Report

of the

Society of Actuaries

Mortality Improvement

(Annuity)

Survey Subcommittee

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Society of Actuaries
475 N. Martingale Rd., Ste. 600
Schaumburg, IL 60173
Phone: 847-706-3500
Fax: 847-706-3599
Web site: http://www.soa.org

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Introduction

This report presents the results of the Mortality Improvement Survey for insurance companies and respondents who write annuity business conducted by the Society of Actuaries (SOA) Committee on Life Insurance Mortality and Underwriting Surveys. A similar survey was sent to insurers and respondents on the pricing of life products. Separate reports have been completed for these additional surveys.

The survey was conducted in February - March of 2011 and sent to insurance companies and respondents in the US and Canada. Forty-two companies completed the survey.

The intent of the Survey was to examine mortality improvement practices with respect to annuity insurance pricing in both the US and Canada. A few questions were asked about functions other than pricing. Appendix 1 displays the US and Canadian practices separately and combined.

The survey included sections on:

- Company Information (Reinsurance & Direct)
- Generational Mortality Improvement - the process of bringing historical mortality experience up to the current era.
- Durational Mortality Improvement - the process of projecting the current era's mortality into the future.
- Mortality Improvement Questions for Companies with Canadian Reporting Requirements who use Mortality Improvement

The report also includes the following appendices:

1. Durational Improvement factors for US, Canada & Combined
2. List of Contributing Companies

The Survey Subcommittee would like to thank all of the companies who participated in the Survey. We also thank those who helped us review this document and offered helpful suggestions and thoughtful comments. Finally, the Survey Subcommittee thanks the Society of Actuaries staff for their help in completing this project, especially Jack Luff and Korrel Rosenberg, without whose help this could not have been completed.

Comments about this report and suggestions for future surveys are welcome and can be addressed to the Committee on Life Insurance Mortality and Underwriting Surveys c/o The Society of Actuaries.

Mortality Improvement Survey Subcommittee:
Gord Gibbins, FSA, Chair
Roger Annin, FSA
Mary J. Bahna-Nolan, FSA
David Bruggeman, FSA
Connie Dewar, FSA
Scott Morrow, FSA

SOA Liaison: Jack Luff, FSA
SOA Research Liaison: Korrel Rosenberg

Executive Summary

Section I: Company Information

- Forty-two companies responded to the Survey. Only one was a reinsurer, so no split is made between direct companies and respondents. For some questions, the results are split for US versus Canadian companies and sometimes the results are combined.
- Thirty-six US companies and six Canadian companies completed the Surveys. Three US and three Canadian companies operate in both countries and provided separate responses by country, so there were actually 48 responses - 9 Canadian and 39 US.
- There were not any material differences by amount of yearly payout for each company.

Section II: Generational Mortality Improvement

- All but one Canadian company and almost 75% of US companies use generational mortality improvement.
- Gender and attained age were the most common factors that generational mortality improvement varied by, according to the respondents.
- Both US and Canadian companies indicated that the basis for their generational mortality improvement assumptions were intercompany, own company and population mortality studies. Sixty-four percent of US companies (and only 33% of Canadian companies) indicated use of intercompany mortality.
- The most common method for creating generational mortality improvement was applying a flat percentage per year.
- At least one third of the companies indicated they review their factors annually and 25% indicated at least every three years. Another 25%+ indicated no set schedule.

Section III: Durational Mortality Improvement

- Over 60% of US and Canadian companies indicated using durational mortality improvement. For those not using duration mortality improvement, a variety of reasons were given.
- Sixty percent of respondents indicated using both generational and durational mortality improvement.
- Over 90% of companies indicated they vary their durational mortality improvement by gender and attained age. "Generation of birth" was a distant third (9% for US and 20% for Canada.).
- Most companies calculate their improvement factors by the compounded $(1\text{-}F)^n$, where F is the improvement factor and n is the length of improvement.

- About 80% of respondents indicated factors are non-zero for the entire pricing horizon.
- All Canadian and 79% of US respondents indicated there was NO maximum duration for applying the improvement factors.
- Approximately 60% of respondents indicated they do have a maximum attained age for applying the improvement factors. The maximum age varied considerably, with a cluster of responses around age 100.
- Almost all respondents indicated there was no minimum mortality level below which mortality improvement factors would not be applied.
- The number of companies doing impaired annuities was very small (4 Canadian, 5 US). For those nine, all but one US reinsurer applied durational mortality improvement factors and they used the same factors as for non-impaired risks.
- Canadian respondents, on average, assume higher durational mortality improvement factors for age 65; but US respondents, on average, use higher factors for age 85 for both males and females.
- On average, both US and Canadian respondents assume higher durational mortality improvement for males than females.
- Similarly, the factors are higher for age 65 than age 85.
- Improvements in medicine and extrapolation were the most important conceptual justifications used by companies to support the application of durational mortality improvement.
- For US companies, the top three factors indicated that may affect mortality improvement negatively were obesity, diabetes and pandemic. Only four Canadian respondents answered this question and all four ranked pandemic in the top three reasons.
- For both Canadian and US respondents, the most common resources for developing durational mortality factors were published insurance industry mortality studies, my company's own mortality studies and government published data.
- The two most common methods used to create durational mortality improvement factors were flat percentage per year and regression based on historical experience.
- When asked how often they review their factors, four of five Canadian companies indicated at least every three years. There was great variety in the US responses. Most companies had not validated previously developed factors.
- For US respondents, 66% indicated using durational mortality improvements in their GAAP valuation, 70% for capital modeling and 75% for planning/forecasting. Most used the same factors as used in pricing.
- For Canadian companies, 80% indicated using durational mortality improvements in their GAAP valuation, 60% capital modeling and 100% for planning/forecasting. Unlike in the US, a higher percentage indicated using a durational mortality improvement factor larger than that used in pricing.

Section IV: Mortality Improvement Questions for Companies with Canadian Reporting Requirements who use Mortality Improvement

- There were only five companies that responded to this section That said, three respondents indicated their company planned to reflect the maximum rates allowed in its annuity valuation (two didn't know) and two indicated that their company's pricing philosophy and practice would not change as a result of the new standard (three didn't know).

Mortality Improvement as Applied to the Pricing of Immediate Annuity Products

Section I: Company Information (Reinsurance and Direct)

Overall, there were 42 companies that responded to the survey on the use of mortality improvement for immediate annuity products. The 42 responses were from a mix of companies that operated in the US and/or Canada. Details regarding the companies' demographics and size are shown below. Throughout this report, many responses are separated by companies operating in Canada and companies operating in the US.

In some cases, not all the respondents completed every question. Where the number of responses for a particular question was less than four, no information is provided in order to ensure confidentiality of the participants.

1. What is your company's primary line of business?

   Only one of the respondents indicated they were a reinsurer. Therefore, their responses are combined with those of the direct companies throughout this report.

2. Please indicate if your company is:

Table 1

Company	#	%
US operating in US only	33	79%
US operating in US and Canada	3	7%
Canada operating in Canada only	3	7%
Canada operating in Canada and US	3	7%
Total # of Companies	**42**	**100%**

Forty-two companies completed the survey. Thirty-three are US companies operating in the US only, while three are US companies with operations in both the US and Canada. Three Canadian companies operate in Canada only, while three Canadian companies operate in both Canada and the US. For the companies indicating they operate in both the US and Canada, each provided a separate response for their Canadian and US operations for a total of 48 responses – nine Canadian, 39 US.

3. What is the yearly payout amount of your company on individual immediate annuity contracts for 12/31/09?

Table 2

In Force (Face)	Canada		US	
	#	%	#	%
$1B and higher	1	17%	1	3%
$400-999.9M	1	17%	4	11%
$100-399.9M	2	33%	10	28%
Less than $100M	2	33%	21	58%
Total # of Companies	**6**	**100%**	**36**	**100%**

Sixty-six percent of the Canadian companies and 86% of the US companies had a yearly payout amount of less than $400 million. For either country, only one respondent had yearly annuity payouts of $1 billion or more. A review of survey responses by level of yearly payout (less than $100 million / $100 million and higher) did not reveal any material differences by size of company.

Section II: Generational Mortality Improvement

Generational mortality improvement describes the process of bringing historical mortality experience up to the current era. For example, if an actuary has an experience study from an observation period ending several years ago, he or she might want to trend that experience to account for any mortality improvement from the observation period to the current projection date. This can be accomplished by: (1) updating the entire underlying mortality table by building a new mortality table that considers generational mortality improvement, or (2) simply applying generational mortality improvement factors to the existing underlying mortality table.

4. Does your company currently use generational mortality improvement (either by applying improvement factors to its existing mortality table or producing an up-to-date mortality table which considers generational mortality improvement)?

Table 3

Use Generational Mortality Improvement	Canada		US	
	#	%	#	%
Yes	8	89%	28	74%
No	1	11%	10	26%
Total # of Respondents	**9**	**100%**	**38**	**100%**

The results showed that nearly three-quarters or more of the respondents use generational mortality improvement. The use of generational mortality improvement appears to be slightly more common in Canada (89% of respondents) versus in the US (74% of respondents), but this may be skewed due to the smaller number of Canadian responses. Note: the Survey did not ask respondents to indicate the underlying mortality table to which they were applying the improvement factors or how often that underlying table was updated to reflect recent experience.

For the respondents indicating they did not use generational mortality improvement, the Survey asked why their company did not use generational mortality improvement. Respondents were requested to check all reasons that applied.

Among the ten US respondents, two indicated generational mortality improvement was not needed and three indicated there was not enough business to warrant its use.

Of the six respondents who indicated "Other," their responses are listed below:

- *Company uses durational improvement;*
- *Not decided;*
- *Too expensive and complicated to use;*
- *We are researching what is the appropriate approach*; and
- *We use a loaded mortality table instead* (1 US and 1 Canadian response).

The remainder of the questions in this section were for respondents that indicated they use some form of generational mortality improvement.

5. Do your company's generational mortality improvement factors vary by: (Check all that apply)

Table 4

Factor	Canada		US	
	#	%	#	%
Gender	6	75%	24	89%
Attained Age	7	88%	21	78%
Product	3	38%	6	22%
Generation of Birth	2	25%	5	19%
Other	0	0%	2	7%
Total # of Respondents	**8**		**27**	

Of the eight Canadian and 27 US respondents, the two most common factors the respondents indicated they used to vary their generational improvement were attained age (88% of Canadian and 78% of US companies) and gender (75% of Canadian and 89% of US companies). These results indicate that the respondents primarily based their generational mortality improvement factors on basic insured data and placed less emphasis on product type or generation of birth.

6. What basis does your company use for its generational mortality improvement assumption? (Check all that apply)

Table 5

Basis	Canada		US	
	#	%	#	%
Intercompany Mortality Studies	3	38%	18	64%
Own Company Mortality Studies	3	38%	12	43%
Population Mortality Studies	3	38%	9	32%
Other	2	25%	2	7%
Total # of Respondents	**8**		**28**	

All of the respondents who indicated using generational mortality improvement answered this question. Both the Canadian and US respondents tended to use population, intercompany and their own mortality experience in determining the generational mortality improvement to use. The US had a significantly higher percentage of respondents that indicated they used intercompany experience (64% of respondents versus 38% for Canada).

The other source used is the Committee on Life Insurance Financial Reporting (CLIFR) tables.

7. What methods does your company use to create generational mortality improvement factors? (Check all that apply)

Table 6

Method	Canada		US	
	#	%	#	%
Flat Percentage per Year	5	63%	16	59%
Regression based on Historical Experience	2	25%	7	26%
Other	3	38%	6	22%
Total # of Respondents	**8**		**27**	

All eight of the Canadian respondents who stated they use generational mortality improvement responded to this question, while 27 of the 28 US respondents provided a response. For both Canada and the US, the most common method for creating generational mortality improvement was by applying a flat percentage per year.

Details regarding the "Other" responses are listed below:

- *Scale G* (2 respondents);
- *Compounded (1-F)^n (from the year of study to year of pricing);*
- *Adjust Scale G to reflect company & intercompany experience;*
- *Industry tables;*
- *Use SOA Projection Scales*; and
- *UK Stipulated.*

8. How often does your company update or review its generational mortality improvement factors and / or the mortality produced by application of such factors?

Table 7

Frequency	Canada		US	
	#	%	#	%
At least annually	3	37%	9	32%
> 1 year, but at least every 3 years	2	25%	7	25%
> 3 years, but at least every 5 years	1	13%	0	0%
Less frequently than every 5 years	0	0%	4	14%
No set schedule	2	25%	8	29%
Total # of Respondents	**8**	**100%**	**28**	**100%**

Of the 36 total respondents, the most common frequency indicated for updating or reviewing generational mortality improvement factors was at least annually, at 37%, and 32% for the Canadian and US respondents, respectively. This was followed by no set schedule for both countries' respondents (25% for Canada; 29% for US) and between one and three years (25% for both Canada and the US).

9. Why doesn't your company use generational mortality improvement? (Check all that apply)

The response to this question is summarized under Question 4 above.

Section III: Durational Mortality Improvement

Durational mortality improvement describes the process of projecting the current era's mortality into the future.

As a cohort proceeds in time from policy year to policy year, the mortality rates applicable in each year may be lower than defined by the base mortality table selected for the project. Future lower mortality might be indicated by:

- Medical advances in the treatment of diseases;
- Application of research into the factors affecting the aging process; and
- Trends toward healthier lifestyles.

Durational mortality improvement is a way of keeping the annual mortality rate of a cohort up-to-date by applying future trends or expectations for mortality improvement.

10. Does your company currently use durational mortality improvement in the pricing of immediate annuity products?

Table 8

Use Durational Mortality Improvement in Pricing	Canada		US	
	#	%	#	%
Yes	5	62%	24	65%
No	3	38%	13	35%
Total # of Respondents	**8**	**100%**	**37**	**100%**

One of the companies operating in both the US and Canada did not respond about whether they use durational mortality improvement and did not answer any of the questions that followed. Therefore, they have been excluded from the Canadian and US totals.

Approximately two thirds of respondents (62% Canadian and 65% US) indicated they used durational mortality improvements in pricing.

For those respondents indicating their companies do not use durational mortality improvement in pricing, the Survey asked why it wasn't used. The respondents were able to select more than one reason.

Table 9

Reason	Canada		US	
	#	%	#	%
Does not believe needed	1	33%	5	38%
Does not believe appropriate	0	0%	1	8%
Other	2	67%	9	69%
Total # of Respondents	**3**		**13**	

All of the respondents whom indicated they did not use durational mortality improvement responded to this question. While some of the respondents indicated durational mortality improvement wasn't used because it was believed to not be needed, the majority responded "Other."

"Other" responses:

- *Low volume of business coupled with adequacy of pricing;*
- *Not decided;*
- *Payout business is immaterial;*
- *We are currently looking into incorporating durational mortality improvement;*
- *We are researching the appropriate approach;*
- *We believe that aging impacts offset any improvements;*
- *We feel it's covered by our generational factors;*
- *We think the generational approach is sufficient to anticipate future mortality improvements;*
- *We use a loaded mortality table instead*; and
- *In process of developing one.*

Approximately 60% of the respondents, as shown in the table below, indicated they use both generational and durational mortality improvement. Nine of the 45 total respondents indicated they did not include the use of any mortality improvement assumptions for their immediate annuities, with a higher percentage of the US respondents indicating they did not use any mortality improvement (eight respondents and 22%) compared to Canadian respondents (one respondent and 13%).

Table 10

Use of Durational Mortality Improvement	Canada		US	
	#	%	#	%
Both Generational and Durational	5	62%	22	59%
No Mortality Improvement Used	1	13%	8	22%
Generational Only	2	25%	5	14%
Durational Only	0	0%	2	5%
Total # of Respondents	**8**	**100%**	**37**	**100%**

11. By which of the following do your company's durational mortality improvement factors vary? (Check all that apply)

Table 11

Reasons for Varying Durational Mortality Improvement	Canada		US	
	#	%	#	%
Attained Age	5	100%	21	91%
Gender	5	100%	21	91%
Generation of Birth / Cohort	1	20%	2	9%
Other	0	0%	1	4%
Total # of Respondents	**5**		**23**	

All five of the Canadian respondents and 23 of the 24 US respondents who indicated they use durational mortality improvement responded to this question. Similar to generational mortality improvement, both the Canadian and US respondents tended to vary the durational mortality improvement factors by Gender (100% of Canadian and 91% of US) and Attained Age (100% of Canadian and 91% of US). A much lower percentage of respondents indicated they use the generation of birth to vary their factors.

For the other response, no further detail was specified.

12a. How are your company's durational mortality improvement factors (F) calculated into future years (n)? (Check one)

Table 12

Calculation of Durational Mortality Improvement Factors	Canada		US	
	#	%	#	%
Compounded $(1-F)^n$	5	100%	22	92%
Simple (1-n*F)	0	0%	1	4%
Other	0	0%	1	4%
Total # of Respondents	**5**	**100%**	**24**	**100%**

All of the respondents who indicated using durational mortality improvement answered this question. Nearly all the respondents (100% Canadian and 92% US) indicated they use compounding when determining durational mortality improvement factors into future years.

"Other" response:

- *Simple, but the factor is not level by age and eventually floors at a fixed percentage of the A2000 mortality.*

12b.How does your company apply the factors by policy year?

Table 13

How are Factors Applied	Canada		US	
	#	%	#	%
Non-zero factors are used for the entire pricing horizon (or end of level term period)	4	80%	19	79%
Factors are non-zero for X years, then become zero	0	0%	4	17%
Other	1	20%	1	4%
Total # of Respondents	**5**	**100%**	**24**	**100%**

All of the respondents who indicated using durational mortality improvement answered this question. Approximately 80% of the respondents indicated that non-zero factors are used for the entire pricing horizon. For the three respondents that indicated the factors are non-zero for a number of years, that number of years ranged between 10 and 20.

"Other" response:

- *Reach zero by age 102*; and
- *Non-zero factors until age 85, then become 0.*

13. Is there a maximum duration at which your company would apply durational mortality improvement factors?

Table 14

Maximum Duration	Canada		US	
	#	%	#	%
Yes	0	0%	5	21%
No	5	100%	19	79%
Total # of Respondents	**5**	**100%**	**24**	**100%**

All of the respondents who indicated using durational mortality improvement answered this question. All of the Canadian and the majority of US respondents (79%) said they do not have a maximum duration after which mortality improvement would not apply.

For the five US respondents indicating there is a maximum duration after which durational mortality improvement would not apply, two indicated 20 years and the remaining three indicated 10, 15 and 16 years.

14. Is there a maximum attained age at which your company would apply durational mortality improvement factors?

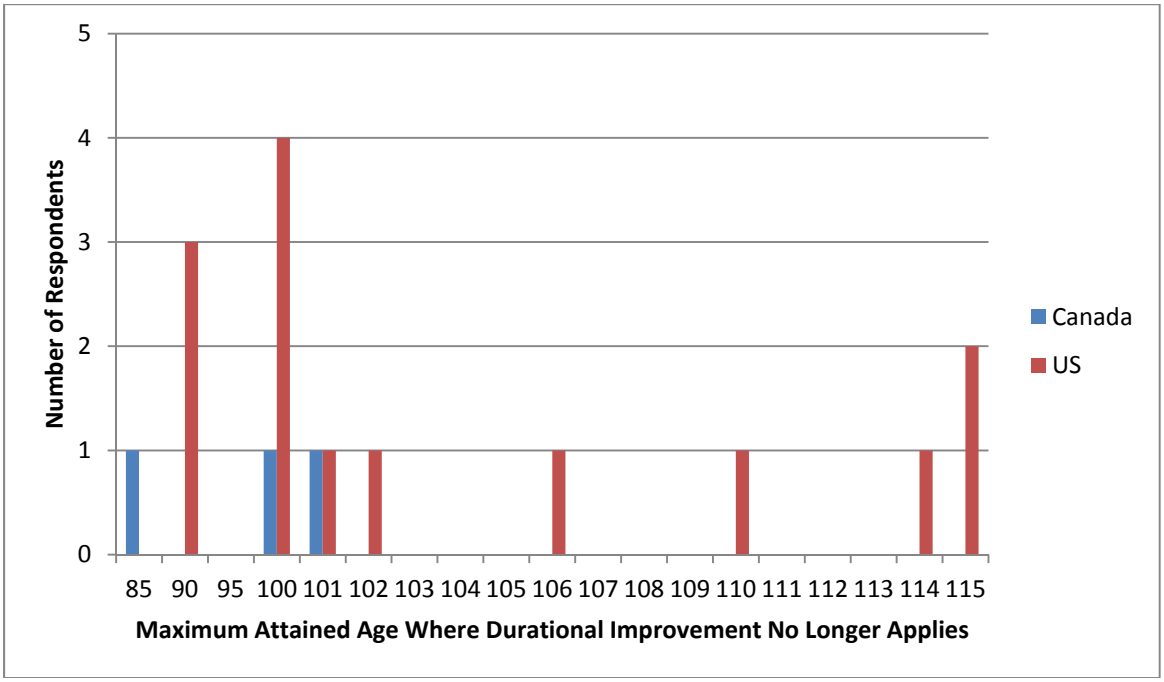
Table 15

Maximum Attained Age	Canada		US	
	#	%	#	%
Yes	3	60%	14	58%
No	2	40%	10	42%
Total # of Respondents	**5**	**100%**	**24**	**100%**

All of the respondents who indicated using durational mortality improvement answered this question. Approximately 60% indicated they do have a maximum attained age after which mortality improvement would not apply.

For those respondents indicating there is a maximum attained age at which durational mortality improvements would no longer apply, the Survey requested information on the maximum attained age.

Chart 1



For the 17 total respondents indicating there is a maximum attained age after which durational mortality improvements would not apply, attained age 100 was the most common age (four respondents), followed by age 90 (three respondents) and age 115 (two respondents) for US respondents; for Canadian respondents, responses were evenly split between ages 85, 100 and 101 (with one respondent each). The US respondents continue durational mortality improvement to older attained ages, with seven respondents (49%) indicating they continue durational mortality improvement to ages above 100, whereas only one Canadian respondent indicated as such.

15. Is there a minimum mortality level below which your company would not allow durational mortality improvement factors to decrease mortality? (e.g., 60% of your annuity pricing mortality table)

Table 16

Minimum Mortality Level	Canada		US	
	#	%	#	%
Yes	0	0%	1	4%
No	5	100%	22	96%
Total # of Respondents	**5**	**100%**	**23**	**100%**

All of the Canadian and 23 of the 24 US respondents who indicated their companies use durational mortality improvement responded to this question. All of the Canadian and all but one of the US respondents indicated there is not a minimum mortality level below which durational mortality improvement factors would not be applied.

16a. Does your company apply durational mortality improvement to impaired (substandard) risk annuities?

Table 17

Apply Durational Mortality Improvement to Impaired Risks	Canada		US	
	#	%	#	%
Yes	4	80%	4	17%
No	0	0%	1	4%
N/A	1	20%	19	79%
Total # of Respondents	**5**	**100%**	**24**	**100%**

All of the respondents who indicated using durational mortality improvement answered this question. The majority of US respondents chose N/A, presumably since they do not write impaired risk annuities. Of the respondents that answered either Yes or No to this question, all the Canadian and the vast majority of US respondents (80%) indicated they apply durational mortality improvement to impaired risks.

16b. If "Yes," are impaired (substandard) risk durational mortality improvement factors generally:

Table 18

Impaired Risk Improvement Factors Compared to Standard	Canada		US	
	#	%	#	%
About the same	4	100%	4	100%
Greater than standard	0	0%	0	0%
Less than standard	0	0%	0	0%
Total # of Respondents	**4**	**100%**	**4**	**100%**

All of the eight respondents that indicated they applied durational mortality improvement to their impaired risk annuity mortality indicated they use about the same level of durational mortality improvement for impaired risks as they do for non-impaired risks.

17. The Survey asked respondents to provide their company's durational mortality improvement factors for male and female risks, issue ages 65 and 85 for the following contract durations: 1-3, 5, 6, 10, 11, 15, 16, 20, 21, 25, 26, 30 and 31+. The responses are shown in Charts 1 through 4 below. Further details of the responses are provided in Appendix I. The Committee made the following observations regarding the responses:

Canada versus US:

- Canadian respondent companies, on average, assume higher durational mortality improvement factors for Age 65 Males than their US counterparts.
- US respondent companies, on average, assume higher durational mortality improvement factors for Age 85 Males and Females than their Canadian counterparts.

Male versus Female:

- On average, both US and Canadian respondent companies assume higher durational mortality improvement factors for Males than they do Females.

Age 65 versus Age 85:

- On average, both US and Canadian respondent companies assume higher durational mortality improvement factors for Age 65 than Age 85.

Chart 2

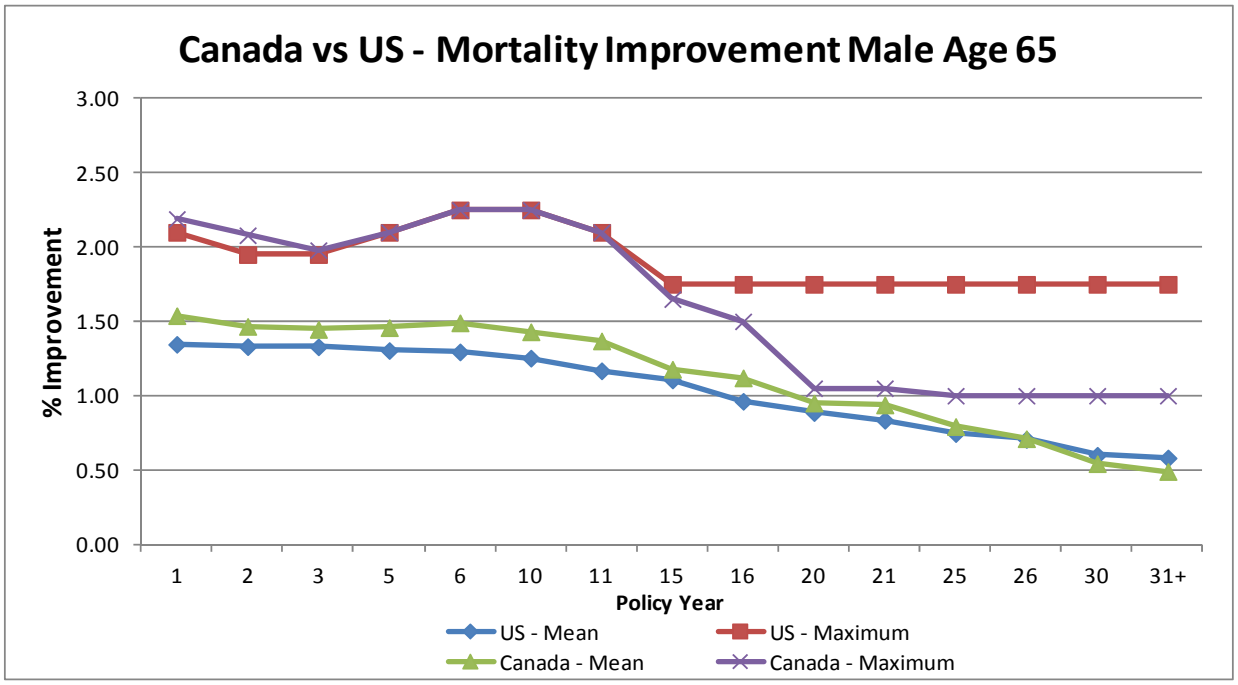


Chart 3

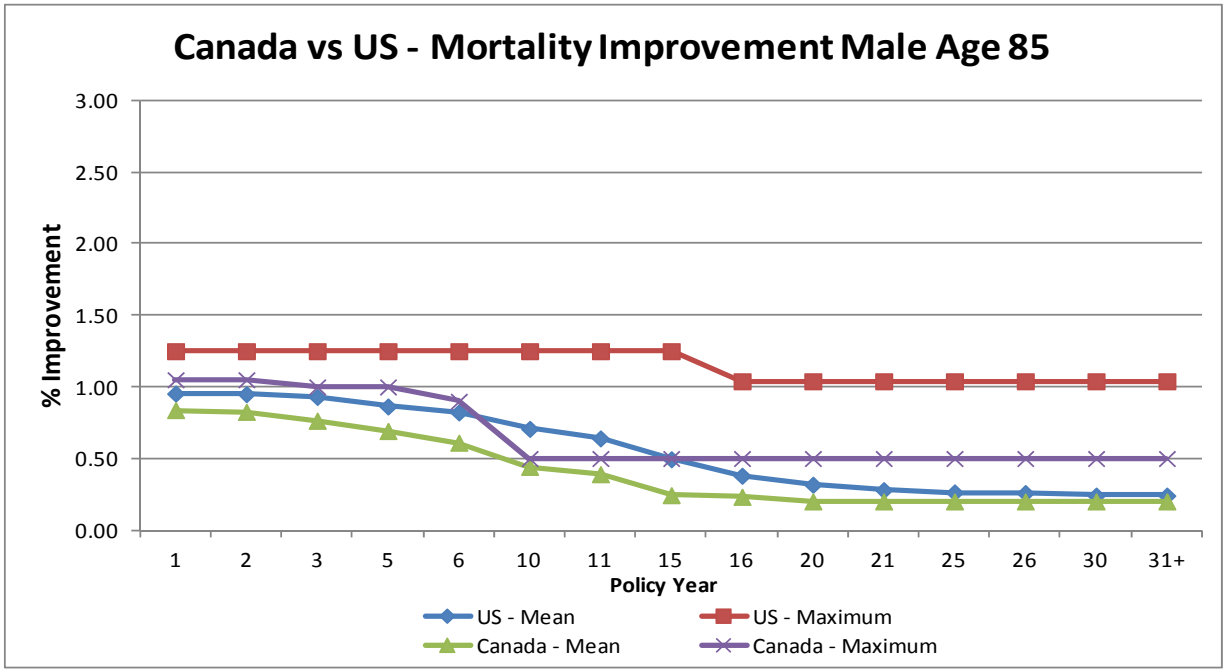


Chart 4

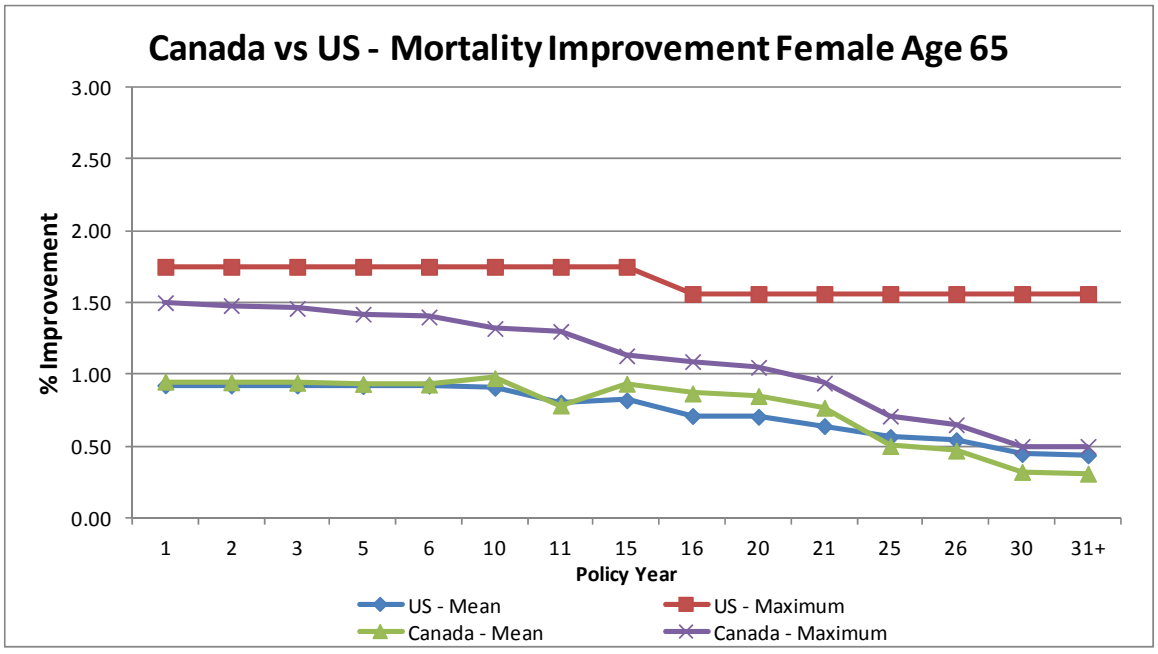
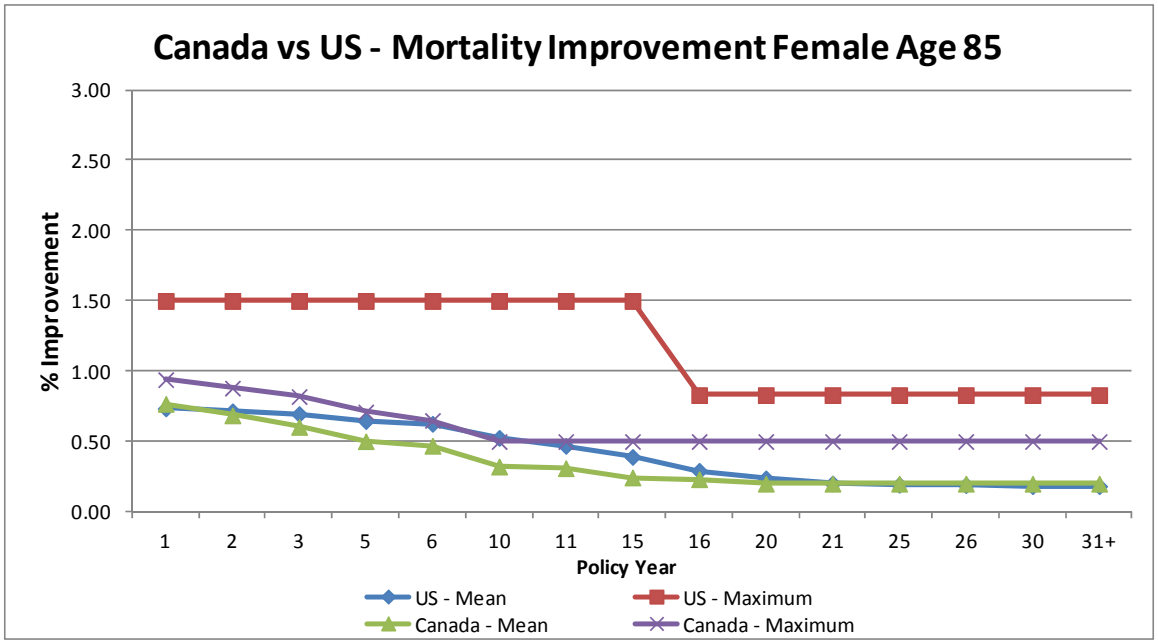


Chart 5



18. What conceptual justifications does your company use to support the application of durational mortality improvement? (Please rank your top 3 justifications from 1 to 3, 1 = most important & 3 = 3rd most important)

Chart 6

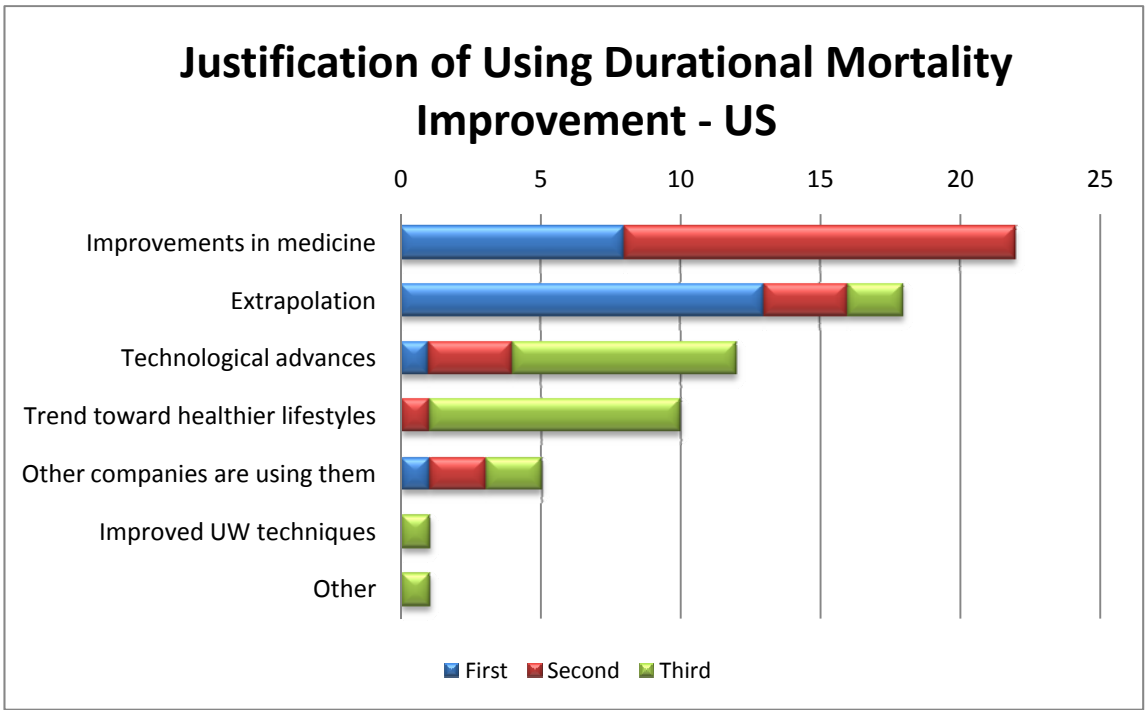


Table 19

Justification	First		Second		Third		Total
	#	%	#	%	#	%	%
Improvements in medicine	8	35%	14	61%	0	0%	96%
Extrapolation	13	57%	3	13%	2	9%	78%
Technological advances	1	4%	3	13%	8	35%	52%
Trend toward healthier lifestyles	0	0%	1	4%	9	39%	43%
Other companies are using them	1	4%	2	9%	2	9%	22%
Improved UW techniques	0	0%	0	0%	1	4%	4%
Other	0	0%	0	0%	1	4%	4%
Total # of Respondents	**23**	**100%**	**23**	**100%**	**23**	**100%**	

Chart 7

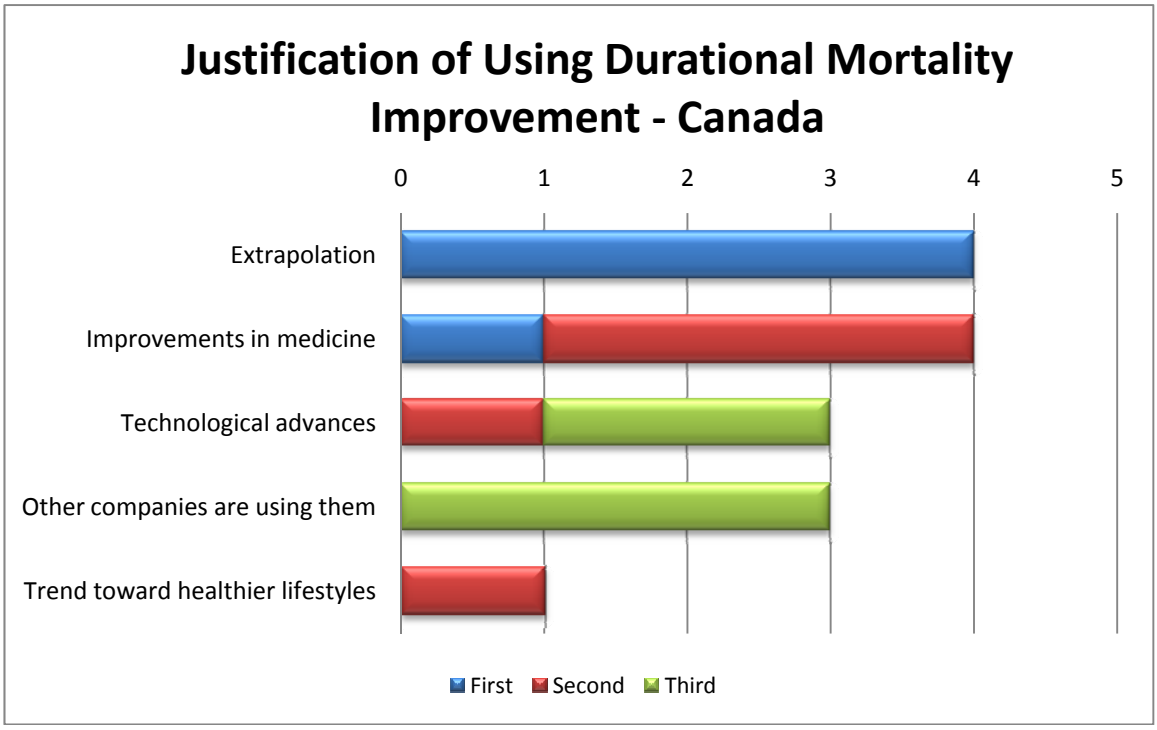


Table 20

Justification	First		Second		Third		Total
	#	%	#	%	#	%	%
Extrapolation	4	80%	0	0%	0	0%	80%
Improvements in medicine	1	20%	3	60%	0	0%	80%
Technological advances	0	0%	1	20%	2	40%	60%
Other companies are using them	0	0%	0	0%	3	60%	60%
Trend toward healthier lifestyles	0	0%	1	20%	0	0%	0%
Total # of Respondents	**5**	**100%**	**5**	**100%**	**5**	**100%**	

All of the Canadian respondents and 23 of the 24 US respondents who indicated their companies use durational mortality improvement responded to this question. For both the US and Canada, improvements in medicine and extrapolation were the most important conceptual justifications used by companies to support the application of durational mortality improvement. In the US, while improvements in medicine was the justification selected by nearly all the respondents (96%), extrapolation was the justification the majority of respondents indicated as the most important (57% versus 35% that indicated improvements in medicine as the most important). The results for the Canadian respondents were similar to those for the US with extrapolation from past experience as the most common response for the most important category. Technological advances and trend toward healthier lifestyles were both popular choices for the 2nd and 3rd most important categories.

"Other" response:

- *Research shows people are living longer.*

19. Please rank the top 3 factors that your company believes may affect mortality improvement negatively, 1 = most important & 3 = 3rd most important.

Chart 8

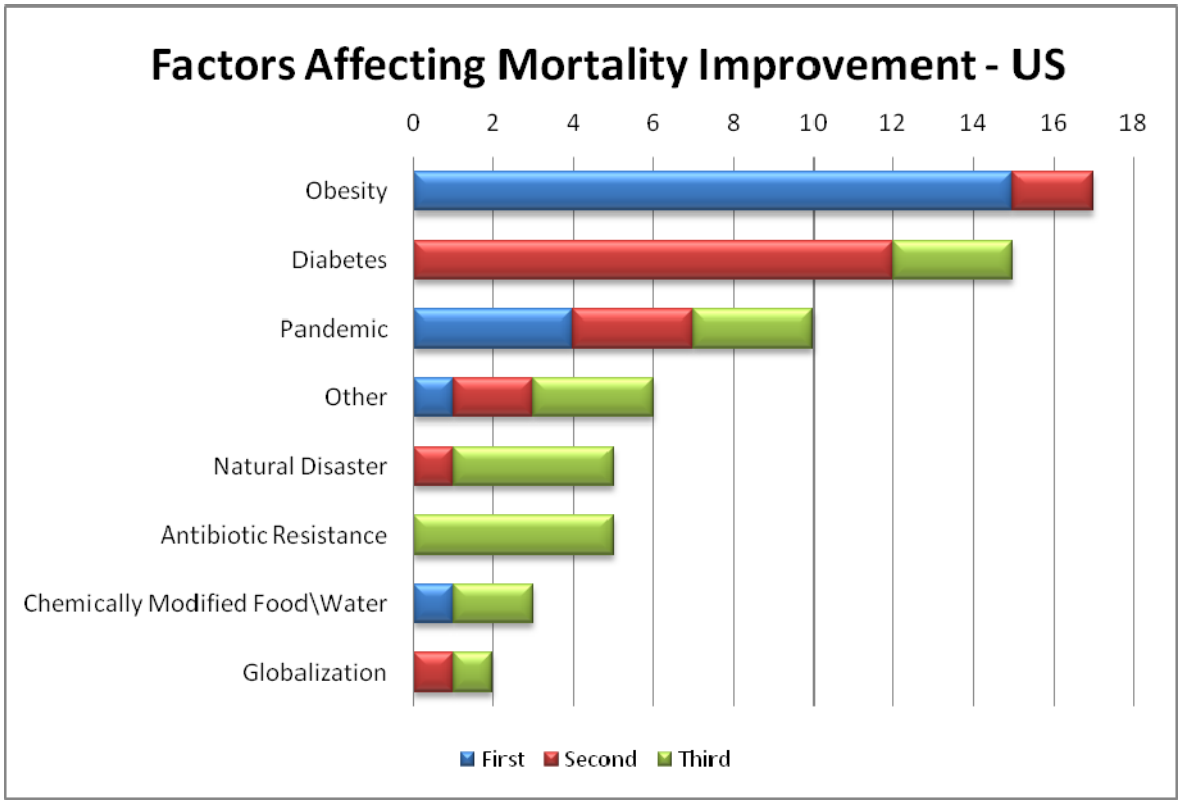


Table 21

Factors Affecting Mortality Improvement	First		Second		Third		Total
	#	%	#	%	#	%	%
Obesity	15	71%	2	10%	0	0%	81%
Diabetes	0	0%	12	57%	3	14%	71%
Pandemic	4	19%	3	14%	3	14%	48%
Other	1	5%	2	10%	3	14%	29%
Natural Disaster	0	0%	1	5%	4	19%	71%
Antibiotic Resistance	0	0%	0	0%	5	24%	24%
Chemically Modified Food/Water	1	5%	0	0%	2	10%	14%
Globalization	0	0%	1	5%	1	5%	10%
Total # of Respondents	**21**	**100%**	**21**	*	**21**	**100%**	

**Total does not add to 100% due to rounding.*

Twenty-one of the 24 US respondents who indicated their companies use durational mortality improvement responded to this question. The increasing trend towards obesity was both the top factor (81%) and most important factor (71%) that may affect mortality improvement negatively. This was followed by the increased prevalence of diabetes and pandemics. While diabetes was indicated as the second overall in terms of factors that may negatively impact future mortality improvement, no respondents indicated it to be the most important factor.

"Other" responses ranked 1st include:

- Economic deterioration

"Other" responses ranked 2nd include:

- Halt to improvements in medicine
- Natural longevity limit

"Other" responses ranked 3rd include:

- Changes in health care practices
- Limits to life span

Chart 9

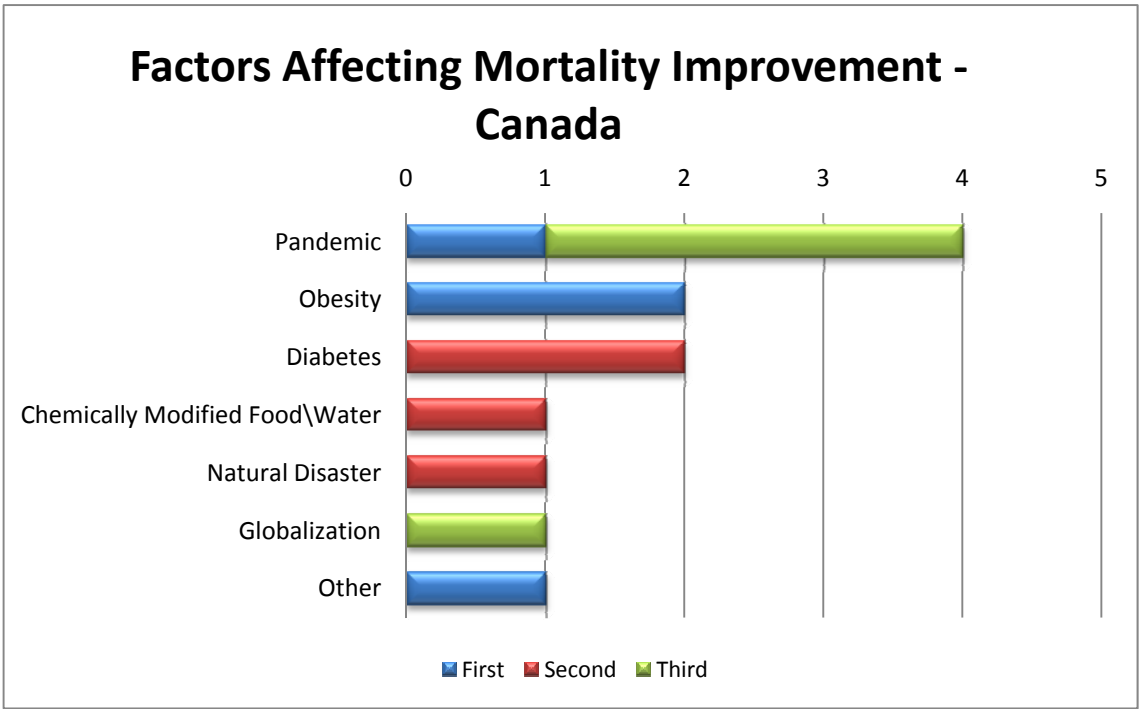


Table 22

Factors Affecting Mortality Improvement	First		Second		Third		Total
	#	%	#	%	#	%	%
Pandemic	1	25%	0	0%	3	75%	100%
Obesity	2	50%	0	0%	0	0%	50%
Diabetes	0	0%	2	50%	0	0%	50%
Chemically Modified Food / Water	0	0%	1	25%	0	0%	25%
Natural Disaster	0	0%	1	25%	0	0%	25%
Globalization	0	0%	0	0%	1	25%	25%
Other	1	25%	0	0%	0	0%	25%
Total # of Respondents	**4**	**100%**	**4**	**100%**	**4**	**100%**	

Four of the five Canadian respondents that indicated their company uses durational mortality improvement responded to this question. Increased prevalence of pandemics was selected by all four respondents; however, was rated as the third most important of the impacts. The increased prevalence of obesity was rated as the most important and diabetes was rated the second most important factor that may negatively impact future mortality improvement.

The respondent that answered "Other" did not specify the factor.

20. In developing *durational* mortality factors or adjustments from available data sources and resources, which of the following does your company use? (Check all that apply)

Table 23

Data Sources	Canada		US	
	#	%	#	%
Published data from insurance industry mortality studies	4	80%	23	96%
My company's mortality studies	3	60%	11	46%
Published data from Government Census or other Government reports	3	60%	7	29%
Consultant resources	0	0%	6	25%
Best Guess	0	0%	4	17%
Reinsurance expertise	2	40%	2	8%
Other	1	20%	1	4%
Total # of Respondents	**5**		**24**	

All of the Canadian and US respondents who indicated their company uses durational mortality improvement responded to this question. Published data from the insurance industry was the most common response by both the Canadian (80%) and US (96%) respondents. This was followed by my company data and published government data, but the published data percentage was lower for the US respondents (29%) than Canada (60%).

21. What methods does your company use to create durational mortality improvement factors? (Check all that apply)

Table 24

Methods Used	Canada		US	
	#	%	#	%
Flat Percentage per year	2	50%	10	45%
Regression based on historical experience	2	50%	7	32%
Method determined by outside source	0	0%	3	14%
Targeted longevity improvements by attained age over a period of years	0	0%	3	14%
Other	1	25%	4	18%
Total # of Respondents	**4**		**22**	

Four of the five Canadian and 22 of the 24 US respondents who indicated their company uses durational mortality improvement responded to this question. The most common response for both the Canadian (50%) and US (45%) respondents indicated using a flat percentage to create durational mortality improvement factors. Regression based on historical experience was the next most common response for both Canada and US.

"Other" responses include:

- *Adjust Scale G to reflect company & industry experience;*
- *Committee on Life Insurance Financial Reporting (CLIFR)*; and
- *Scale G Factors.*

On the "Other" responses, one of the companies did not specify the method used, and there was one company that operated in Canada and the US.

22. How often does your company update or review its durational mortality improvement factors and / or the mortality produced by application of such factors?

Table 25

Frequency of Update/Review	Canada		US	
	#	%	#	%
No set schedule	0	0%	7	29%
At least annually	2	40%	6	25%
>1 year, but at least every 3 years	2	40%	4	17%
>3 years, but at least every 5 years	1	20%	2	8%
Less frequently than every 5 years	0	0%	5	21%
Total # of Respondents	**5**	**100%**	**24**	**100%**

All of the Canadian and US respondents who answered yes to using durational mortality improvement responded to this question. Nearly one-third of the respondents for the US (29%) indicated they do not have a set schedule, where 80% of the Canadian respondents indicated they updated or reviewed the durational mortality improvement factors at least every 3 years and all did so at least every 5 years.

23. Has your company validated or reviewed previous durational mortality improvement factors to see if the anticipated results have been realized?

Table 26

Validated/Reviewed	Canada		US	
	#	%	#	%
Yes	1	20%	3	13%
No	4	80%	21	87%
Total # of Respondents	**5**	**100%**	**24**	**100%**

All of the respondents who indicated their companies use durational mortality improvement responded to this question. The vast majority of Canadian (80%) and US (88%) respondents indicated that they have not validated or reviewed previous durational mortality improvement factors.

24. If possible, use the chart below and the following codes to indicate the results of your company's most recent mortality validation exercise.

    There were insufficient responses provided to assess the results of companies' validation exercises.

    Listed below is the summary for US Companies only:

Table 27

	Male		Female	
Improvement	**Ages ≤ 79**	**Ages ≥ 80**	**Ages ≤ 79**	**Ages ≥ 80**
About Right	1	1	1	1
Greater than Expected	1	1	1	1
Less than Expected	0	0	0	0
Total # of Respondents	**2**	**2**	**2**	**2**

    Listed below is the summary for Canadian Companies only:

Table 28

	Male		Female	
Improvement	**Ages ≤ 79**	**Ages ≥ 80**	**Ages ≤ 79**	**Ages ≥ 80**
About Right	0	0	0	0
Greater than Expected	1	1	1	1
Less than Expected	0	0	0	0
Total # of Respondents	**1**	**1**	**1**	**1**

25. If the previous assumptions have <u>not</u> been realized, what action has your company taken (or is it planning to take)?

    Define new base mortality table and new durational improvement factors
    Define new base mortality table but leave durational improvement factors the same
    Update generational factors for current table and define new durational factors
    Update generational factors but leave durational factors the same
    Other (please specify)

    There were insufficient responses provided to assess the results of companies' validation exercises.

26. In addition to pricing, does your company also apply mortality improvement for the following applications? If yes, indicate whether the improvement rates are the same, higher or lower than those used in pricing and comment as required.

Listed below is the summary for US Companies only:

Table 29

Application	Yes						No		N/A		Total # of Respondents
	Same		Higher		Lower						
	#	%	#	%	#	%	#	%	#	%	
GAAP	13	57%	2	9%	0	0%	6	26%	2	9%	23
Capital Modeling	13	65%	1	5%	0	0%	4	20%	2	10%	20
Planning/Forecasting	14	70%	1	5%	1	5%	4	20%	0	0%	20

Durational mortality improvements were indicated by US respondents 75% of the time for planning/forecasting, 70% for capital modeling and 66% for GAAP valuations. Most US respondents indicated using the same factors for these applications as are used in pricing.

Listed below is the summary for Canadian Companies only:

Table 30

Application	Yes						No		N/A		Total # of Respondents
	Same		Higher		Lower						
	#	%	#	%	#	%	#	%	#	%	
Capital Modeling	1	20%	2	40%	0	0%	1	20%	1	20%	5
GAAP	1	20%	3	60%	0	0%	1	20%	0	0%	5
Planning/Forecasting	2	40%	2	40%	1	20%	0	0%	0	0%	5

Durational mortality improvements were indicated by Canadian respondents 100% of the time for planning/forecasting, 80% for GAAP valuations and 60% for capital modeling. Unlike in the US, a higher percentage of Canadian respondents use a durational mortality improvement factor larger than that used in pricing.

Additional comments:

- *GAAP - same plus a PAD,*
- *SPIA has not been considered in capital modeling yet,*
- *Modeling and forecasting use a single percentage approximately equal to the average pricing assumption that varies by attained age/sex,* and
- *Pricing has not yet updated improvement factors to the more up-to-date valuation tables*

27. Are there any other issues regarding the use of mortality improvement in immediate annuity pricing you would have liked to have seen covered in this survey?

Table 31

Other Issues	Canada		US	
	#	%	#	%
Yes	1	20%	5	21%
No	4	80%	19	79%
Total # of Respondents	**5**	**100%**	**24**	**100%**

If "Yes", please explain:

- *How are other insurers incorporating improvement into GLWB?*
- *Inclusion of information on base table as projected improvement as a % are keyed off this!*
- *These are not survey questions, but we are interested in: What is the most recent intercompany experience for mortality improvement? How does that compare to Scale G?*
- *Use with variable annuity living benefits.*
- *Whether companies believe their aggregate improvement is related to markets where SPIA is used as a funding vehicle. i.e., premium financing /loan arbitraging.*

28. Why doesn't your company use *durational* mortality improvement? (Check all that apply)

The response to this question is summarized under Question 10 above.

Section IV: Mortality Improvement Questions for Companies with Canadian Reporting Requirements who use Mortality Improvement

The Canadian Institute of Actuaries is proposing modifying the valuation standard to allow for limited mortality improvement for life insurance liabilities and modify the existing projection scale for annuities.

> **Note**: The only Canadian companies that responded to the following questions were those that had answered that they did use durational mortality improvement.

29. Does your company plan to reflect the maximum rates allowed in its annuity valuation?

Table 32

Response	#	%
Yes	3	60%
No	0	0%
Don't Know	2	40%
Total # of Respondents	**5**	**100%**

Three of the five respondents plan on reflecting the maximum rates allowed in its life insurance valuation, while the other two responded that they were unsure.

30. Will your company's pricing philosophy and practice change as a result of the new standard?

Table 33

Response	#	%
Yes	0	0%
No	2	40%
Don't Know	3	60%
Total # of Respondents	**5**	**100%**

Of the respondents, two said that the new standard will not change their pricing philosophy, while the other three said they were unsure.

31. Please identify any concerns from either a valuation or pricing perspective resulting from the proposed professional changes.

    - *Our understanding is that the maximum allowed mortality improvement rates will be for life insurance valuation, not annuity valuation.*
    - *Potential disconnect between pricing & valuation.*

Appendix 1 – Durational Improvement Factor Results

Male Age 65 US Only

	Policy Duration														
	1	2	3	5	6	10	11	15	16	20	21	25	26	30	31+
Median	1.50	1.50	1.50	1.40	1.35	1.25	1.25	1.25	1.15	1.00	1.00	0.75	0.60	0.50	0.50
Mean	1.35	1.33	1.33	1.30	1.29	1.25	1.17	1.11	0.96	0.89	0.83	0.74	0.71	0.60	0.58
Mode	1.50	1.50	1.50	1.40	1.35	1.25	1.25	1.25	1.25	1.25	1.25	1.15	0.00	0.00	0.00
Min	0.50	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	2.10	1.95	1.95	2.10	2.25	2.25	2.10	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
25th Percentile	1.25	1.24	1.24	1.20	1.20	1.18	1.00	1.00	0.71	0.60	0.50	0.45	0.40	0.10	0.00
75th Percentile	1.50	1.50	1.50	1.42	1.45	1.45	1.33	1.25	1.25	1.25	1.25	1.15	1.09	1.00	1.00

Male Age 85 US Only

	Policy Duration														
	1	2	3	5	6	10	11	15	16	20	21	25	26	30	31+
Median	1.04	1.04	1.01	1.01	0.96	0.79	0.63	0.50	0.40	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.95	0.95	0.93	0.86	0.82	0.71	0.64	0.50	0.38	0.32	0.28	0.26	0.26	0.24	0.24
Mode	1.25	1.25	1.25	1.15	1.10	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	0.33	0.27	0.20	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.04	1.04	1.04	1.04	1.04	1.04	1.04
25th Percentile	0.70	0.70	0.60	0.51	0.50	0.50	0.40	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75th Percentile	1.25	1.25	1.25	1.15	1.10	1.00	1.00	0.71	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Female Age 65 US Only

	Policy Duration														
	1	2	3	5	6	10	11	15	16	20	21	25	26	30	31+
Median	0.88	0.88	0.88	0.88	0.88	0.83	0.78	0.75	0.75	0.75	0.60	0.50	0.50	0.40	0.40
Mean	0.93	0.92	0.92	0.92	0.92	0.91	0.81	0.82	0.71	0.71	0.64	0.57	0.54	0.45	0.44
Mode	1.75	1.75	1.75	1.75	1.75	0.80	0.80	0.75	0.75	0.75	0.00	0.00	0.00	0.00	0.00
Min	0.25	0.25	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.56	1.56	1.56	1.56	1.56	1.56	1.56
25th Percentile	0.66	0.65	0.64	0.62	0.64	0.57	0.42	0.47	0.38	0.38	0.28	0.20	0.20	0.00	0.00
75th Percentile	0.95	0.95	0.95	0.95	0.95	1.03	0.94	1.03	0.94	0.94	0.89	0.70	0.68	0.63	0.63

Female Age 85 US Only

	Policy Duration														
	1	**2**	**3**	**5**	**6**	**10**	**11**	**15**	**16**	**20**	**21**	**25**	**26**	**30**	**31+**
Median	0.75	0.75	0.68	0.62	0.60	0.50	0.50	0.38	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.74	0.72	0.70	0.64	0.63	0.53	0.47	0.39	0.29	0.24	0.20	0.19	0.19	0.18	0.18
Mode	0.75	0.75	0.75	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	0.17	0.13	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	0.83	0.83	0.83	0.83	0.83	0.83	0.83
25th Percentile	0.53	0.50	0.45	0.45	0.40	0.28	0.21	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75th Percentile	0.81	0.75	0.75	0.74	0.73	0.65	0.63	0.50	0.50	0.50	0.42	0.39	0.39	0.39	0.39

Male Age 65 Canada Only

	Policy Duration														
	1	2	3	5	6	10	11	15	16	20	21	25	26	30	31+
Median	1.40	1.30	1.30	1.40	1.50	1.40	1.34	1.10	1.00	1.00	1.00	0.75	0.65	0.50	0.40
Mean	1.54	1.47	1.45	1.46	1.49	1.43	1.37	1.18	1.12	0.95	0.94	0.79	0.71	0.54	0.49
Mode	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*	0.50	*
Min	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.70	0.50	0.40	0.30	0.20
Max	2.19	2.08	1.98	2.10	2.25	2.25	2.10	1.65	1.50	1.05	1.05	1.00	1.00	1.00	1.00
25th Percentile	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.71	0.60	0.41	0.35
75th Percentile	2.10	1.95	1.95	1.79	1.70	1.50	1.40	1.14	1.10	1.00	1.00	1.00	0.90	0.50	0.50

*** Denotes those durations where the mode could not be calculated.**

Male Age 85 Canada Only

	Policy Duration														
	1	2	3	5	6	10	11	15	16	20	21	25	26	30	31+
Median	0.94	0.88	0.82	0.71	0.60	0.50	0.40	0.12	0.10	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.84	0.83	0.76	0.69	0.61	0.44	0.39	0.24	0.23	0.20	0.20	0.20	0.20	0.20	0.20
Mode	*	*	*	0.50	*	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Min	0.50	0.50	0.50	0.50	0.40	0.30	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	1.05	1.05	1.00	1.00	0.90	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
25th Percentile	0.70	0.70	0.60	0.50	0.50	0.41	0.35	0.10	0.06	0.00	0.00	0.00	0.00	0.00	0.00
75th Percentile	1.00	1.00	0.90	0.75	0.65	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

*** Denotes those durations where the mode could not be calculated.**

Female Age 65 Canada Only

	Policy Duration														
	1	2	3	5	6	10	11	15	16	20	21	25	26	30	31+
Median	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.50	0.50	0.41	0.35
Mean	0.95	0.95	0.94	0.93	0.93	0.97	0.78	0.94	0.87	0.85	0.77	0.50	0.47	0.32	0.31
Mode	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*	1.00	0.90	0.50	0.50	0.50	0.50
Min	0.50	0.50	0.50	0.50	0.50	0.50	0.12	0.50	0.50	0.50	0.50	0.30	0.30	0.00	0.00
Max	1.50	1.48	1.46	1.42	1.40	1.32	1.30	1.13	1.09	1.05	0.94	0.71	0.65	0.50	0.50
25th Percentile	0.75	0.75	0.75	0.75	0.75	1.00	0.50	1.00	0.70	0.70	0.60	0.50	0.40	0.20	0.20
75th Percentile	1.00	1.00	1.00	1.00	1.00	1.05	1.00	1.05	1.05	1.00	0.90	0.50	0.50	0.50	0.50

*** Denotes those durations where the mode could not be calculated.**

Female Age 85 Canada Only

	Policy Duration														
	1	**2**	**3**	**5**	**6**	**10**	**11**	**15**	**16**	**20**	**21**	**25**	**26**	**30**	**31+**
Median	0.90	0.75	0.60	0.50	0.50	0.41	0.35	0.12	0.10	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.77	0.69	0.60	0.50	0.47	0.32	0.31	0.24	0.23	0.20	0.20	0.20	0.20	0.20	0.20
Mode	0.90	0.50	*	0.50	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Min	0.50	0.50	0.40	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	0.94	0.88	0.82	0.71	0.65	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
25th Percentile	0.60	0.50	0.50	0.50	0.40	0.20	0.20	0.10	0.06	0.00	0.00	0.00	0.00	0.00	0.00
75th Percentile	0.90	0.80	0.70	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

*** Denotes those durations where the mode could not be calculated.**

Male Age 65 US & Canada Combined

	Policy Duration														
	1	2	3	5	6	10	11	15	16	20	21	25	26	30	31+
Median	1.50	1.50	1.50	1.40	1.35	1.25	1.25	1.20	1.05	1.00	0.97	0.73	0.63	0.50	0.50
Mean	1.37	1.35	1.34	1.31	1.31	1.26	1.18	1.10	0.97	0.89	0.84	0.74	0.70	0.60	0.57
Mode	1.50	1.50	1.50	1.40	1.35	1.25	1.25	1.25	1.25	1.25	1.25	0.50	0.00	1.00	0.00
Min	0.50	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	2.19	2.08	1.98	2.10	2.25	2.25	2.10	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
25th Percentile	1.24	1.24	1.23	1.20	1.19	1.16	1.00	1.00	0.78	0.70	0.53	0.50	0.40	0.23	0.05
75th Percentile	1.50	1.50	1.50	1.42	1.50	1.48	1.39	1.25	1.25	1.25	1.25	1.15	1.07	1.00	1.00

Male Age 85 US & Canada Combined

	Policy Duration														
	1	2	3	5	6	10	11	15	16	20	21	25	26	30	31+
Median	1.00	1.00	0.90	0.83	0.83	0.50	0.50	0.50	0.40	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.92	0.92	0.90	0.83	0.79	0.67	0.61	0.46	0.36	0.30	0.27	0.25	0.25	0.23	0.23
Mode	1.25	1.25	1.25	1.15	1.10	0.50	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	0.33	0.27	0.20	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.04	1.04	1.04	1.04	1.04	1.04	1.04
25th Percentile	0.70	0.70	0.60	0.50	0.50	0.42	0.35	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75th Percentile	1.25	1.25	1.25	1.15	1.10	1.00	1.00	0.60	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Female Age 65 US & Canada Combined

	Policy Duration														
	1	2	3	5	6	10	11	15	16	20	21	25	26	30	31+
Median	0.88	0.88	0.88	0.88	0.88	0.83	0.79	0.75	0.75	0.75	0.60	0.50	0.50	0.41	0.39
Mean	0.93	0.93	0.93	0.93	0.93	0.91	0.82	0.83	0.72	0.71	0.65	0.56	0.54	0.44	0.43
Mode	0.50	0.50	0.50	0.50	1.75	0.50	0.80	0.75	0.75	0.75	0.00	0.00	0.00	0.00	0.00
Min	0.25	0.25	0.25	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.56	1.56	1.56	1.56	1.56	1.56	1.56
25th Percentile	0.63	0.62	0.60	0.57	0.62	0.53	0.45	0.50	0.41	0.41	0.33	0.26	0.26	0.03	0.00
75th Percentile	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.04	0.97	0.97	0.89	0.70	0.67	0.63	0.63

Female Age 85 US & Canada Combined

	Policy Duration														
	1	**2**	**3**	**5**	**6**	**10**	**11**	**15**	**16**	**20**	**21**	**25**	**26**	**30**	**31+**
Median	0.75	0.75	0.66	0.58	0.55	0.50	0.50	0.38	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.73	0.70	0.68	0.63	0.61	0.51	0.45	0.37	0.28	0.23	0.20	0.19	0.19	0.18	0.18
Mode	0.75	0.75	0.75	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	0.17	0.13	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	0.83	0.83	0.83	0.83	0.83	0.83	0.83
25th Percentile	0.50	0.50	0.43	0.43	0.40	0.25	0.20	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75th Percentile	0.83	0.75	0.75	0.71	0.68	0.63	0.63	0.50	0.50	0.50	0.43	0.40	0.40	0.40	0.40

Appendix 2 – List of Participating Companies

Allianz Life Insurance Company of North America
Allstate
Americo
Ameritas Life
Bankers Life and Casualty Company
Berkshire Hathaway Life Re (Canada)
Berkshire Hathaway Life Re (US)
CNO Financial Group
CUNA Mutual Group
Desjardins Financial Security
Everence Association Inc.
Federated Life Insurance Company
First Investors Life
Great American Financial Resources Inc
Great West Life Co (Canada) *
Great West Life Co (US) *
ING
John Hancock Financial Services, Inc.
Knights of Columbus
Liberty Life Insurance Company of Boston
Lincoln Financial Group
Manulife Financial (Direct)
MassMutual
MetLife
Mutual of Omaha
National Guardian
Nationwide Financial
New York Life Insurance
Northwestern Mutual
OneAmerica
Pacific Life Insurance Company
Penn Mutual
Phoenix Life Insurance Co
Prudential Financial
RiverSource
Standard Insurance Company (US)
Standard Life (Canada)
State Farm Life Insurance Company
Sun Life Financial (Canada) *
Sun Life Financial (US) *
Symetra Life Insurance
Thrivent Financial for Lutherans

TIAA-CREF
Transamerica Life Canada *
Transamerica/Aegon (US) *
USAA Life Insurance Company

**Separate responses were provided for US and Canada.*