Canadian Institute of Actuaries / Institut canadien des actuaires

SOCIETY OF ACTUARIES®

Report on the Survey of Post-Level Premium Period Lapse and Mortality Assumptions for Level Premium Term Plans

April 2020

Document 220041

Report on the Survey of Post-Level Premium Period Lapse and Mortality Assumptions for Level Premium Term Plans

AUTHORS

Steve Schumacher, FSA, MAAA
Travis Agne, ASA
Joni Obermark

RGA

SPONSORS

Canadian Institute of Actuaries and
Society of Actuaries

Copyright © 2020 by the Canadian Institute of Actuaries and the Society of Actuaries. All rights reserved.

CONTENTS

Report on the Survey of Post-Level Premium Period Lapse and Mortality Assumptions for Level Premium Term Plans

Section 1: Background

The Canadian Institute of Actuaries (CIA) and Society of Actuaries (SOA) engaged RGA Reinsurance Company (RGA) to undertake a research project on level premium term life insurance products with a particular focus on the magnitude and impact of the "shock lapse" at the end of the level premium period. This project is similar to the SOA-sponsored research completed by RGA in 2014 for USA business.

Section 2: Project Overview

As with the research project completed by RGA in 2014, this project will be completed in two phases:

- Phase 1 includes a survey of the mortality and lapse assumptions used by actuaries for pricing and modeling level premium term products at the end of 2017. This report summarizes the findings from the 15 Phase 1 survey responses received. Where appropriate, results will be compared to the 2014 Phase 1 survey done for USA business in Appendix C. A list of the 15 companies who submitted responses to the survey can be found in Appendix A. Survey questions can be found in Appendix B.
- Phase 2 is in progress and includes a study of the mortality and lapse experience of level premium term policies as they transition out of the level premium period. Participating companies have been asked to supply policy-level inforce and termination records so that experience results may be analyzed at a granular level including age, gender, risk class, premium jump, and policy size.

Upon completion of this project, a report incorporating the pricing assumptions from Phase 1 and the Phase 2 experience study will be prepared.

Section 3: Disclaimer of Liability

This report is intended for use by actuaries, underwriters and other professionals familiar with the level premium term product design, underwriting and marketing techniques used by Canadian life insurance companies. The qualified actuary responsible for co-authoring this report is Steve Schumacher, FSA, MAAA. The results and analyses presented are derived from the responses to a survey questionnaire. While good-faith effort has been made to analyze the reasonableness of each response, the final report is ultimately reliant on the accuracy of the underlying survey responses.

The results provided herein come from a variety of life insurance companies with unique product structures, target markets, underwriting philosophies and distribution methods. As such, these results should not be deemed directly applicable to any particular company or representative of the life insurance industry as a whole.

RGA Reinsurance Company (RGA), its directors, officers and employees, disclaim liability for any loss or damage arising or resulting from any error or omission in RGA's analysis and summary of the survey results or any other information contained herein. The report is to be reviewed and understood as a complete document.

This report is published by the Canadian Institute of Actuaries (CIA) and the Society of Actuaries (SOA) and contains information based on input from companies engaged in the Canadian life insurance industry. The information published in this report was developed from actual historical information and does not include any projected information.

The opinions expressed and conclusions reached by the authors are their own and do not represent any official position or opinion of the CIA or the SOA or its members. The CIA and SOA make no representations regarding the accuracy or completeness of the content of this report. It is for informational purposes only. The CIA and SOA do not recommend, encourage or endorse any particular use of the information provided in this report. The report should not be construed as professional or financial advice. The CIA and SOA make no warranty, express or implied, guarantee or representation whatsoever and assumes no liability or responsibility in connection with the use or misuse of this report.

Section 4: Executive Summary

4.1 Summary of Key Results

Everything in this Phase 1 report is based on the responding companies' assumptions only. The analysis on Canadian experience will be the focus of Phase 2.
The following table summarizes the shock lapse and mortality assumptions used at the end of the level premium period for a selected common pricing cell. Refer to the "Lapse Assumptions" section for details on the specific risk parameters chosen for this table. Refer to Appendix A for a note regarding participating companies in the two surveys.

	Term Period (L)		
	10	**20**	**30**
Number of Companies that Carry this Product	15	15	13
100% Shock Lapse Assumed	0	0	0
Shock Lapse Assumption Provided	15	15	10
Dur L Median Lapse Rate	67%	70%	81%
Dur L through L+1 Cumulative Median Lapse Rate	80%	84%	89%
Dur L through L+2 Cumulative Median Lapse Rate	81%	85%	90%
Dur L through L+3 Cumulative Median Lapse Rate	82%	86%	90%
Mortality Deterioration Assumption Provided	14	14	10
Dur L+1 Median Mortality Deterioration (100% = none)	154%	193%	288%
Dur L+2 Median Mortality Deterioration (100% = none)	177%	234%	320%
Dur L+3 Median Mortality Deterioration (100% = none)	173%	218%	299%
Dur L+5 Median Mortality Deterioration (100% = none)	162%	194%	263%
Dur L+9 Median Mortality Deterioration (100% = none)	153%	161%	170%

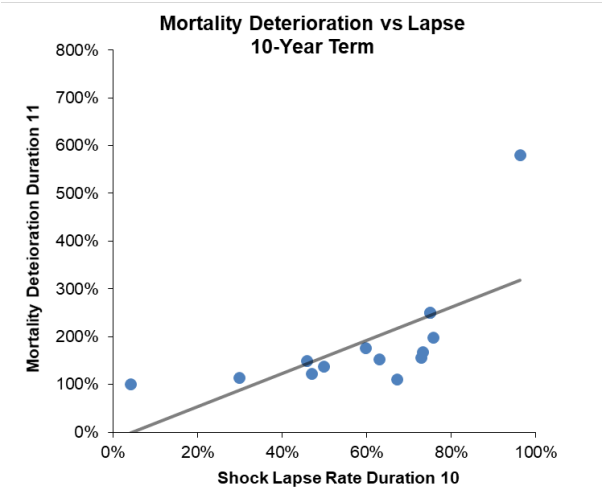
As shown above, all 15 companies that responded provided a shock lapse assumption of less than 100% for all their level term products. The only exception to this is the situation where a company assumes 100% shocks for older issue ages on 20-year term business. Respondents were more likely to assume a higher shock lapse for 20- and 30-year term than for 10-year term.

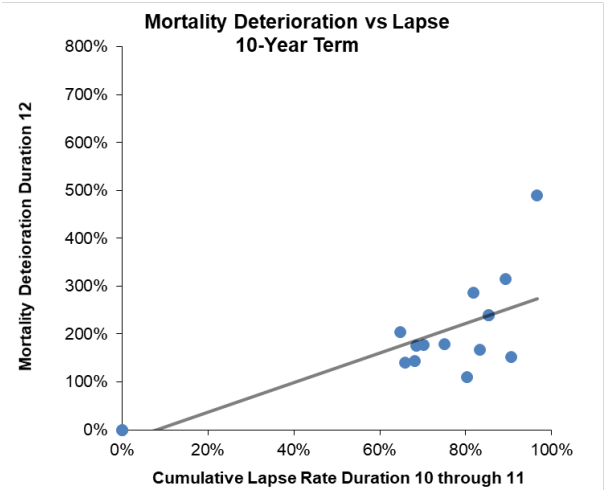
- The median lapse rate assumed at the end of the level premium period increased as the term length increased.
- The median cumulative lapse rate assumed from duration L through the end of duration L+1 also increased as the term length increased. This trend continued through L+3.
- Mortality deterioration assumptions generally began grading down by duration L+3.

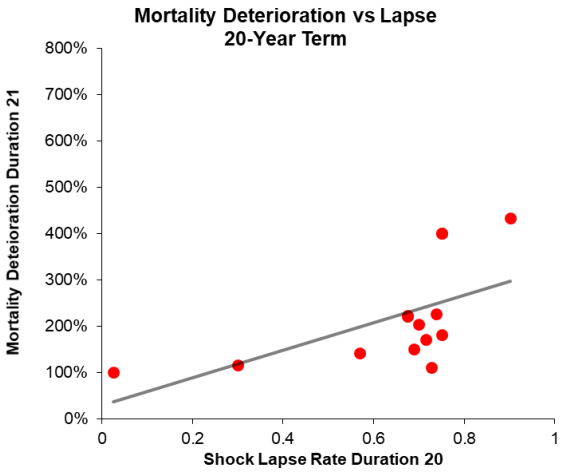
Companies used a variety of methods for determining mortality deterioration assumptions including the Dukes–MacDonald model, the Canadian Institute of Actuaries Valuation Technique Paper #2 method (CIA VTP #2), and a variety of "other" methods based on actuarial judgment. The most prevalent assumption used was the CIA VTP #2 method.

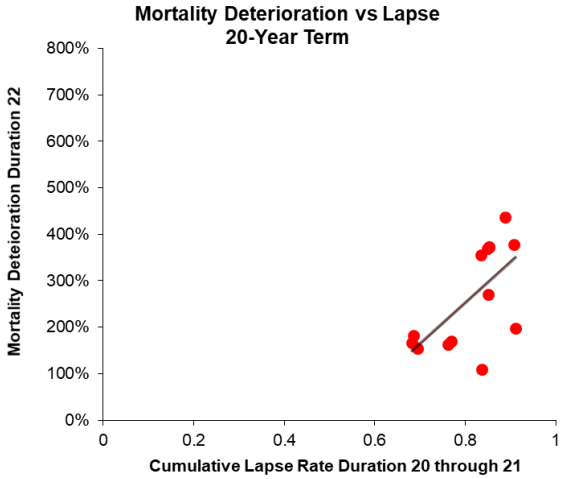
4.2 Relationship between Lapse and Mortality Deterioration Assumptions

The following XY scatter plots show the relationship between the shock lapse assumption and the mortality deterioration assumption for 10- and 20-year term. The left panel displays the duration L+1 mortality deterioration assumption as a function of the duration L shock lapse assumption. The right panel displays the duration L+2 mortality deterioration assumptions as a function of the cumulative lapse rate assumed for durations L and L+1. There does not seem to be a strong correlation between the size of the shock lapse assumed by a company and the amount of mortality deterioration assumed. With only 15 companies it is somewhat difficult to determine the relationship among assumptions. (NOTE: Diagonal regression lines have been drawn to aid the visual display. The authors do not suggest a strictly linear relationship exists between the magnitude of the shock lapse and the amount of mortality deterioration.)









Section 5: Introduction

The Phase 1 survey was sent to 22 of the top term writers in Canada. Responses were provided by 15 companies representing approximately 66% of the 2017 term sales as reported by LIMRA in the Canadian Individual Life Insurance Sales Technical Supplement: 2017 Annual. A list of survey participants is included in Appendix A.

5.1 Product Mix

Respondents were asked to provide the amount of term business (by face amount) they sold in 2017 by level premium period. While 10- and 20-year term are the dominant product types, most companies sell at least some business at other term periods. Every company surveyed had at least 5% of its business in both 10- and 20-year term, as shown in the columns to the right of the table below. All but one company had at least 15% of its term business in both 10- and 20-year term.

Level Premium Term Product Mix by Level Period

Product Level Period	Aggregate Distribution for Respondents	Number of Companies where Product Represents at Least x% of Individual Company's Term Sales		
		x=5%	x=15%	x=30%
10-Year Term	37.3%	15	14	10
15-Year Term	1.7%	2	0	0
20-Year Term	45.2%	15	15	12
25- and 30-Year Term	8.8%	10	8	3
Other	7.0%	4	1	0

5.2 Distribution Channels

The following table displays the distribution channels used to sell respondents' term products in 2017. The majority of companies indicated Independent Agents, Managing General Agents, and Captive Agents were the most heavily used channels.

Distribution Channels Selling Level Premium Term Insurance

Distribution Channel	Aggregate Distribution for Respondents	Number of Companies where Channel Represents at Least x% of Individual Company's Term Sales		
		x=5%	x=25%	x=75%
Independent Agents	21.0%	6	5	2
Managing General Agents	29.4%	9	7	5
Captive Agents	38.6%	7	5	2
Banks	6.2%	1	1	0
Internet	0.1%	0	0	0
Direct Response	4.6%	3	1	1
Other	0.8%	0	0	0

5.3 Post-Level Term Premium Structure

Respondents were asked to describe their current premium structure after the end of the level premium period. Some respondents selected more than one option. The dominant premium structure among respondents is an initial level premium period followed by a jump to a new level premium period. Unless specifically stated, all assumption information shown in this paper will include both Jump to New Level Period and Premium Jump to Annual Renewable Term (ART) as provided by the companies.

Post-Level Product Design	
Product Structure	Responses (Company can have multiple)
Jump to New Level Period	14
Premium Jump to ART	5
Premium Grade to ART	0
Face Amount Decrease	0
Product Terminates	0

Respondents were then asked to describe any changes to the premium structure of *new business* term products in the last five years. Responses varied but can be generalized as follows:

Changes to Post-Level Premium Structure for Term, New Business	
Description	Responses
No Change	8
Jump to ART	4
Shorten Renewal Level Period	1
No Response	2

Similarly, companies were asked if changes to *inforce* post-level rates were considered or implemented in the last five years to attempt to optimize lapses and anti-selective mortality. Responses were open-ended and the level of consideration was not quantified.

Changes to Post-Level Premium Structure for Term, In Force		
Description	Implemented in Last Five Years	Considering
Lower Post-Level Premiums	0	1
New ART Scale	1	2
Other	0	0

5.4 Post-Level Term Premium Structure

Companies were asked to describe the changes, if any, made at the end of the level period to premium modes or automatic withdrawal authorizations for inforce policies. The 15 responses to this question can be generally summarized as follows:

Changes to Premium Modes and/or Auto Withdrawals Following the Level Period	
Response	Number of Companies
No change	11
Policyholders are Removed from Automatic Withdrawals	0
Automatic Change to a Defined Mode (Monthly/Quarterly/Annual)	0
Policyholders Notified of Increasing Premium	4
Depends on Conversion Option of the Product	0

5.5 Premium Jumps

Respondents were asked to provide premium rates per $1,000 for their most popular 10- and 20-year level term products sold at year-end 2017 for a $500,000 policy. Rates were provided for males and females, four issue ages (25, 35, 45, 55), best preferred non-smoker class and standard non-smoker class. The summary table shows the magnitude of the median jump in premium from the level period to the first year of the post-level period. The final column shows the premium jump assuming the same insured qualifies for a new policy from the same company within the same underwriting class after the level period. This comparison requires the assumption that premium rates do not change over a 10- or 20-year period.

As an example, one company's rate for a 45-year-old male standard risk with a 10-year term policy might be 1.00 per $1,000. If the first post-level rate on that product is 7.1 per $1,000, then the premium jump is 7.1. This value serves as the basis for the median premium jump in the "Renewal Premium" column below. If the same male lapsed and re-entered (still standard) and bought a new 10-year term policy, the rate might be 2.8 per $1,000. The renewal premium of 7.1 is 2.5 times bigger than the re-entered premium rate (7.1 / 2.8 = 2.5). This is the basis of the "Lapse and Re-Enter" column in the table.

				Median Premium Jumps	
Term Period (L)	**Gender**	**Class**	**Issue Age**	**Renewal Premium**	**Lapse and Re-Enter**
10	**Male**	**Best**	**25**	**3.2**	**3.3**
			35	**6.4**	**3.5**
			45	**8.0**	**2.8**
			55	**7.7**	
	Female	**Best**	**25**	**4.0**	**3.8**
			35	**6.1**	**3.7**
			45	**8.5**	**2.7**
			55	**7.4**	
	Male	**Standard**	**25**	**3.0**	**3.0**
			35	**5.7**	**2.9**
			45	**7.1**	**2.5**
			55	**7.3**	
	Female	**Standard**	**25**	**3.7**	**3.0**
			35	**5.7**	**3.1**
			45	**7.1**	**2.5**
			55	**7.0**	
20	**Male**	**Best**	**25**	**6.2**	**2.5**
			35	**15.9**	**2.0**
			45	**16.4**	
			55	**11.5**	
	Female	**Best**	**25**	**6.5**	**2.4**
			35	**14.4**	**2.0**
			45	**15.4**	
			55	**12.7**	
	Male	**Standard**	**25**	**5.5**	**2.1**
			35	**13.2**	**1.7**
			45	**14.3**	
			55	**10.4**	
	Female	**Standard**	**25**	**6.2**	**2.3**
			35	**12.8**	**1.7**
			45	**14.2**	
			55	**11.0**	

Section 6: Lapse Assumptions

6.1 Overview

Respondents were asked to provide their lapse assumptions at the end of 2017 for five durations beginning with the last year of the level premium period and the additional duration shock just at the end of the second level period. The responses often varied by a number of parameters, including the length of the level term period, gender, issue age, face amount band, risk class, premium payment mode, and premium jump ratio.

The 15 responses often varied by company-prescribed parameters, as summarized in the table below. The numbers in the table represent the count of companies that varied by each listed parameter(s) in the leftmost column intersecting with any parameters in the other columns. For example, two companies varied their assumptions by issue age, level period, and smoker status, while one varied by level period and premium jump ratio.

Lapse Assumption Variation by Parameter		
Additional Parameter	Base Parameter(s)	
	Issue Age and Level Period	Level Period
No Other Variance	5	3
Premium Jump Ratio	1	1
Smoker Status	2	
Face Amount Band	1	
Smoker Status and Face Amount Band	1	
Risk Class Plus Additional	1	
Total	11	4

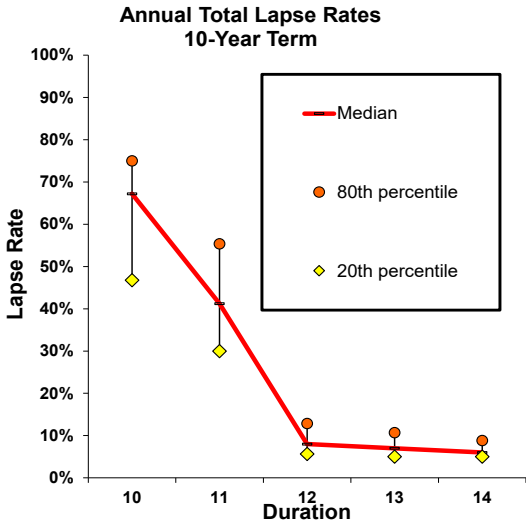
6.2 Specific Lapse Assumptions

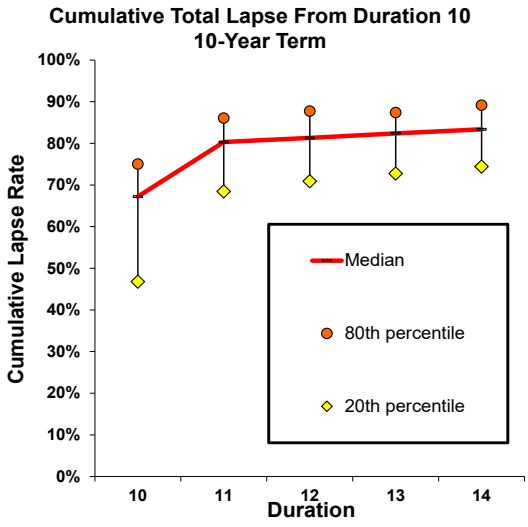
As previously indicated, some respondents provided assumptions that varied by pricing cell. For the sake of a consistent comparison, the assumptions summarized in the Executive Summary and elsewhere in this report were selected for a common pricing cell, which was chosen as follows:

- Male; standard non-tobacco risk class
- Face amount $500,000
- Issue age 45 for 10-year term; issue age 35 for 20-year term
- Annual premium payment mode

The values displayed in the tables and graphs that follow are by duration across all companies, such that a company's lapse assumption by duration may fall within different percentile ranges. For example, looking across all participating companies' 10-year term products, Company A's lapse rate assumption may represent the minimum lapse rate assumption value in duration 10 and may represent the median assumption value in duration 11, etc. Cumulative lapses were calculated by company and then the percentiles were calculated across all companies.

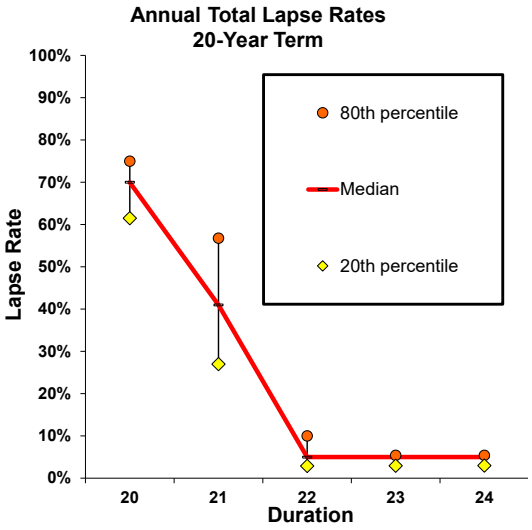
10-Year Term	Annual Lapse Rate Assumption by Duration					Cumulative Lapse Through Duration				
(n=15)	10	11	12	13	14	10	11	12	13	14
Minimum	4%	6%	4%	3%	3%	4%	65%	69%	71%	73%
20th Percentile	47%	34%	6%	5%	5%	47%	68%	71%	73%	74%
Median	67%	41%	8%	7%	6%	67%	80%	81%	82%	83%
80th Percentile	75%	55%	13%	11%	9%	75%	86%	88%	88%	89%
Maximum	96%	69%	24%	16%	16%	96%	97%	97%	97%	97%

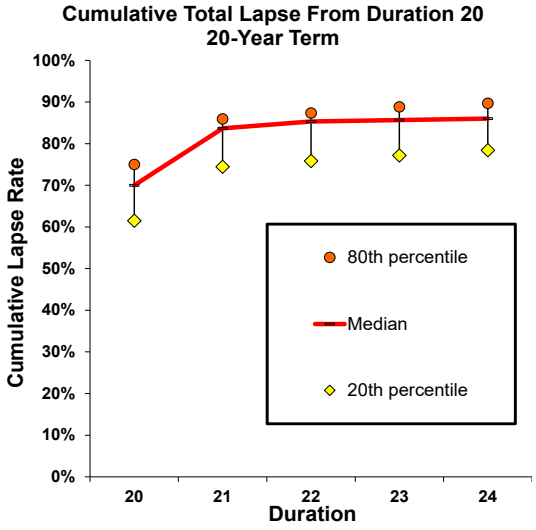




6.3 Specific Lapse Assumptions (20-Year Term)

20-Year Term	Annual Lapse Rate Assumption by Duration					Cumulative Lapse through Duration				
(n=15)	20	21	22	23	24	20	21	22	23	24
Minimum	2%	5%	2%	2%	2%	2%	68%	69%	70%	71%
20th Percentile	61%	27%	3%	3%	3%	61%	74%	76%	77%	78%
Median	70%	41%	5%	5%	5%	70%	84%	85%	86%	86%
80th Percentile	75%	57%	10%	5%	5%	75%	86%	87%	89%	90%
Maximum	90%	67%	21%	13%	12%	90%	91%	92%	93%	93%

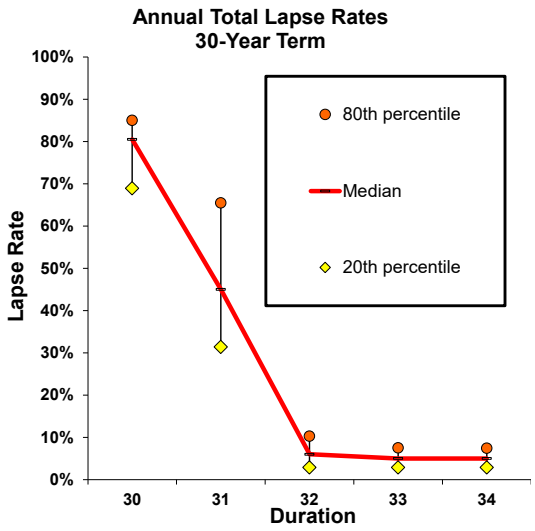


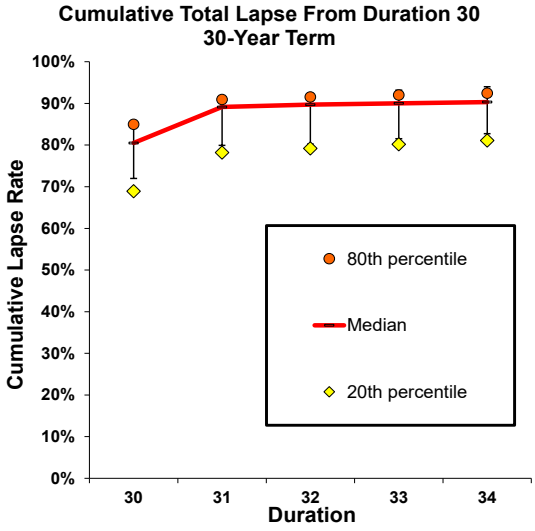


30-Year Term	Annual Lapse Rate Assumption by Duration					Cumulative Lapse through Duration				
(n=10)	30	31	32	33	34	30	31	32	33	34
Minimum	2%	19%	1%	1%	1%	2%	68%	69%	70%	71%
20th Percentile	69%	31%	3%	3%	3%	69%	78%	79%	80%	81%
Median	81%	45%	6%	5%	5%	81%	89%	90%	90%	90%
80th Percentile	85%	65%	10%	8%	7%	85%	91%	92%	92%	92%
Maximum	90%	71%	39%	13%	12%	90%	97%	98%	98%	99%

6.4 Specific Lapse Assumptions (30-Year Term)

30-Year Term	Annual Lapse Rate Assumption by Duration					Cumulative Lapse through Duration				
(n=10)	30	31	32	33	34	30	31	32	33	34
Minimum	2%	19%	1%	1%	1%	2%	68%	69%	70%	71%
20th Percentile	69%	31%	3%	3%	3%	69%	78%	79%	80%	81%
Median	81%	45%	6%	5%	5%	81%	89%	90%	90%	90%
80th Percentile	85%	65%	10%	8%	7%	85%	91%	92%	92%	92%
Maximum	90%	71%	39%	13%	12%	90%	97%	98%	98%	99%

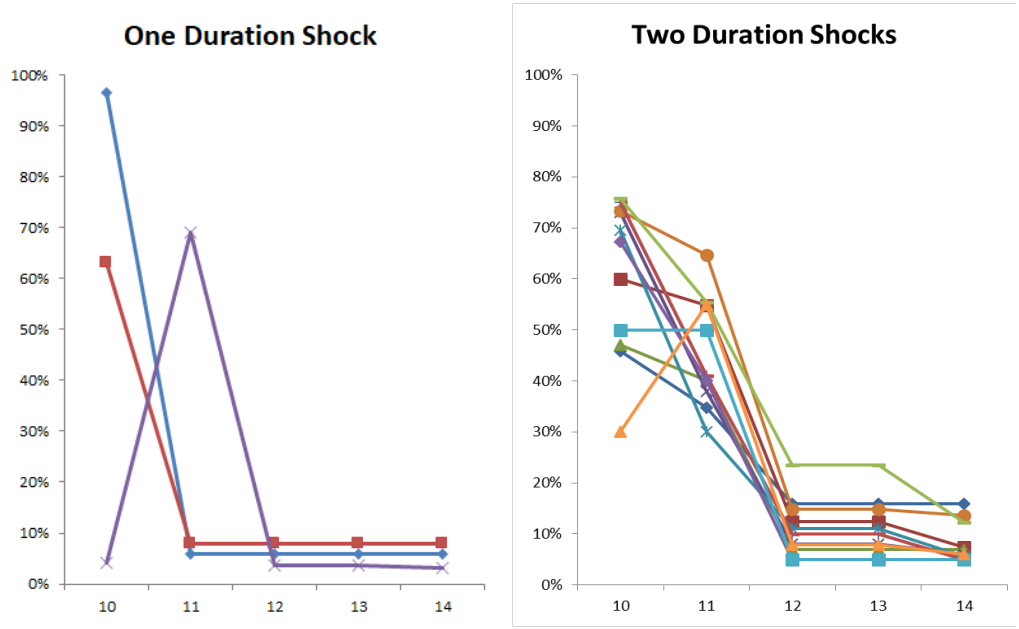




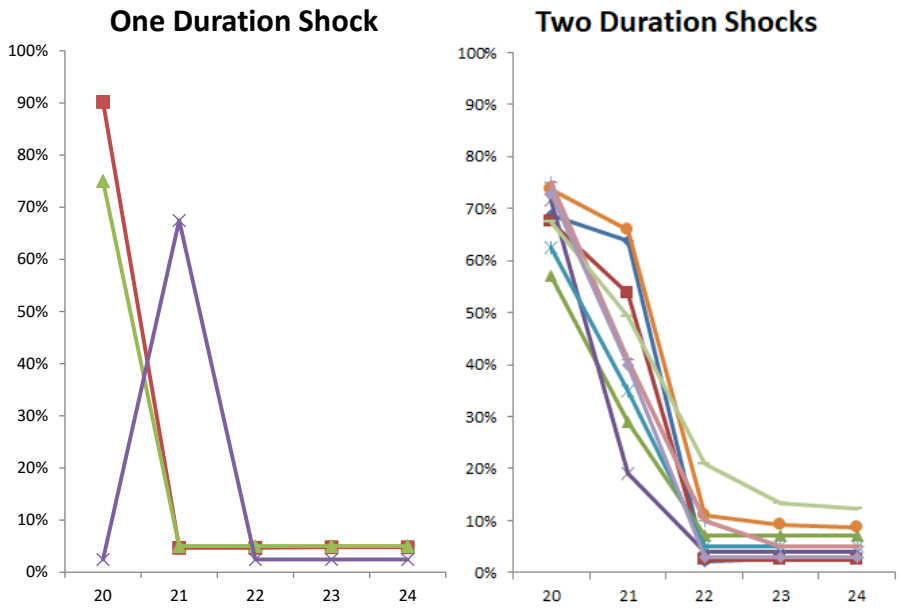
6.5 Specific Lapse Assumptions (10- and 20-Year Term – All Responses)

Although the graphs on the previous pages give a sense of the general levels and distributions of lapse assumptions by duration, they do not necessarily reflect durational trends of any individual company's assumption. Quite often, companies assuming an initial shock lapse rate that is lower than the median assumption will assume a second shock lapse that is much higher than the median in the following duration. The following graphs plot each respondent's 10- and 20-year term post-level period lapse rate assumptions by policy year to illustrate these trends. Three companies assume one shock lapse period while the other 12 companies have multiple duration shocks.

Lapse Rates by Duration
10-Year Term



Lapse Rates by Duration
20-Year Term

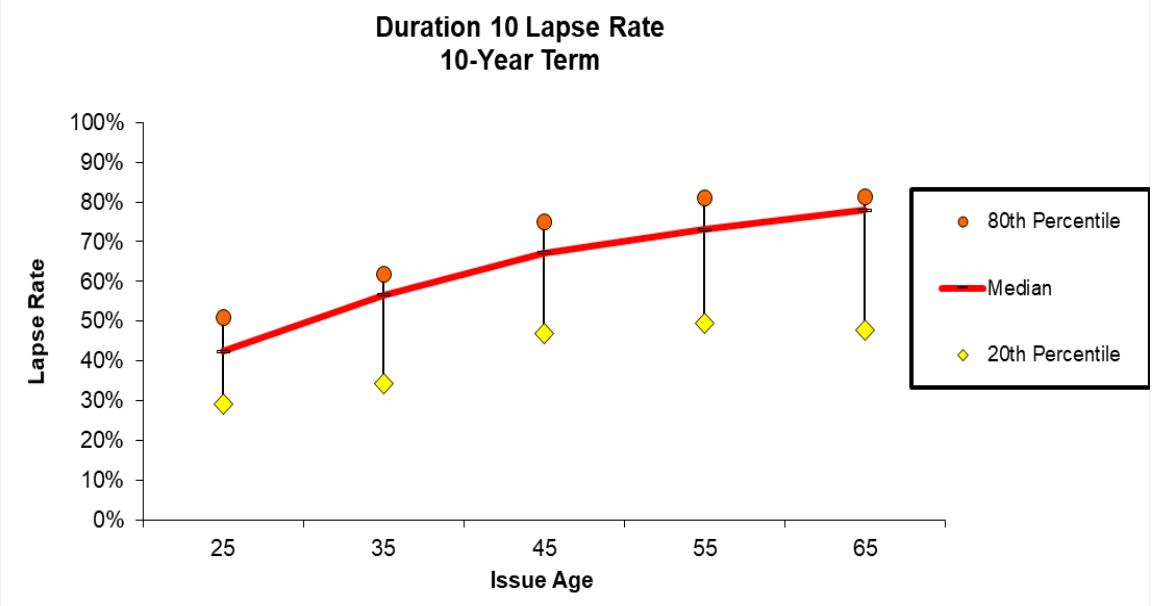


Lapse Rate by Duration		
Description	Responses	
	10-Year Term	20-Year Term
Duration L Shock, Then Level	2	2
Duration L Shock, Then Grade Down	0	0
Duration L+1 (Beginning of the Year) Shock	1	1
2 Shocks, Duration L>=L+1	11	11
2 Shocks, Duration L+1>L	1	1

6.6 Specific Lapse Assumptions (Variations by Issue Age)

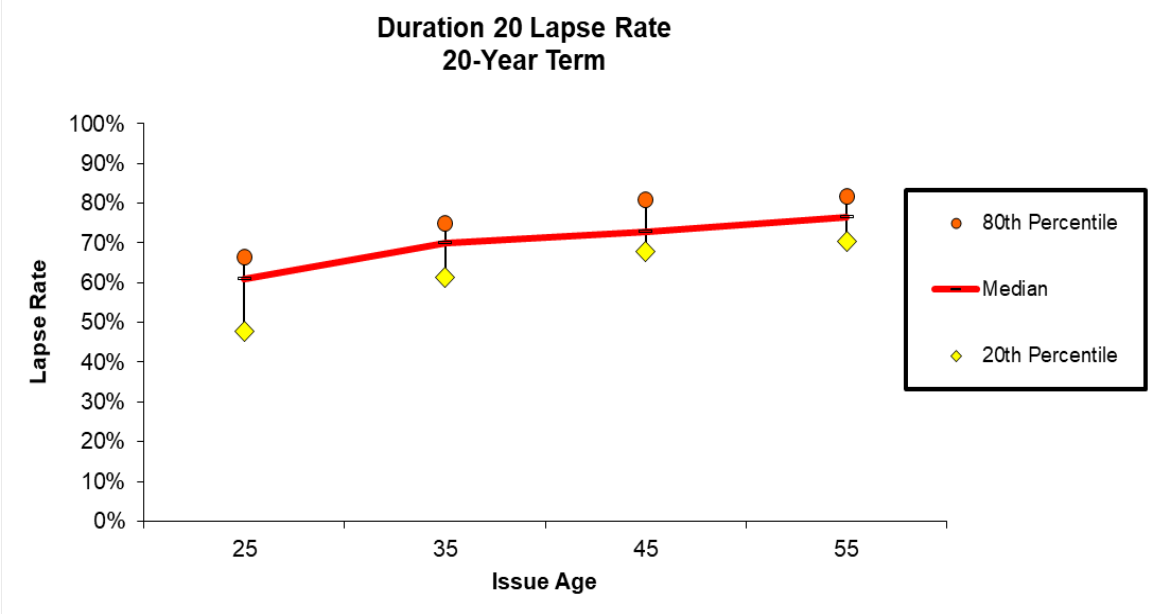
As mentioned previously, most respondents provided lapse rates varying by issue age within each product. Generally, these companies used a shock lapse that was higher for older ages. The following table and graph show the distribution of the duration 10 lapse assumptions by issue age for 10-year term products.

10-Year Term (n=15)	Duration 10 Lapse Rate Assumption				
	25	35	45	55	65
Minimum	4%	4%	4%	4%	4%
20th Percentile	29%	34%	47%	49%	48%
Median	42%	57%	67%	73%	78%
80th Percentile	51%	62%	75%	81%	81%
Maximum	84%	86%	96%	97%	94%



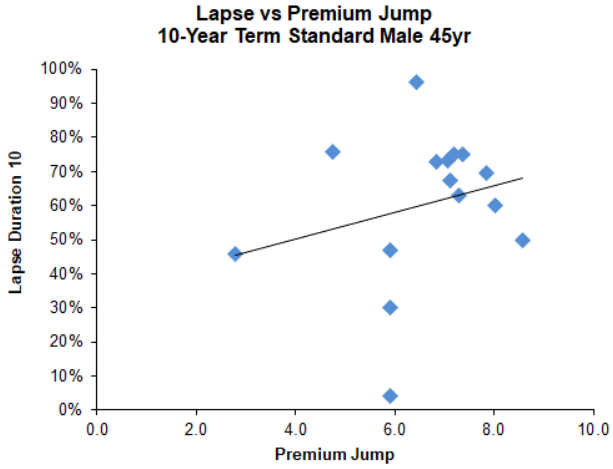
The following table and graph show the distribution of the duration 20 lapse assumptions by issue age for 20-year term products.

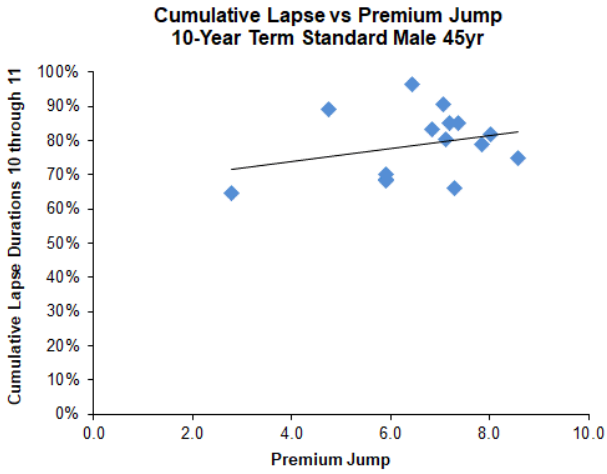
20-Year Term (n=15)	Duration 20 Lapse Rate Assumption			
	25	35	45	55
Minimum	2%	2%	2%	2%
20th Percentile	48%	61%	68%	70%
Median	61%	70%	73%	76%
80th Percentile	66%	75%	81%	82%
Maximum	87%	90%	100%	100%

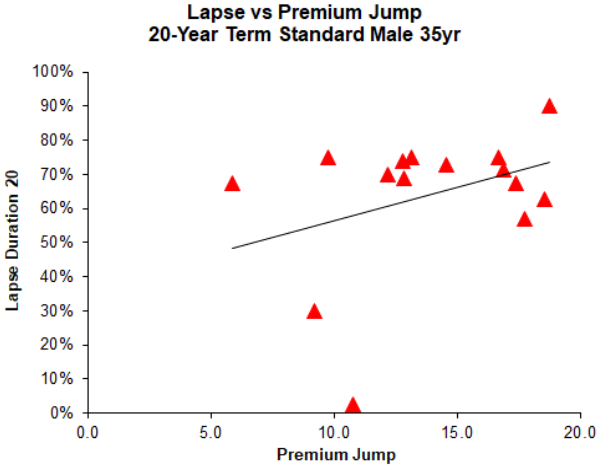


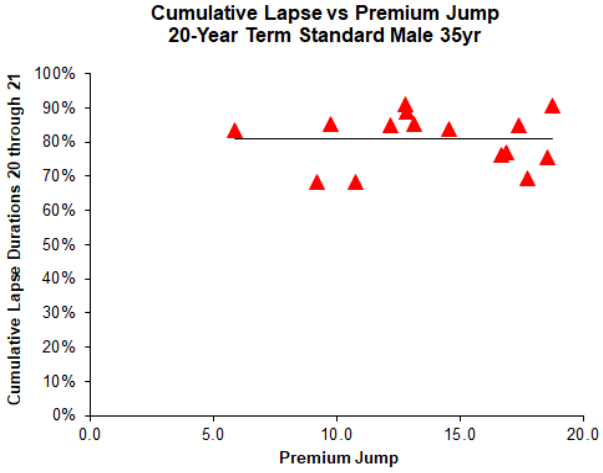
6.7 Lapse Assumptions by Premium Jump

The following sets of graphs combine the premium jump data developed earlier with the provided lapse assumptions. Both sets of data used for these examples follow the parameters described in the "Specific Lapse Assumptions" section. The graphs to the right show the cumulative lapse assumption by the initial premium jump as many companies assumed some or all of the lapse shock occurred at the beginning of the year in which the premium jump occurred. A trend line is present to aid visualization, but it is not necessarily meant to indicate a true linear relationship between lapse and premium jump.









6.8 Lapse Skewness

The 2014 SOA Phase 2 experience study done on USA business demonstrated that lapses tend to be skewed toward the end of the last duration of the level period and toward the beginning of the first year of the post-level period. For this study, we asked companies how they were distributing their assumptions by month before and after the shock lapse. The question was broken up into three parts, and respondents were asked to describe or provide the assumptions used for monthly skewed lapses within the following policy years. Some companies provided more than one answer.

- During the level period (durations 1 through L-1 for L year term)

Monthly Lapse Skewness during Level Premium Period (1 to L-1)	
Description	Responses (Company can have multiple)
Lapses are Uniformly Distributed	11
Lapses Occur on Premium Payment Modes	4
Lapses Occur at the End of the Year	0
Graded Monthly with Shock in Month 12	2
No Response or N/A	0

- During the last year of the level period (duration L for L year term)

Monthly Lapse Skewness during Year of Shock Lapse	
Description	Responses (Company can have multiple)
Lapses are Uniformly Distributed	1
Lapses Occur on Premium Payment Modes	2
Lapses Occur at the End of the Year	2
Lapses Graded toward End of the Year with Shock in Month 12	12
Lapses Skewed to Beginning of Year	0
No Response or N/A	0

- Beyond the level period (durations L+1)

Monthly Lapse Skewness during First Year after Post-Level Period	
Description	Responses (Company can have multiple)
Lapses are Uniformly Distributed	1
Lapses Occur on Premium Payment Modes	3
Lapses Occur at the End of the Year	0
Lapses Skewed to Beginning of Year	13
Lapses Graded Monthly with Shock in Month 12	0
No Response or N/A	0

- Beyond the level period (durations L+2 and Later)

Monthly Lapse Skewness beyond Post-Level Period (L+2 and Later)	
Description	Responses (Company can have multiple)
Lapses are Uniformly Distributed	9
Lapses Occur on Premium Payment Modes	2
Lapses Occur at the End of the Year	0
Lapses Graded Monthly with Shock in Month 12	1
No Response or N/A	3

Section 7: Mortality Deterioration Assumptions

7.1 Overview

Due to the adverse selection of unhealthy policyholders choosing to persist after a large increase in their premium, most actuaries assume a corresponding increase in the mortality after the shock lapse. Respondents were asked to provide their annual mortality deterioration assumptions at the end of 2017 beginning with the first year after the level premium period. The responses often varied by issue age and the level term period. Some companies also varied their assumptions by additional items such as gender, smoker status, and risk class.

The following table summarizes the responses. The numbers in the table represent the count of companies that varied by each listed parameter(s) in the leftmost column intersecting with any parameters in the other columns. For example, 10 companies varied their assumptions only by duration and level period, while two varied by duration, level period, smoker status, and gender. One company did not provide any response.

Mortality Assumption Variation by Parameter		
Additional Parameter	Base Parameter(s)	
	Issue Age and Level Period	Level Period
No Other Variance	10	1
Gender and Smoker Status	2	
Risk Class Plus Additional	1	
Total	13	1

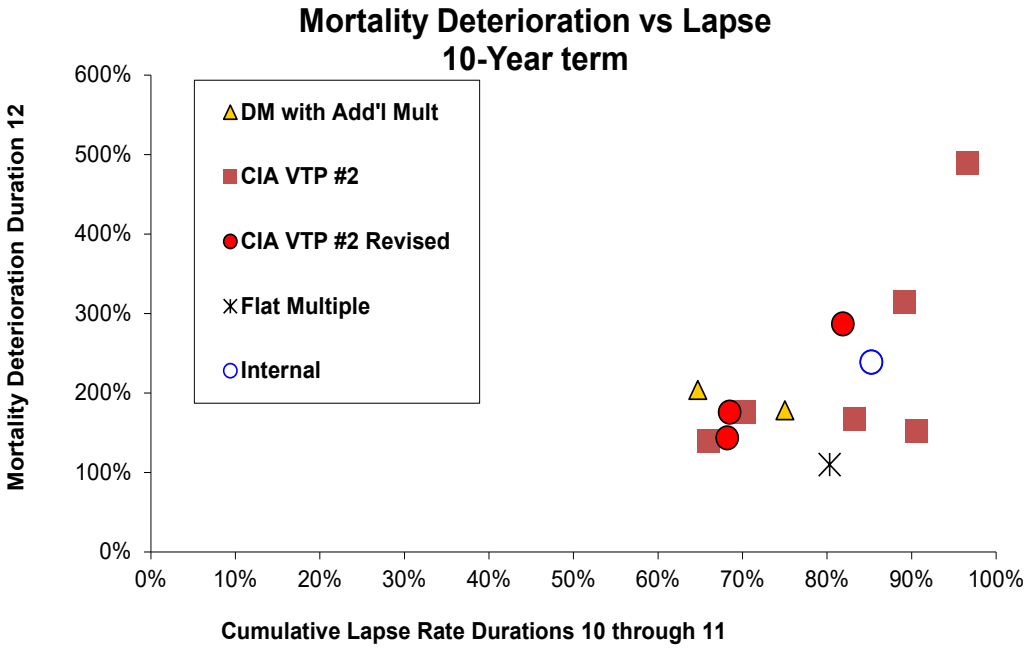
7.2 Methodology for Developing Deterioration Assumptions

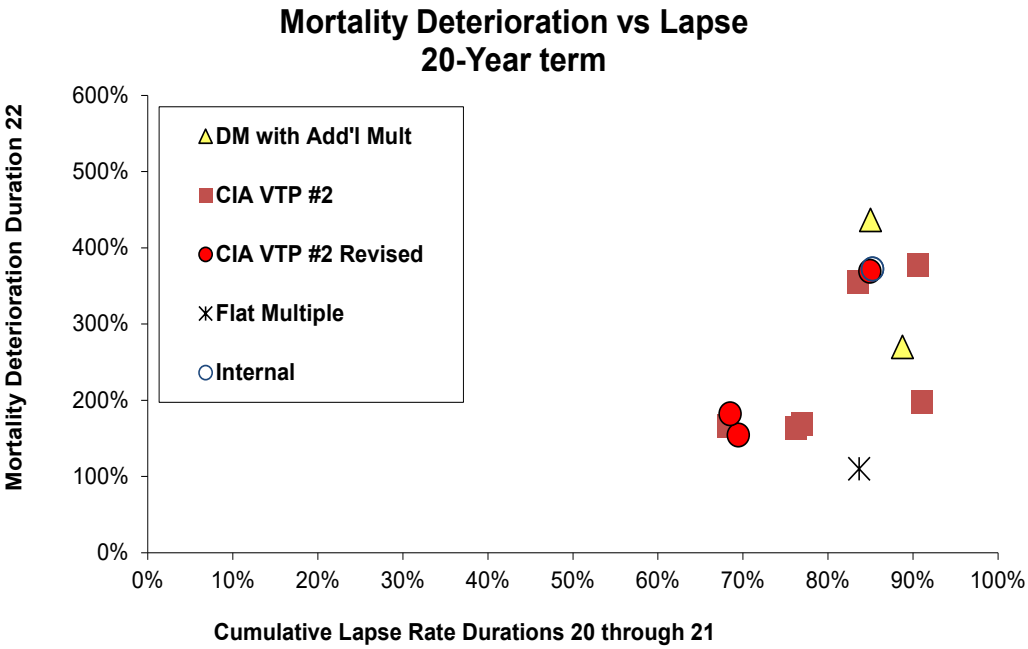
Respondents were asked what methodology they used to develop mortality deterioration assumptions. Some companies used more than one method.

Method of Developing Mortality Assumption	
Method	Responses
CIA VTP #2	7
CIA 2017 Educational Note (VTP #2 revised)	4
Dukes–MacDonald or Derivatives of Dukes–MacDonald	2
Becker–Kitsos	0
Flat Multiple	2
Internal	3

Respondents were also asked to provide their specific mortality deterioration assumptions for pricing and modeling their level premium term products. The following sections describe the variations in mortality deterioration assumptions by company.

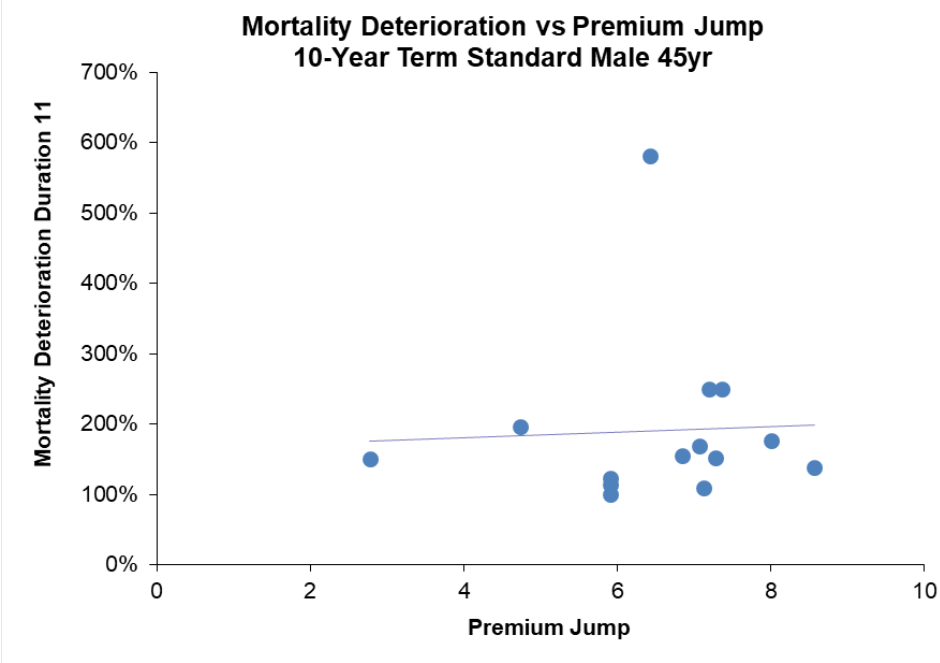
The following graphs display companies' mortality deterioration assumptions as a function of the shock lapse with plot points differentiated based on the method used to develop the deterioration assumption. It appears that a general relationship between the shock lapse and mortality deterioration assumptions exists regardless of the specific method chosen to develop the assumptions. The correlation does not seem to be stronger for any one particular method.

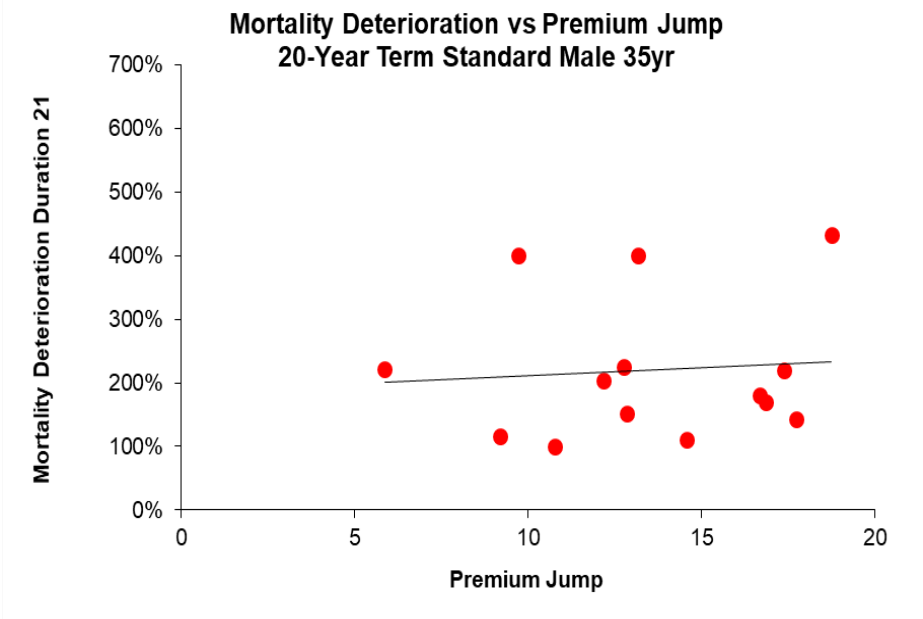




7.3 Specific Mortality Deterioration Assumptions by Premium Jump

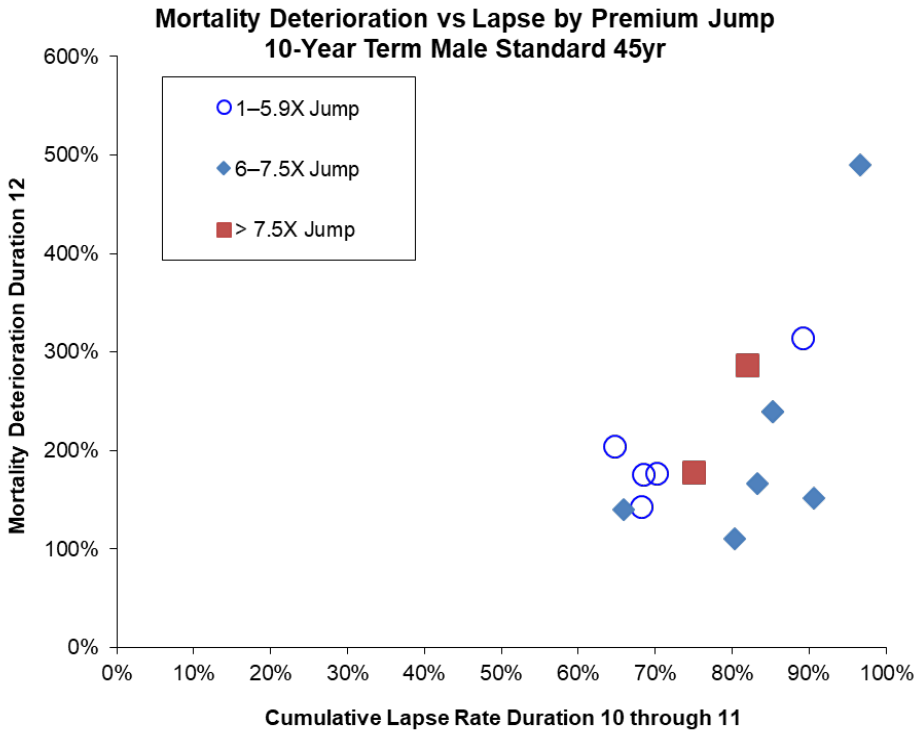
The following graphs combine the premium jump data with the provided mortality deterioration assumptions. Both sets of data used for these examples follow the parameters described for the pricing cell in the "Specific Lapse Assumptions" section. Companies that did not provide a mortality deterioration assumption are excluded. A trend line is present to aid visualization, but it does not indicate a true linear relationship. It does not appear from the graphs below that a strong connection exists between premium jump and assumed mortality deterioration.





7.4 Relationship to Premium Jump

The following graph displays the same data used in the last section for 10-year term products with plot points differentiated based on the magnitude of the ratio of the first post-level premium to the last level premium. Because the data is so thin, it is difficult to determine a correlation between the premium jump and the magnitude of mortality to lapse shocks. This is something that will be looked into when analyzing the full data set of the various companies in the Phase 2 study.

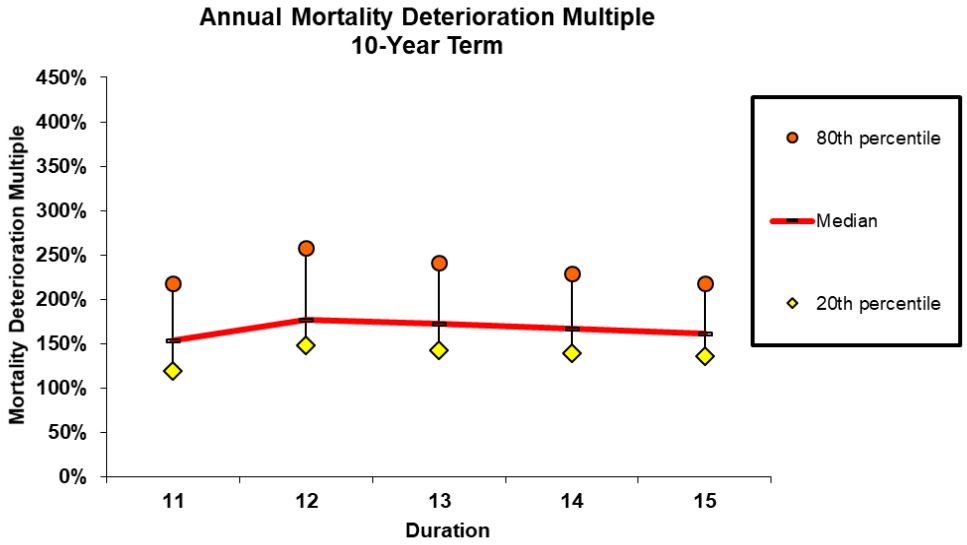


	Magnitude of Premium Jump Ratio			
	1–5.9X Jump	6–7.5X Jump	> 7.5X Jump	Subtotal
Total Respondents	5	7	3	15
100% Shock Lapse Assumed	0	0	0	0
Less than 100% Shock Lapse Assumed	5	7	3	15
Dur L Median Lapse Rate	46%	73%	60%	67%
Dur L through L+1 Cumulative Median Lapse Rate	69%	85%	79%	80%
Dur L through L+2 Cumulative Median Lapse Rate	71%	87%	81%	81%
Dur L through L+3 Cumulative Median Lapse Rate	73%	87%	82%	82%
Mortality Deterioration Assumption Provided	5	7	2	14
Dur L+1 Median Mortality Deterioration (100% = none)	123%	168%	157%	154%
Dur L+2 Median Mortality Deterioration (100% = none)	177%	167%	233%	177%
Dur L+3 Median Mortality Deterioration (100% = none)	174%	159%	215%	173%

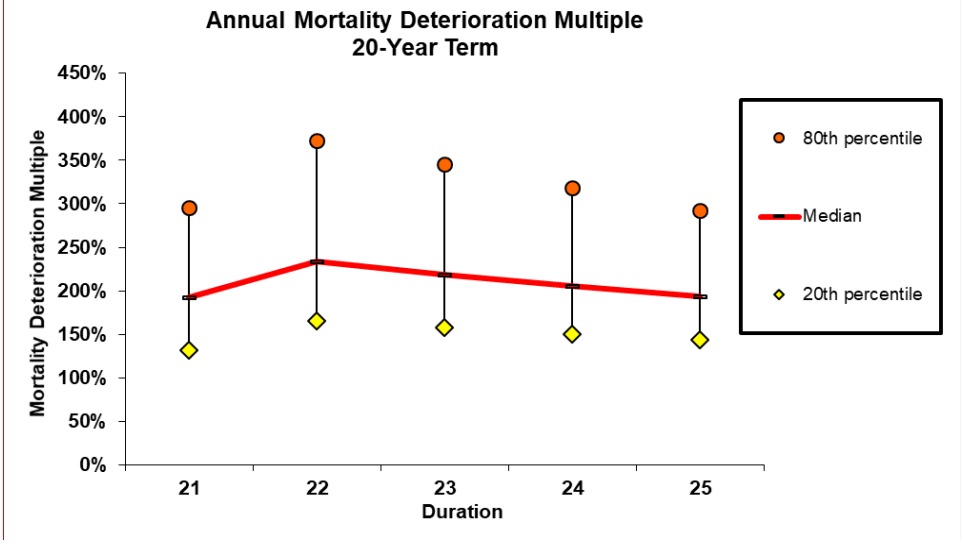
7.5 Specific Mortality Deterioration Assumptions

The following tables and graphs show the range of specific mortality deterioration assumptions used by respondents. For companies that provided assumptions varying by age, level term period, or risk class, the assumption displayed is for the same pricing cell described in the "Lapse Assumptions" section. The values displayed are by duration across all companies, such that a different company's assumption may be represented as the minimum, 20th percentile, etc., in different durations.

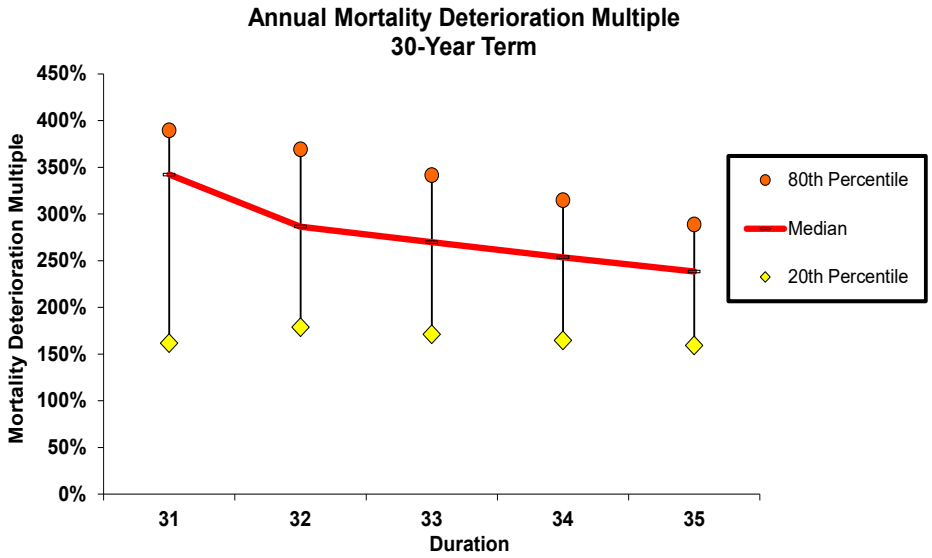
10-Year Term (n=14)	Annual Mortality Deterioration Multiple Assumption by Duration				
	11	12	13	14	15
Minimum	100%	110%	110%	110%	110%
20th Percentile	119%	148%	143%	139%	136%
Median	154%	177%	173%	168%	162%
80th Percentile	218%	258%	241%	229%	218%
Maximum	581%	490%	450%	422%	401%



20-Year Term (n=14)	Annual Mortality Deterioration Multiple Assumption by Duration				
	21	22	23	24	25
Minimum	100%	110%	110%	110%	110%
20th Percentile	132%	165%	158%	150%	144%
Median	193%	234%	218%	205%	194%
80th Percentile	295%	372%	345%	318%	292%
Maximum	433%	437%	400%	406%	408%

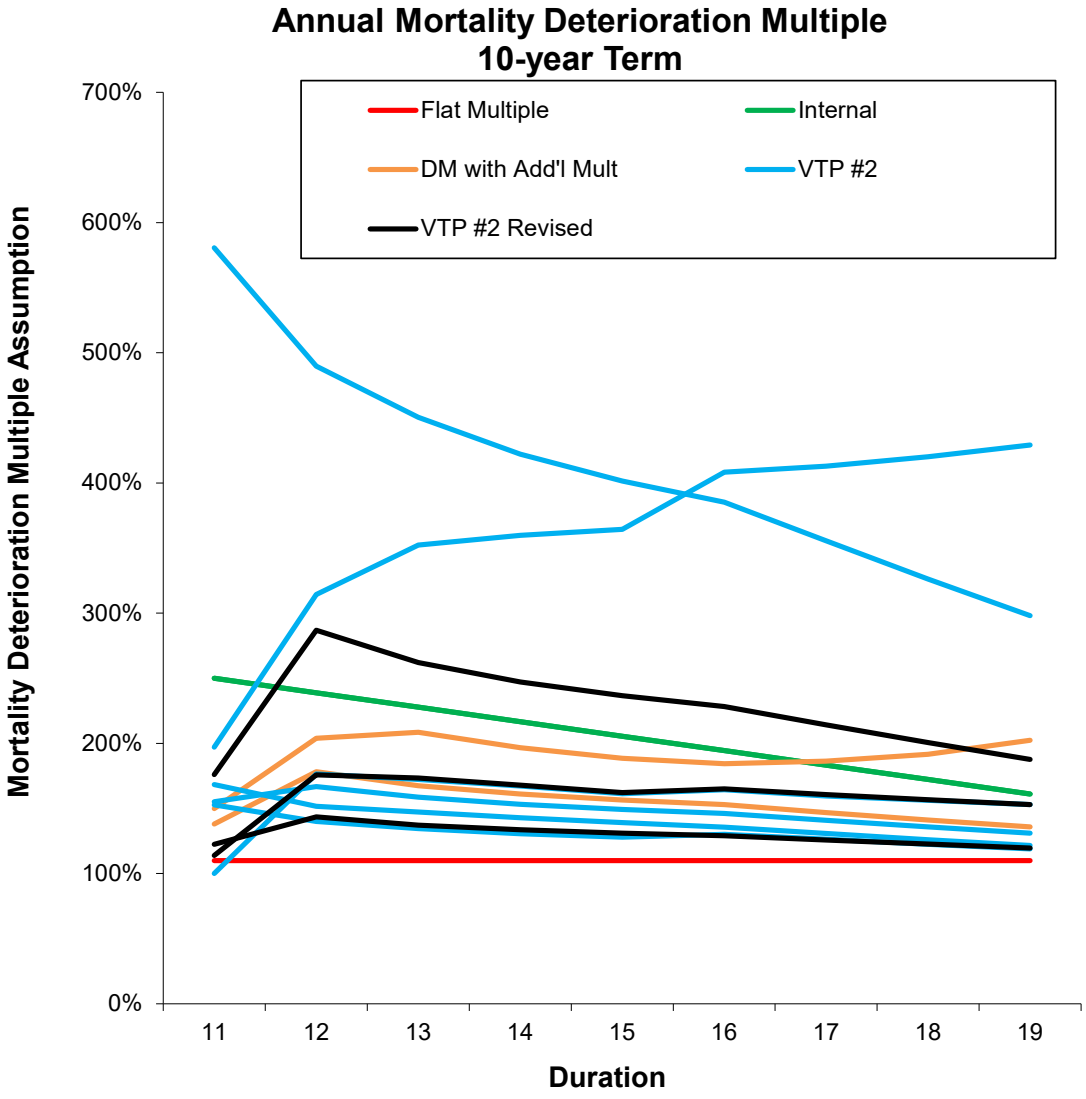


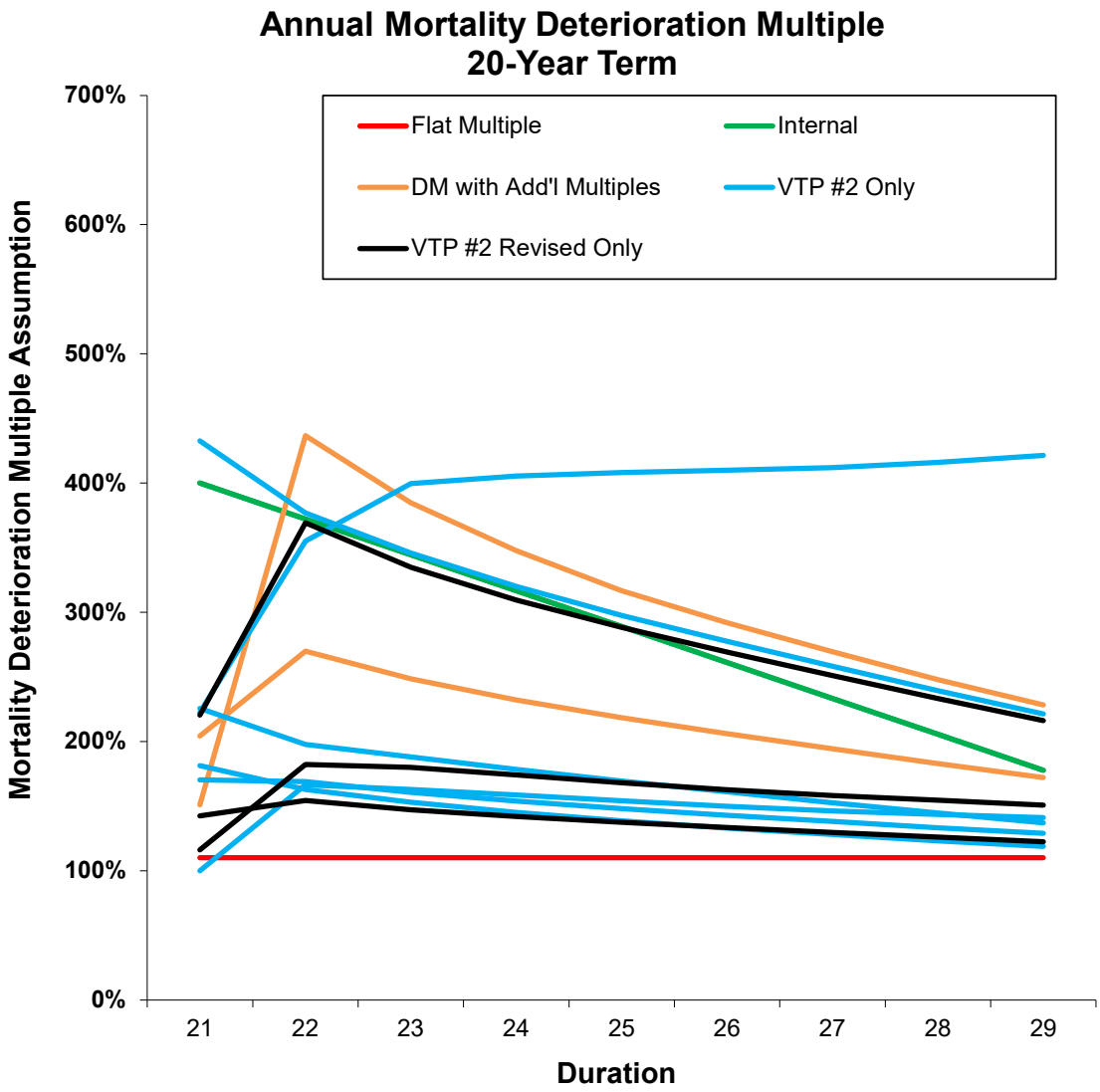
30-Year Term (n=10)	Annual Mortality Deterioration Multiple Assumption by Duration				
	31	32	33	34	35
Minimum	100%	110%	110%	110%	110%
20th Percentile	162%	179%	171%	165%	159%
Median	342%	286%	270%	254%	238%
80th Percentile	389%	369%	341%	315%	289%
Maximum	400%	372%	344%	317%	289%



7.6 Specific Mortality Deterioration Assumptions by Calculation Method (10- and 20-Year Term – All Responses)

The companies primarily used a version of CIA VTP#2 or Dukes–MacDonald to calculate the anti-selection factors. The graph below separates the assumptions from above by the various methods.

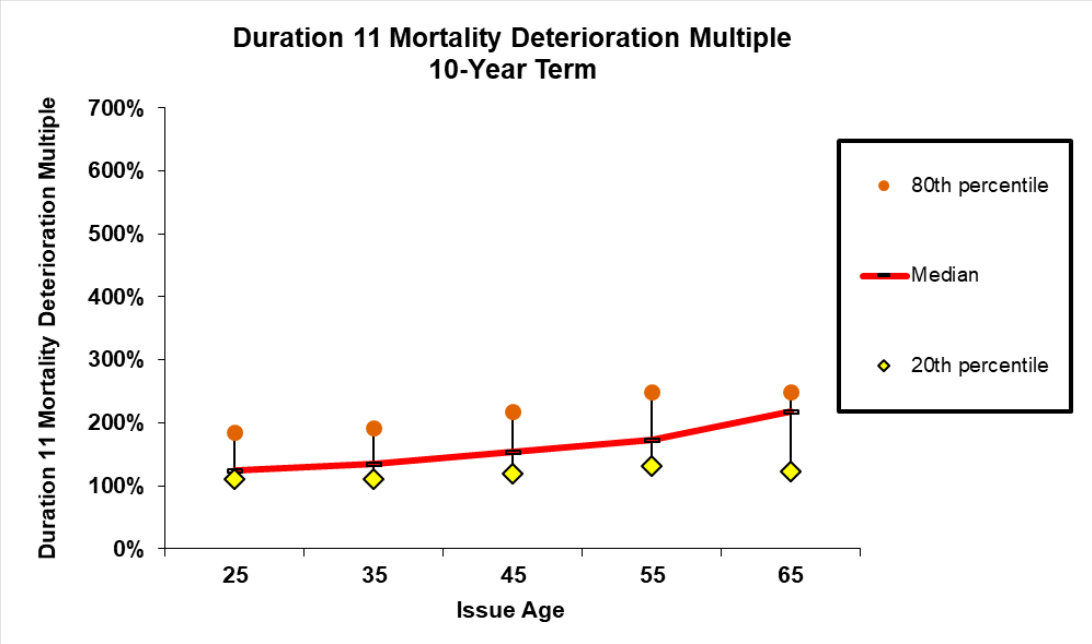


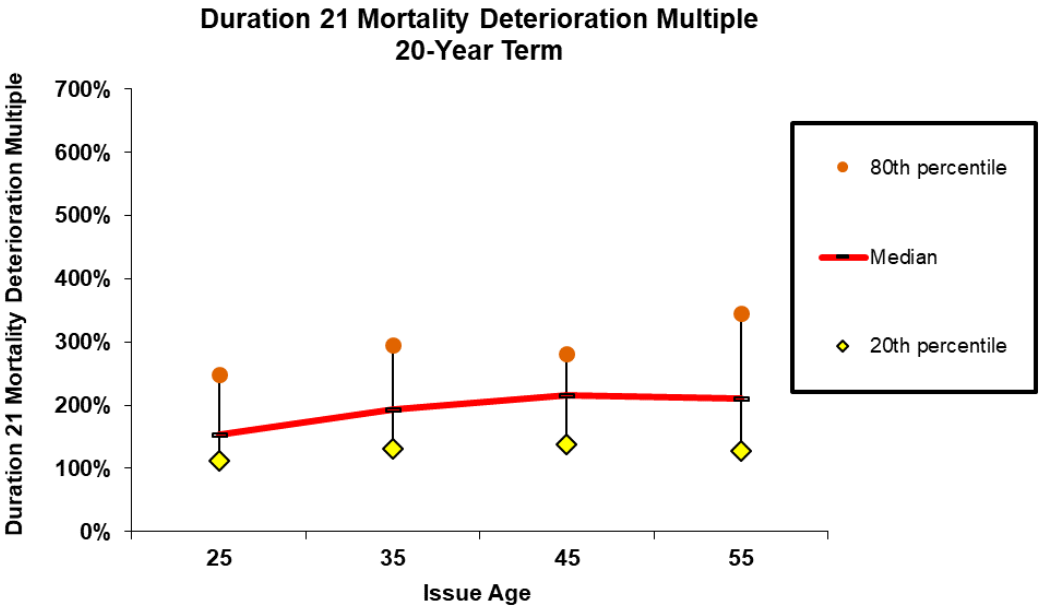


7.7 Specific Mortality Deterioration Assumptions (Variations by Issue Age)

Some companies provided mortality deterioration assumptions that varied by issue age within a given product type. In general, these companies provided slightly increasing multiples for issue ages 25, 35, 45, 55 and 65. The following table and graphs show the distributions of duration L+1 mortality deterioration multiple assumptions by issue age used for 10- and 20-year term products.

	Mortality Deterioration Assumption by Issue Age								
	10-Year Term Duration 11					20-Year Term Duration 21			
	25	35	45	55	65	25	35	45	55
Minimum	100%	100%	100%	100%	100%	100%	100%	100%	100%
20th Percentile	110%	111%	119%	131%	123%	112%	132%	137%	127%
Median	124%	135%	154%	173%	218%	153%	193%	216%	211%
80th Percentile	186%	191%	218%	250%	250%	249%	295%	281%	345%
Maximum	250%	303%	581%	611%	640%	400%	433%	400%	400%





7.8 Term Conversions

Respondents were asked whether they use different anti-selective mortality deterioration assumptions for term policies that convert to a permanent plan instead of persisting in the term policy. Of the 15 companies, seven responded that they use different anti-selective mortality deterioration for conversions than for term policies that persist. Of these seven respondents,

- One used a flat multiple for conversions
- One used a flat additional for conversions
- Two indicated that no anti-selection was assumed for conversions
- Three others indicated that their assumptions were different for conversions

Section 8: Other Assumptions and Practices

8.1 Use and Development of Assumptions

Companies were asked to indicate applications where they utilize assumptions for projecting beyond the level premium period.

Situations Utilizing Assumptions beyond the Level Premium Period		
Application	Products Sold at Year-End 2017	Inforce Business No Longer Sold
Pricing	15	9
Cash Flow Testing	13	11
Embedded Values	9	6
Illustrations	13	11
Reserves	15	15
Income Projections	13	12
Economic Capital	1	1

Companies were asked for their primary sources of information for developing lapse and mortality assumptions for pricing beyond the level period.

Source of Assumptions		
Source	Shock Lapse	Post-Level Mortality
Internal Experience	14	9
External Consultants	0	2
Reinsurers	5	5
CIA/SOA Research Study	12	14
Other Industry Studies	3	3

Companies were also asked when the last significant revision to post-level mortality and lapse assumptions for pricing took place.

Last Revision to Assumptions		
Time Period	Shock Lapse	Post-Level Mortality
Within Past 12 Months	5	5
Within Past 2 Years	2	3
Within Past 3 Years	1	2
3–5 Years Ago	4	1
More Than 5 Years Ago	4	5

8.2 Conservation Programs

Respondents were asked whether they had an organized effort in place to promote persistency at the end of the level premium period. The responses can be broadly grouped as follows. Companies can have more than one response.

Conservation Programs	
Description	Responses
No	4
Yes, Policyholder Communication Near End of Term	9
Yes, Conversion or Exchange Encouraged with Agent or Policyholder Incentives	3
Yes, Conversion or Exchange Encouraged without Additional Incentives	4
Yes, Other	0

8.3 Conversion Options

Respondents were asked to describe the conversion options available to term policyholders. A wide variety of restrictions were disclosed, including limits on the number of years that conversion was available, the maximum attained age that conversion was allowed, and the types of products into which a policyholder may convert. All of the responding companies indicated that they allow for conversion into a permanent product. Additionally, every company places restrictions on the maximum attained age that the conversion can take place. These ages vary from 65 to 75 years old.

Seven companies also noted that they allowed conversions into a new, longer level premium term product within the first five years of issue. This should not be taken to imply that the others do not offer conversions into a different term product, just that only seven companies mentioned this in their response. Some companies may consider this a plan exchange rather than a conversion option.

The following responses reflect the type of permanent plan into which term policyholders may convert:

Conversion Product Options	
Conversion Option	Respondents
Any Available Permanent Plan	8
Term to 100	3
Universal Life	4
Whole Life	4

Section 9: Special Thanks

The authors would like to extend a thank you to all participating companies for making this project a success. Without your support, such research projects would not be possible.

The authors would also like to thank the CIA and SOA, along with the following members of the Project Oversight Group and staff, for their guidance and support on this research project. Their comments, feedback and direction have greatly improved the value of this project.

Project Oversight Group
Vera Ljucovic [Chair]
Maude Bergeron
Marie-Josée Blanchet
Donna Mann-Campbell
Nicolas Genois
Isabelle Lachance
John Pfeffer
Louis-Philippe Pouliot
Graham Sutton

CIA/SOA Staff
Shlomit Jacobson
Mervyn Kopinsky
Erika Schulty

Appendix A: Survey Participants

Assumption Mutual
Desjardins
Foresters Financial
Industrial Alliance
ivari
La Capitale
Manulife
RBC Insurance
SSQ Assurance
Sun Life
TD Life
The Co-operators
UV Mutuelle
Wawanesa Life
Western Life

Appendix B: Survey Questions

Please answer as many of the following questions as possible with the answer that best fits your level term products sold at YE (year end) 2017. If you do not know the answer, please respond "Unknown".

For purposes of this survey, "Level Premium Term" or "Level Term" is term insurance with level premiums for 10, 15, 20, 25 or 30 years for example, followed by an increase in the premium rate per $1000 beyond the initial level period. The length of the level period refers to the number of years premiums are anticipated to remain level (i.e. not the guarantee period). Term Universal Life (UL) should be included, and flagged separately, as if it were level term insurance with a corresponding level period.

Contact Information

Your Name:	
Title:	
Phone:	
Email:	

Company and Product Background Information

1. Company Name

2. Sales Volume

How much level term business (by face amount) did your company sell in 2017?

Product Level Premium Period	2017 Sold by Face amount
10 Year Term 15 Year Term 20 Year Term 25-30 Year Term Other	
Total	-

If other, describe

3. Distribution Channels

Please provide entries to the following table for each distribution channel through which your company sells material amounts of level premium term.

Channel	% of 2017 Level Term Face Amt. Sales
Independent Agent	
Managing General Agent	
Captive Agent	
Banks	
Internet	
Direct Response	
Other	

If other, describe

4.Reinsurance

Please select the types of reinsurance used on your term products at YE 2017. (Place an X for all that apply.)

First Dollar Quota Share Coinsurance	-
First Dollar Quota Share YRT*	-
Excess of Retention YRT*	-
Other	-

*Yearly Renewable Term

If other, describe

5. Conservation Programs

Does your company have an organized effort to promote persistency at the end of the level period? (Place an X for all that apply.)

Yes, policyholder communication near end of term	-
Yes, renewal, conversion or exchange encouraged with agent or policyholder incentives	-
Yes, renewal, conversion or exchange encouraged without additional incentives	-
Yes, other	-
No	-

If yes, describe

6. Product Structure

a) What is the general product structure after the level period? (Place an X for all that apply.)

Jump to new level period	-
Premium jump to ART*	-
Premium grade to ART*	-
Face Amount Decrease	-
Other (describe)	-
Unknown	-
NA	-

* Annual Renewable Term

Please provide any additional description as necessary. Example may be “Term 10 jumps to new level period every 10 years.”

b) Please describe any changes to the post-level period premium structure for new business term products in the past 5 years. Examples may be "Changed structure to grade into Annual Renewable Term scale over 3 years" or "Changed structure to reduce face amount to keep premiums level".

c) Has your company considered or implemented changes in the past 5 years to inforce post-level rates in an attempt to optimize lapse rates and anti-selective mortality?

Implemented (describe below)	-
Considering (describe below)	-
Not considering	-

If Implemented or considering, please add description.
Example may be "Reduced post-level rates by 20% for issue years 1999 and later".

d) Please describe the conversion options available on your level premium term policies including the length of the conversion period (or maximum age) and the types of plans that a policyholder may convert into.
Example may be "Conversion available up to age 85 into any existing UL plan" or "Exchange for a longer term available in the first 5 years".

e) By what parameters do your current premium rates vary? (Place an X for all that apply.)

	Level Premium Period	Beyond Level Period
Gender	-	-
Policy		-
Duration		-
Attained Age	-	-
Smoking status	-	-
Preferred risk class	-	-
Substandard Rating	-	-
Face Amount Issued	-	-
Others (please enter)		

If others (apart from issue age and level period), describe

7. Premium Modes and Automatic Withdrawal

Please describe changes, if any, made at the end of the level period to premium modes or automatic withdrawal authorizations for inforce policies.
Example may be "Policies are removed from automatic withdrawal prior to the first post-level premium".

8. Premiums

Please provide the premium rates per $1000 for your most popular level term products sold at year end 2017 for a $500,001 policy.

			Level Period	Anticipated (Current) Post-Level Rates				Guaranteed Post-Level Period Rates			
Level Period (L)	Risk Class	Issue Age	1 through L	L+1	L+2	L+3	2L+1*	L+1	L+2	L+3	2L+1*
10	Male Best Preferred Non-Smoker Class	25 35 45 55									
	Female Best Preferred Non-Smoker Class	25 35 45 55									
10	Male Residual Standard (Non-Preferred) Non-Smoker Class	25 35 45 55									
	Female Residual Standard (Non-Preferred) Non-Smoker Class	25 35 45 55									
20	Male Best Preferred Non-Smoker Class	25 35 45 55									
	Female Best Preferred Non-Smoker Class	25 35 45 55									
20	Male Residual Standard (Non-Preferred) Non-Smoker Class	25 35 45 55									
	Female Residual Standard (Non-Preferred) Non-Smoker Class	25 35 45 55									

*2L+1 is duration 21 for a 10 year term plan (i.e. the premium rate in the third level period in a 10+10+10 structure)

2018 CIA/SOA Post Level Premium

"Shock Lapse" Pricing Assumption Survey

Please answer as many of the following questions as possible with the answer that best fits your level term products sold at YE (year end) 2017. If you do not know the answer, please respond "Unknown".

For purposes of this survey, "Level Premium Term" or "Level Term" is term insurance with level premiums for 10, 15, 20, 25 or 30 years for example, followed by an increase in the premium rate per $1000 beyond the initial level period. The length of the level period refers to the number of years premiums are anticipated to remain level (i.e. not the guarantee period). Term Universal Life (UL) should be included, and flagged separately, as if it were level term insurance with a corresponding level period.

General Assumptions

1. Source for Assumptions

a) What are your primary sources of lapse and mortality assumptions for pricing beyond the level period? (Place an X in all that apply.)

	Shock Lapse	Post-Level Mort
Internal experience		
External consultants		
Reinsurers		
CIA/SOA Research Study		
Other Industry Studies		
Other (describe)		

If other, describe

b) When was the last significant revision to the lapse and mortality assumptions for pricing beyond the level period?

	Shock Lapse	Post-Level Mort
within the past 12 months		
within the past 2 years		
within the past 3 years		
3-5 years ago		
more than 5 years ago		

Provide additional commentary as needed

2. Pricing Horizon

Does your company's pricing or modeling horizon extend beyond the level premium period?

If your answer to the question above is "yes", please indicate in the following table where assumptions for periods beyond the level premium period are used by entering "Yes" or "No". Enter "Unknown" if you do not know and enter "NA" if the application is not applicable (e.g., if your company does not calculate embedded values, enter "NA" for those entries.)

Application	Product sold at Year End 2017	Inforce Business No Longer Sold
Pricing		
Cash Flow Testing		
Embedded Values		
Illustrations		
Reserves		
Income Projections		
Other (Describe)		

If other, describe

3. Grace Period

What is your company's standard grace period in number of days? Does it vary by product or pricing era?

2018 CIA/SOA Post Level Premium

"Shock Lapse" Pricing Assumption Survey

Please answer as many of the following questions as possible with the answer that best fits your level term products sold at YE (year end) 2017. If you do not know the answer, please respond "Unknown".

For purposes of this survey, "Level Premium Term" or "Level Term" is term insurance with level premiums for 10, 15, 20, 25 or 30 years for example, followed by an increase in the premium rate per $1000 beyond the initial level period. The length of the level period refers to the number of years premiums are anticipated to remain level (i.e. not the guarantee period). Term Universal Life (UL) should be included, and flagged separately, as if it were level term insurance with a corresponding level period.

Pricing Mortality Anti-Selection Multiples after the Level Premium Period for Currently Sold Products

1. Do you assume mortality anti-selection after the level premium period?

2. a) If the response to 1. was "Yes", what methodology is used to determine the level of anti-selection? (select all that apply)

Method	Used?
Becker–Kitsos	
Dukes–MacDonald	
Canadian Institute of Actuaries VTP #2 (original)	
CIA 2017 Educational Note (VTP #2 revised)	
Flat Multiple	
Other	

If other, describe

b) If the response to 2a. was a formula-based approach, please define the method and parameters used to calculate the level of anti-selection. Example may be "75% of lapses in excess of 5% are newly select".

3. Term conversions
If the response to 1. was “Yes”, do you assume different anti-selection multiples for policies that convert to a permanent plan at the end of the level period than for policies that persist in the term plan?

If yes, describe

4. Anti-Selection Multiples

The table below assumes that multiples do not vary materially by gender, underwriting class or other factors. If multiples do vary and the differences are material, please provide additional tables with labels indicating the underwriting class or relevant factor. Multiples should be 1.0 if there is no anti-selection.

Level Premium Period (L)	Issue Age	Mortality Anti-Selection Multiples in the Post-Level Premium Period								
		L+1	L+2	L+3	L+4	L+5	L+6	L+7	L+8	L+9
10 Years	25									
	35									
	45									
	55									
	65									
15 Years	25									
	35									
	45									
	55									
	65									
20 Years	25									
	35									
	45									
	55									
30 Years	25									
	35									
	45									
	55									

2018 CIA/SOA Post Level Premium

"Shock Lapse" Pricing Assumption Survey

Please answer as many of the following questions as possible with the answer that best fits your level term products sold at YE (year end) 2017. If you do not know the answer, please respond "Unknown".

For purposes of this survey, "Level Premium Term" or "Level Term" is term insurance with level premiums for 10, 15, 20, 25 or 30 years for example, followed by an increase in the premium rate per $1000 beyond the initial level period. The length of the level period refers to the number of years premiums are anticipated to remain level (i.e. not the guarantee period). Term Universal Life (UL) should be included, and flagged separately, as if it were level term insurance with a corresponding level period.

Total Lapse Rate Pricing Assumptions for Currently Sold Products

Total lapse rates are intended to include voluntary withdrawals and conversions to other products. If you have separate assumptions for lapses and conversions, please provide them separately.

This sheet requests your total lapse rate pricing assumptions for products sold at YE 2017 for policy years where high shock lapses would be expected—generally at the end of the last year (L) of the level premium period and in the first few years (L+1, L+2, etc.) after the level premium period.

1. Verbal description of the way shock lapse rate assumptions are determined.
   If possible, please describe how total lapse rate assumptions are set.

   An example might be:

   Total lapses vary only by the number of years since the end of the level premium period (L=length of the level premium period) and the ratio (R) of the first renewal premium to the initial level premium (R = GP([x]+L)/GP([x])).

Description:

2. Monthly Skewness Factors
Describe or provide your assumptions for monthly skewed lapse rates within policy years.
An example might be: Lapses are assumed to occur on premium modes during the level period and 50% heaped to the beginning of the renewal year.

During the initial level premium period (durations 1 through L-1)

Last duration of the initial level premium period (duration L for L-year term)

Between renewals (durations L+1 through 2L-1)

3. Total Lapse Rate Assumptions

Please provide your total lapse assumptions for products sold at YE 2017 for each primary factor by which your assumptions vary (premium jump ratio, risk class, premium mode, gender, etc.)
Create as many copies of the table as necessary to fully describe your lapse rate assumptions. Please include conversion to other plans in the total assumed lapse rate or provide separate assumptions for conversions.

Product: _____Total Lapse Rates

Primary Factor	Level Premium Period (L)	Issue Age	Total Assumed Lapse Rate for Policy Year					
			L	L+1	L+2	L+3	L+4	2L*
	10 Year	25 35 45 55 65						
	15 Year	25 35 45 55 65						
	20 Year	25 35 45 55						
	30 Year	25 35 45 55						

Product: _____Total Lapse Rates

Primary Factor	Level Premium Period (L)	Issue Age	Total Assumed Lapse Rate for Policy Year					
			L	L+1	L+2	L+3	L+4	2L*
	10 Year	25 35 45 55 65						
	15 Year	25 35 45 55 65						
	20 Year	25 35 45 55						
	30 Year	25 35 45 55						

Appendix C: Comparison of Canadian 2019 Study to US 2014 SOA Study

For comparison purposes, this appendix will have many of the tables and graphs that are in the main report, but with USA data from the 2014 SOA study either combined with or next to the Canadian data.

There are a number of things that should be kept in mind when looking at this data. The USA survey was done in 2013 for business at the end of 2012, five years before the Canadian survey. Also, there were 41 companies that responded to the USA survey compared to 15 in Canada. The 41 companies in the USA survey provided data based on the Best underwriting class for their products, while all 15 Canadian companies provided data on their Standard or Residual class and only 11 provided data on their Best class. Because of this, most of the comparisons are between the USA Best class and the Canadian Residual class. There are some that do compare Best to Best.

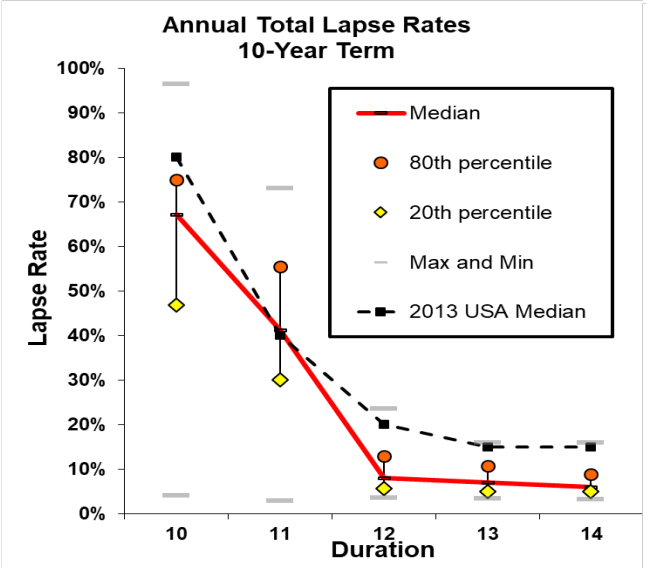
For 10-year term, the assumptions used are for a policy issued to a 45-year-old male with a face amount of $500,001. Unless noted, the underwriting class is the Residual class for Canadian companies and Best for USA. USA actuals are for all of the issue ages and all of the risk classes. The 20-year term assumptions are the same as the 10-year term except the issue age is 35.

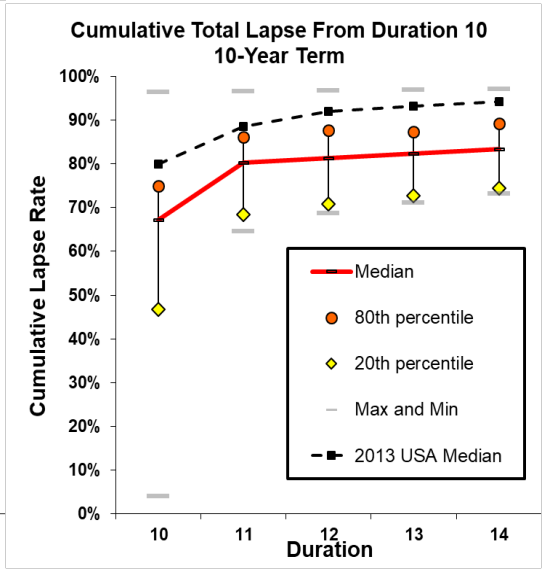
As shown earlier, most companies in Canada have renewal premiums that jump to a new level period. In the USA, however, the vast majority of companies have renewal premiums that jump to an ART premium scale. The following table demonstrates this. There is no distinction between the ART or level renewal premiums for any of the tables or graphs.

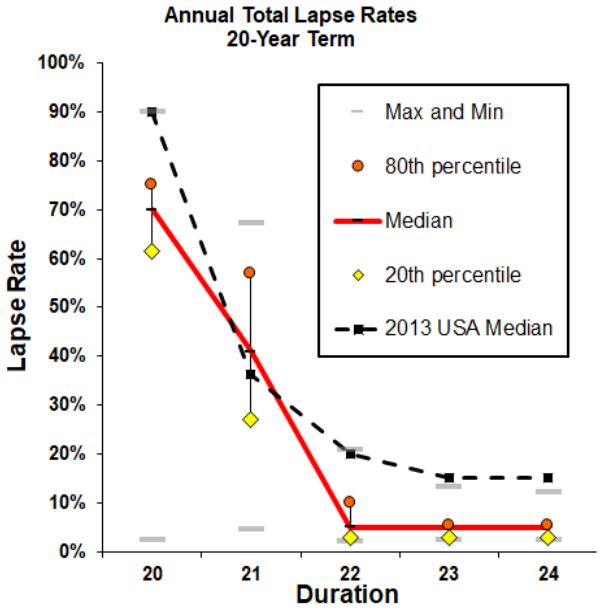
Post-Level Product Design		
	Responses (Company can have multiple)	
Product Structure	**Canada**	**USA**
Jump to New Level Period	14	3
Premium Jump to ART	5	40
Premium Grade to ART	0	4
Face Amount Decreases	0	1
Product Terminates	0	2
Other	0	1

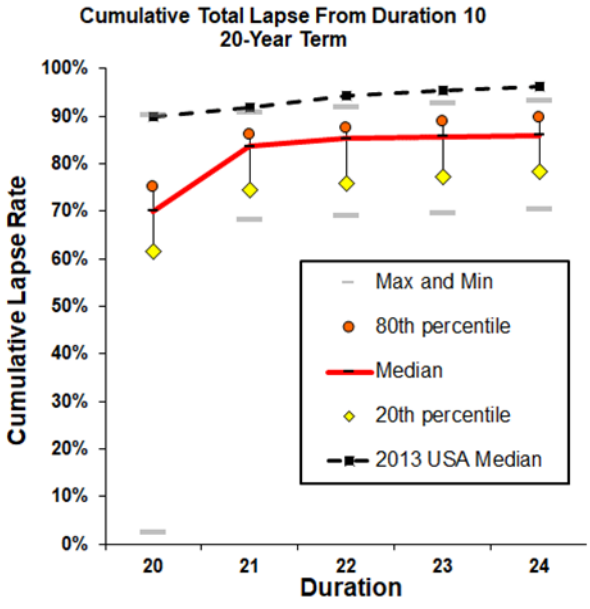
Canadian Assumptions Compared to USA Actuals – Lapses

Canadian lapse assumptions appear to be much lower than those in the USA for both 10- and 20-year term. This is true for the initial shock (left) and the cumulative lapses (right).

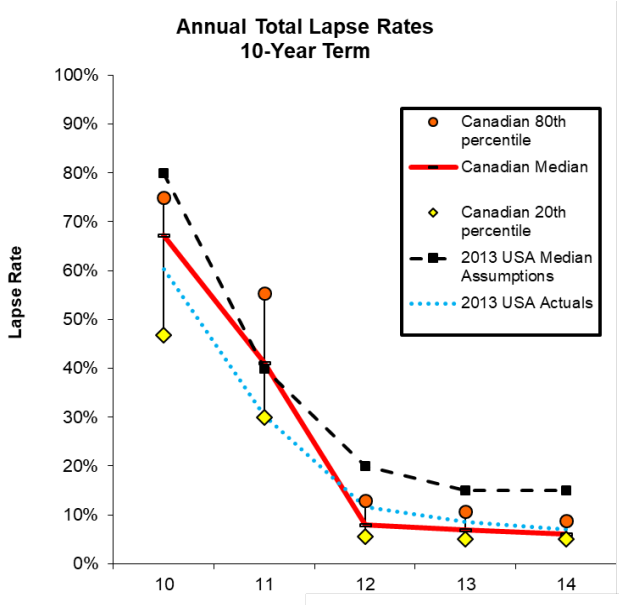


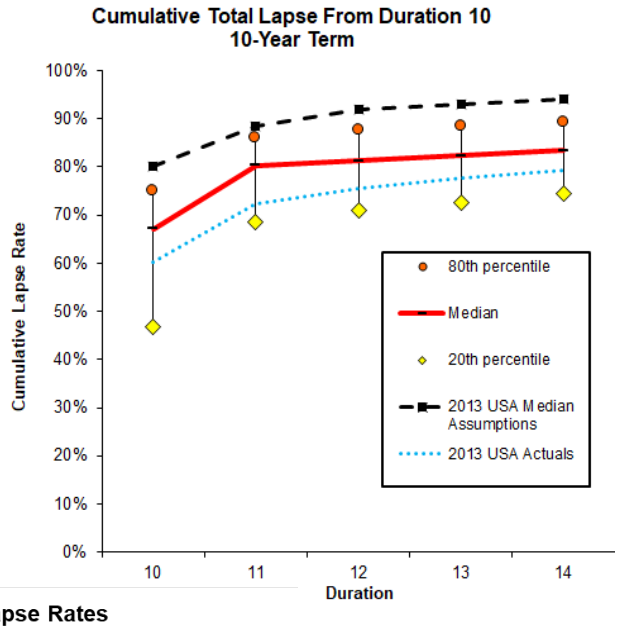


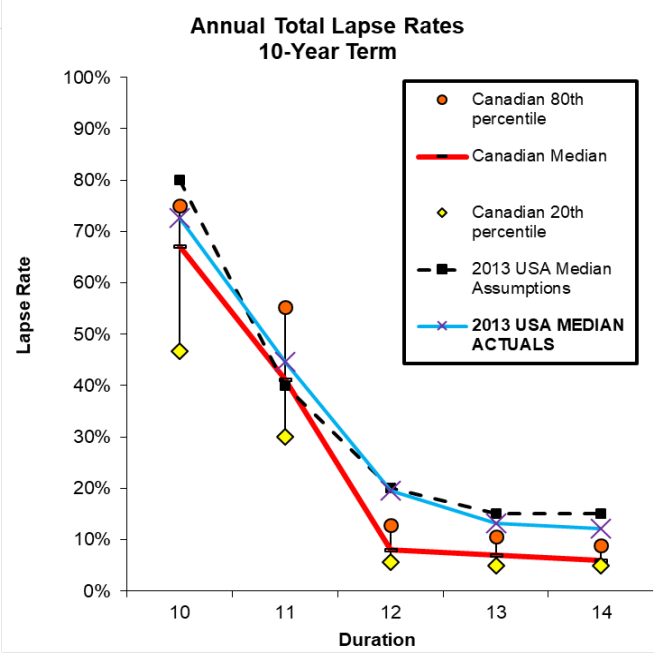




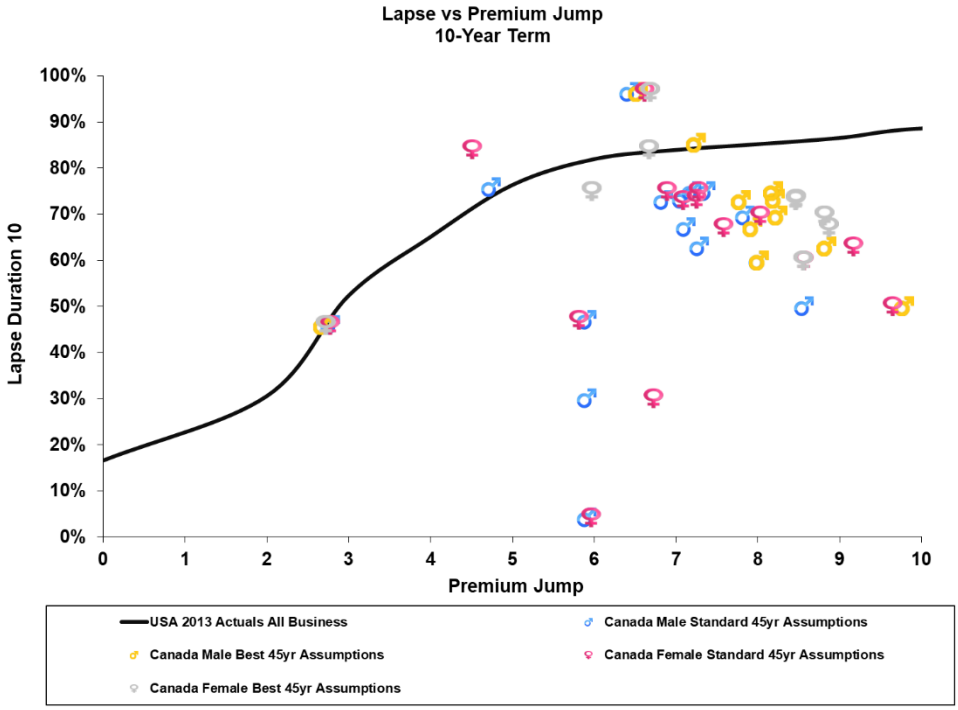
These graphs show how the average lapse rates for the USA actuals fall far below the median USA assumptions and are even below the Canadian assumptions. One thing to keep in mind is that the USA actuals are an average of all of the business (all issue ages and underwriting classes) where the assumptions are based on the median assumptions. Some of the very large companies in the USA have lower-than-average lapse assumptions, which may be pulling the average lapses down. To illustrate this, the median actual lapse rates were placed in the third graph instead of the mean actual lapse rates. Using the median actuals shows that the actual lapses are in line with the median assumptions.

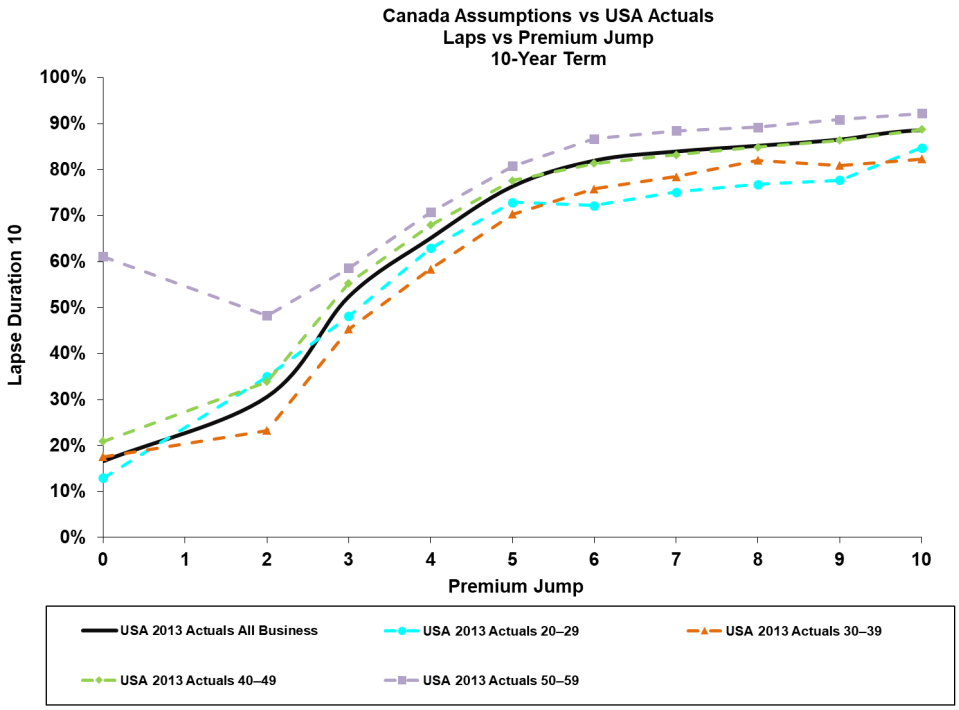






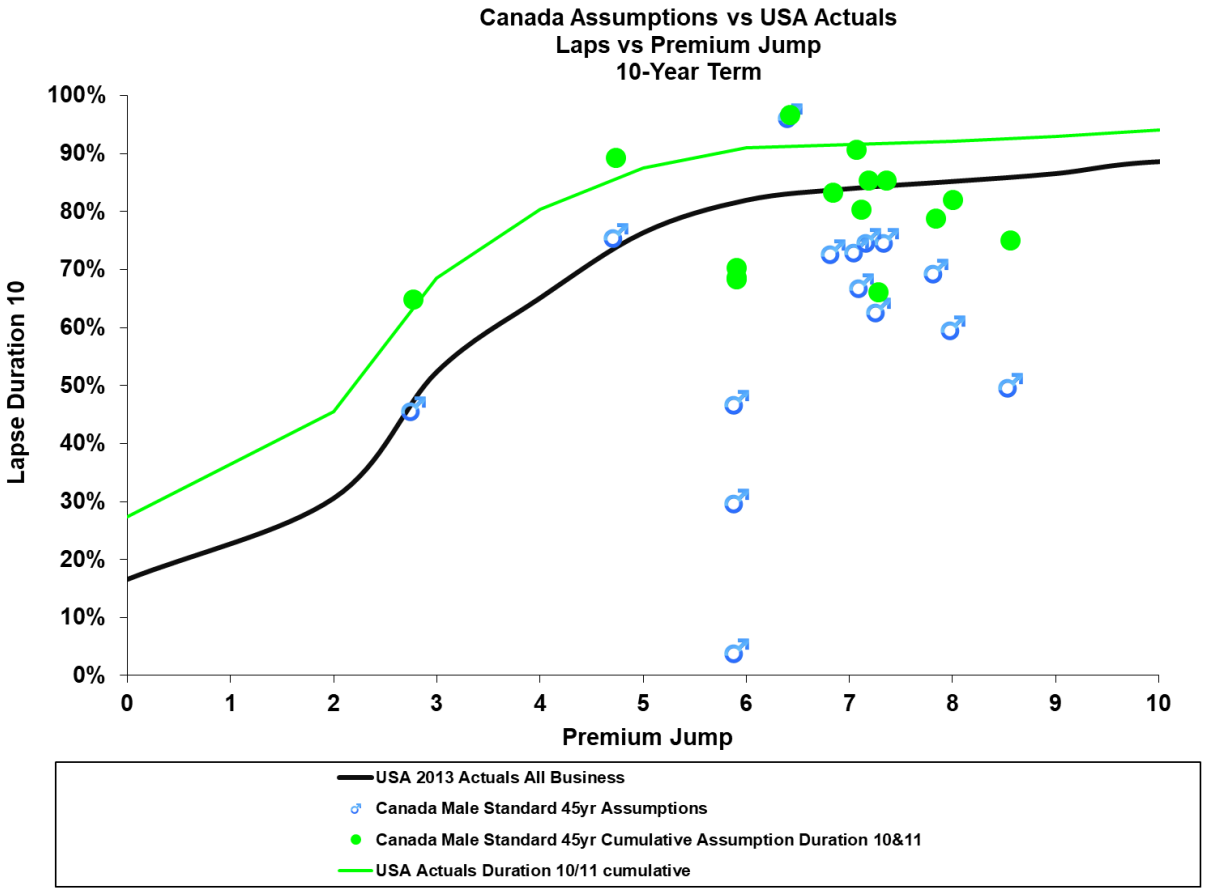
Once again, the Canadian assumptions are based on a 45-year-old at issue with various risk classes. The USA actuals are based on all of the USA business that was in the 2014 study. Because the USA actuals have all of the issue ages, it is not a perfect comparison. To look into this further, the issue ages were grouped in 10-year bands to see how much difference there is between issue ages. It is clear from the second graph below that the overall actual lapse rate is very similar to the issue age 40–49 band.



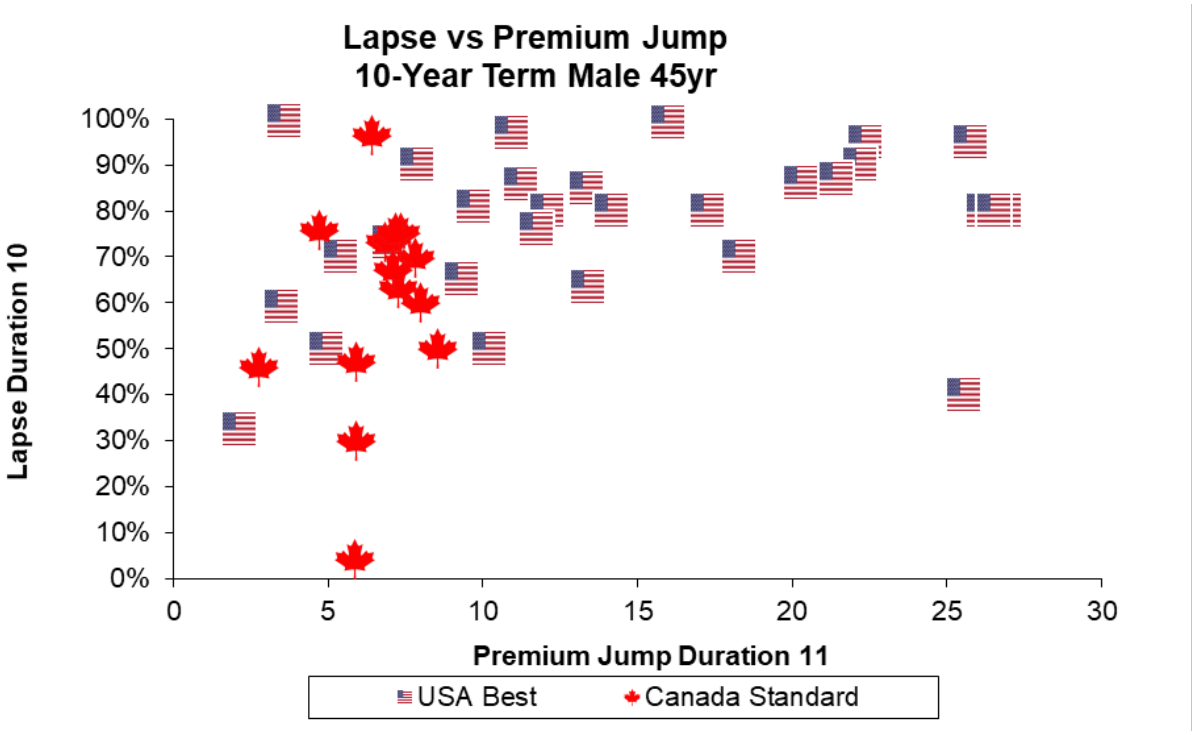


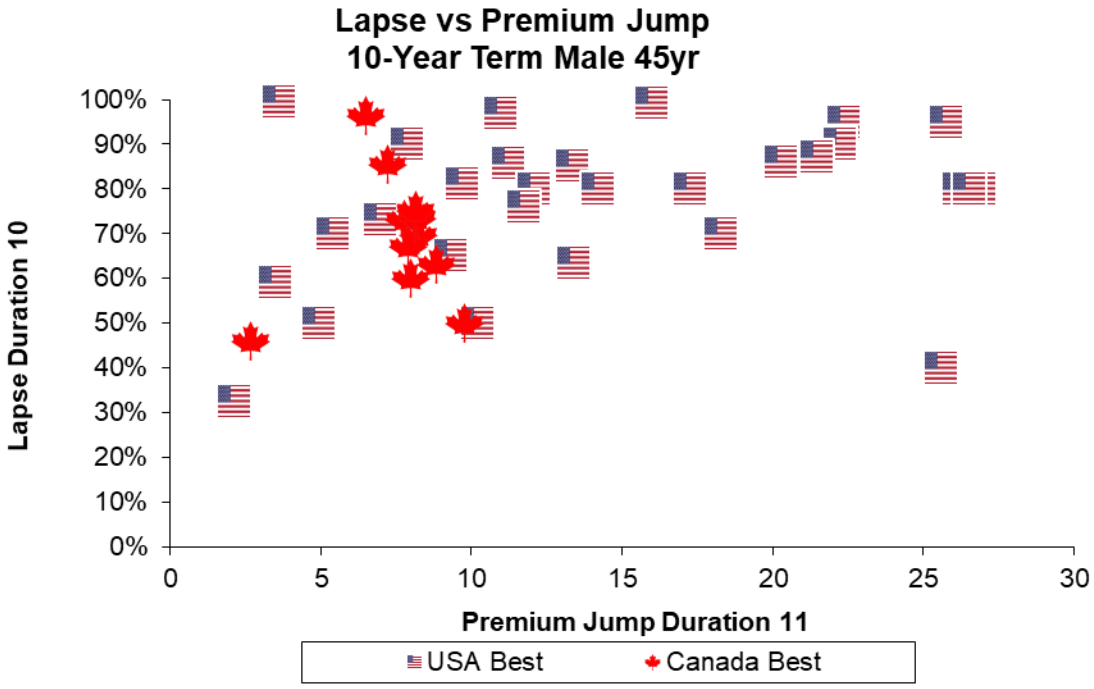
It would appear that most of the Canadian assumptions fall well below the USA actuals. Part of this could be explained by the fact that many companies in Canada have a shock lapse rate in both durations 10 and 11, including one company that only assumes a shock lapse in duration 11. Most of the shock in duration 11 for all of these companies is concentrated in the first few months of the year. These early duration 11 lapses could be those policies that lapse during the grace period. In the graph below the cumulative duration 10 and 11 lapse assumptions and actuals are added.

When calculating actual lapse rates for duration 10, policies that lapsed during the grace period at the beginning of duration 11 were put in the year 10 actuals. It is assumed that if no premium was paid in duration 11, the lapse occurred at the end of duration 10.



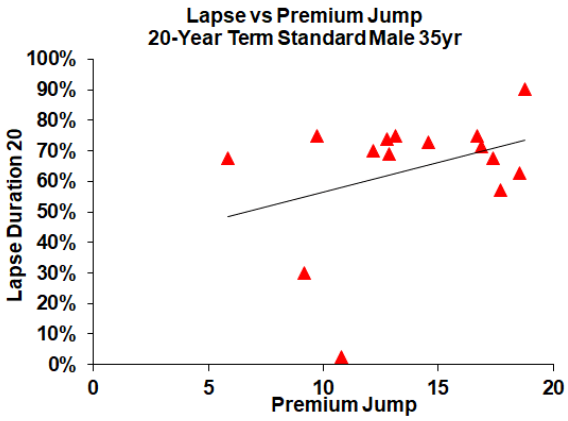
Canadian companies have much smaller premium jumps compared to the USA. In fact, well over half of the USA respondents have premium jumps that are bigger than those of all the Canadian respondents. That said, the shock lapse assumptions relative to similar premium jumps in the two different markets are in line with each other.

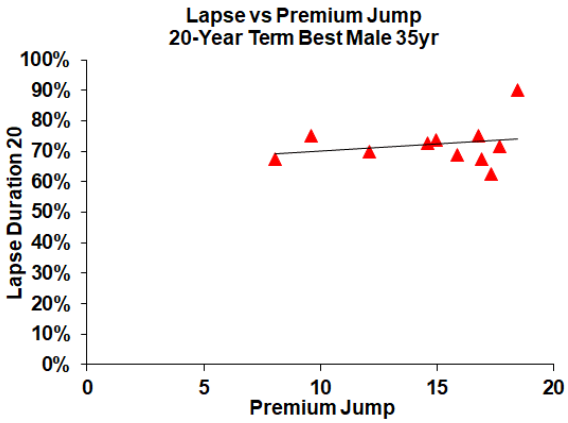




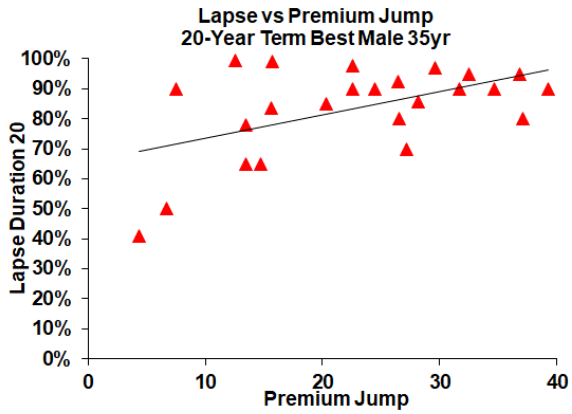
For the 20-year term products, please note that the x-axis range is different between Canada and the USA. Also, the lines drawn in are not meant to represent a linear relationship, but are intended only for visual help.

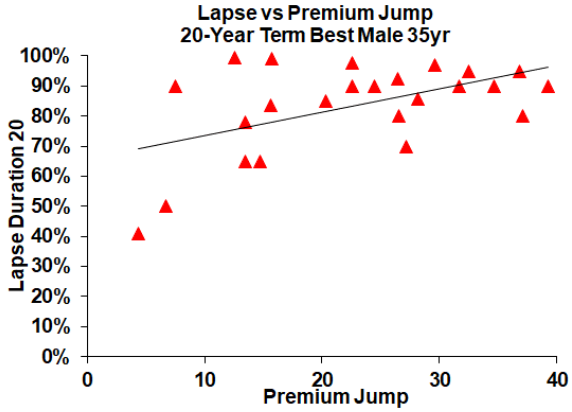
Canada





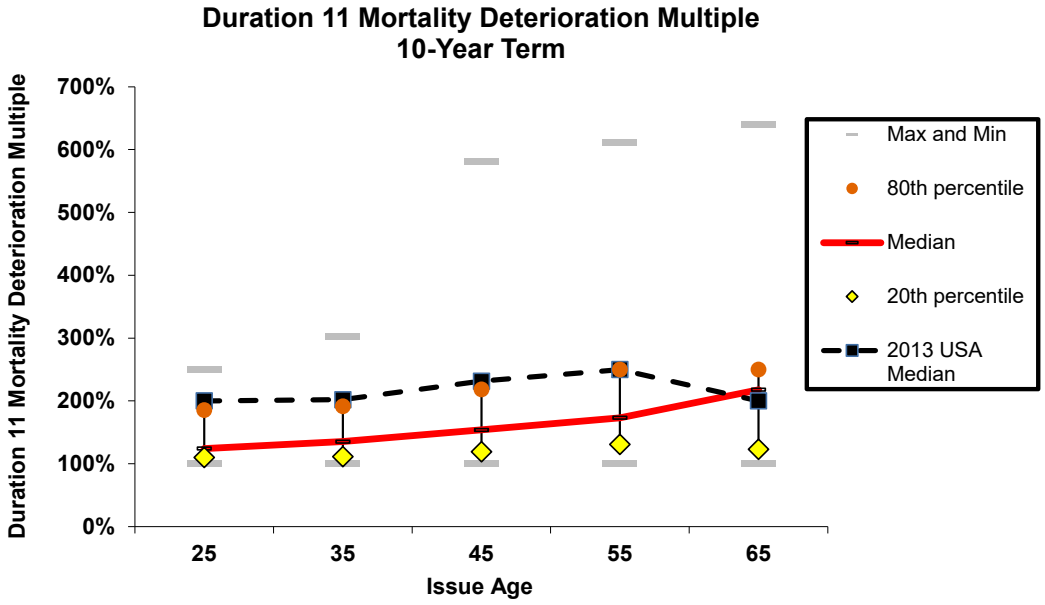
US

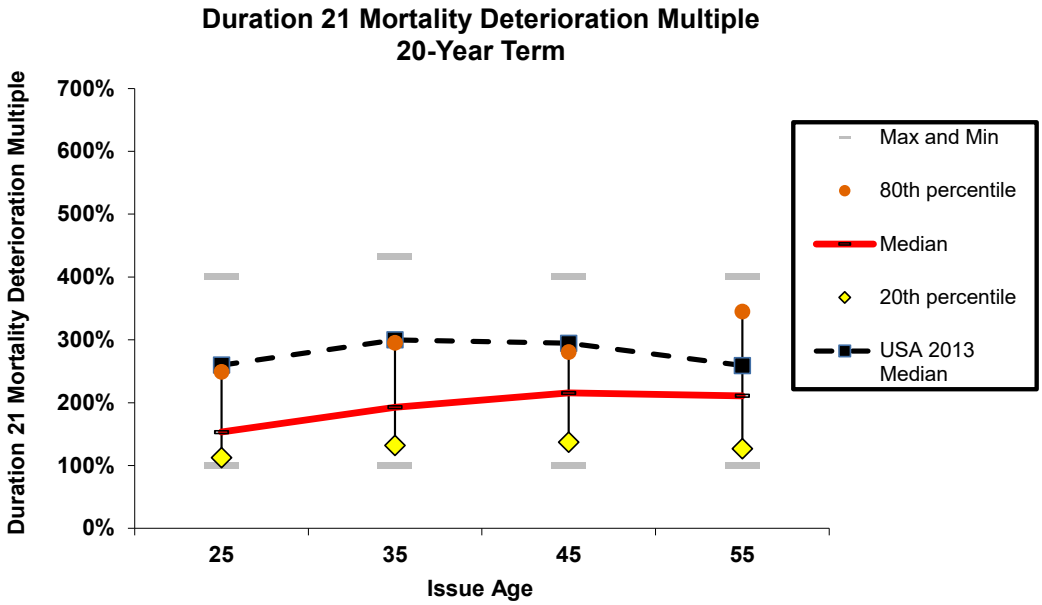




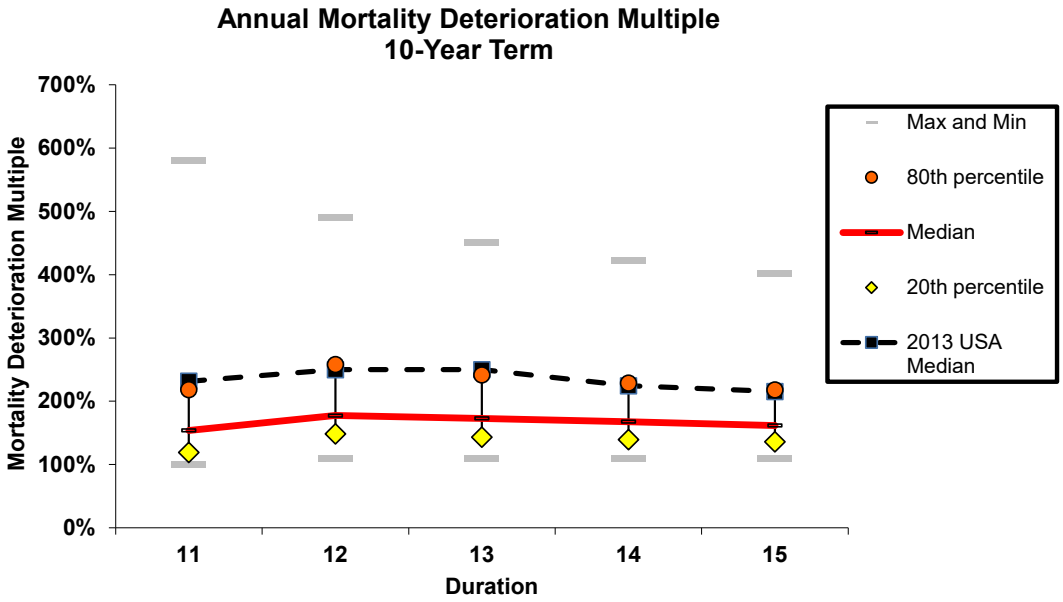
Canadian Assumptions Compared to USA Assumptions – Mortality

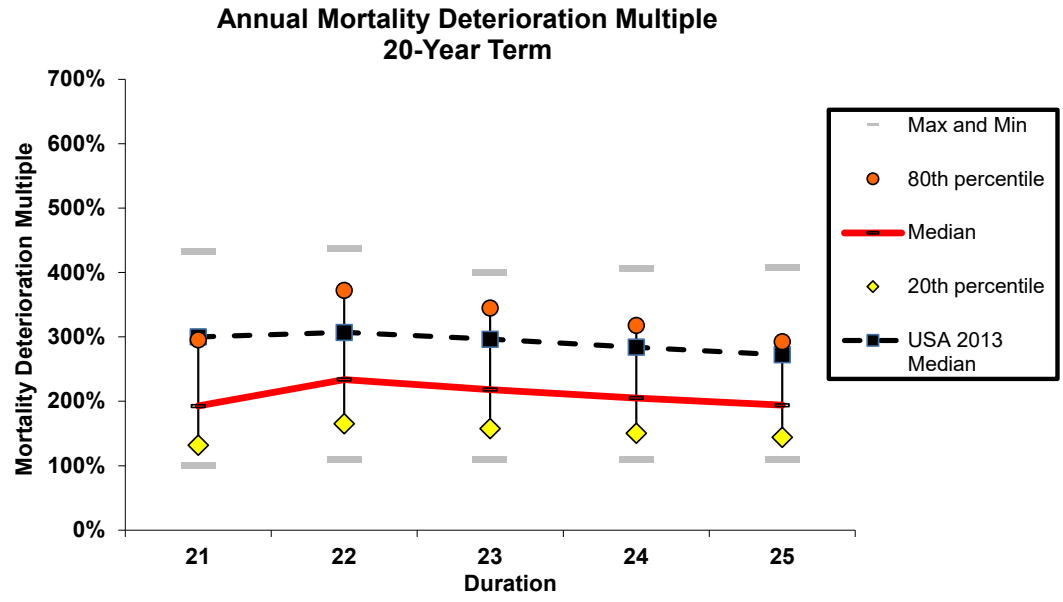
When comparing the mortality deterioration multiples between the USA and Canadian assumptions, Canada tends to have much lower multiples. This makes sense with the lower premium jumps and lower shock lapse assumptions in Canada. The one outlier appears to be the USA Issue Age 65 number that does not fit the pattern of the other ages and it may just be from the mix of companies that sell at age 65 is different.



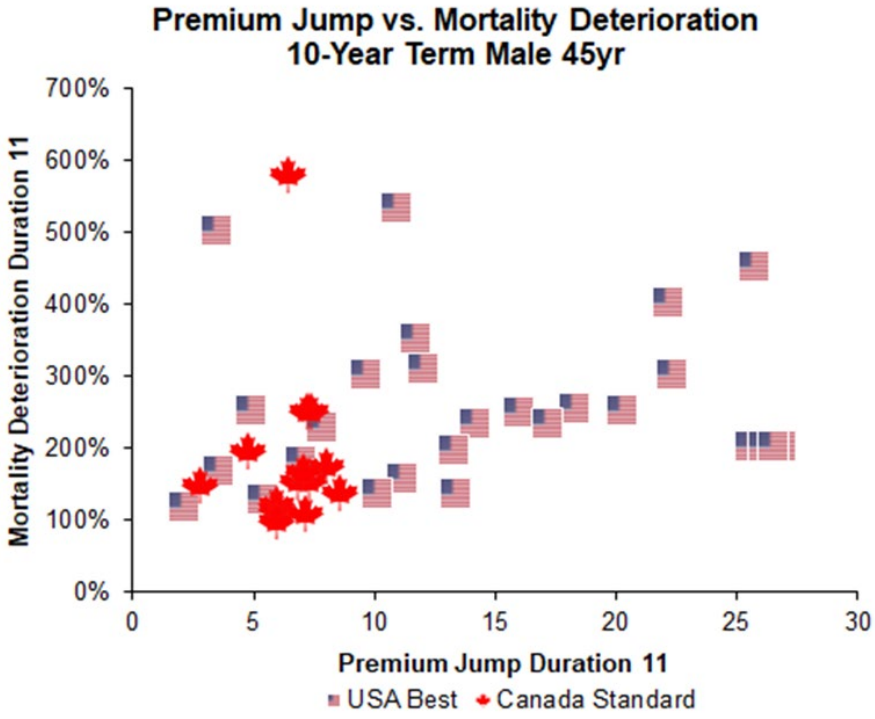


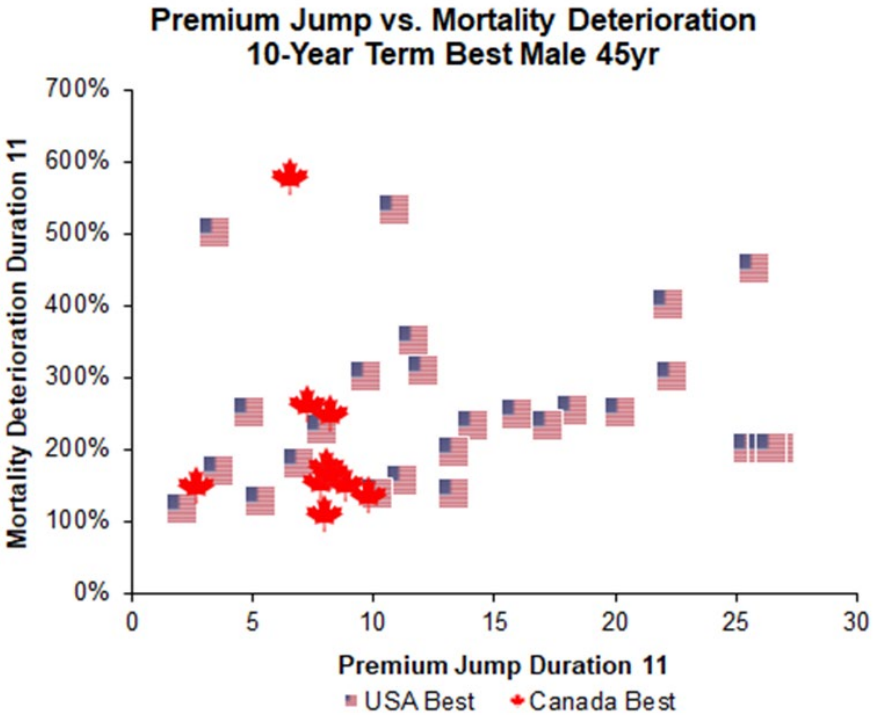
Similar to the Issue Age graphs, the mortality deterioration by duration shows lower Canadian assumptions compared to the USA. Once again this makes sense with the lower premium jumps and lower shock lapse assumptions in Canada.



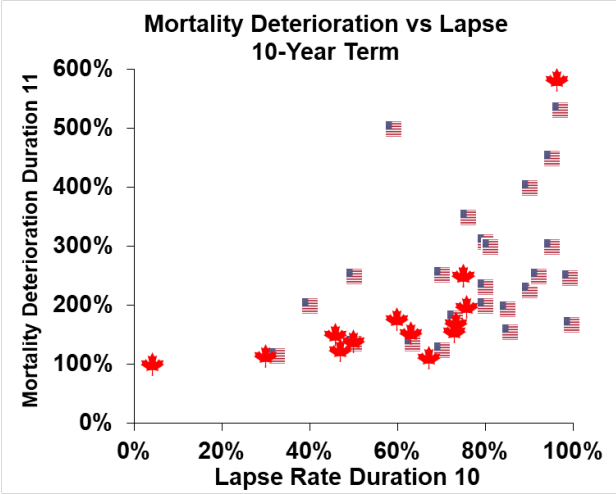


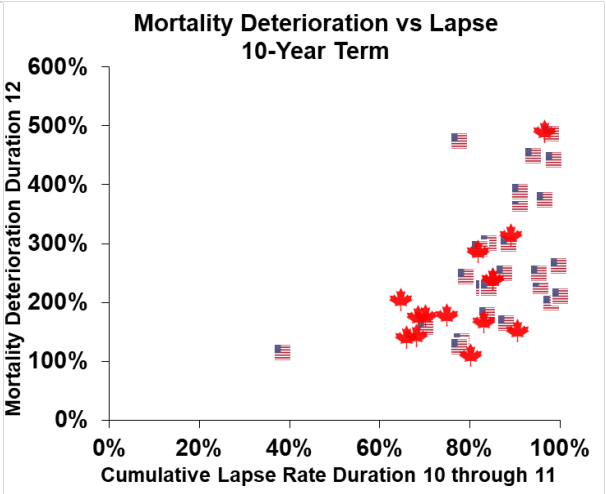
As shown earlier, all of the premium jumps in Canada are lower than most of the USA companies'. The deterioration multiples in Canada do line up similarly to the USA companies with premium jumps of less than 10x. The first graph is Standard (Canada) vs. Best (USA), while the second is Best to Best.

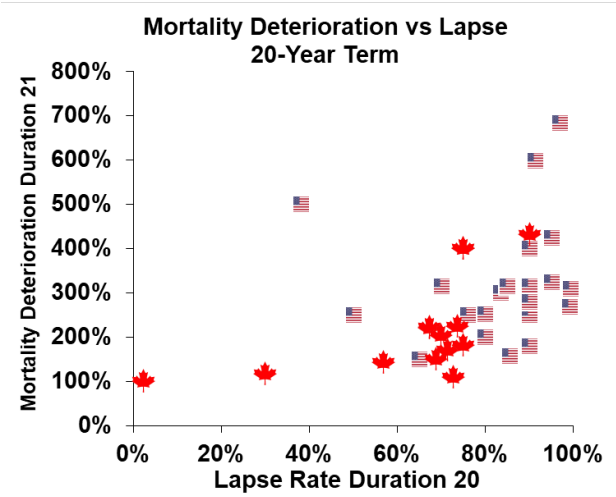


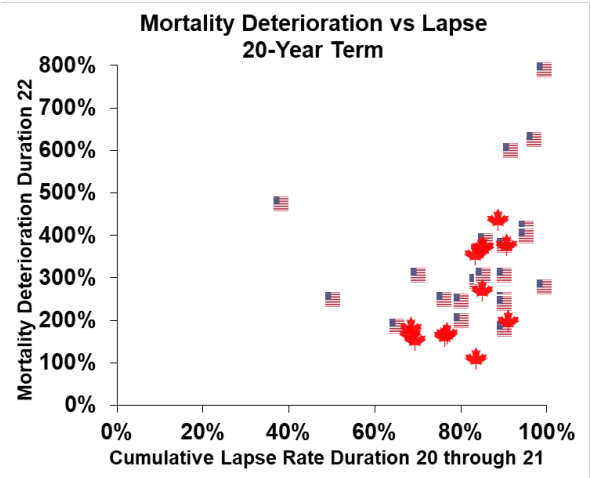


These graphs are showing the mortality deterioration by lapse rate. The first is for lapse rate in duration 10 and the mortality deterioration in duration 11, while the second is for the cumulative lapse rate for durations 10 and 11 and the mortality deterioration in duration 12.

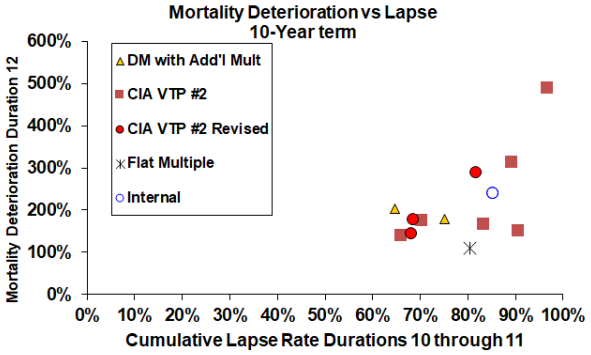


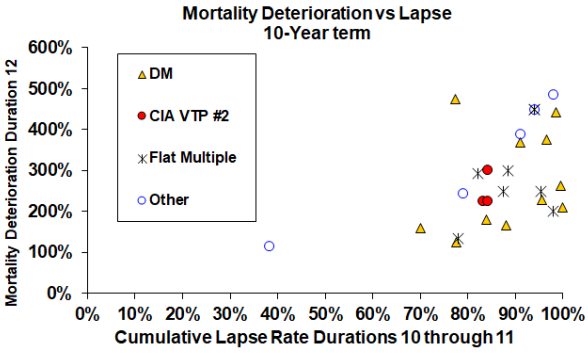




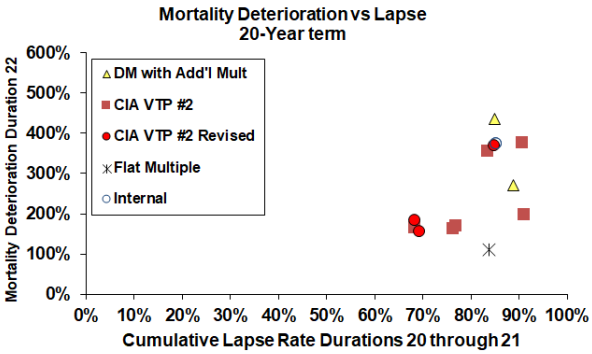


These graphs are similar to the ones before. However, the method in which the mortality deterioration was calculated is used as points on the graphs. There does not appear to be much of a pattern in Canada. In Phase 2, the following graphs will all be further explored to see if a pattern emerges from the actual data.

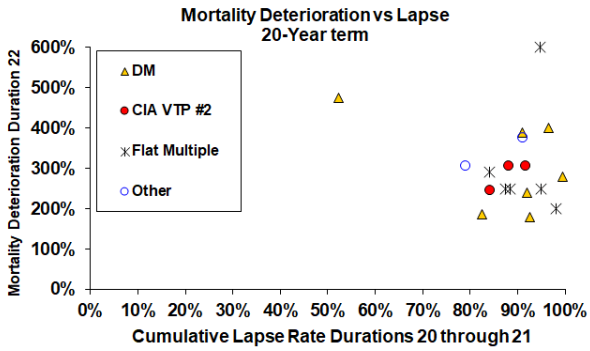




Canada

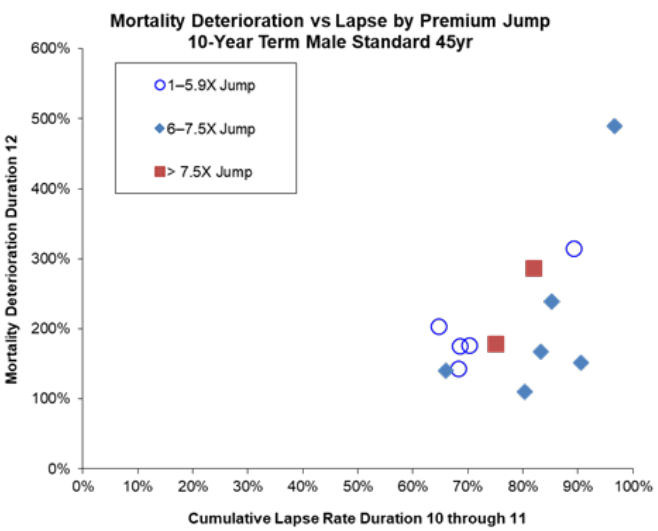


USA

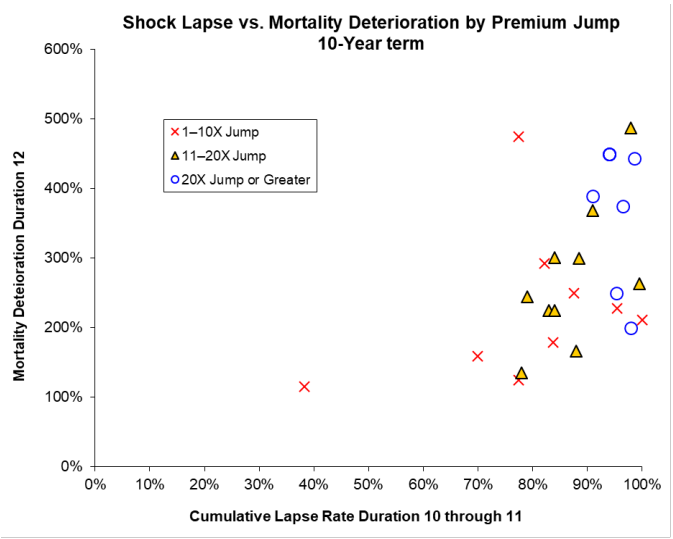


Similarly, premium jump multiples were used as the points in the graph. Once again, there does not appear to be much of a pattern in Canada. Also note that the grouping of premium jumps is quite different between the USA and Canadian numbers.

Canada

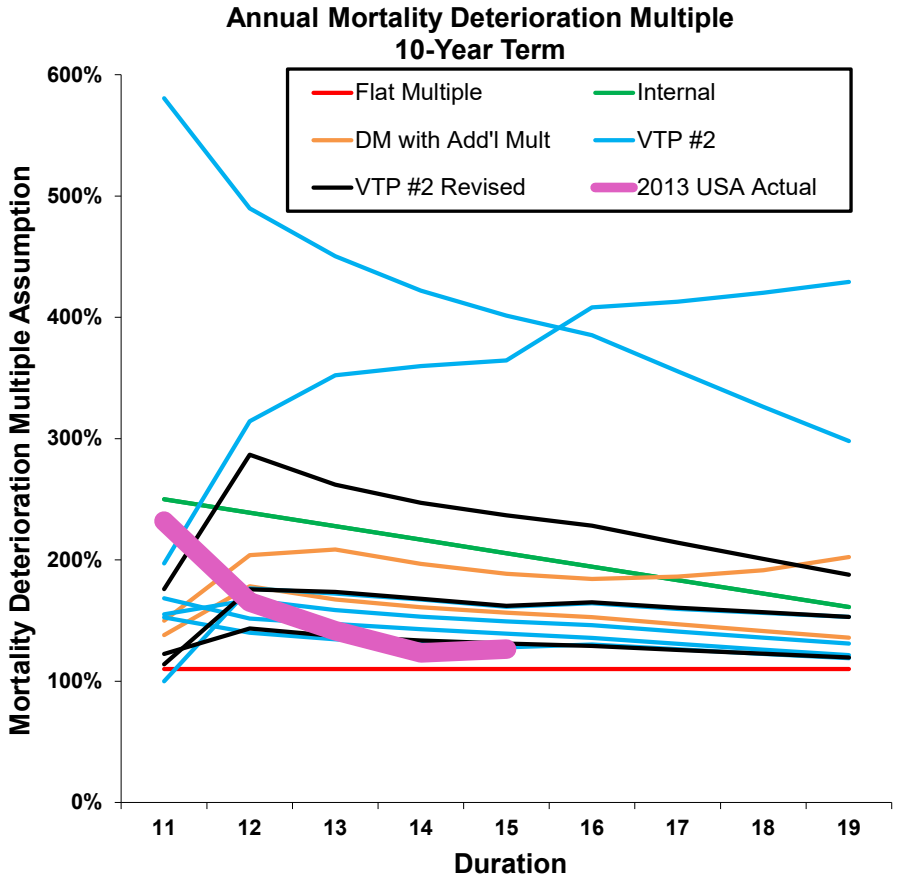


USA



When looking at the USA actual mortality deterioration multiples, it is clear that these fall below many of the companies' assumptions for both the USA and Canada. Once again, it should be noted that some of the biggest sellers of level term in the USA had much lower premium jumps, which would likely bring down the average lapse rates (shown above), and therefore also reduce the actual mortality deterioration multiples. With that said, the actual mortality deterioration multiples are highest in duration 11 and drop off fairly quickly. This is different than what many of the Canadian companies assume as they tend to have a higher mortality deterioration multiple in Year 12 (for 10-year term) and then have it decrease in subsequent years. This will be something important to look at when the actual results from the Canadian business are analyzed in Phase 2 of the study.

As a reminder when reviewing the graphs, a 100% mortality multiple assumption would mean no additional mortality is assumed. Also, this graph is showing Male Standard Issue Age 45 assumptions where the actuals are all of the USA business that was studied.



About the Society of Actuaries

With roots dating back to 1889, the Society of Actuaries (SOA) is the world's largest actuarial professional organizations with more than 31,000 members. Through research and education, the SOA's mission is to advance actuarial knowledge and to enhance the ability of actuaries to provide expert advice and relevant solutions for financial, business and societal challenges. The SOA's vision is for actuaries to be the leading professionals in the measurement and management of risk.

The SOA supports actuaries and advances knowledge through research and education. As part of its work, the SOA seeks to inform public policy development and public understanding through research. The SOA aspires to be a trusted source of objective, data-driven research and analysis with an actuarial perspective for its members, industry, policymakers and the public. This distinct perspective comes from the SOA as an association of actuaries, who have a rigorous formal education and direct experience as practitioners as they perform applied research. The SOA also welcomes the opportunity to partner with other organizations in our work where appropriate.

The SOA has a history of working with public policy makers and regulators in developing historical experience studies and projection techniques as well as individual reports on health care, retirement and other topics. The SOA's research is intended to aid the work of policymakers and regulators and follow certain core principles:

Objectivity: The SOA's research informs and provides analysis that can be relied upon by other individuals or organizations involved in public policy discussions. The SOA does not take advocacy positions or lobby specific policy proposals.

Quality: The SOA aspires to the highest ethical and quality standards in all of its research and analysis. Our research process is overseen by experienced actuaries and non-actuaries from a range of industry sectors and organizations. A rigorous peer-review process ensures the quality and integrity of our work.

Relevance: The SOA provides timely research on public policy issues. Our research advances actuarial knowledge while providing critical insights on key policy issues, and thereby provides value to stakeholders and decision makers.

Quantification: The SOA leverages the diverse skill sets of actuaries to provide research and findings that are driven by the best available data and methods. Actuaries use detailed modeling to analyze financial risk and provide distinct insight and quantification. Further, actuarial standards require transparency and the disclosure of the assumptions and analytic approach underlying the work.

Society of Actuaries
475 N. Martingale Road, Suite 600
Schaumburg, Illinois 60173
www.SOA.org

About the Canadian Institute of Actuaries

The Canadian Institute of Actuaries (CIA) is the national, bilingual organization and voice of the actuarial profession in Canada. Our members are dedicated to providing actuarial services and advice of the highest quality. The Institute puts the public interest ahead of the needs of the profession and those of its members.

Vision

Financial security for Canadians.

Mission

As the trusted bilingual voice of the Canadian actuarial profession, we advance actuarial science and its application for the well-being of society.

Values

Values shape our attitudes and influence our professional conduct. Our values are:

Community

We put the public interest ahead of our own. Our processes are transparent and volunteerism is at the heart of our activities.

Integrity

We are honest and accountable professionals; we uphold strict ethical principles. We use our expertise, rigorous standards, and objectivity to deliver actuarial services and advice of the highest quality.

Advancement

We are committed to demonstrating the value of effective risk management. We use innovation to advance actuarial science and its applications.

Canadian Institute of Actuaries
360 Albert Street, Suite 1740
Ottawa, Ontario KIR 7X7
www-cia-ica.ca