Actuaries
Risk is Opportunity.®

Report on the Survey of Post-Level Premium Period Lapse and Mortality Assumptions for Level Premium Term Plans (2013)

SEPTEMBER 2013

SPONSORED BY

Society of Actuaries

PREPARED BY

Tim Rozar, FSA, CERA, MAAA
Jason McKinley, ASA
Andrew Stallmann
Susan Willeat, FSA, MAAA

RGA®

TABLE OF CONTENTS

Background

The Society of Actuaries ("the 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 a follow-up to SOA-sponsored research completed by RGA in October 2009 (http://www.soa.org/research/research-projects/life-insurance/research-post-level.aspx) and July 2010 (http://www.soa.org/research/research-projects/life-insurance/research-shock-lapse-report.aspx). A prior survey report by Jeffrey T. Dukes and Kathleen M. Dziedzic was also published in May 2007 (http://www.soa.org/research/research-projects/life-insurance/research-shock-lapse.aspx)

Project Overview

As with the research project completed by RGA in 2010, this project will be completed in two phases:

- Phase 1 included a survey of the mortality and lapse assumptions used by actuaries for pricing and modeling level premium term products at the end of 2012. This report summarizes the findings from the 41 Phase 1 survey responses received. Where appropriate, results will also be compared to the 2009 Phase 1 survey. A list of the 41 companies who submitted responses to the survey can be found in Appendix A (p. 40). Survey questions can be found in Appendix B (p. 41).
- Phase 2 is currently 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 will be asked to supply policy level inforce and termination records so that experience results may be analyzed at a granular level including, but not limited to, age, gender, risk class, premium jump and policy size.

Upon completion of this project, a report incorporating final results of the pricing assumption survey and the Phase 2 experience study will be prepared.

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 U.S. life insurance companies. The actuary responsible for preparing this report is Tim Rozar, FSA, MAAA, CERA, a qualified actuary. 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 Society of Actuaries (SOA) and contains information based on input from companies engaged in the U.S. 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 SOA or its members. The SOA makes no representations regarding the accuracy or completeness of the content of this Study. It is for informational purposes only. The SOA does not recommend, encourage or endorse any particular use of the information provided in this Study. The Study should not be construed as professional or financial advice. The SOA makes no warranty, express or implied, guarantee or representation whatsoever and assumes no liability or responsibility in connection with the use or misuse of this Study.

Executive Summary

Summary of Key Results

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 chart. A snapshot of 10-year and 20-year level term products from the 2009 Post-Level Term Survey Report was provided for comparison. Refer to Appendix C (p. 49) for a note regarding participating companies in the two surveys.

	Term Period (L)				2009 Report	
	10	15	20	30	10	20
Total Respondents	38	32	39	26	41	41
100% Shock Lapse Assumed	9	9	15	14	8	10
Less than 100% Shock Lapse Assumed	29	23	24	12	33	31
Dur L Median Lapse Rate	80%	85%	90%	95%	80%	82%
Dur L through L+1 Cumulative Median Lapse Rate	88%	91%	92%	96%	86%	88%
Dur L through L+2 Cumulative Median Lapse Rate	92%	94%	94%	96%	87%	91%
Dur L through L+3 Cumulative Median Lapse Rate	93%	95%	95%	97%	89%	91%
Mortality Deterioration Assumption Provided	27	20	21	9	29	27
Dur L+1 Median Mortality Deterioration (100% = none)	232%	282%	300%	300%	200%	250%
Dur L+2 Median Mortality Deterioration (100% = none)	250%	295%	307%	293%	225%	250%
Dur L+3 Median Mortality Deterioration (100% = none)	250%	282%	296%	286%	217%	250%
Dur L+5 Median Mortality Deterioration (100% = none)	215%	269%	272%	268%	200%	245%
Dur L+10 Median Mortality Deterioration (100% = none)	201%	250%	235%	250%	200%	227%

As shown above, 29 of the 41 responding companies provided a shock lapse assumption of less than 100% for at least one of their level term products. Note that companies who did not provide their lapse assumptions are not included in the totals above. Respondents were more likely to assume a 100% shock lapse for 20 and 30-year term than for 10 and 15-year term.

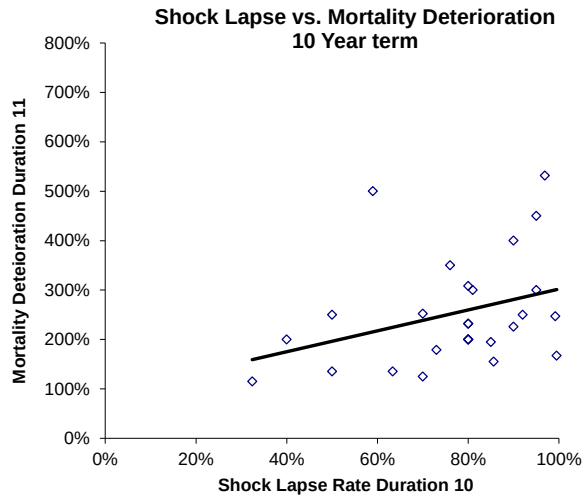
For those who did not assume a 100% shock lapse:

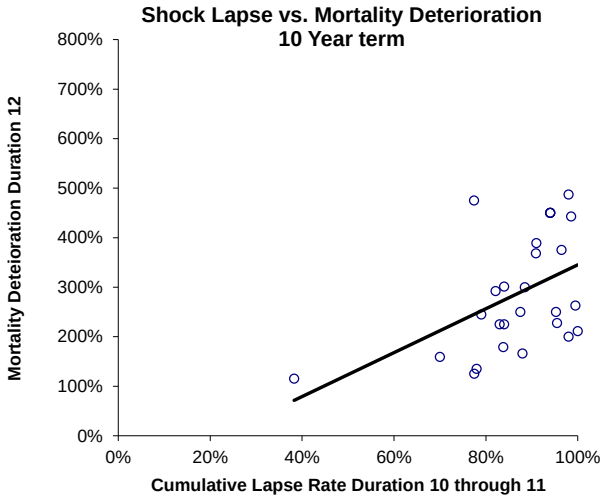
- The median lapse rate assumed at the end of the level premium period increased monotonically as the term length increased. In the previous study, these numbers held between 80% and 82%.
- The median cumulative lapse rate assumed from duration L through the end of duration L+1 also increased monotonically, from 88% to 96%, as the term length increased.
- Mortality deterioration assumptions generally begin grading down by duration L+3.

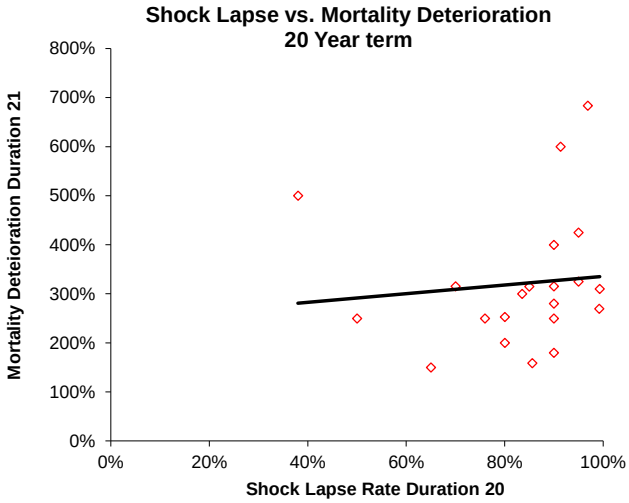
A variety of methods were used for determining mortality deterioration assumptions, including the Dukes-MacDonald model, the Canadian Institute of Actuaries Valuation Technique Paper #2 method and a variety of “other” methods based on actuarial judgment.

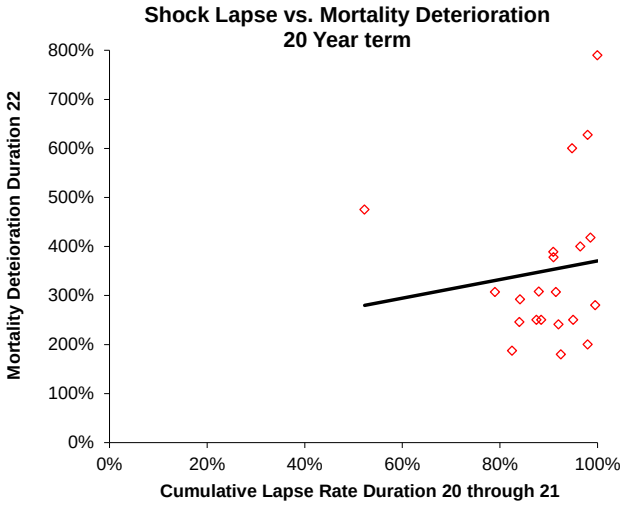
Relationship between Shock Lapse and Mortality Deterioration Assumptions

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 represents 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 assumption as a function of the cumulative lapse rate assumed for durations L and L+1. There is a fairly strong correlation between the size of the shock lapse assumed by a company and the amount of mortality deterioration assumed. This relationship appears even stronger in the right panel displays because some companies use two consecutive durations of shock lapses rather than one large shock lapse. *(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.)*









Introduction

The Phase 1 survey was sent to the top 100 term writers based on the face amount of 2012 term insurance sales along with selected other companies. Responses were provided from 41 companies, representing approximately 62% of 2012 term sales (as reported in statutory annual statements aggregated from www.snl.com). A list of survey participants is included in Appendix A (p. 40).

Product Mix

Respondents were asked to provide the amount of term business (by face amount) they sold in 2012 by level premium period. While 10-year and 20-year term are the dominant product types, most companies sell at least some business at other term periods.

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%
5 Year Term	1.2%	3	1	0
10 Year Term	22.7%	42	36	8
15 Year Term	8.6%	32	6	1
20 Year Term	52.0%	44	44	42
25-30 Year Term	15.1%	33	23	9
Other	0.4%	5	2	1

Distribution Channels

The following chart displays the distribution channels used to sell respondents' term products in 2012. Most companies indicated independent 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 Agent	34.6%	22	19	11
Managing General Agents	18.0%	10	8	1
Captive Agent	40.0%	23	18	14
Banks	0.2%	2	1	1
Internet	1.4%	1	0	0
Broker Dealer	2.2%	9	5	2
Direct Response	2.9%	4	1	0
Other	0.8%	4	1	1

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.

Post-Level Product Design	
Product Structure	Responses
Premium jump to ART	40
Premium grade to ART	4
Jump to new level period	3
Face amount decrease	1
Product terminates	2
Flexible Premiums (Term UL)	1

The dominant premium structure among respondents is a level premium followed by a jump to an ART scale after the end of the level premium period.

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	
No change	23
Grade premiums into an ART scale over 'x' years	3
Other	3

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. Twelve companies responded and two offered more than one suggestion:

Changes to Post-Level Premium Structure for Term In Force		
Description	Implemented in last 5 years	Considering
Lower post-level premiums	1	5
Grade into an ART scale	3	3
Other	0	2

Post Level Term Premium Structure (cont.)

Survey respondents were asked to describe the general level of their guaranteed ultimate premium rates. Some companies provided more than one answer for different products. Although the responses varied and were submitted as free-form text, they can be generally summarized as follows. Responses from the 2009 Survey Report have been included in the next two charts for comparison.

Structure of Guaranteed Ultimate Rates		
Description	2013	2009
% of 1980 CSO		
Between 150-300%	2	8
% of 2001 CSO		
Less than 200%	5	1
Exactly 200%	7	12
Between 200-300%	11	7
Exactly 300%	11	12
More than 300%	7	1
Other	3	5

Many companies have abandoned using the 1980 CSO guaranteed ultimate premium scale in favor of the 2001 CSO ultimate rate scale in the last five years.

Respondents were then asked to describe the relationship between the current and guaranteed rates beyond the level period. Some companies provided more than one answer for different products. The responses could be generally grouped as follows:

Relationship between Current Ultimate and Guaranteed Ultimate Premiums		
Description	2013	2009
Product has Guaranteed Rates only	14	15
Current Rates = Guaranteed Rates	15	12
Current Rates < Guaranteed Rates	14	16
Current Rates grade to Guaranteed Rates	1	2

Post Level Term Premium Structure (cont.)

Survey respondents were asked to describe the parameters by which their current level premium and post-level period premium rates vary (apart from issue age and level period).

Parameters by which Current Premium Rates Vary		
Parameter	Level Premium Period	Beyond Level Period
Gender	42	44
Policy Duration	n/a	10
Attained Age	n/a	38
Smoking status	43	44
Preferred risk class	41	14
Substandard Rating	38	32
Face Amount Issued	41	10

Additionally, some companies varied their current premiums depending on the distribution channel or the conversion options available on the product.

Premium Modes and Automatic Withdrawals

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 32 responses to this question can be generally summarized as follows:

Changes to Premium Modes and/or Auto Withdrawals Following the Level Period	
Response	Respondents
No change	24
Policyholders are removed from automatic withdrawals	2
Automatic change to a defined mode (monthly/quarterly/annual)	2
Policyholders notified of increasing post-level premium, then given the option to change	2
Depends on conversion option of the product	2

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 2012 for a $500,000 policy. Rates were provided for males and females, four issue ages (25, 35, 45 and 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. Current post-level rates are used where possible. 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 35-year old male standard risk with a 20-year term policy might be 0.75 per thousand. If the first post-level rate on that product is 7.5 per thousand, then the premium jump is 10.0. This value serves as the basis for the median premium jump in the "Non-Lapse Group" column below. If the same male lapsed and re-entered (still standard) and bought another 20-year term policy, the rate might be 1.5 per thousand, giving a premium jump of 2.0. This is the basis of the "Lapse and Re-Enter" column in the table.

				Median Premium Jumps	
Term Period (L)	Gender	Class	Issue Age	Non-Lapse Group	Lapse and Re-Enter
10	Male	Best	25	6.1	5.8
			35	11.6	5.4
			45	13.4	5.3
			55	14.4	
	Female	Best	25	6.4	6.0
			35	11.8	5.3
			45	13.6	5.8
			55	13.9	
	Male	Standard	25	3.2	3.1
			35	6.0	2.9
			45	7.1	3.1
			55	7.8	
	Female	Standard	25	3.3	2.9
			35	5.4	2.7
			45	6.8	3.4
			55	8.3	
20	Male	Best	25	9.9	3.9
			35	20.5	3.2
			45	25.5	
			55	24.1	
	Female	Best	25	9.1	3.7
			35	19.7	4.1
			45	21.8	
			55	23.1	
	Male	Standard	25	5.2	2.0
			35	9.9	1.8
			45	12.6	
			55	12.7	
	Female	Standard	25	5.3	1.9
			35	10.1	2.2
			45	11.9	
			55	12.8	

Lapse Assumptions

Overview

Respondents were asked to provide their lapse assumptions at the end of 2012 for six durations beginning with the last year of the level premium 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.

- Of the 38 respondents providing lapse rates for 10-year level term products, 29 (76%) assumed a shock lapse of less than 100% at the end of the level premium period.
- Of the 29 respondents who used a shock lapse of less than 100% for 10-year term:
    - 5 used a shock lapse of 100% for their 20-year level term product.
    - 5 used a shock lapse of 100% for their 30-year level term product, and 12 others did not provide any lapse assumptions for 30-year term.

The 29 responses with a shock lapse under 100% 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 and risk class only, while one varied by issue age, risk class and premium jump ratio.

		Additional Variations		
Vary by These Parameters	No Other Variance	Premium Mode	Premium Jump Ratio	Risk Class & Premium Jump Ratio
No Variance	9			
Issue Age & Level Period	5	1	1	1
Level Period	5	1		
Issue Age & Risk Class	2		1	
Risk Class	1			
Premium Jump Ratio	1	1		

Additional factors for variation included face amount, smoker status, gender and the conversion option(s) available on the product.

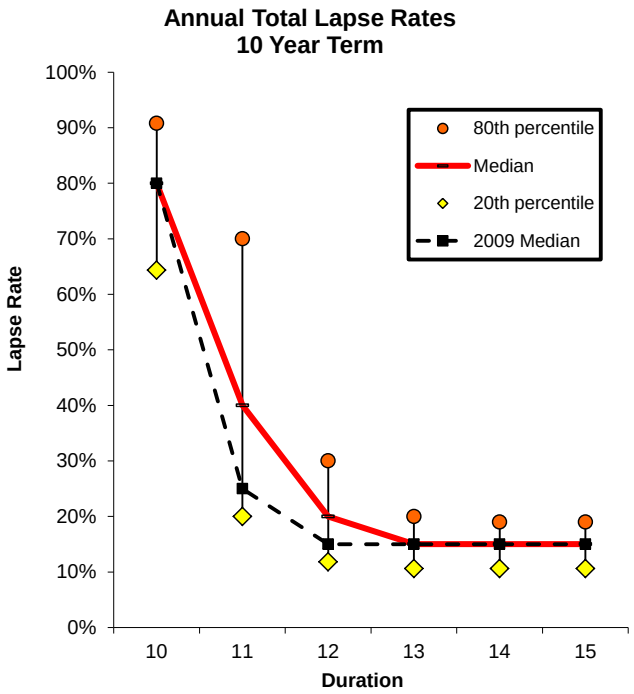
Specific Shock Lapse Assumptions

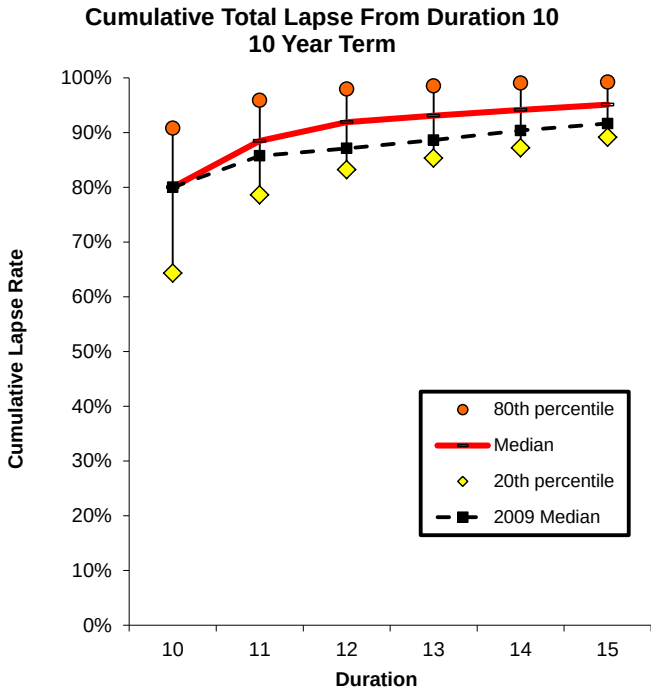
As previously indicated, some respondents provided assumptions that varied by pricing cell. For the sake of a consistent comparison, the assumptions summarized in the Executive Summary and elsewhere in this report were selected for a common pricing cell, which was chosen as follows:

- Male; best preferred non-tobacco risk class
- Face amount $500,000
- Issue age 45 for 10 and 15-year term; issue age 35 for 20 and 30-year term
- Annual premium payment mode
- 20x premium jump for 10-year term; 25x jump for 15 and 20-year term; 30x jump for 30-year term

The values displayed in the charts 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.

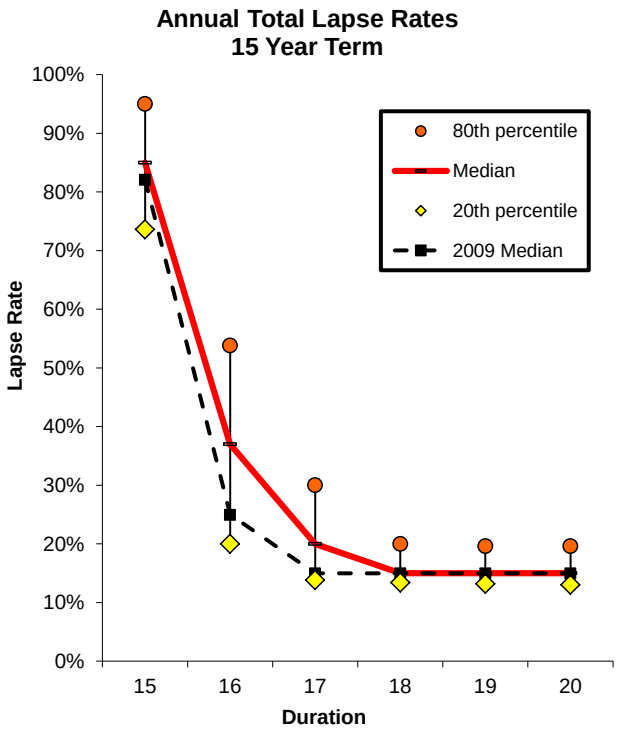
10 Year Term (n=29)	Annual Lapse Rate Assumption by Duration						Cumulative Lapse through Duration					
	10	11	12	13	14	15	10	11	12	13	14	15
Minimum	32%	6%	6%	5%	5%	5%	32%	38%	44%	49%	53%	57%
20th percentile	64%	20%	12%	11%	11%	11%	64%	79%	83%	85%	87%	89%
Median	80%	40%	20%	15%	15%	15%	80%	88%	92%	93%	94%	95%
80th percentile	91%	70%	30%	20%	19%	19%	91%	96%	98%	99%	99%	99%
Maximum	99.5%	99%	100%	50%	50%	50%	99.5%	100%	100%	100%	100%	100%
2009 Median	80%	25%	15%	15%	15%	15%	80%	86%	87%	89%	90%	92%

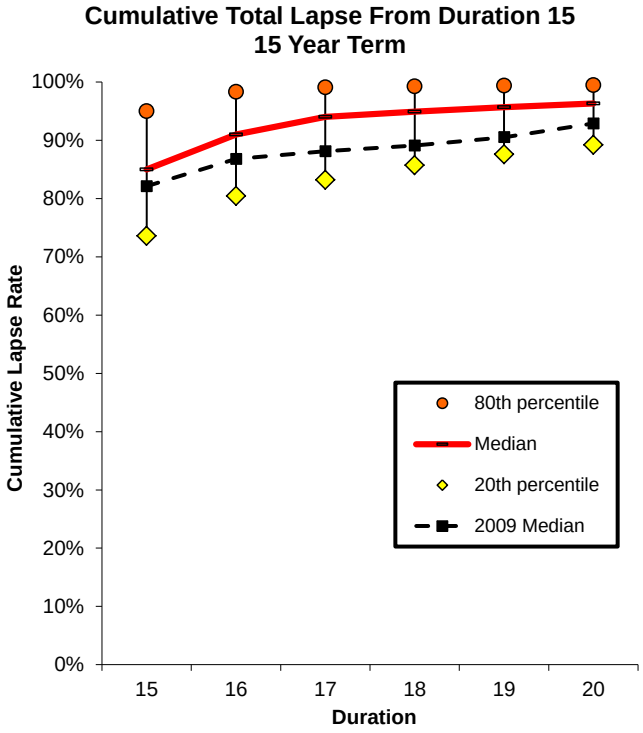




Specific Shock Lapse Assumptions (15-Year Term)

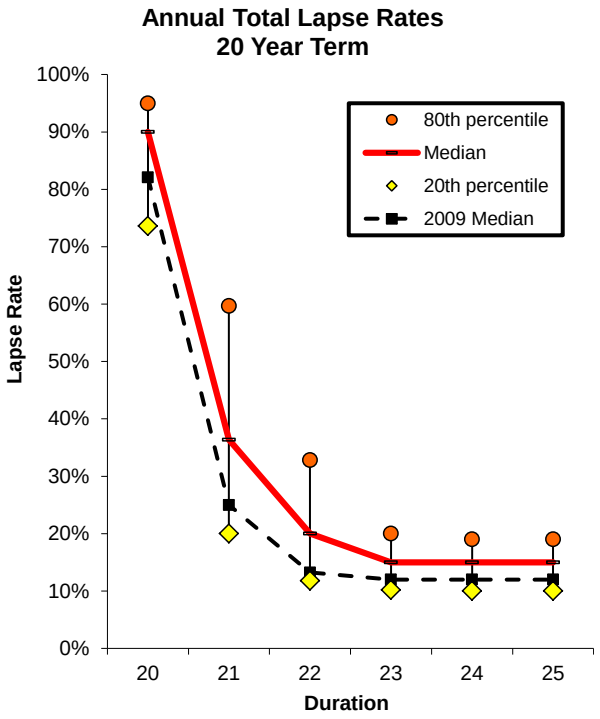
15 Year Term (n=23)	Annual Lapse Rate Assumption by Duration						Cumulative Lapse through Duration					
	15	16	17	18	19	20	15	16	17	18	19	20
Minimum	50%	4%	4%	4%	4%	4%	50%	65%	72%	77%	80%	83%
20th percentile	74%	20%	14%	13%	13%	13%	74%	80%	83%	86%	88%	89%
Median	85%	37%	20%	15%	15%	15%	85%	91%	94%	95%	96%	96%
80th percentile	95%	54%	30%	20%	20%	20%	95%	98%	99%	99%	99%	99%
Maximum	99.5%	99%	100%	50%	50%	50%	99.5%	100%	100%	100%	100%	100%
2009 Median	82%	25%	15%	15%	15%	15%	82%	87%	88%	89%	91%	93%

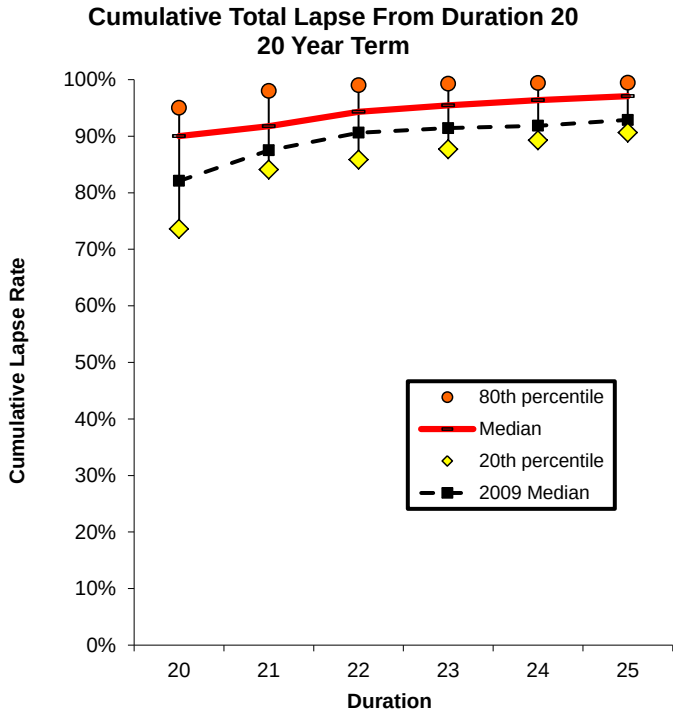




Specific Shock Lapse Assumptions (20-Year Term)

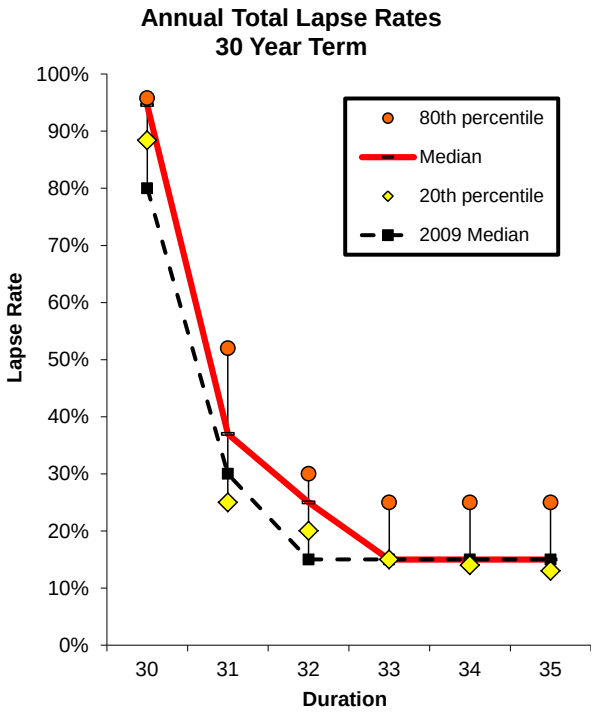
20 Year Term (n=24)	Annual Lapse Rate Assumption by Duration						Cumulative Lapse through Duration					
	20	21	22	23	24	25	20	21	22	23	24	25
Minimum	38%	4%	4%	4%	4%	4%	38%	52%	59%	64%	67%	71%
20th percentile	74%	20%	12%	10%	10%	10%	74%	84%	86%	88%	89%	91%
Median	90%	36%	20%	15%	15%	15%	90%	92%	94%	95%	96%	97%
80th percentile	95%	60%	33%	20%	19%	19%	95%	98%	99%	99%	99%	99%
Maximum	99%	98%	100%	50%	50%	50%	99%	100%	100%	100%	100%	100%
2009 Median	82%	25%	13%	12%	12%	12%	82%	88%	91%	91%	92%	93%

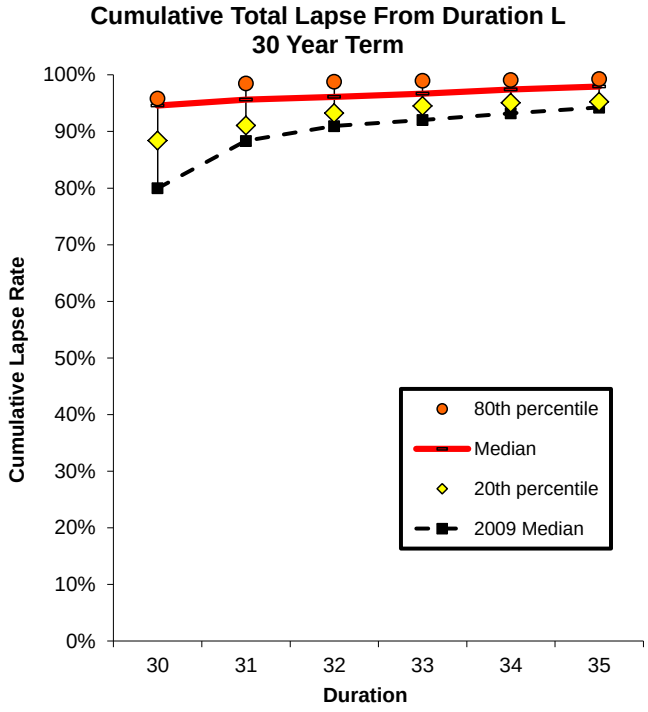




Specific Shock Lapse Assumptions (30-Year Term)

30 Year Term (n=12)	Annual Lapse Rate Assumption by Duration						Cumulative Lapse through Duration					
	30	31	32	33	34	35	30	31	32	33	34	35
Minimum	79%	3%	3%	3%	3%	3%	79%	88%	89%	89%	89%	90%
20th percentile	88%	25%	20%	15%	14%	13%	88%	91%	93%	94%	95%	95%
Median	95%	37%	25%	15%	15%	15%	95%	96%	96%	97%	97%	98%
80th percentile	96%	52%	30%	25%	25%	25%	96%	98%	99%	99%	99%	99%
Maximum	99%	98%	93%	40%	40%	40%	99%	100%	100%	100%	100%	100%
2009 Median	80%	30%	15%	15%	15%	15%	80%	88%	91%	92%	93%	94%

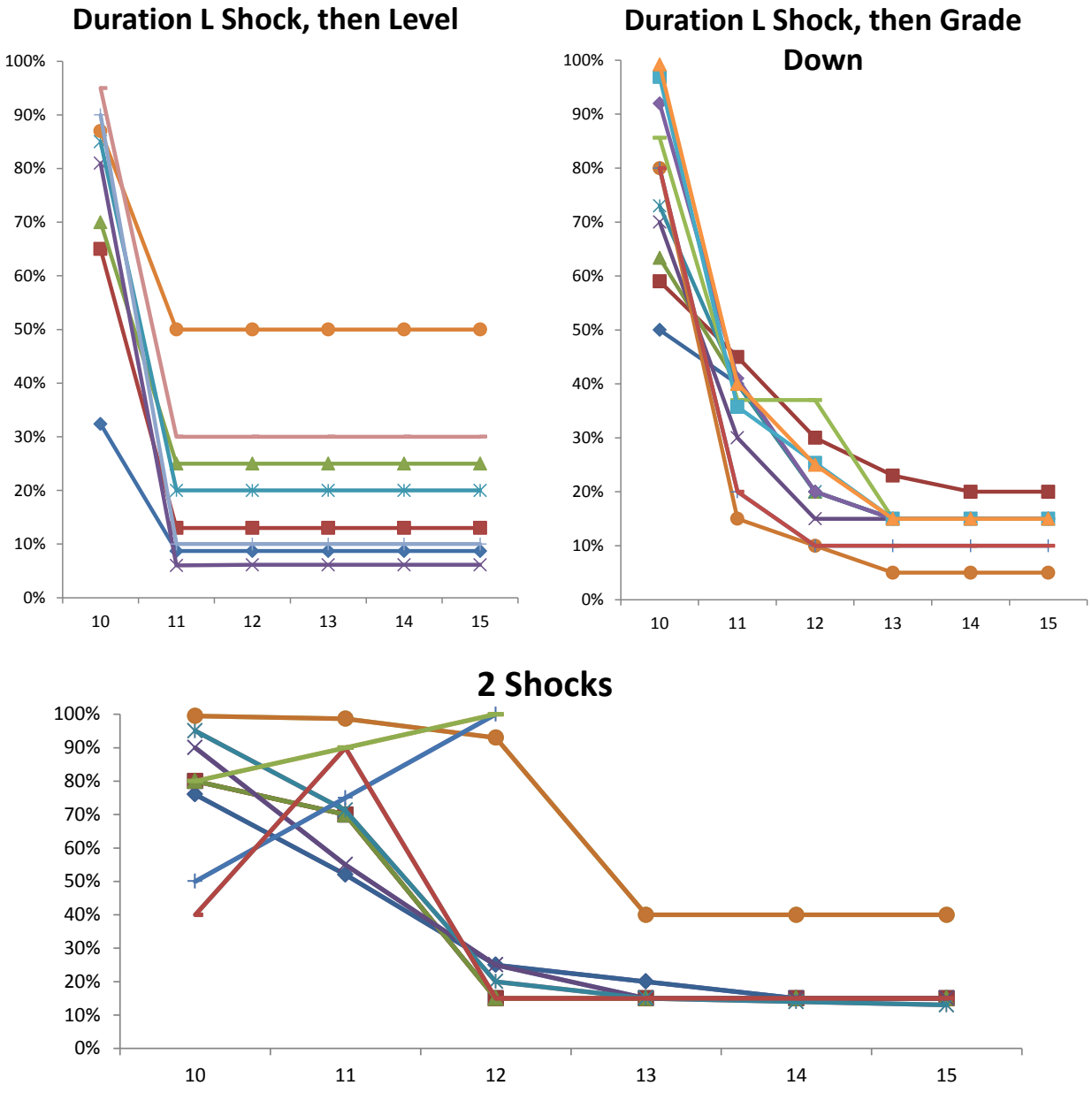




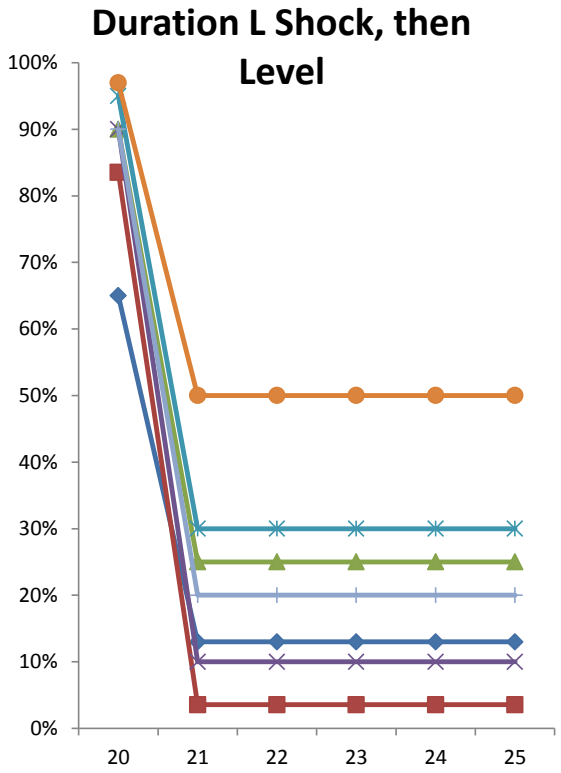
Specific Shock Lapse Assumptions (10 & 20-Year Term – All Responses)

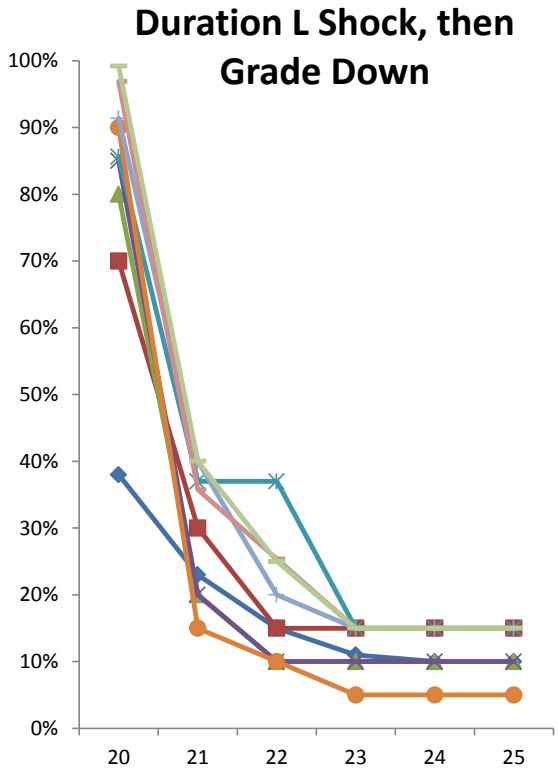
Although the graphs on the previous pages give a sense of the general levels and distributions of lapse assumptions by duration, they don't necessarily reflect durational trends of any individual company's assumption. Quite often, companies assuming an initial shock lapse rate that is lower than the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

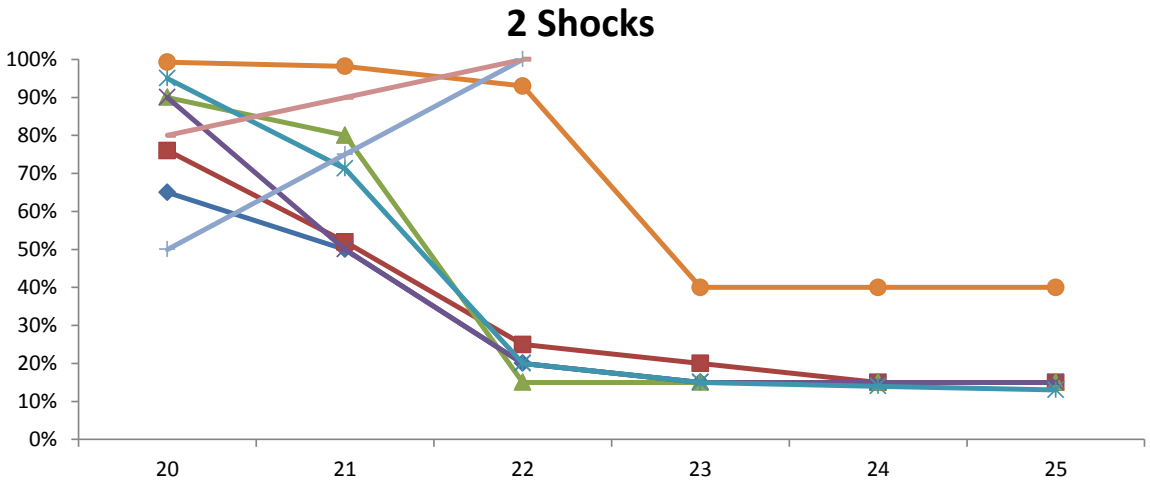
Lapse Rates by Duration
10 Year Term



Lapse Rates by Duration
20 Year Term





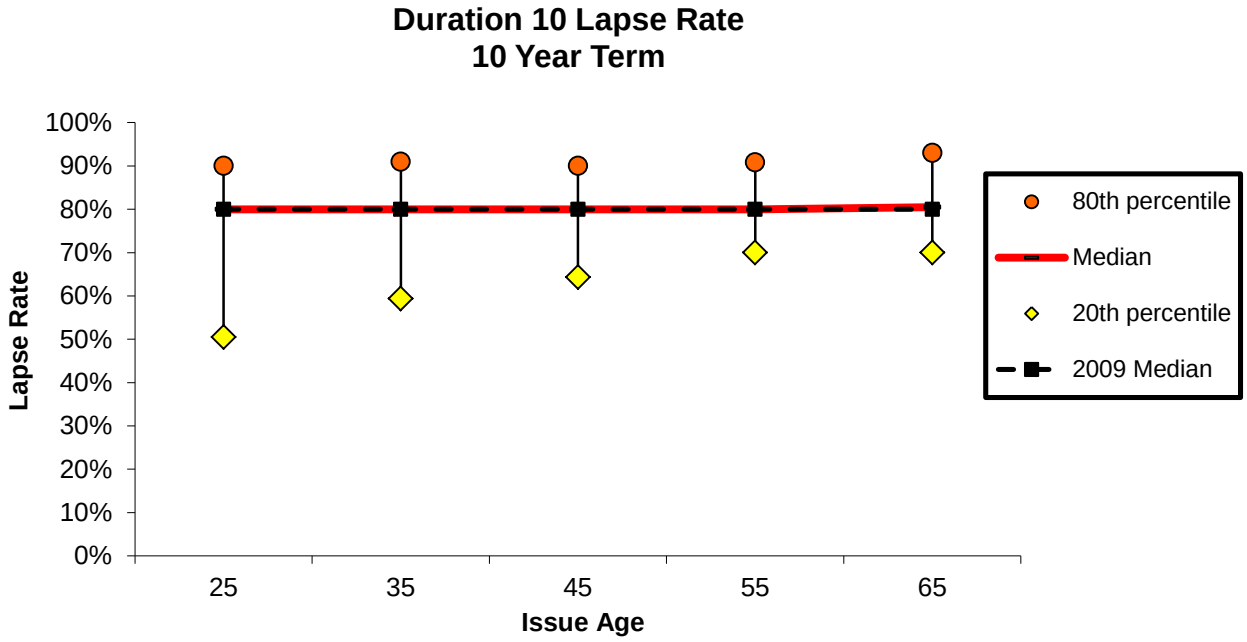


Lapse Rate Trend By Duration		
Description	Responses	
	10-Year Term	20-Year Term
Duration L Shock, then level	8	7
Duration L Shock, then grade down	12	10
2 Shocks, Duration L>=L+1	6	5
2 Shocks, Duration L+1>L	3	2

Specific Shock Lapse Assumptions (Variations by Issue Age)

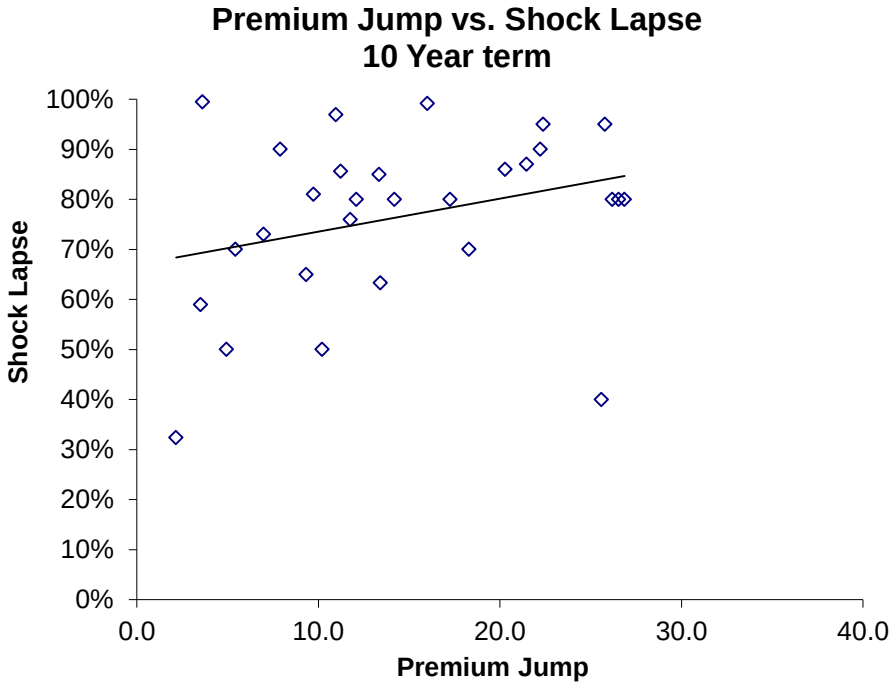
As mentioned previously, a few respondents provided lapse rates varying by issue age within each product. Some used a shock lapse that was higher for older ages than younger ages, and some used a shock lapse that was higher for younger ages than older ages. The following table and chart show the distribution of the duration 10 lapse assumptions by issue age for 10-year term products. In the aggregate, there is very little difference in the shock lapse assumption used by issue age.

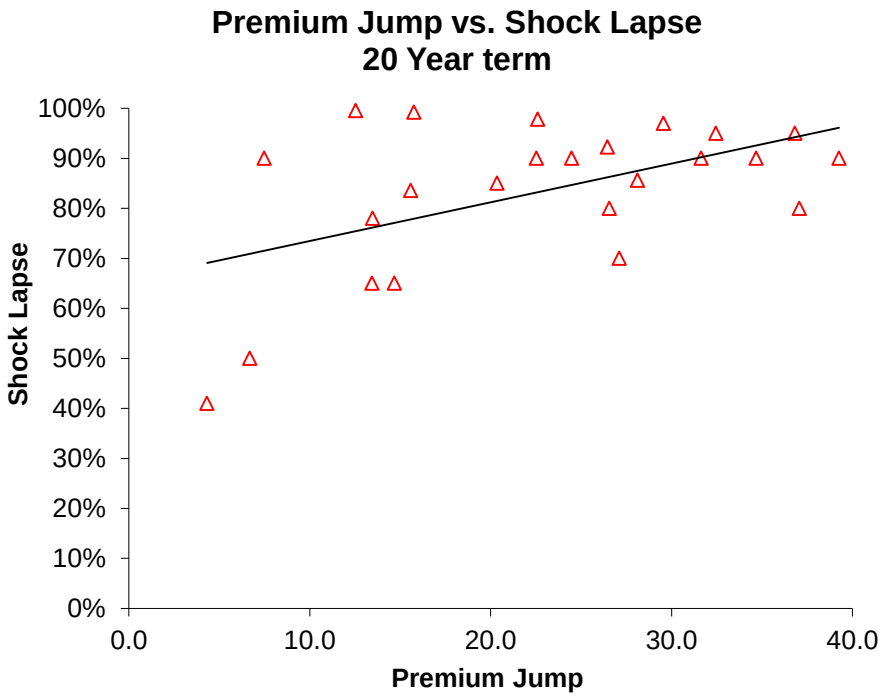
10 Year Term (n=29)	Duration 10 Lapse Rate Assumption				
	25	35	45	55	65
Minimum	30.0%	29.8%	32.4%	40.0%	40.0%
20th percentile	50.5%	59.4%	64.3%	70.0%	70.0%
Median	80.0%	80.0%	80.0%	80.0%	80.5%
80th percentile	90.0%	91.0%	90.0%	90.8%	93.0%
Maximum	99.2%	99.3%	99.5%	99.6%	99.7%
2009 Median	80.0%	80.0%	80.0%	80.0%	80.0%



Shock Lapse Assumptions by Premium Jump

The following charts combine the premium jump data developed earlier with the provided shock lapse assumptions. Both sets of data used for these examples follow the parameters described in the "Specific Shock Lapse Assumptions" section. Companies that assume 100% lapse, or which employed decreasing face structures in the post-level period, are excluded from this comparison. A trend line is present to aid visualization, but it does not indicate a true linear relationship between shock lapse and premium jump.





Lapse Skewness

The researchers were curious about how companies were distributing their lapse assumptions by month before and after the shock lapse, since the 2010 Phase 2 experience study 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. 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 used different methods depending on the payment mode, and thus fall into the "Other" category.

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

Monthly Lapse Skewness During Level Premium Period	
Response	Respondents
Lapses are uniformly distributed	18
Lapses occur on premium payment modes	10
Lapses occur at the end of the year	7
Other	4
No response	5

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

Monthly Lapse Skewness During Year of Shock Lapse	
Response	Respondents
Lapses are uniformly distributed	5
Lapses occur on premium payment modes	3
Lapses occur at the end of the year	17
Lapses graded toward end of the year with shock in month 12	12
No response	7

- Beyond the level period (durations L+1 and later)

Monthly Lapse Skewness During Post-Level Period	
Response	Respondents
Lapses are uniformly distributed	6
Lapses occur on premium payment modes	7
Lapses occur at the end of the year	9
Lapses skewed to the beginning of L+1, Uniform thereafter	8
No response	14

Mortality Deterioration Assumptions

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 2012 beginning with the first year after the level premium period. The responses often varied by a number of parameters, including the length of the level term period, policy duration, issue age, risk class and gender.

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, three companies varied their assumptions only by duration and level period, while one varied by duration, level period and size of shock lapse.

		Additional Variations		
Vary by These Parameters	No other Variation	Risk Class and Gender	Gender	Size of Shock Lapse
Duration, Level Period and Issue Age	6	4	1	
Policy Duration	5			
Constant across all parameters	4			
Duration and Level Period	3			1
Level Period	2			
Issue Age	1			

Additionally, some respondents varied their mortality deterioration assumption by policy size, premium jump ratio and the conversion option(s) available on the product.

Methodology for Developing Deterioration Assumptions

Respondents were asked what methodology they used to develop mortality deterioration assumptions. Some companies used more than one method. The original survey question included the Becker-Kitsos method as an option; however, it may have caused some confusion among respondents as Becker-Kitsos is derived from the Dukes-MacDonald method.

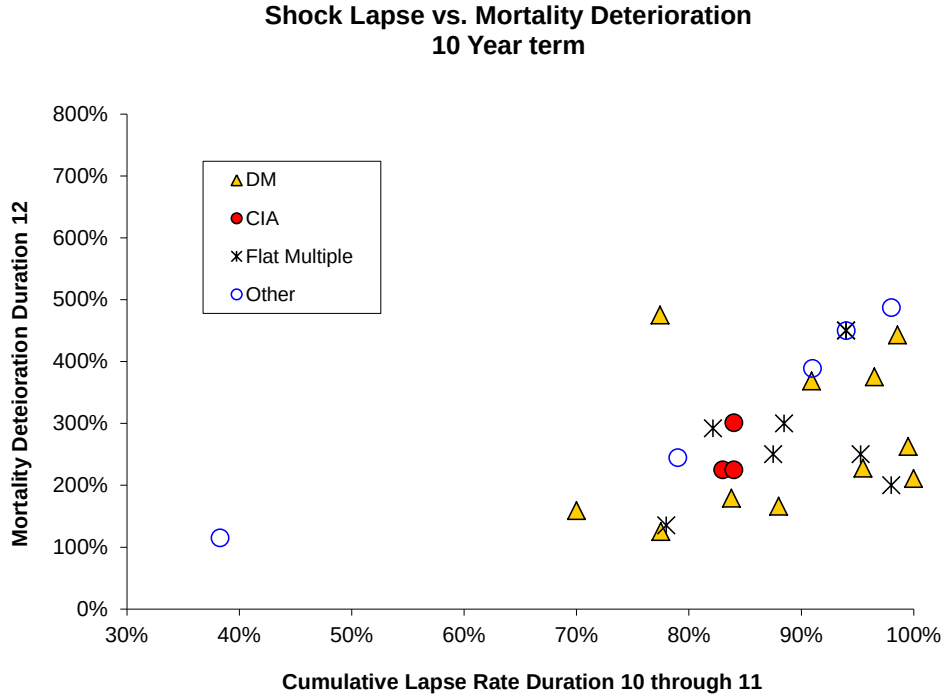
Method of Developing Mortality Assumption	
Method	Responses
N/A - 100% shock lapse	9
Dukes-MacDonald or derivatives of Dukes-MacDonald	14
Canadian Institute of Actuaries Valuation Technique Paper #2	4
Flat Multiple	13
Other: Set by reinsurer/external consultant	3
Other: Internally developed method	3

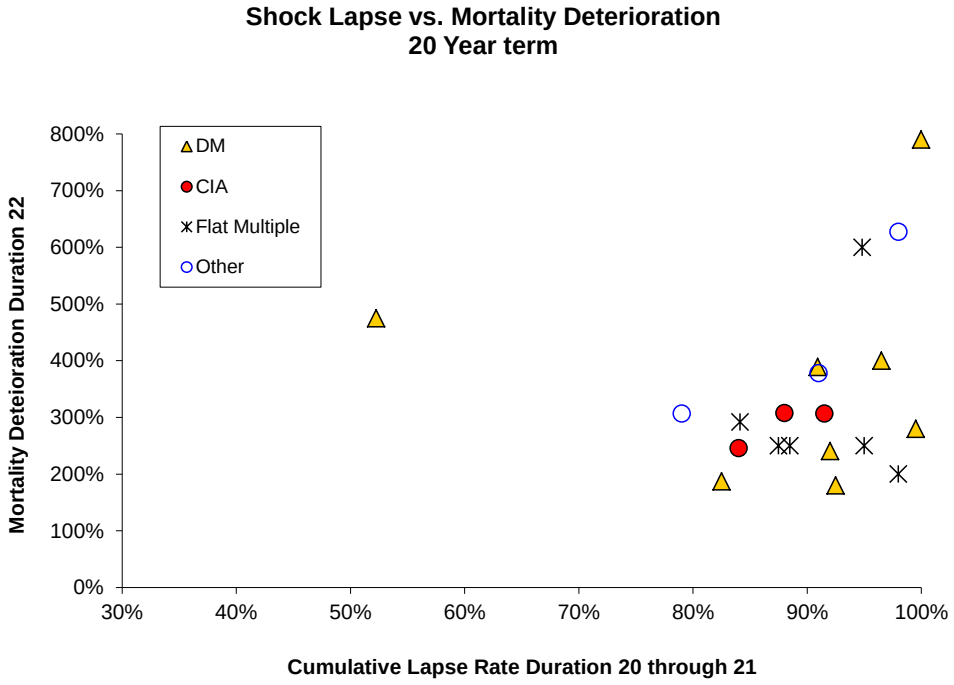
Companies were also asked to more specifically define the method and parameters of any formula-based approach used to develop mortality anti-selection assumptions. Responses varied significantly from company to company, but can be generalized as follows:

- Seven companies used a modified Dukes-MacDonald approach where x% of lapses in excess of y% are newly select.
- Four companies assumed z% anti-selection effectiveness at various levels during the post-level premium period.
- Four companies used other methods, commonly resulting from a combination of industry studies and internal experience.

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

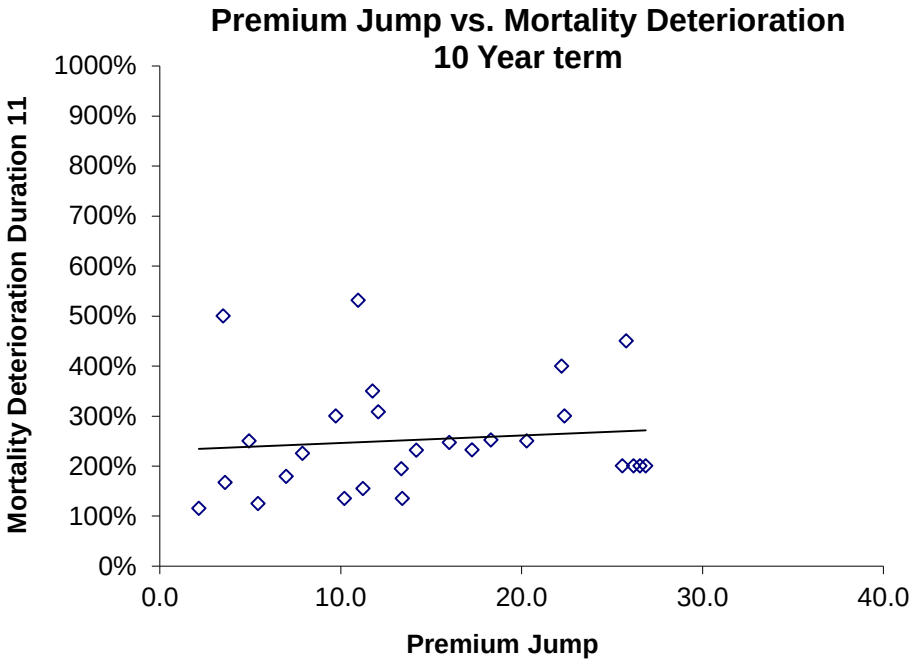
The following charts display companies' mortality deterioration assumptions as a function of the shock lapse, with plot points differentiated based on the method used to develop the deterioration assumption. It appears that a general relationship between the shock lapse and mortality deterioration assumptions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

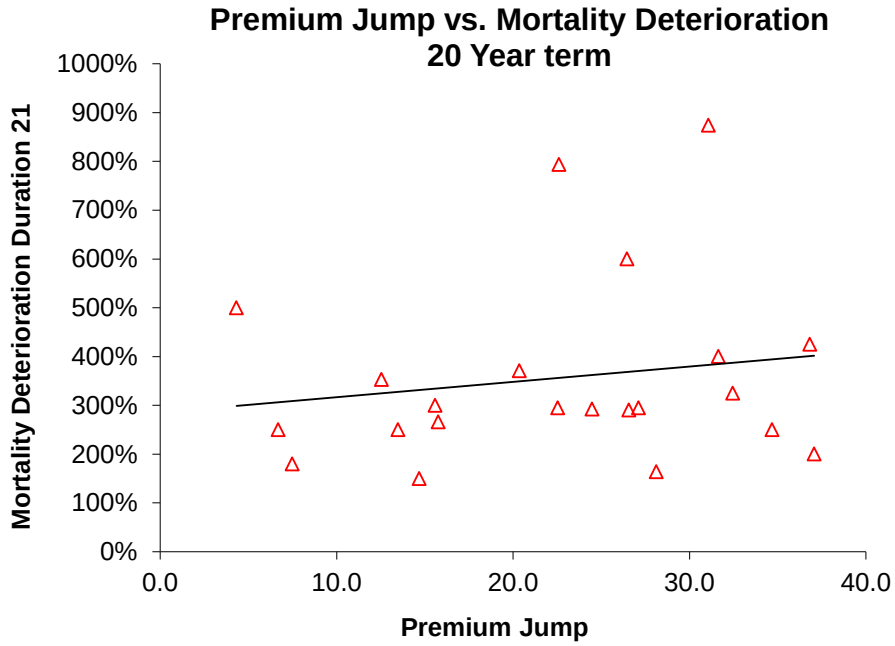




Specific Mortality Deterioration Assumptions by Premium Jump

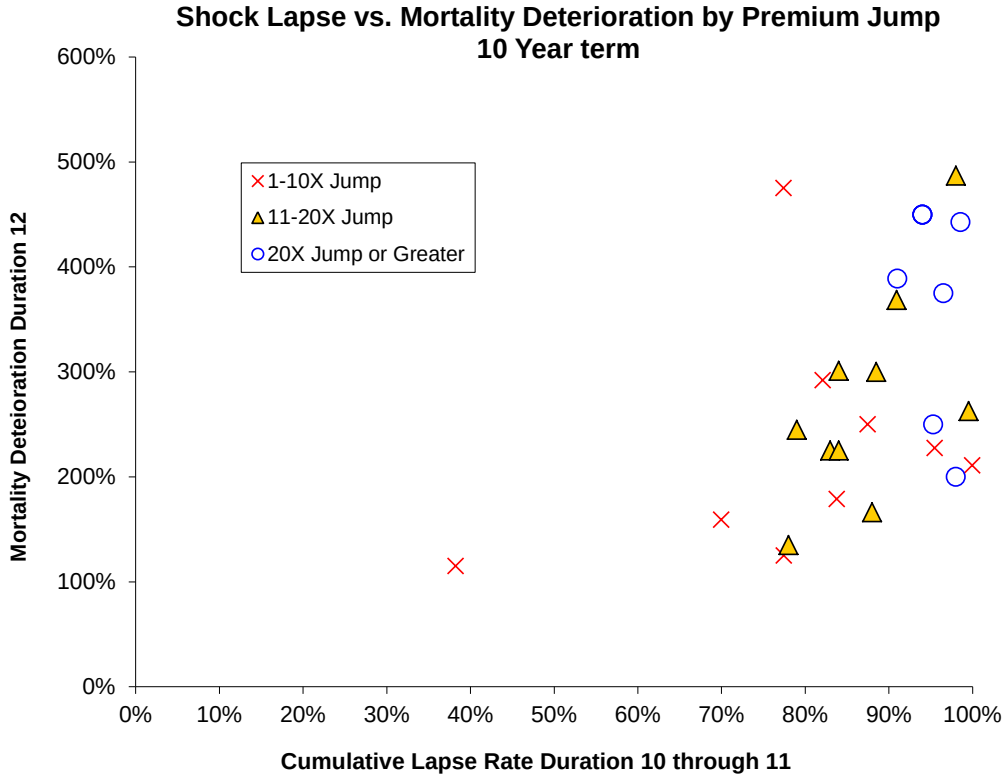
The following charts combine the premium jump data with the provided mortality deterioration assumptions. Both sets of data used for these examples follow the parameters described for the pricing cell in the "Specific Shock Lapse Assumptions" section. Companies that did not provide a mortality deterioration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





Relationship to ART Premium

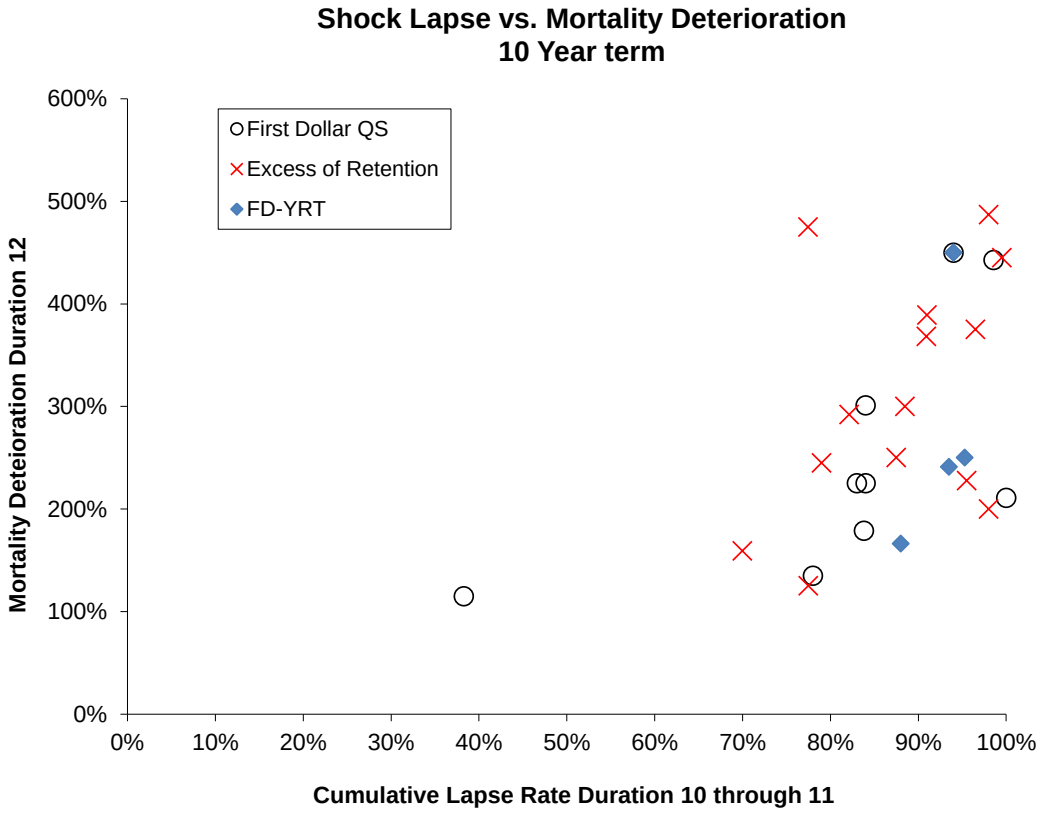
The following chart displays the same data used in the last section for 10-year term products, with plot points differentiated based on the magnitude of the ratio of the first post-level premium to the last level premium. Although the data is thin, it seems that companies with a higher premium jump between the level period and the post-level period might be assuming somewhat higher shock lapse and assumed mortality deterioration than companies with smaller ART premium scales.



	Magnitude of Premium Jump Ratio			
	1-10X Jump	11-20X Jump	>20X Jump	Subtotal
Total Respondents	13	15	11	39
100% Shock Lapse Assumed	3	5	2	10
Less than 100% Shock Lapse Assumed	10	10	9	29
Dur L Median Lapse Rate	67%	80%	85%	80%
Dur L through L+1 Cumulative Median Lapse Rate	80%	88%	95%	88%
Dur L through L+2 Cumulative Median Lapse Rate	84%	91%	96%	92%
Dur L through L+3 Cumulative Median Lapse Rate	88%	93%	96%	93%
Mortality Deterioration Assumption Provided	10	11	8	29
Dur L+1 Median Mortality Deterioration (100% = none)	179%	240%	225%	232%
Dur L+2 Median Mortality Deterioration (100% = none)	211%	281%	382%	250%
Dur L+3 Median Mortality Deterioration (100% = none)	201%	237%	431%	250%

Relationship to Reinsurance Method

The following chart displays the same data for 10-year term products, with plot points differentiated based on the type of reinsurance used. Companies were grouped into those primarily using "First Dollar Quota Share" reinsurance (coinsurance or YRT) and those using primarily "Excess of Retention." There does not appear to be any significant relationship between shock lapse and assumed mortality deterioration based on the type of reinsurance used.

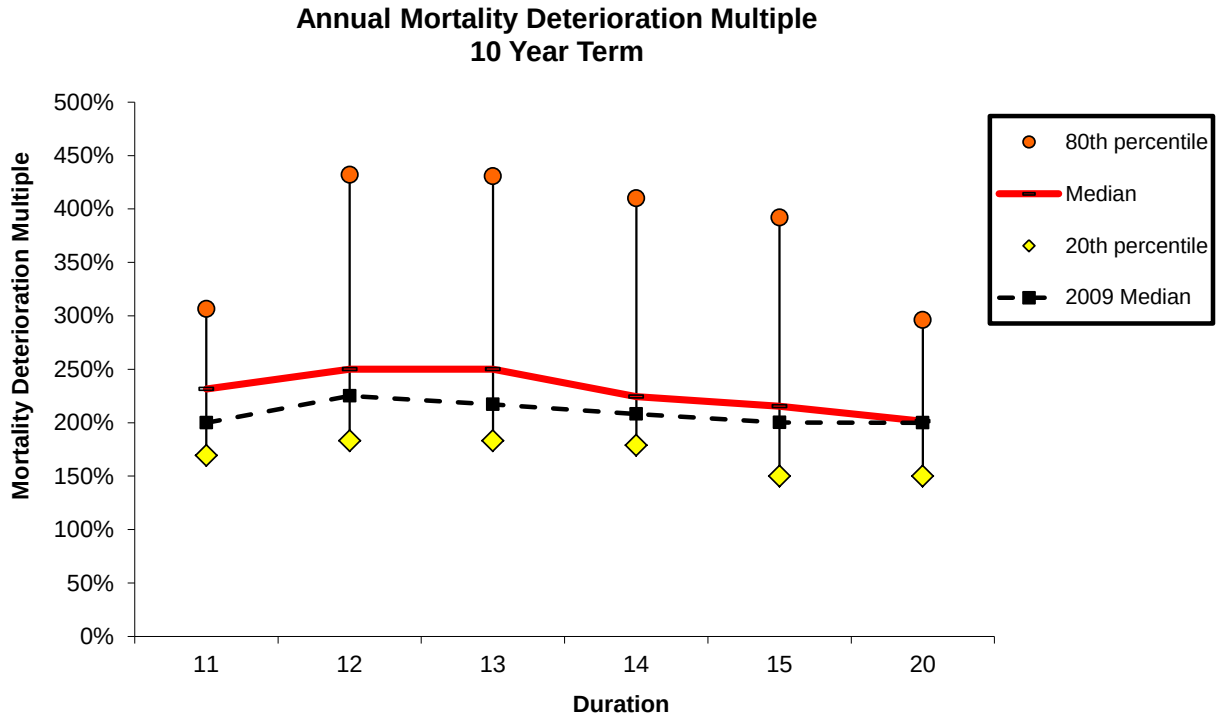


	Reinsurance Method			
	FDQS	Excess	FD-YRT	Total
Total Respondents	15	18	6	39
100% Shock Lapse Assumed	6	3	1	10
Less than 100% Shock Lapse Assumed	9	15	5	29
Dur L Median Lapse Rate	80%	81%	85%	80%
Dur L through L+1 Cumulative Median Lapse Rate	84%	91%	94%	91%
Dur L through L+2 Cumulative Median Lapse Rate	86%	92%	95%	94%
Dur L through L+3 Cumulative Median Lapse Rate	88%	93%	96%	95%
Mortality Deterioration Assumption Provided	8	14	5	27
Dur L+1 Median Mortality Deterioration (100% = none)	216%	251%	200%	232%
Dur L+2 Median Mortality Deterioration (100% = none)	225%	277%	250%	250%
Dur L+3 Median Mortality Deterioration (100% = none)	217%	250%	250%	250%

Specific Mortality Deterioration Assumptions

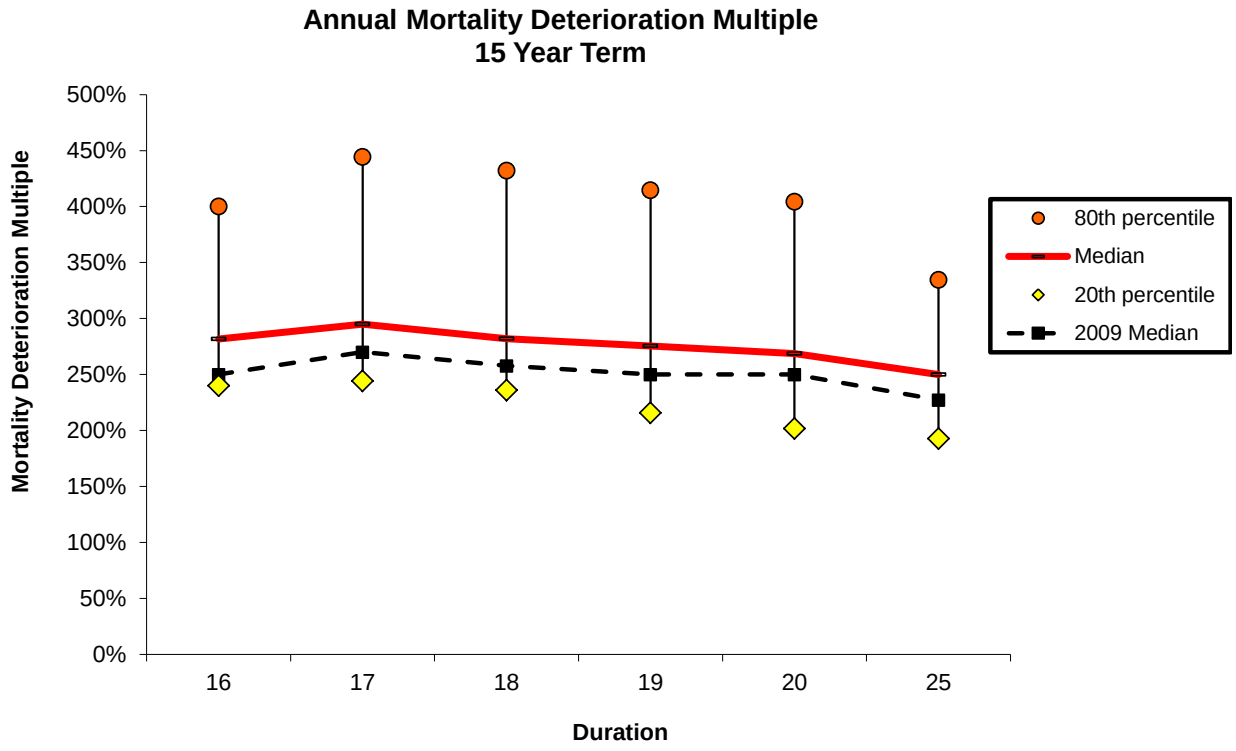
The following tables and charts show the range of specific mortality deterioration assumptions used by respondents. For companies that provided assumptions varying by age, level term period or risk class, the assumption displayed is for the same pricing cell described in the "Lapse Assumptions" section. 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=27)	Annual Mortality Deterioration Multiple Assumption by Duration					
	11	12	13	14	15	20
Minimum	115%	115%	115%	115%	115%	113%
20th percentile	169%	183%	183%	179%	150%	150%
Median	232%	250%	250%	224%	215%	201%
80th percentile	306%	386%	424%	410%	392%	296%
Maximum	500%	475%	535%	525%	600%	1125%
2009 Median	200%	225%	217%	208%	200%	200%



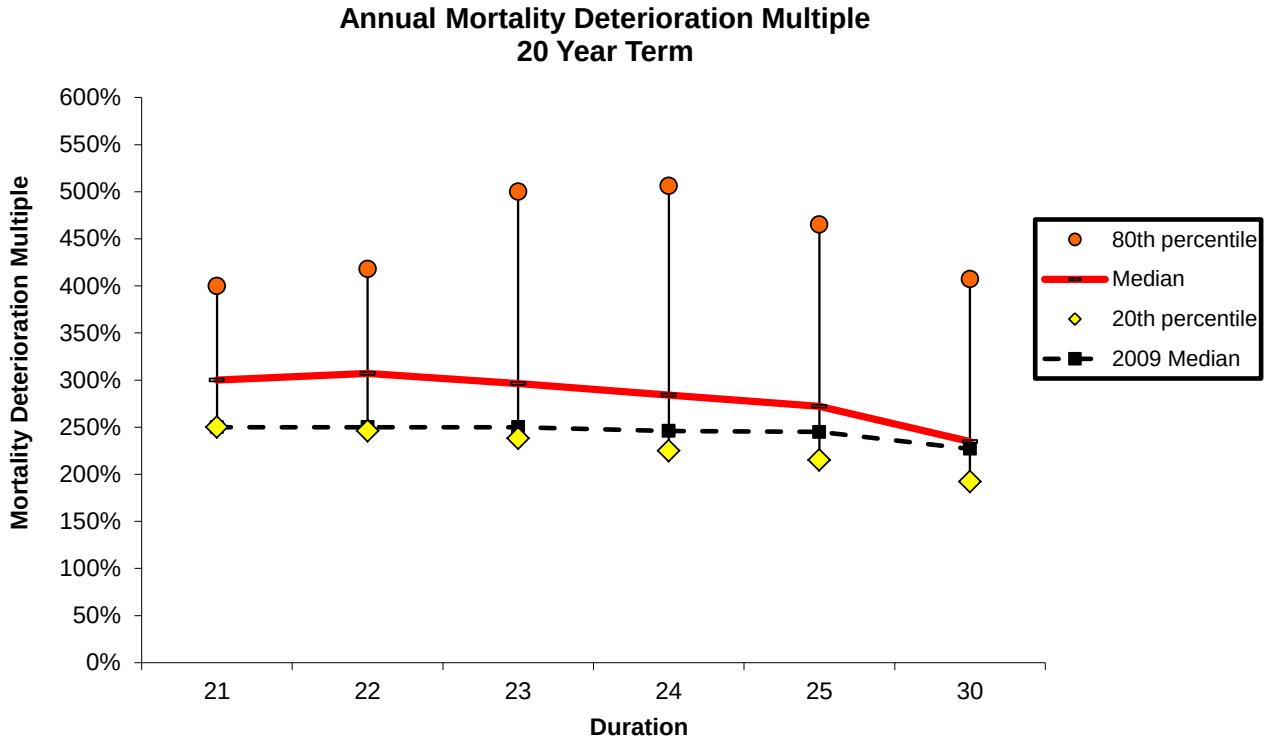
Specific Mortality Deterioration Assumptions (15-Year Term)

15 Year Term (n=20)	Annual Mortality Deterioration Multiple Assumption by Duration					
	16	17	18	19	20	25
Minimum	125%	125%	125%	125%	125%	125%
20th percentile	240%	244%	236%	216%	202%	193%
Median	282%	295%	282%	275%	269%	250%
80th percentile	400%	444%	432%	415%	404%	334%
Maximum	620%	860%	1371%	1275%	1216%	1658%
2009 Median	250%	270%	258%	250%	250%	227%



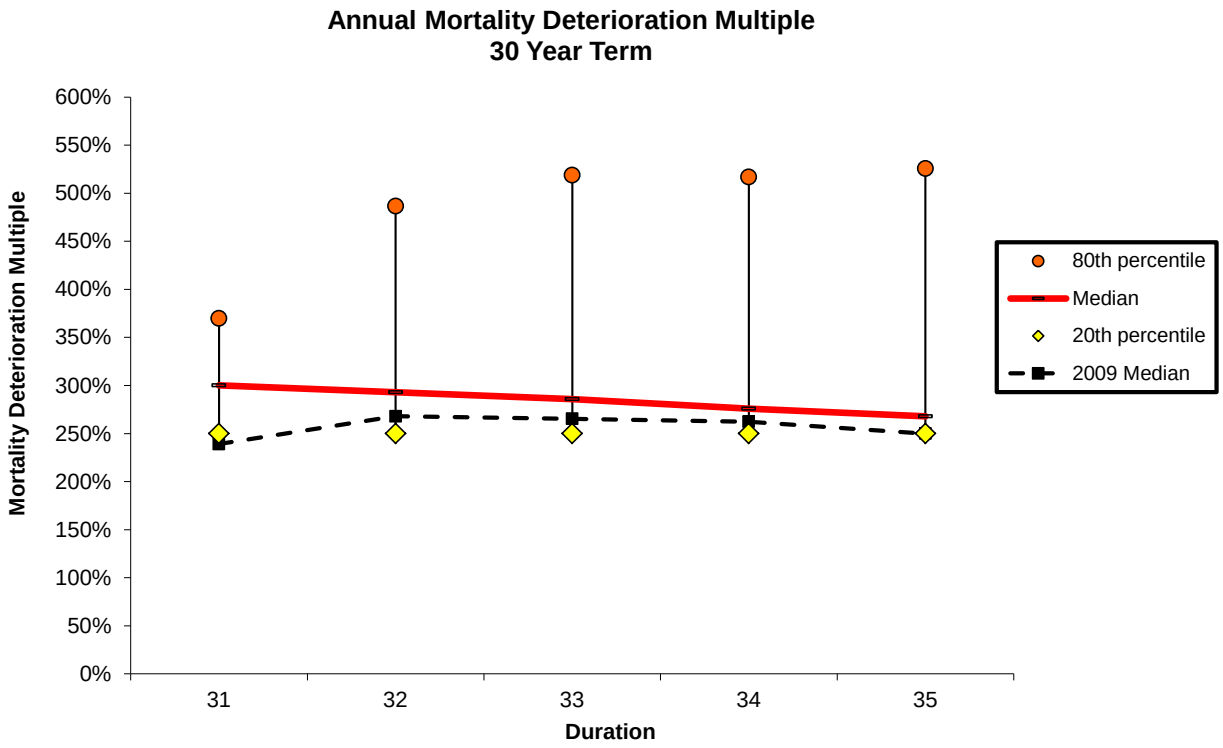
Specific Mortality Deterioration Assumptions (20-Year Term)

20 Year Term (n=21)	Annual Mortality Deterioration Multiple Assumption by Duration					
	21	22	23	24	25	30
Minimum	150%	180%	168%	157%	159%	164%
20th percentile	250%	246%	238%	225%	215%	192%
Median	300%	307%	296%	284%	272%	235%
80th percentile	400%	418%	500%	506%	465%	407%
Maximum	684%	790%	1235%	1178%	1192%	1310%
2009 Median	250%	250%	250%	246%	245%	227%



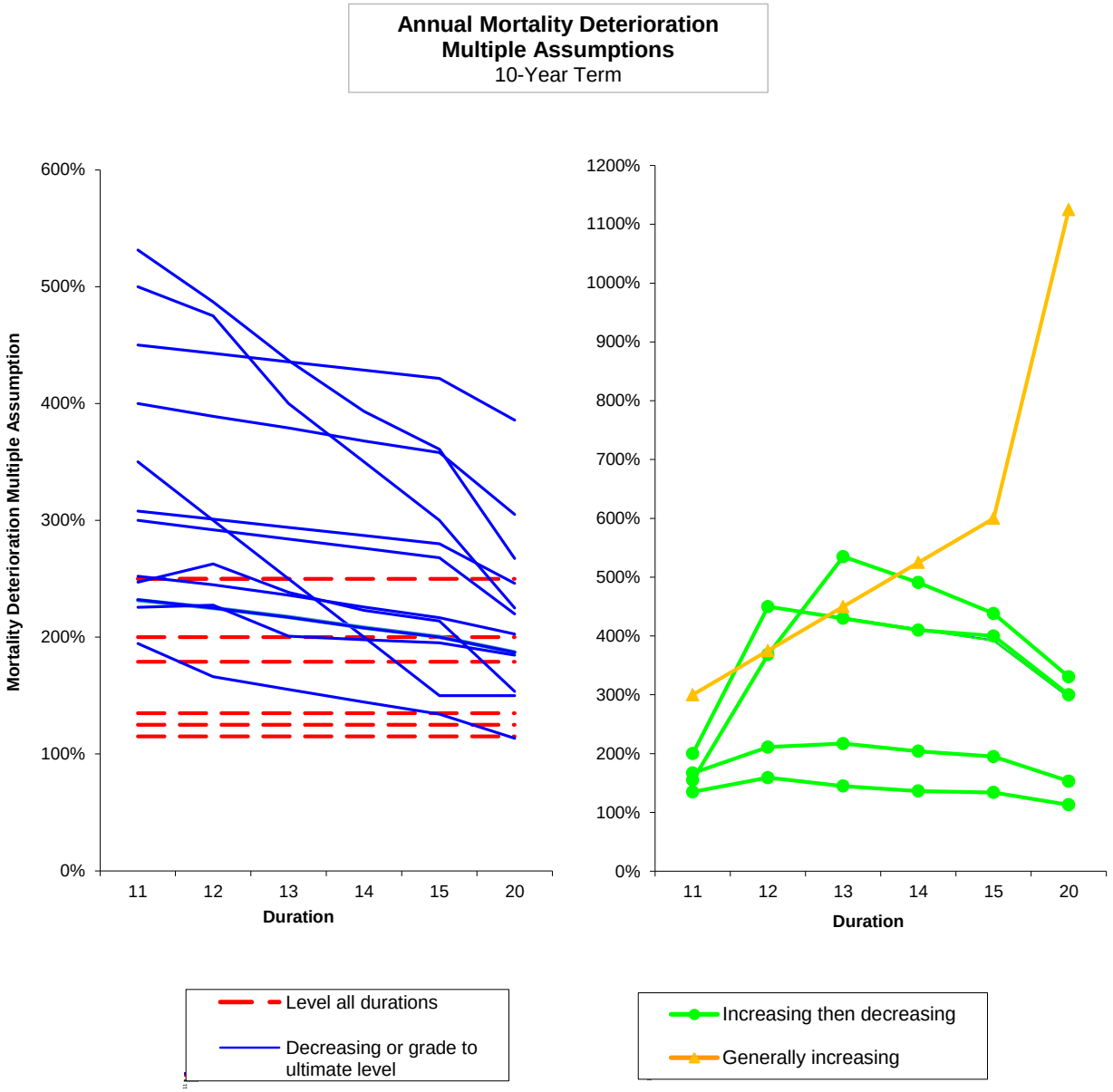
Specific Mortality Deterioration Assumptions (30-Year Term)

30 Year Term (n=9)	Annual Mortality Deterioration Multiple Assumption by Duration				
	31	32	33	34	35
Minimum	180%	180%	180%	180%	180%
20th percentile	250%	250%	250%	250%	250%
Median	300%	293%	286%	276%	268%
80th percentile	370%	487%	519%	517%	526%
Maximum	652%	1508%	4260%	7070%	7310%
2009 Median	239%	268%	265%	262%	250%

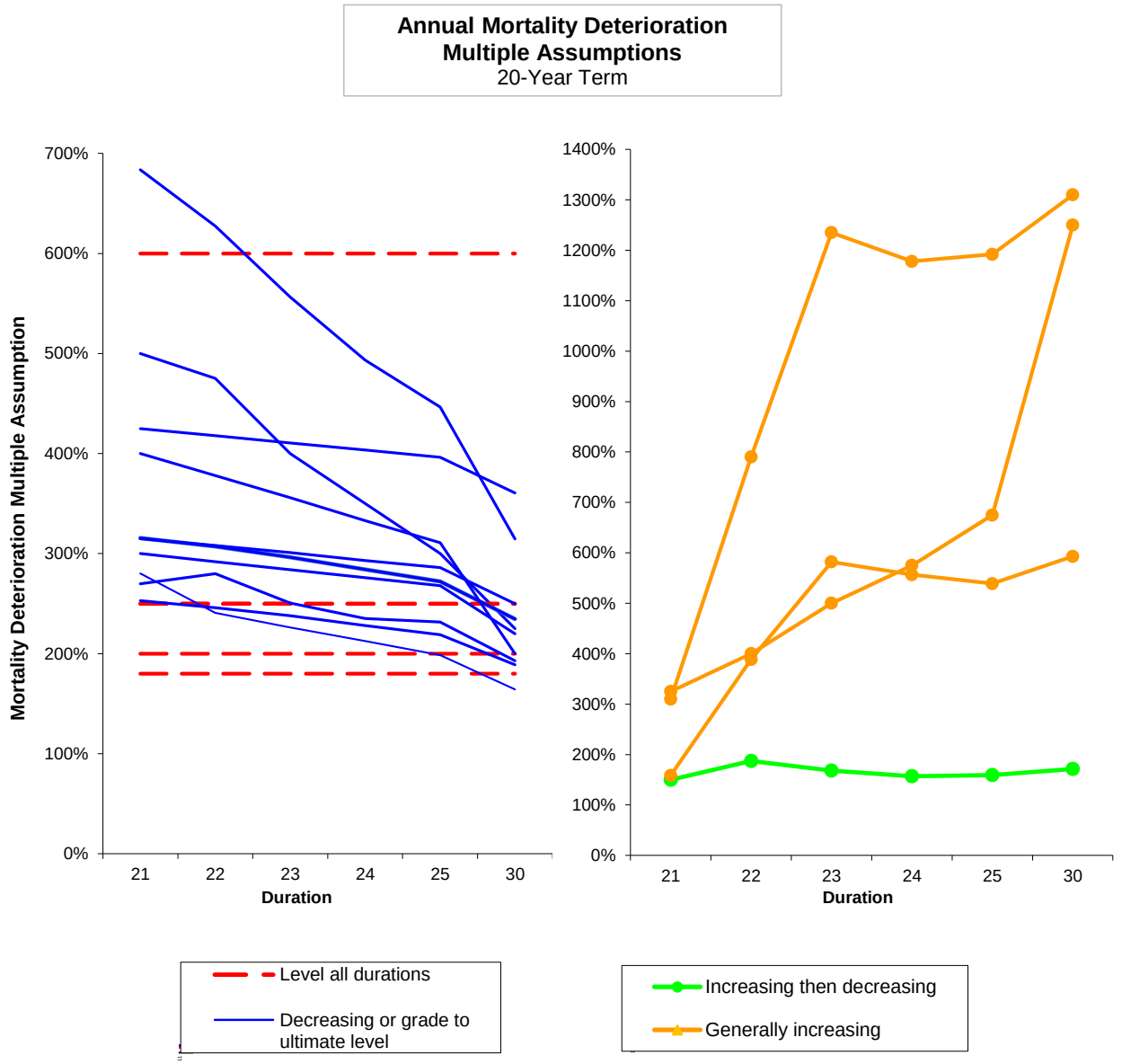


Specific Mortality Deterioration Assumptions (10 and 20-Year Term – All Responses)

Although the graphs on the previous pages give a sense of the general levels and distributions of mortality deterioration assumptions by duration, they don't necessarily reflect durational trends of any individual company's assumption. Most companies provided an assumption that was either level for all durations or began decreasing by the second or third duration after the level period. Some companies provided identical assumptions. Please take note of the differences in scale between the charts.



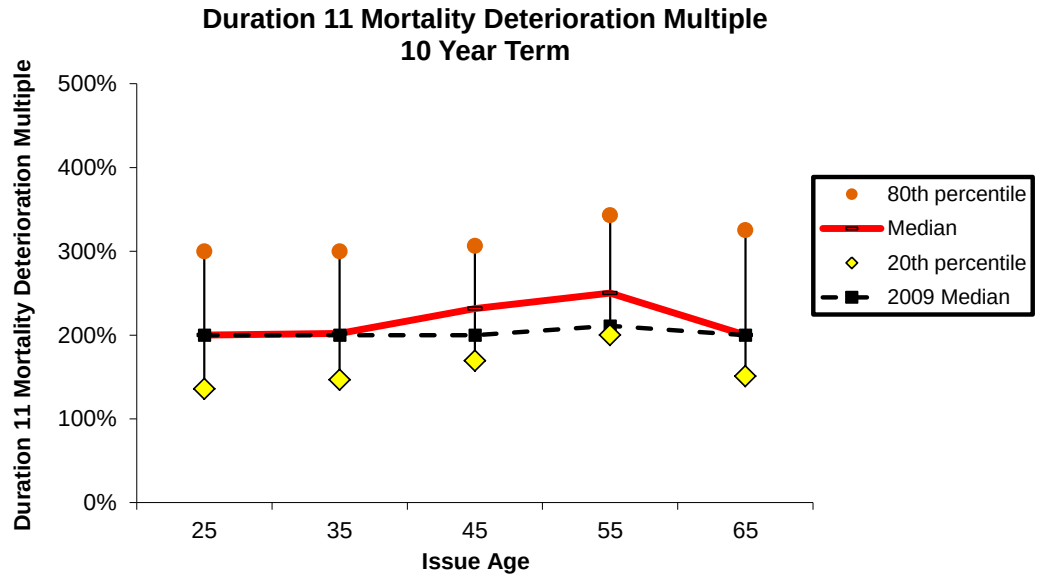
Mortality Deterioration Assumption Trend By Duration		
Description	Responses	
	10-Year Term	20-Year Term
Level all durations	7	6
Decreasing or grade to ultimate level	13	11
Increasing then decreasing	6	1
Generally increasing	1	3

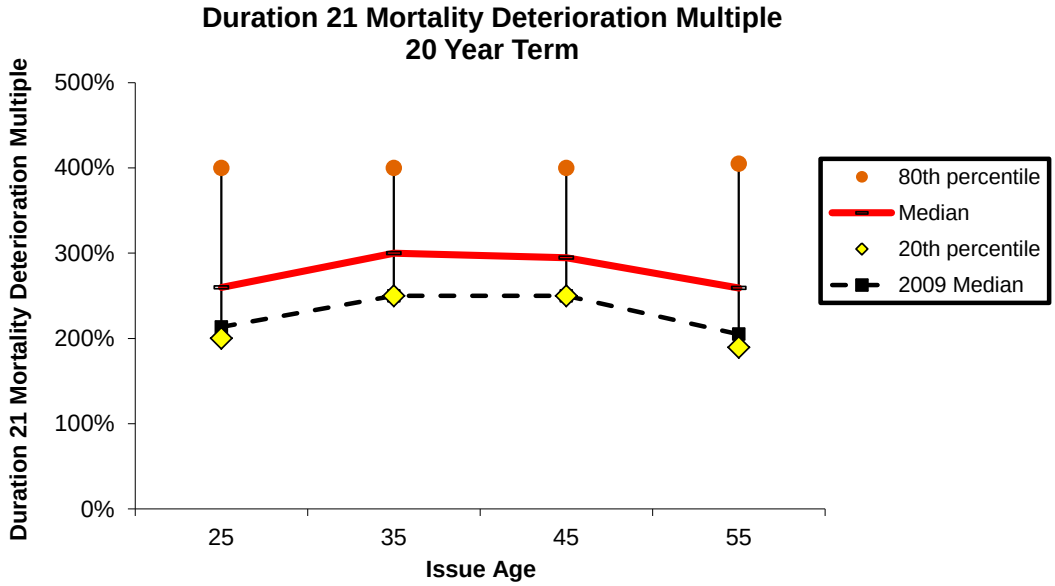


Specific Mortality Deterioration Assumptions (Variations by Issue Age)

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 and 55, with a lower multiple for age 65. The following table and charts 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	115%	115%	115%	115%	115%	160%	180%	180%	180%
20th percentile	136%	147%	169%	200%	151%	220%	250%	250%	207%
Median	200%	202%	232%	250%	200%	260%	300%	294%	268%
80th percentile	300%	300%	300%	312%	304%	385%	385%	391%	391%
Maximum	500%	500%	500%	500%	500%	500%	684%	793%	1057%
2009 Median	200%	200%	200%	211%	200%	213%	250%	250%	205%





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 persist in the term policy. Of the 32 companies that use a shock lapse of less than 100%, 17 responded that they use different anti-selective mortality deterioration for conversions than for term policies that persist. Of these 17 respondents,

- 2 indicated that more anti-selection was assumed for conversions.
- 2 indicated that no anti-selection was assumed for conversions.
- 2 indicated that less anti-selection was assumed for conversions.
- 5 indicated that conversions are included in permanent plan experience.
- 6 simply indicated that their assumption was different for conversions.

Other Assumptions & Practices

Use and Development of Assumptions

Companies were asked to indicate applications where they utilize assumptions for projecting beyond the level premium period. The three "Other" responses all indicated that DAC is amortized over the level period, but GAAP reserves can be extended beyond the level period.

Situations Utilizing Assumptions Beyond the Level Premium Period		
Application	Products Sold at YE 2012	Inforce Business No Longer Sold
Pricing	30	20
Cash Flow Testing	26	26
Embedded Values	16	11
Illustrations	15	14
SAP Earnings Projections	15	15
GAAP Reserves & DAC	16	17
GAAP Income Projections	21	20
Other	3	3

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	28	19
External consultants	12	11
Reinsurers	16	15
SOA Research Study	18	18
Other Industry studies	8	8

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	10	9
Within past 2 years	5	5
Within past 3 years	8	4
3-5 years ago	6	9
more than 5 years ago	8	10

Reinsurance

Respondents were asked about their use of reinsurance on term products at the end of 2012. Note that several respondents had more than one type of reinsurance arrangement.

Type of Reinsurance Used on Term Products	
First Dollar QS Coinsurance	11
First Dollar QS YRT	13
Excess of Retention YRT	21
Other	9

Respondents were also asked about reinsurance recapture options. Again, some respondents are included in multiple rows.

Use of Reinsurance in Practice and in Pricing		
Recapture Option	Treaty Provides For	New Business Pricing Assumes
Full recapture at end of level period	10	3
Full recapture at level period + n years	2	0
Full recapture after 10 years for all plans	2	0
Limited recapture to current retention limit	19	1
No recapture	10	25
No reinsurance	0	2
Unknown	1	1
Other	2	0

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.

Conservation Programs	
Response	Respondents
No	14
Yes, policyholder communication near end of term	21
Yes, conversion or exchange encouraged with agent or policyholder incentives	13
Yes, conversion or exchange encouraged without additional incentives	9
Yes, other	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.

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

Conversion Product Options	
Response	Respondents
May convert into any available permanent plan	25
May convert into product(s) of the insurer's choice	4
May convert into a Whole Life product only (not UL)	3

Few companies place restrictions on the permanent product to be used for conversion. This raises the question of whether it would be cheaper for an unhealthy insured to convert to a permanent plan with guaranteed death benefit coverage than pay the ART premiums after the end of the level term period.

The following responses reflect the type of attained age or duration restrictions attached to conversions. Given the wide variety of responses, they have been grouped into the following broad categories. Keep in mind responses may fall into multiple groups.

Conversion Restrictions	
Limitation	Respondents
Prior to specified attained age (often 65, 70, or 75)	5
Prior to specified number of years (often 5 or 10)	2
Prior to end of level premium period	4
Prior to attained age and/or duration	11
Prior to attained age and/or end of level period	19
Not prior to specified number of years (5)	4

Special Thanks

The authors would again like to extend our thanks 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 following members of the SOA's Project Oversight Group and SOA Staff for their guidance and support on this research project. Their comments, feedback and direction have greatly improved the value of this project.

Jeff Beckley
Tatiana Berezin
Brian Carteaux
Doug Doll
Tony Phipps
David Wylde

Cynthia MacDonald
Jack Luff
Erika Schulty

Appendix A: Survey Participants

Allstate
American Family Insurance
American National Insurance Company
American United Life
American-Amicable Group
Americo Financial
Amica Life Insurance Company
Aviva USA
AXA Equitable
CNO Financial
Columbus Life
COUNTRY Life Insurance Company
Erie Family Life Insurance Co.
Farm Bureau Life of MO
Fidelity Investments Life Insurance Company
Genworth Financial Group
ING
John Hancock
Lafayette Life
Legal & General America
Lincoln Financial Group
Massachusetts Mutual Life Insurance Company
Modern Woodmen of America
MTL Insurance Company
Nationwide
New York Life Insurance Company
Northwestern Mutual
Ohio National Financial Services
Pekin Life Insurance Company
Penn Mutual
Principal Financial Group
Protective Life Insurance
Prudential
Riversource
Sammons
State Farm Life Insurance Company
Symetra
TransAmerica
Vantis Life Insurance Company
Woodmen of the World Life Insurance Society
Western & Southern Life

Appendix B: Survey Questions

2013 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 year end 2012. 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 or 30 years followed by an increase in the premium rate per $1000 beyond the 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 UL should be included 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 2012?

Product Level Premium Period	2012 Sold by Face amount
5 Year Term	
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 2012 Level Term Face Amt. Sales
Independent Agent	
Managing General Agents	
Captive Agent	
Banks	
Internet	
Broker Dealer	
Direct Response	
Other	

If other, describe

4.Reinsurance

Please select the types of reinsurance used on your term products at YE 2012. (Place an X for all that apply.)

First Dollar QS Coinsurance	-
First Dollar QS YRT	-
Excess of Retention YRT	-
Other	-

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, conversion or exchange encouraged with agent or policyholder incentives	-
Yes, 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.)

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

Please provide any additional description as necessary

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 ART 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 general level of your guaranteed ultimate premium rates.
*Examples may be "Approximately 300% of 2001 CSO Ultimate" or "Approximately x * level period rates"*

e). Please describe the relationship between the current and guaranteed rates beyond the level period.
Example may be "Current equal to guarantee" or "Product has guaranteed rates only" or "current approximately 75% of guaranteed"

f). 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 for first 5 policy years into any existing UL plan."

g). 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 2012 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	L+4	L+1	L+2	L+3	L+4
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									

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	-	-
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 neeeded

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 YE 2012	In-Force Business No Longer Sold
Pricing		
Cash Flow Testing		
Embedded Values		
Illustrations		
SAP Earnings Projections		
GAAP Reserves & DAC		
GAAP Income Projections		
Other (Describe)		

If other, describe

3. Reinsurance Recapture

What are the recapture provisions and assumptions for reinsured business at the end of the level period

	Treaty provides for	New Business pricing assumes
Full recapture at end of level period	-	-
Full recapture at level period + n years	-	-
Full recapture after 10 years for all plans	-	-
Limited recapture to current retention limit	-	-
No recapture	-	-
No reinsurance	-	-
Other (describe)	-	-
Unkown	-	-
NA	-	-

Please provide any additional description as necessary

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 2012 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 non-level premium to the 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 year after the level period

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

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

Beyond the level premium period. (durations L+1 and later)

3. Total Lapse Rate Assumptions

Please provide your total lapse assumptions for products sold at YE 2012 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.

Primary Factor	Level Premium Period (L)	Issue Age	Total Assumed Lapse Rate for Policy Year					
			L	L+1	L+2	L+3	L+4	L+5
	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						

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	
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 8% 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+10	L+15	L+20	L+25
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									

Appendix C: A Note about Common Companies between 2009 and 2013 Surveys

This study features many tables and charts with comparisons between the 2009 survey responses and those from the current survey. The participating groups in each study are not wholly comprised of the same companies. However, the results when looking only at common companies between the studies are not materially different from the results when comparing all companies in each survey. Thus, for simplicity we use the all company view in the displays in the text. The following table demonstrates using the first display from the Executive Summary:

	Common Companies				All Companies			
	2009		2013		2009		2013	
	Term Period (L)		**Term Period (L)**		**Term Period (L)**		**Term Period (L)**	
	10	20	10	20	10	20	10	20
Total Respondents	25	25	24	24	41	41	38	39
100% Shock Lapse Assumed	5	7	4	8	8	10	9	15
Less than 100% Shock Lapse Assumed	20	18	20	16	33	31	29	24
Dur L Median Lapse Rate	80%	81%	83%	90%	80%	82%	80%	90%
Dur L through L+1 Cumulative Median Lapse Rate	86%	88%	92%	95%	86%	88%	88%	92%
Dur L through L+2 Cumulative Median Lapse Rate	87%	91%	95%	96%	87%	91%	92%	94%
Dur L through L+3 Cumulative Median Lapse Rate	89%	92%	95%	97%	89%	91%	93%	95%
Mortality Deterioration Assumption Provided	17	15	20	15	29	27	27	21
Dur L+1 Median Mortality Deterioration (100% = none)	215%	253%	229%	300%	200%	250%	232%	300%
Dur L+2 Median Mortality Deterioration (100% = none)	231%	270%	247%	307%	225%	250%	250%	307%
Dur L+3 Median Mortality Deterioration (100% = none)	233%	251%	237%	296%	217%	250%	250%	296%
Dur L+5 Median Mortality Deterioration (100% = none)	217%	250%	207%	272%	200%	245%	215%	272%
Dur L+10 Median Mortality Deterioration (100% = none)	200%	235%	193%	250%	200%	227%	201%	235%

In the authors' opinion, the differences are too minimal to double the displays used in the report.