.2%	2.6%	2.2%	1.9%
8	5.2%	3.7%	3.2%	2.7%	2.2%	1.8%	1.5%
9	4.0%	3.1%	2.7%	2.3%	1.8%	1.5%	1.2%
10	3.1%	2.5%	2.2%	1.9%	1.5%	1.2%	1.0%
11	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.8%
12	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.8%
13	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.8%
14	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.8%
15	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.8%
16 & Over	1.9%	1.7%	1.5%	1.4%	1.1%	0.8%	0.6%



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Recommended Individual Lapse Table— Active Lives (No Margins)

Policy Year	Issue Age Group						Marital Status Adjustment Factor			Underwriting Class Adjustment Factor		
	Under 55	55-59	60-64	65-69	70-74	75 & Over	Married	Single	Unknown	Preferred	Standard	Sub-standard
1	6.1%	3.4%	4.6%	4.4%	5.4%	7.8%	0.89	1.47	1.00	1.04	0.88	1.16
2	5.3%	3.0%	2.9%	3.1%	3.8%	5.7%	0.88	1.49	1.00	1.07	0.84	1.14
3	4.6%	2.6%	2.3%	2.5%	3.1%	4.8%	0.87	1.52	1.00	1.08	0.82	1.12
4	4.0%	2.3%	1.9%	2.2%	2.7%	4.2%	0.86	1.53	1.00	1.09	0.82	1.11
5	3.4%	2.0%	1.7%	2.0%	2.5%	3.8%	0.85	1.54	1.00	1.09	0.82	1.09
6	3.0%	1.8%	1.5%	1.8%	2.3%	3.5%	0.84	1.55	1.00	1.09	0.84	1.07
7	2.6%	1.6%	1.4%	1.7%	2.1%	3.3%	0.83	1.55	1.00	1.07	0.88	1.05
8	2.2%	1.4%	1.3%	1.6%	2.0%	3.1%	0.82	1.54	1.00	1.05	0.92	1.03
9	1.9%	1.2%	1.2%	1.5%	1.9%	3.0%	0.82	1.53	1.00	1.03	0.98	1.02
10	1.7%	1.1%	1.1%	1.4%	1.8%	2.8%	0.81	1.52	1.00	0.99	1.06	1.00
11	1.5%	0.9%	1.0%	1.4%	1.7%	2.7%	0.81	1.50	1.00	0.95	1.14	0.98
12	1.3%	0.8%	1.0%	1.3%	1.6%	2.6%	0.80	1.48	1.00	0.95	1.14	0.98
13	1.1%	0.7%	0.9%	1.3%	1.6%	2.5%	0.80	1.45	1.00	0.95	1.14	0.98
14	0.9%	0.6%	0.9%	1.2%	1.5%	2.4%	0.79	1.41	1.00	0.95	1.14	0.98
15	0.8%	0.6%	0.9%	1.2%	1.5%	2.4%	0.79	1.37	1.00	0.95	1.14	0.98
16 & Over	0.7%	0.5%	0.8%	1.1%	1.4%	2.3%	0.79	1.33	1.00	0.95	1.14	0.98



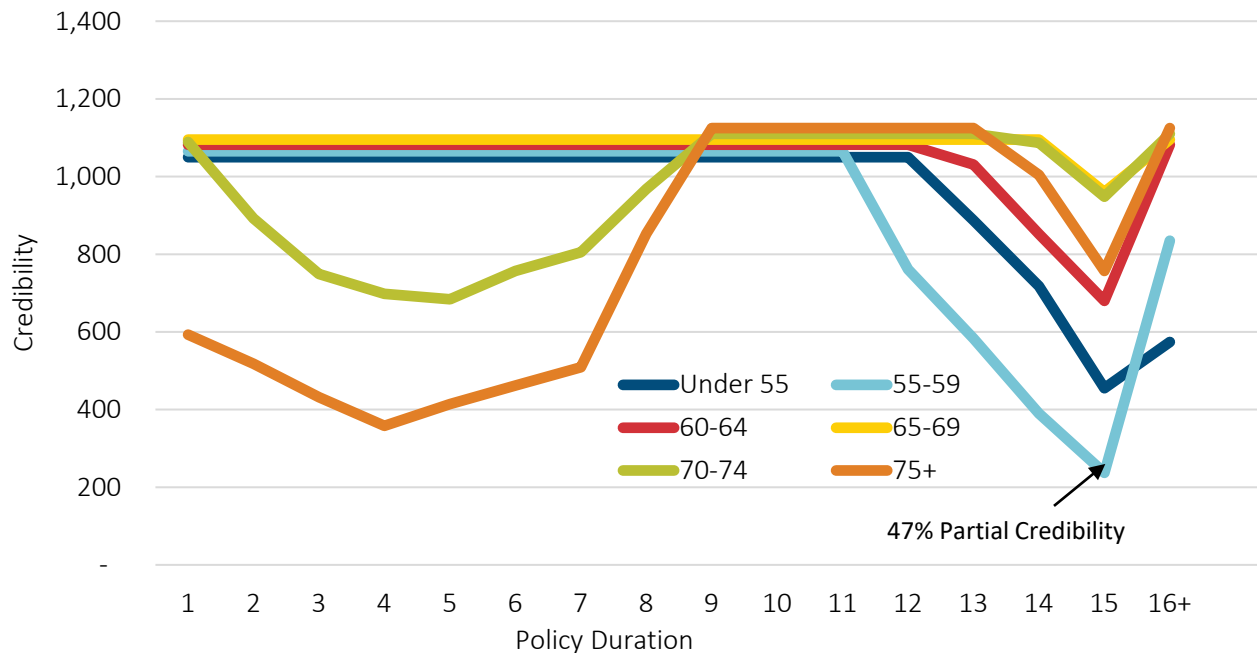
Recommended Group Lapse Table—Active Lives (With Margins)

Issue Age Group							
Policy Year	Under 35	35-39	40-44	45-49	50-54	55-59	60 & Over
1	19.4%	13.8%	11.2%	9.0%	7.8%	8.0%	6.9%
2	16.7%	11.5%	9.4%	7.6%	6.5%	6.5%	5.6%
3	14.2%	9.5%	7.8%	6.4%	5.4%	5.2%	4.5%
4	12.0%	7.9%	6.5%	5.4%	4.5%	4.3%	3.7%
5	9.9%	6.5%	5.5%	4.5%	3.8%	3.5%	3.0%
6	8.1%	5.4%	4.6%	3.8%	3.2%	2.8%	2.5%
7	6.5%	4.5%	3.8%	3.2%	2.6%	2.3%	2.0%
8	5.2%	3.7%	3.2%	2.7%	2.2%	1.9%	1.7%
9	4.0%	3.1%	2.7%	2.3%	1.8%	1.5%	1.4%
10	3.1%	2.6%	2.2%	1.9%	1.5%	1.3%	1.1%
11	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.9%
12	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.9%
13	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.9%
14	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.9%
15	2.4%	2.1%	1.9%	1.6%	1.3%	1.0%	0.9%
16 & Over	1.9%	1.8%	1.5%	1.4%	1.1%	0.8%	0.7%



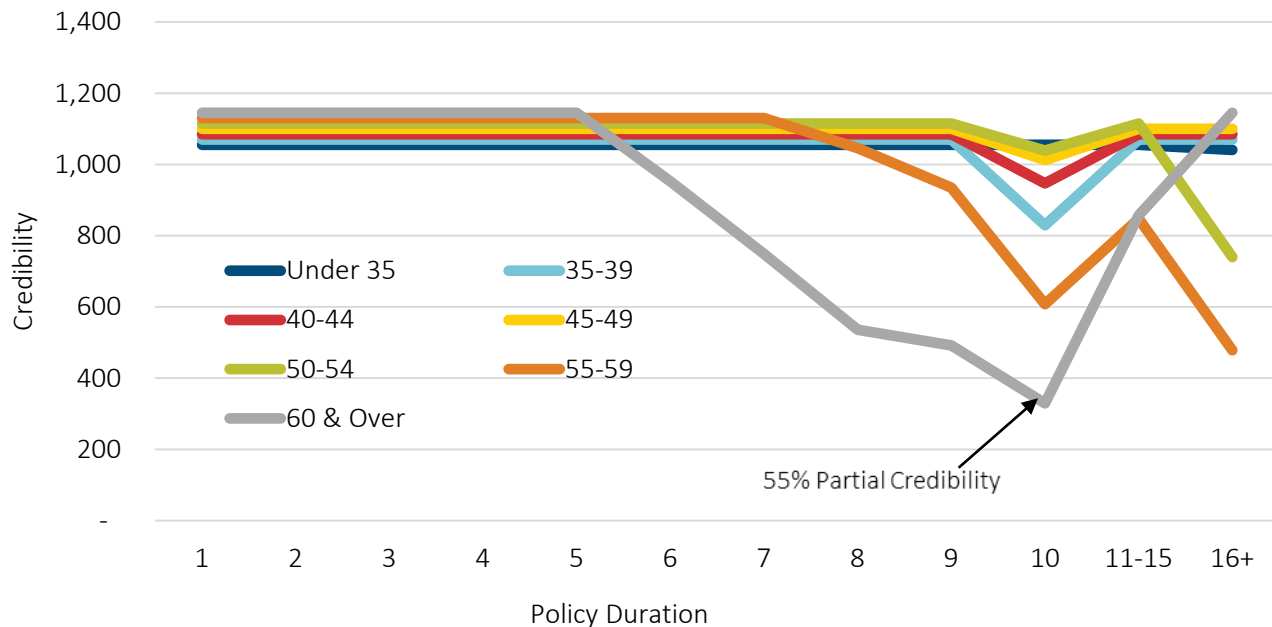
Data Credibility for Individual Lapses

Minimum of Number of Individual Lapses and 1,082 (Full Credibility) by Issue Age Group and Policy Duration



Data Credibility for Group Lapses

Minimum of Number of Group Lapses and 1,082 (Full Credibility) by Issue Age Group and Policy Duration



Mortality Improvement to 2020



Recommended Mortality Improvement

- The study period is 2008 through 2011
- Recommend to apply improvement trend using the 2012 Individual Annuity Mortality Basic tables (2012 IAM) G2 scale from 2010 to 2020 (11 years)
- Recommended tables represent industry experience as of 2020
- G2 scale applies to both total lives and active lives



Alternatives for Mortality Improvement

- The mortality tables can be made dynamic by continuing to apply the G2 scale to future valuation dates
- For first principle valuation approach, G2 scale can be applied to both active lives and disabled lives



Recommended Margins



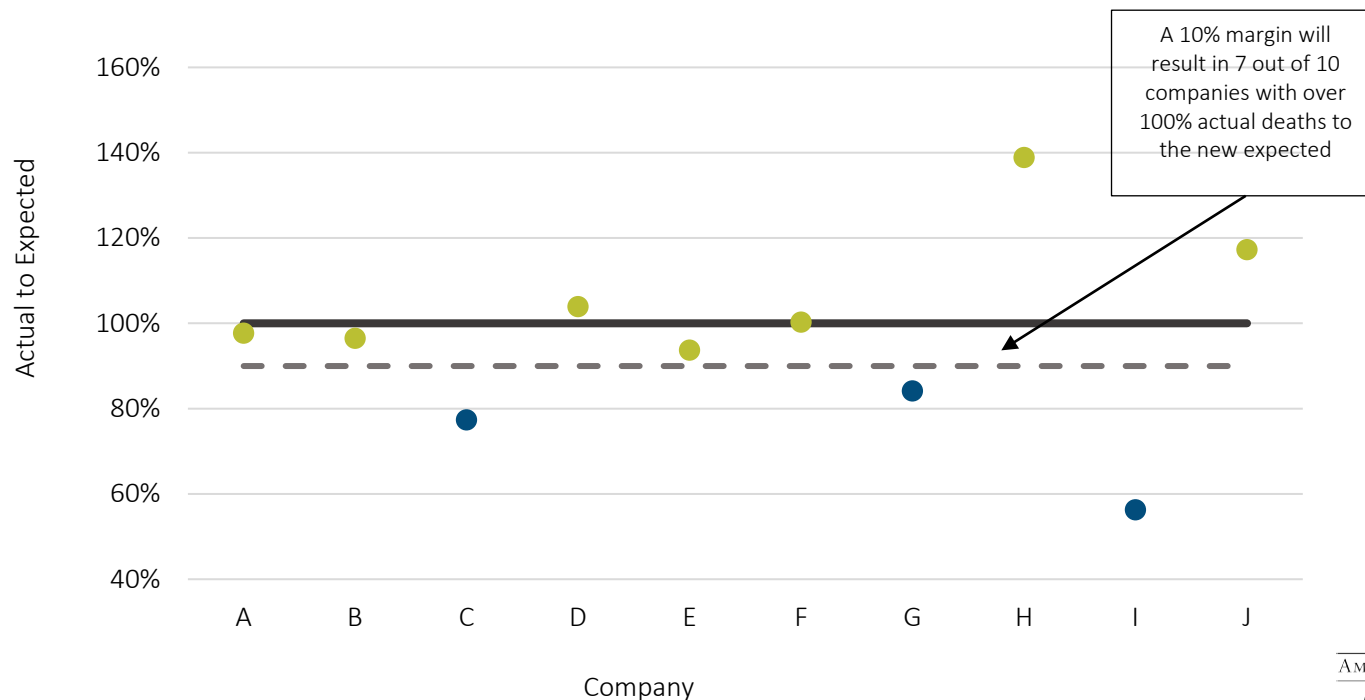
Recommended Margins

- 10% for mortality
- 15% for lapse
- Same for total lives and active lives



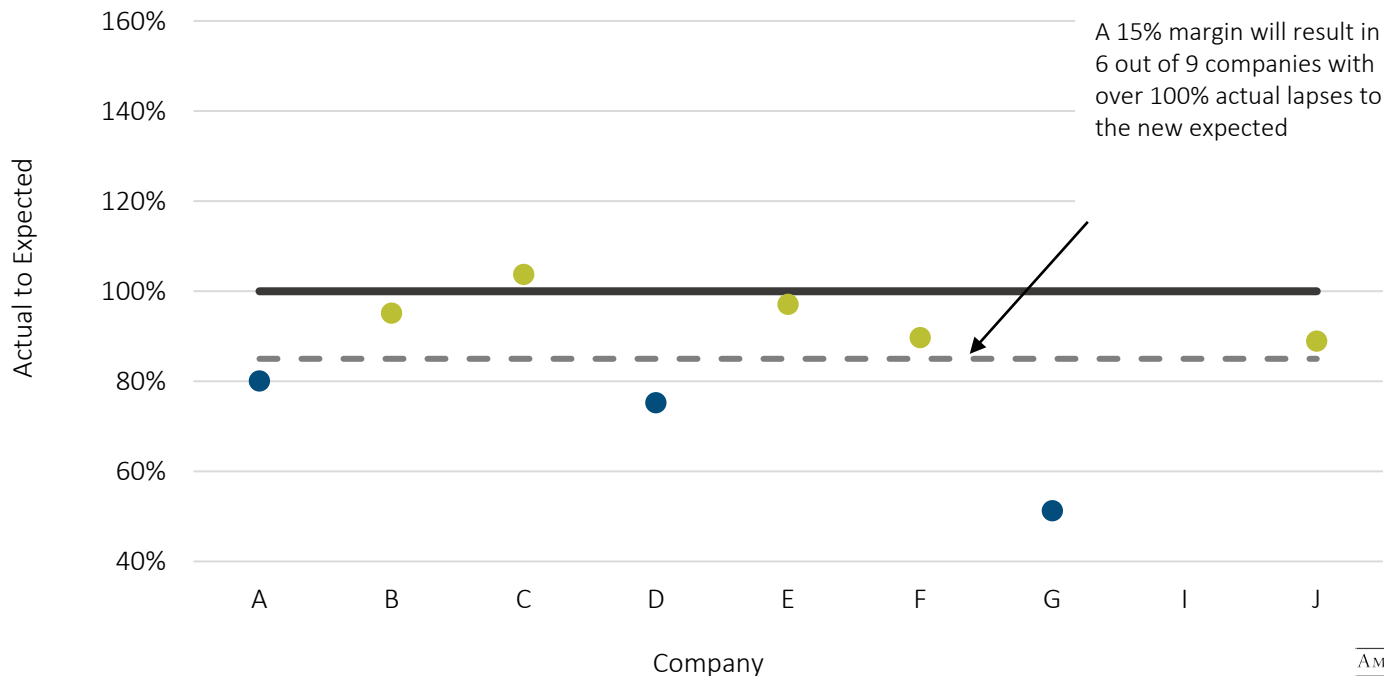
Actual Total Lives Mortality to Expected (Based on Recommended Tables) By Company

Actual-to-Expected Mortality, Total Lives by Company, Without Margins, Policy Years 11 & Over



Actual Individual Total Lives Lapses to Expected (Based on Recommended Tables) By Company

Actual-to-Expected Lapses, Individual Total Lives, by Company, Without Margins, Policy Years 11 & Over

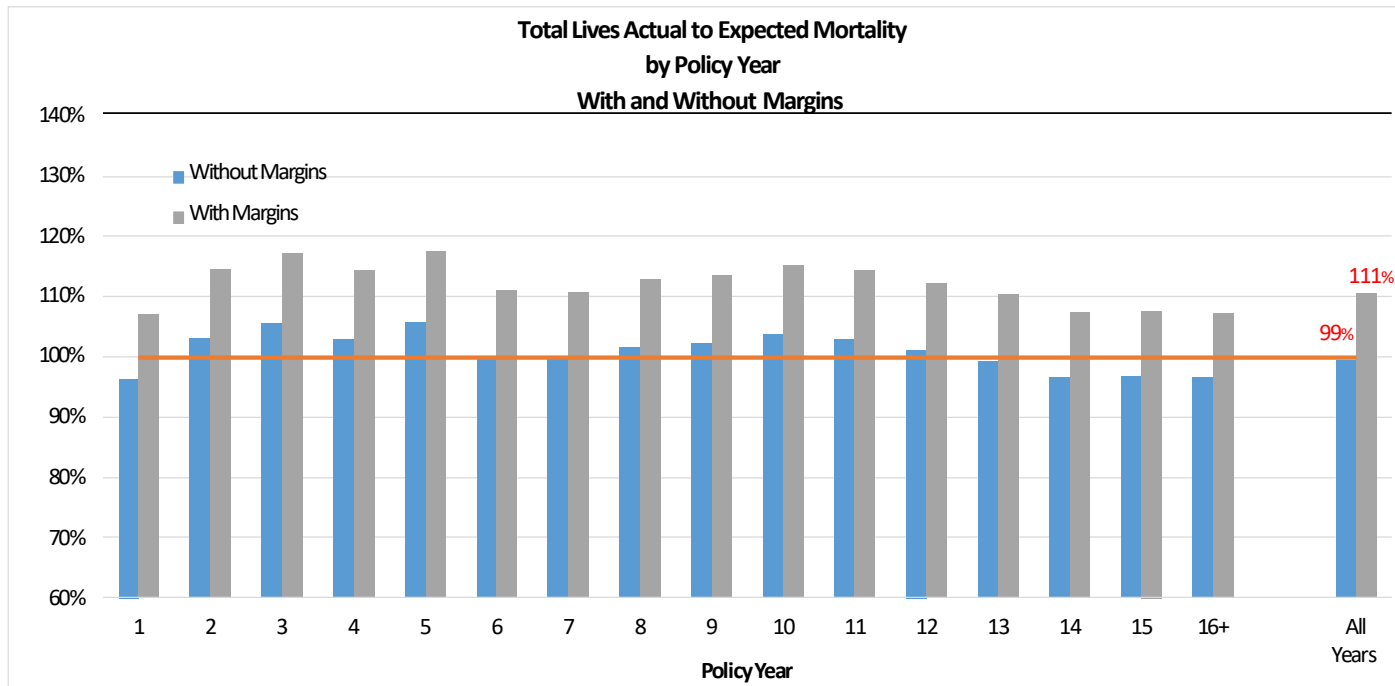


Actual to Expected Mortality Rates

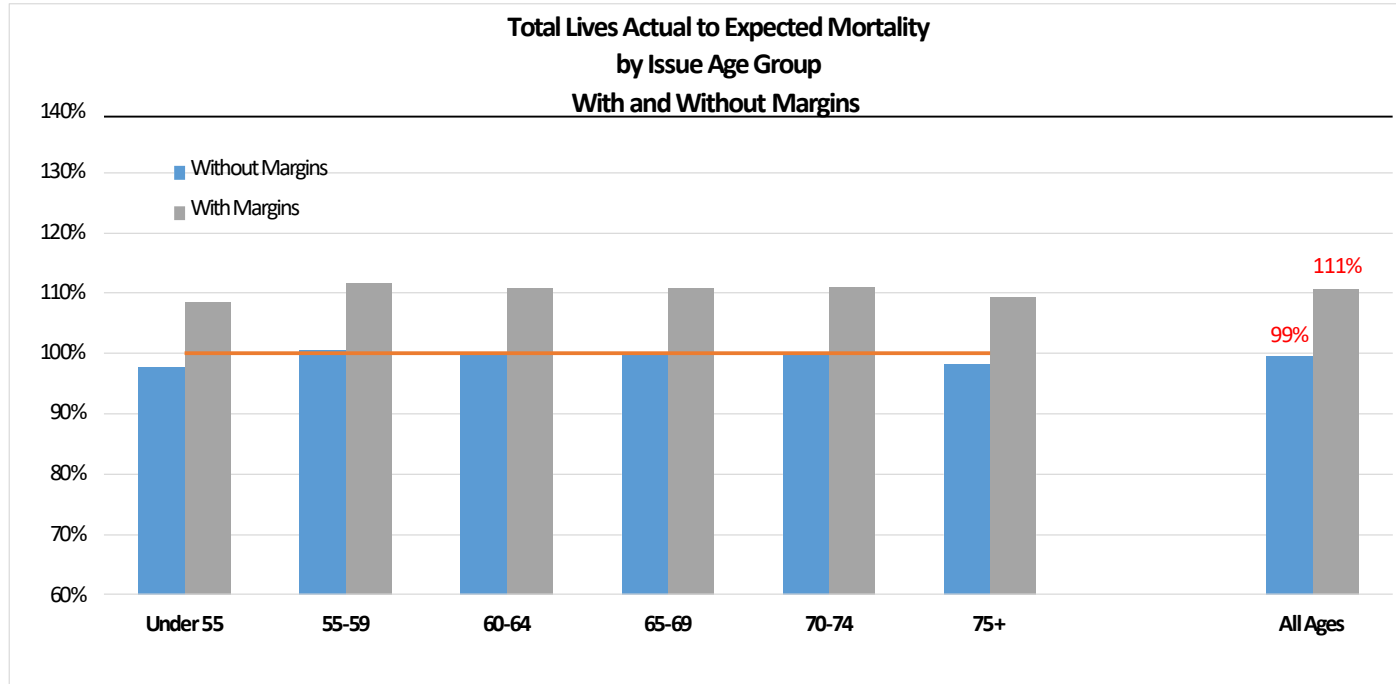
(Expected Based on Recommended Tables)



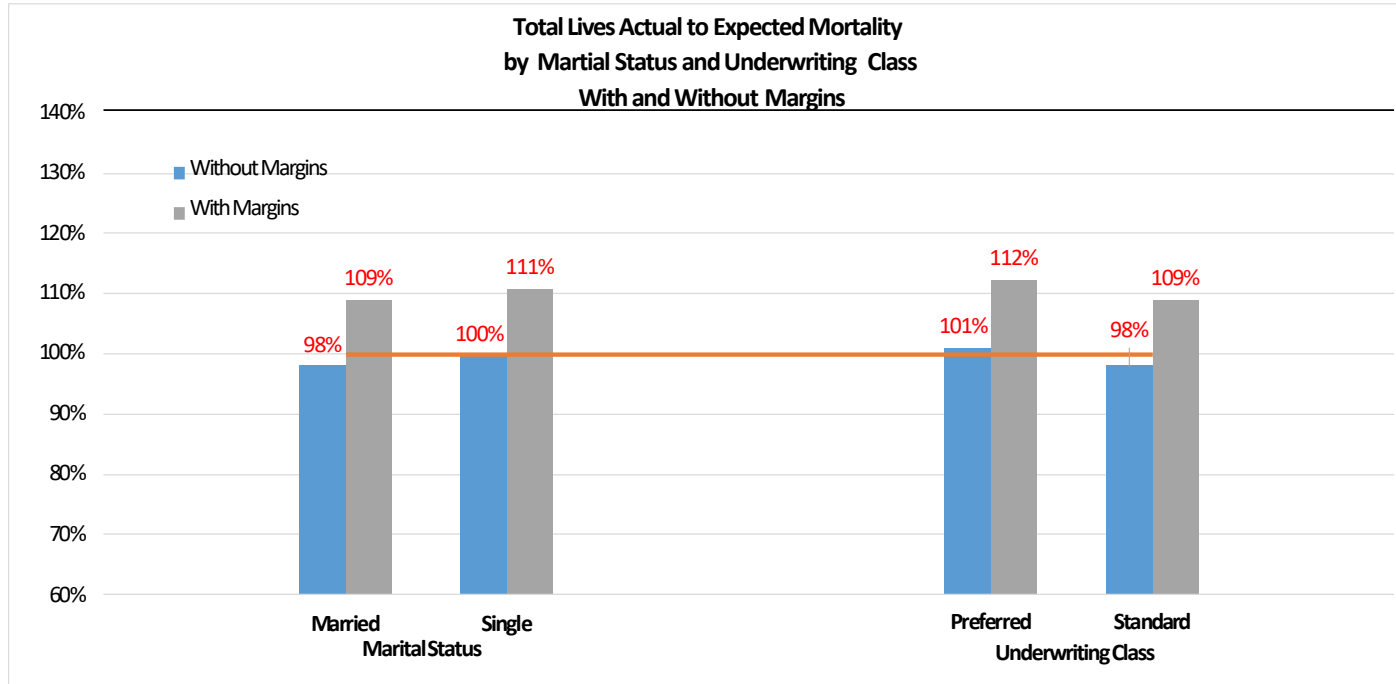
Actual Total Lives Mortality to Expected by Policy Year



Actual Total Lives Mortality to Expected by Issue Age Group



Actual Total Lives Mortality to Expected by Marital Status and Underwriting Class



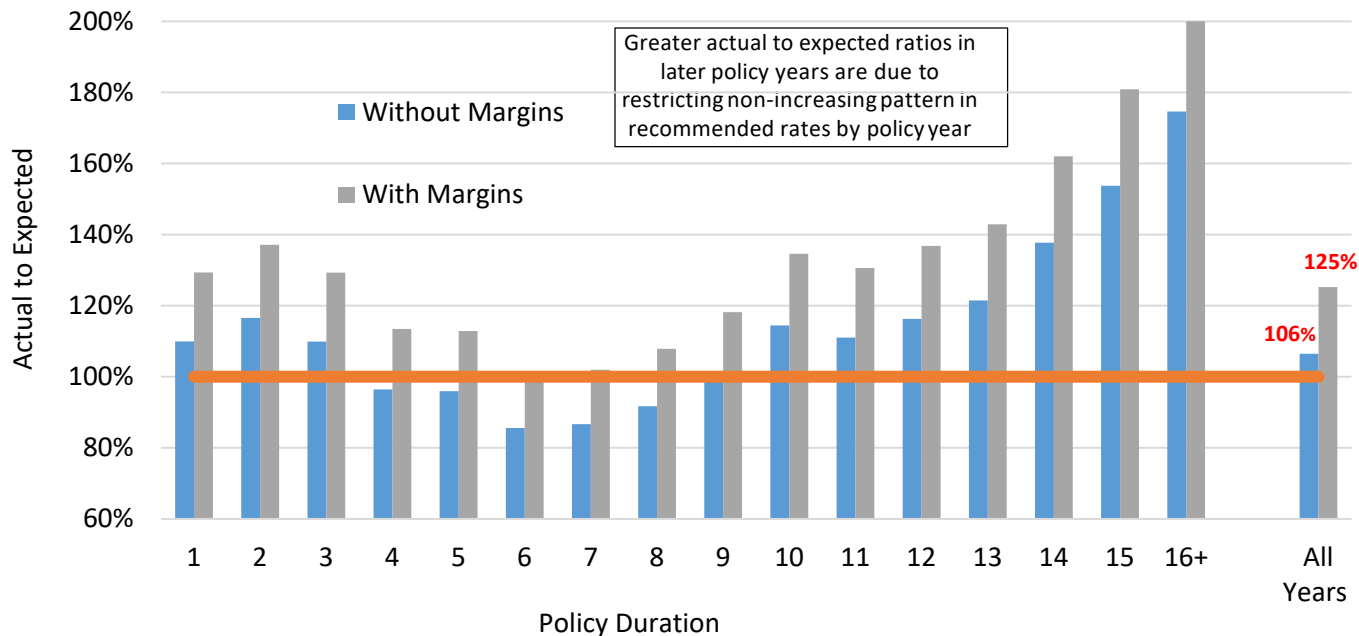
Actual to Expected Lapse Rates

(Expected Based on Recommended)



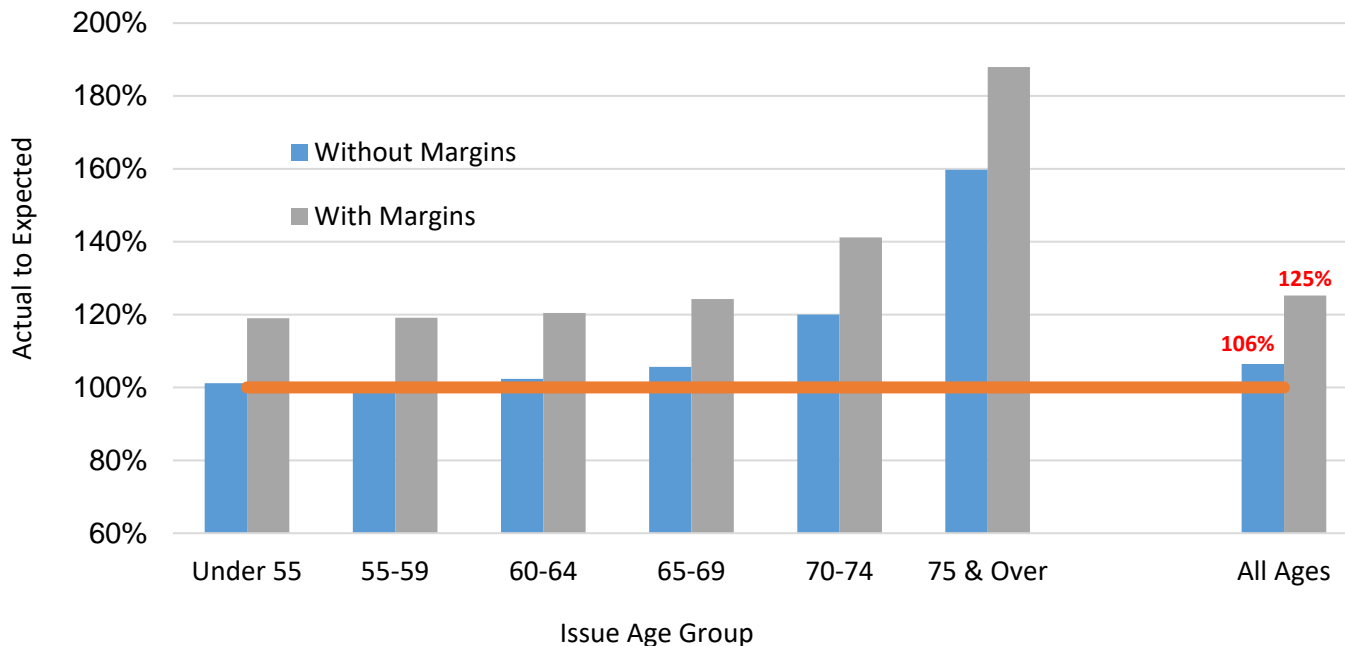
Actual Individual Total Lives Lapses to Expected by Policy Year

Actual-to-Expected Lapses, Individual Total Lives, by Policy Duration, With and Without Margins



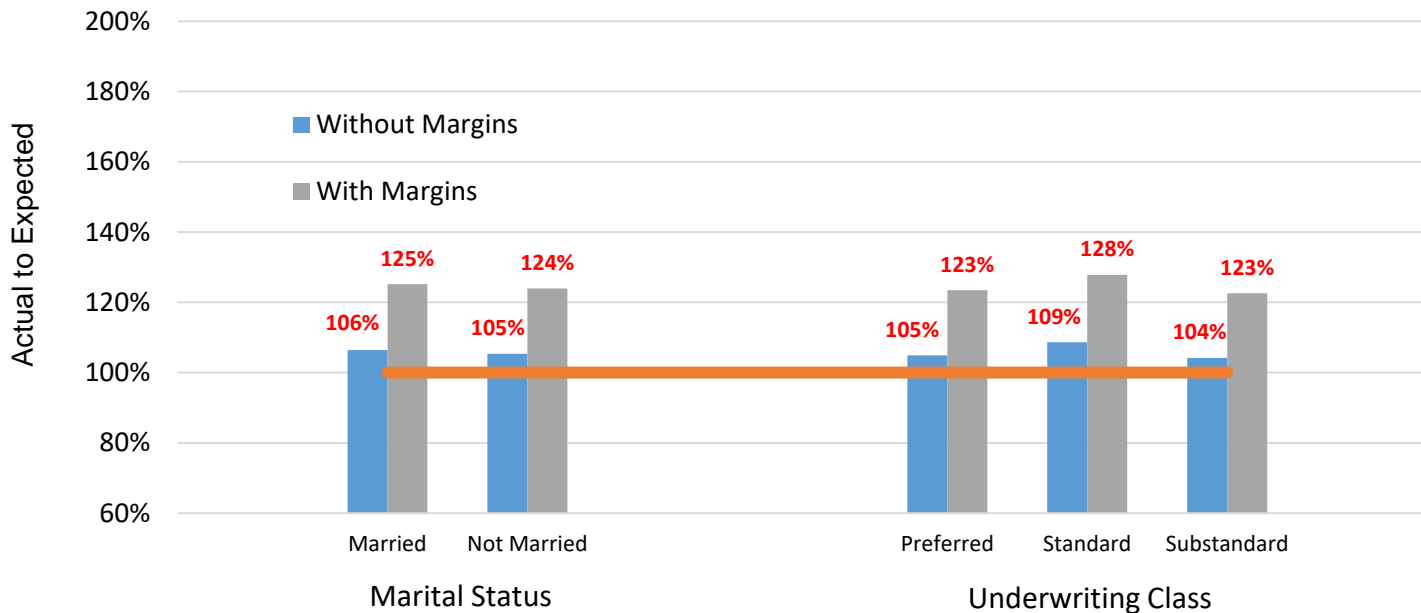
Actual Individual Total Lives Lapses to Expected by Issue Age Group

Actual-to-Expected Lapses, Individual Total Lives, by Issue Age Group, With and Without Margins

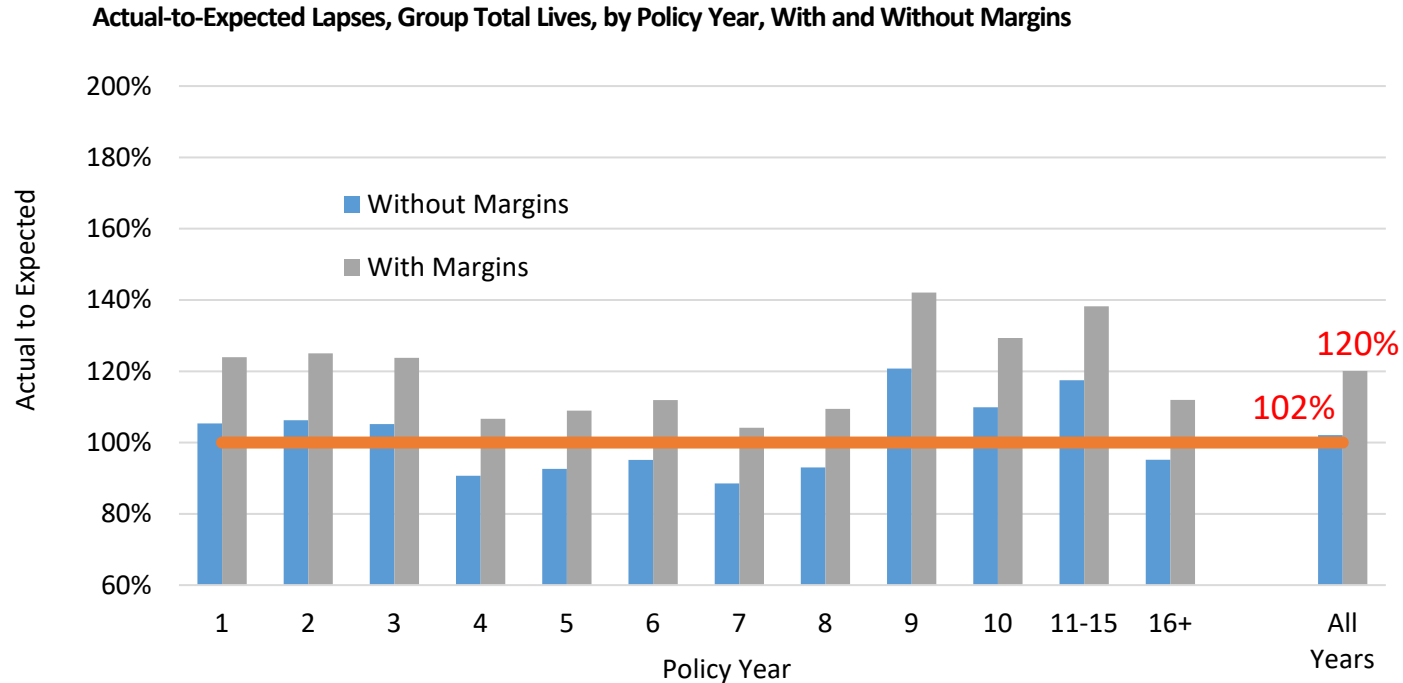


Actual Individual Total Lives Lapses to Expected by Marital Status and Underwriting Class

Actual-to-Expected Lapses, Individual Total Lives, by Marital Status and Underwriting Class, With and Without Margins

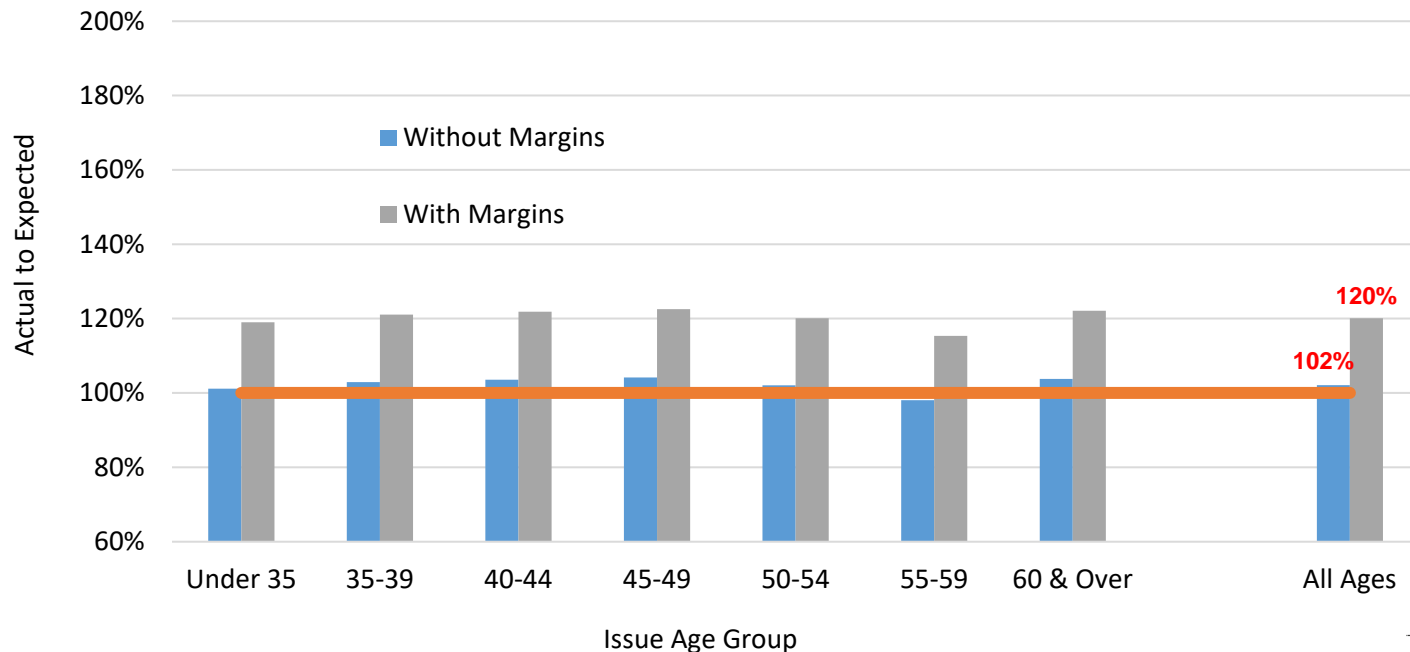


Actual Group Total Lives Lapses to Expected by Policy Year



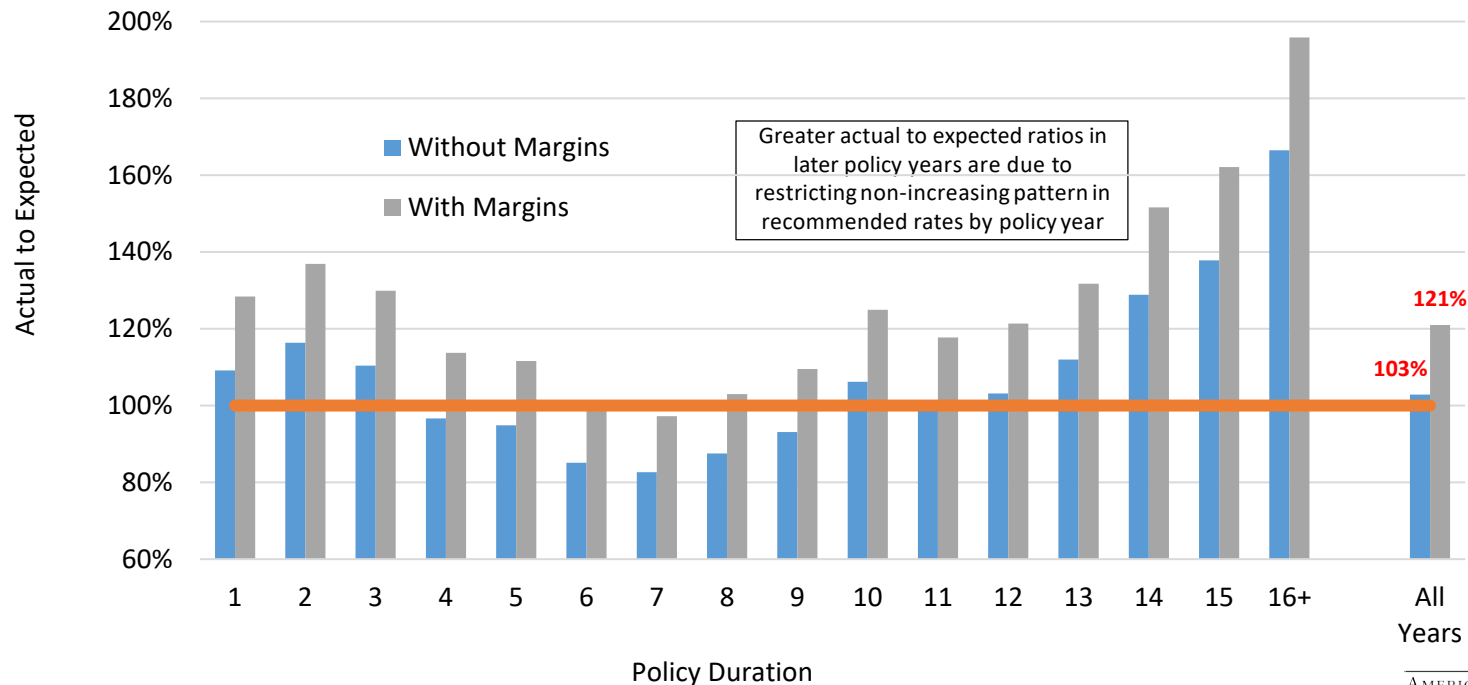
Actual Group Total Lives Lapses to Expected by Issue Age Group

Actual-to-Expected Lapses, Group Total Lives, by Issue Age Group, With and Without Margins



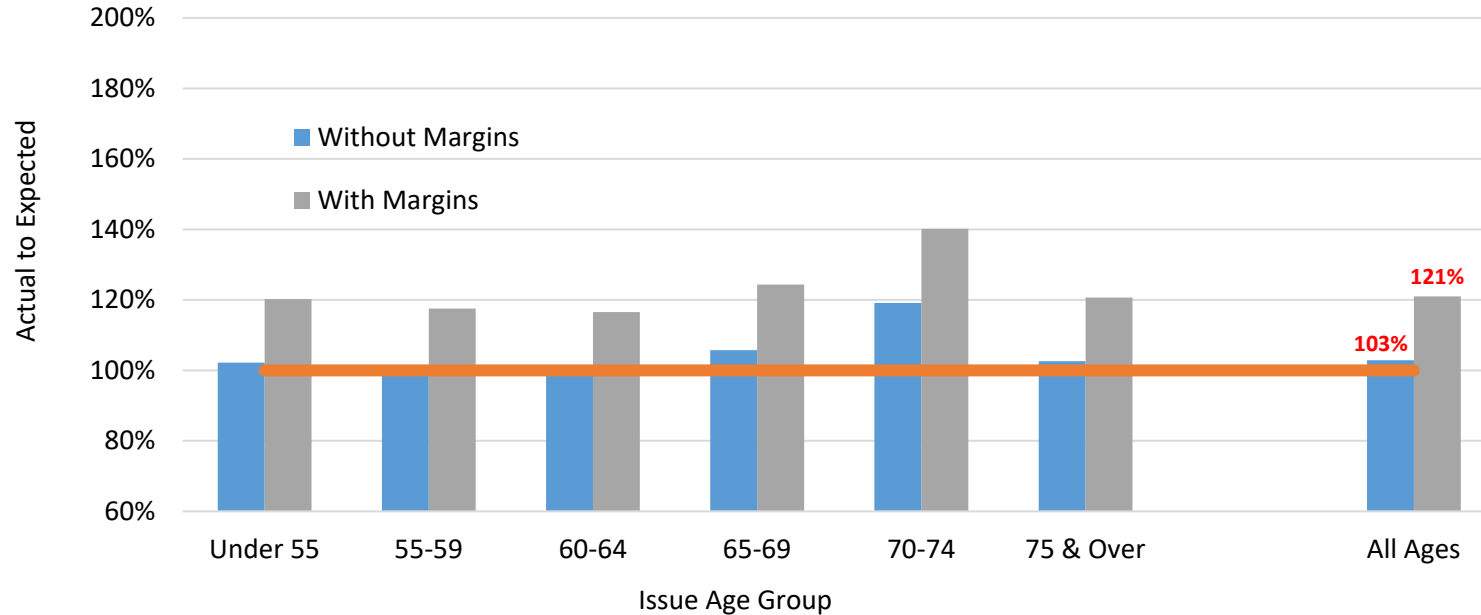
Actual Individual Active Lives Lapses to Lapses by Policy Year

Actual-to-Expected Lapses, Individual Active Lives, by Policy Duration, With and Without Margins



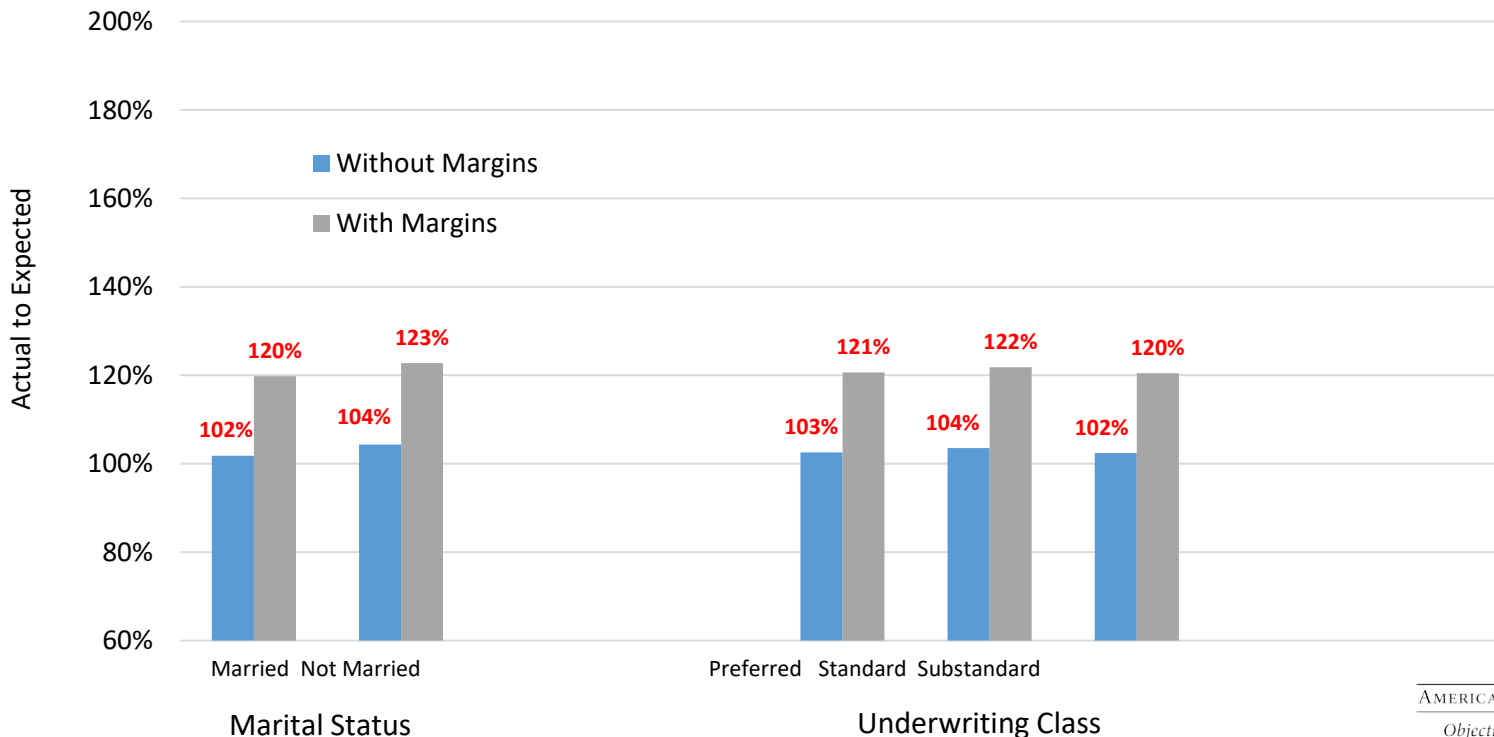
Actual Individual Active Lives Lapses to Expected by Issue Age Group

Actual-to-Expected Lapses, Individual Active Lives, by Issue Age Group, With and Without Margins



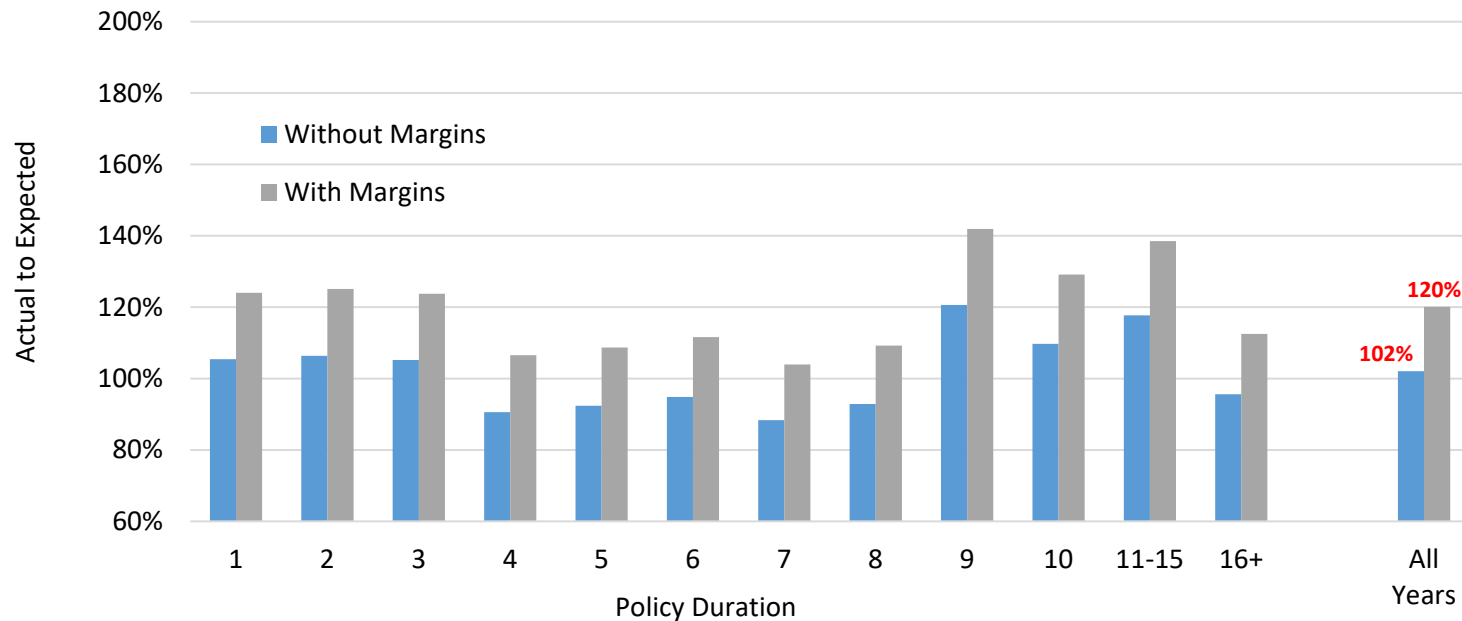
Actual Individual Active Lives Lapses to Expected by Marital Status and Underwriting Class

Actual-to-Expected Lapses, Individual Active Lives, by Marital Status and Underwriting Class, With and Without Margins



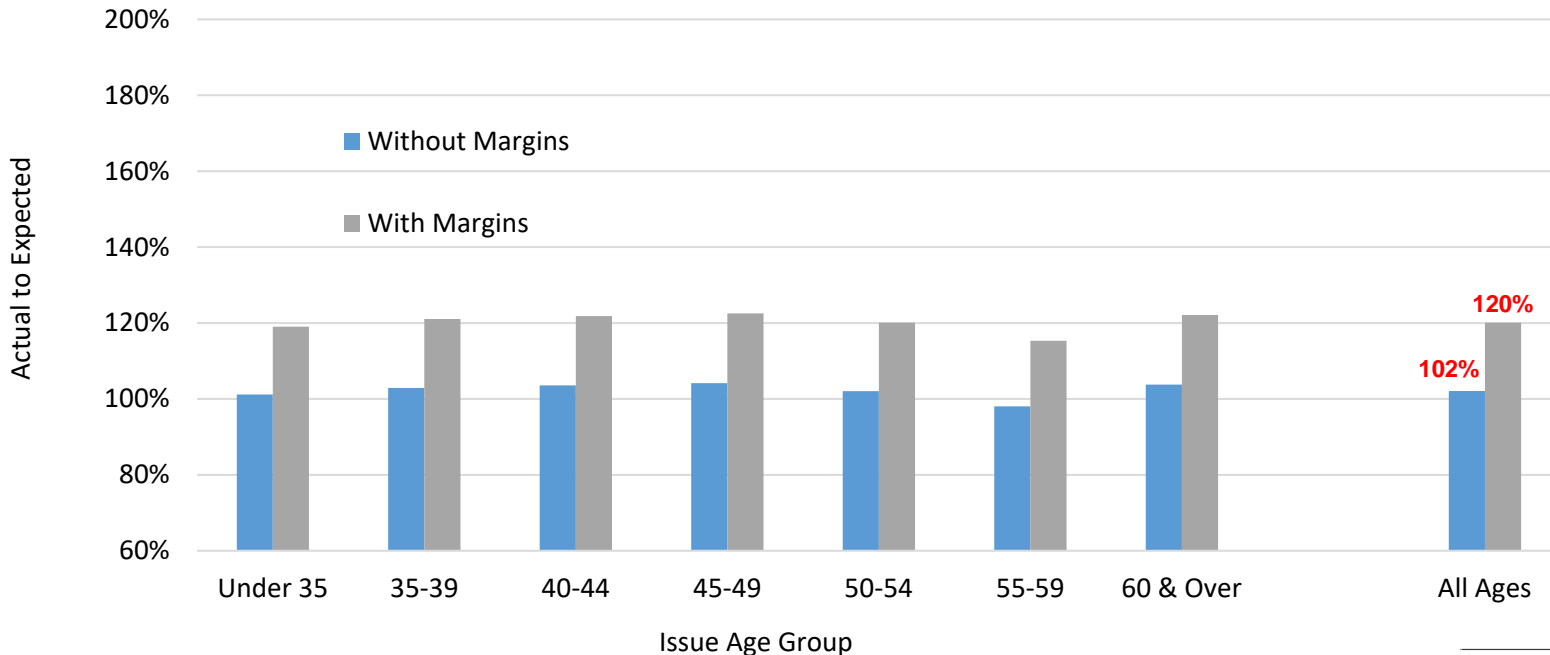
Actual Group Active Lives Lapses to Expected by Policy Year

Actual-to-Expected Lapses, Group Active Lives, by Policy Duration, With and Without Margins



Actual Group Active Lives Lapses to Expected by Issue Age Group

Actual-to-Expected, Group Active Lives, by Issue Age Group, With and Without Margins



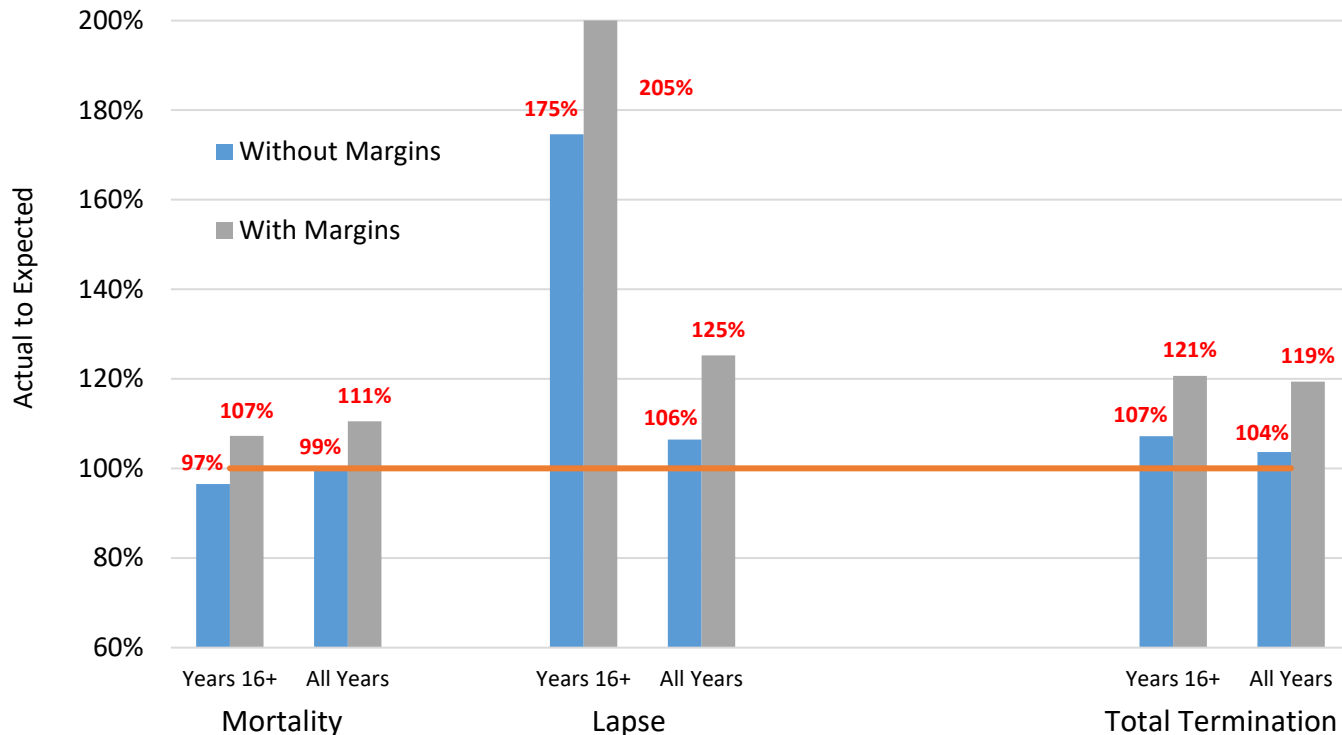
Actual to Expected Total Policy Termination Rates

(Mortality and Lapse Combined—Total Lives Only)



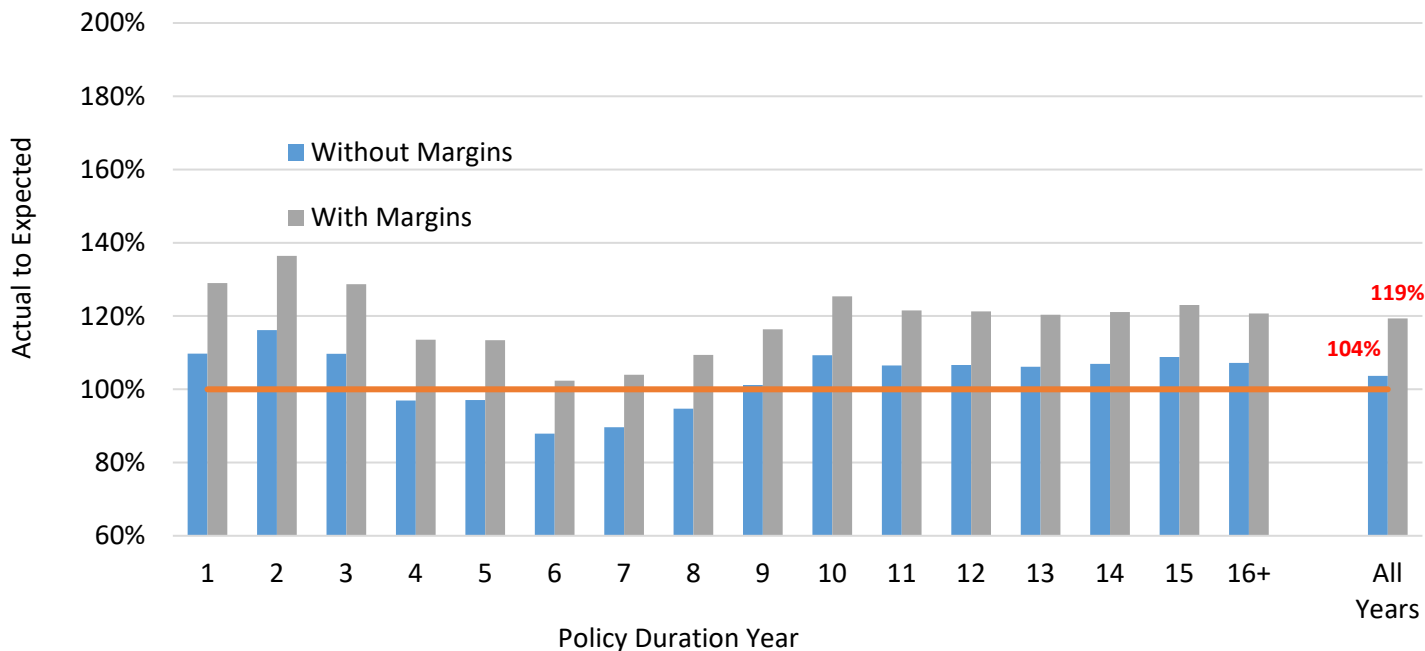
Actual Individual Total Lives to Expected by Mortality and Lapse

Actual-to-Expected Mortality and Lapse, Individual Total Lives, With and Without Margins



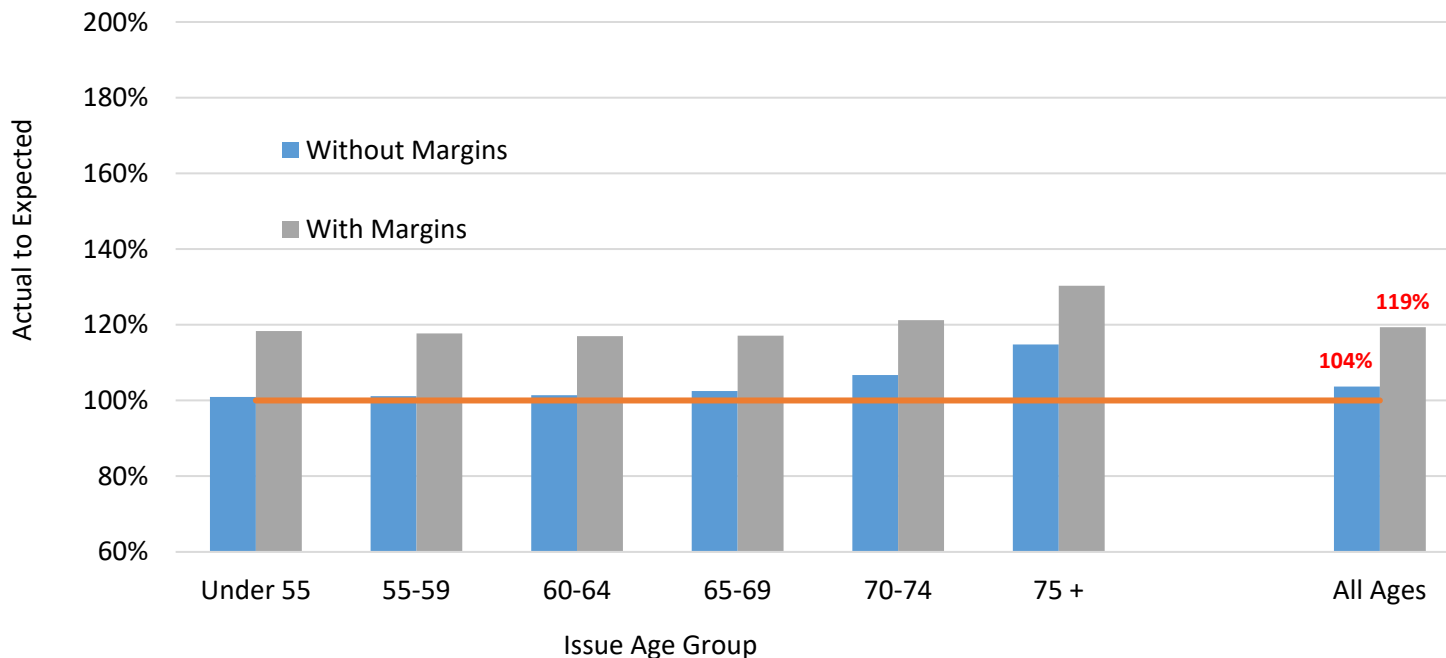
Actual Individual Total Lives Total Terminations to Expected by Policy Year

Actual-to-Expected Total Terminations, Individual Total Lives, by Policy Year, With and Without Margins



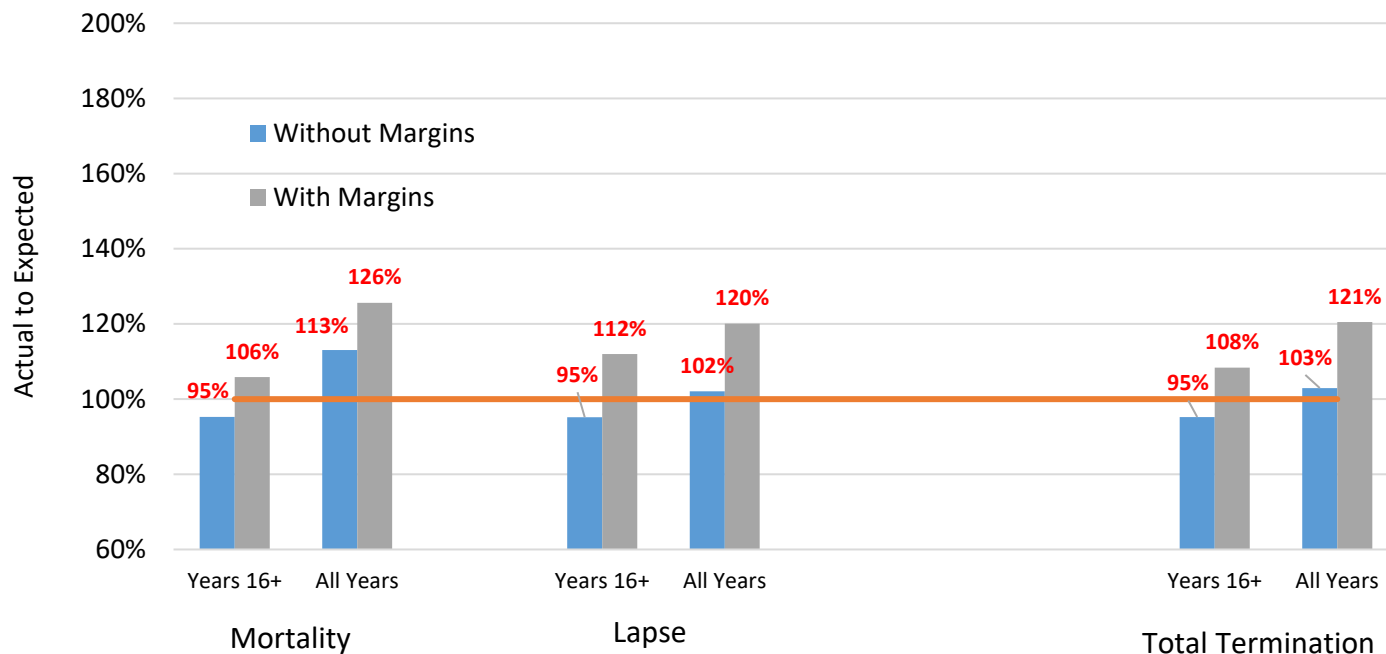
Actual Individual Total Lives Total Terminations to Expected by Issue Age Group

Actual-to-Expected Total Terminations, Individual Total Lives, by Issue Age Group, With and Without Margins



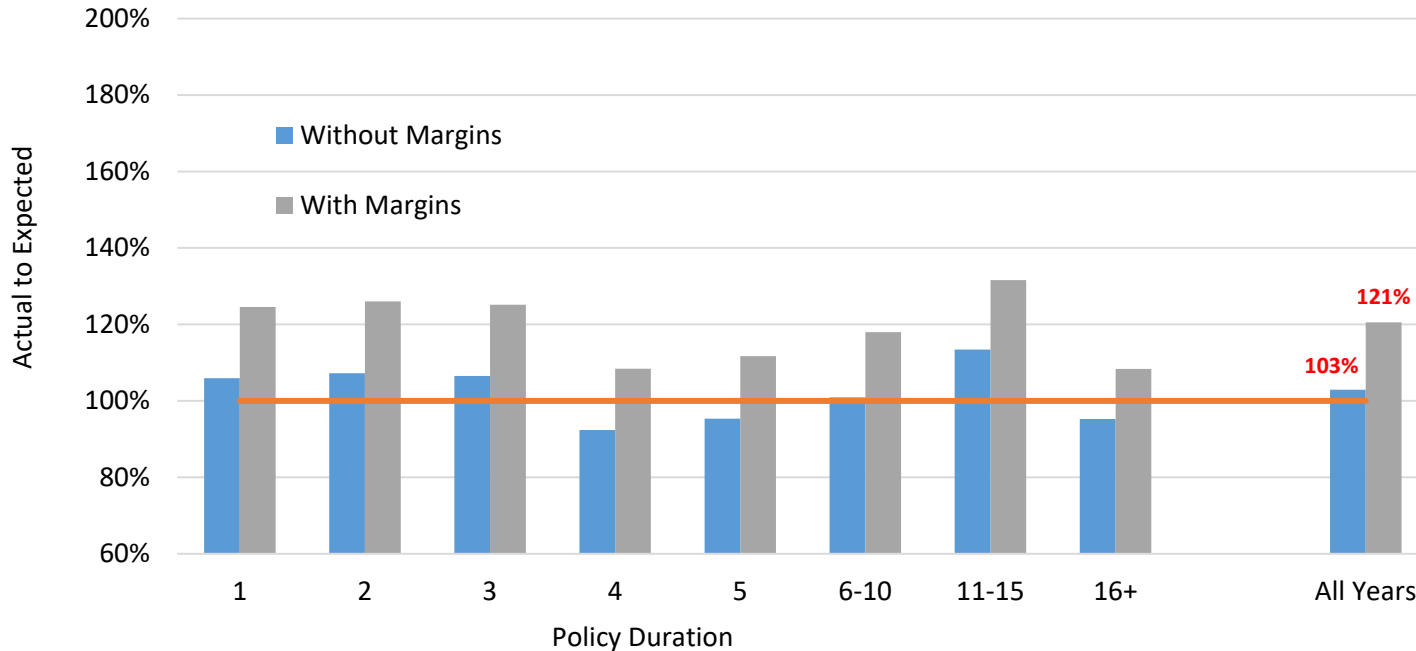
Actual Group Total Lives to Expected by Mortality and Lapse

Actual-to-Expected Mortality and Lapse, Group Total Lives, With and Without Margins



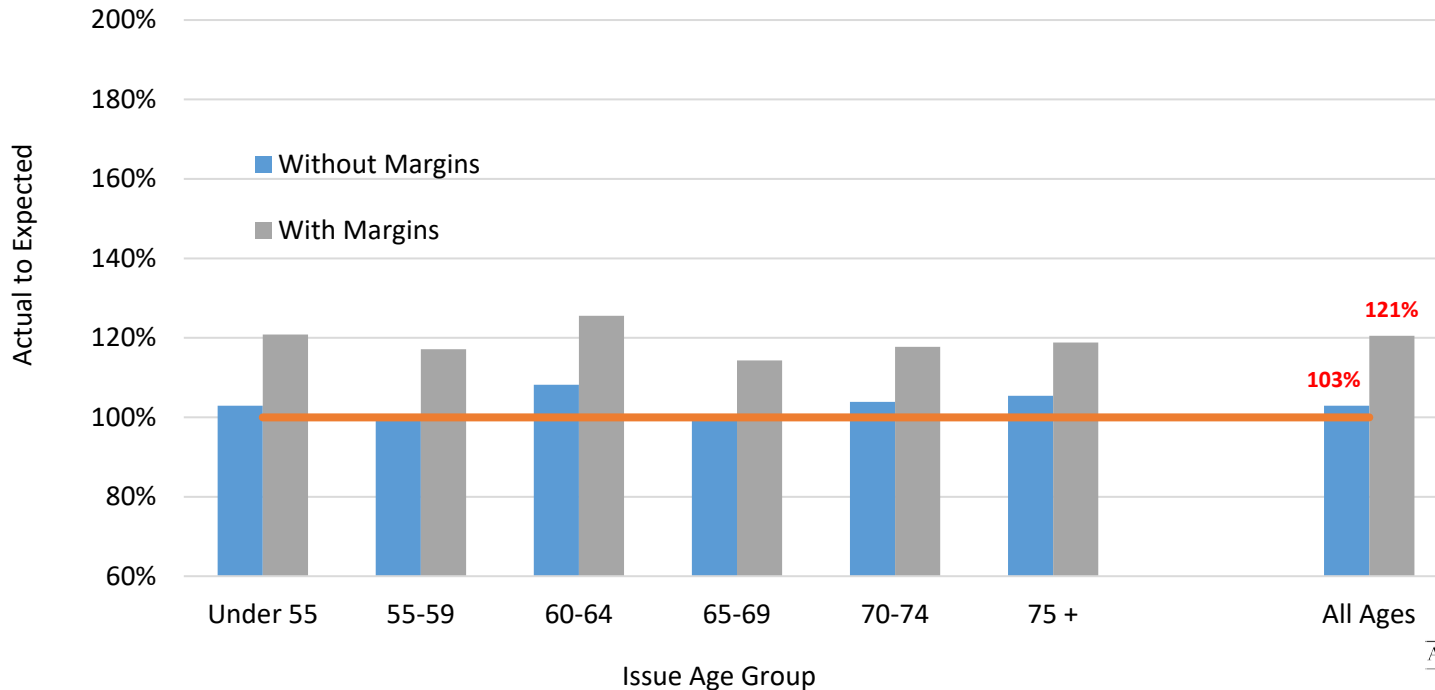
Actual Group Total Lives Total Terminations to Expected by Policy Year

Actual-to-Expected Total Terminations, Group Total Lives, by Policy Duration, With and Without Margins



Actual Group Total Lives Total Terminations to Expected by Issue Age Group

Actual-to-Expected Total Terminations, Group Total Lives, by Issue Age Group, With and Without Margins



Additional Information

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