



# Product Matters!

The newsletter of the Individual Life Insurance and Annuity Product Development Section

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## Comments from the Chair

### Leaving a Legacy

by Kevin J. Howard

**I**t helps me to reflect from time to time. The unfolding of day to day, hour to hour and minute to minute demands sometimes causes my focus to be drawn down to such a low level that I lose track of the ultimate purpose of why I do what I do. Stepping back and reflecting allows me to move away from the detail. With the opportunity to reflect, I gain (or regain) a focus on the higher level purpose.

I recently returned from the 4th Annual Product Development Actuary Symposium and the Illustration Actuary Seminar that preceded it. It was another successful event with over 200 registrants. The event has grown steadily since its inception. The topics were timely, well presented and well discussed. Our general session speakers presented the topic of risk management and capital management and challenged us with a new way to look at existing metrics. The luncheon speaker, the director of menu management from McDonald's, gave a delightful presentation on the process their firm uses to develop new products. He also answered questions. I think there was something in his message for our industry to learn from McDonald's successes and failures. Most importantly, there was excellent discussion by the attendees in all of the concurrent sessions.

Since my term on the section council will expire in only a few months, I was discussing with friends at dinner that night what role I may have with future section or SOA activities, potentially including next year's Product Development Symposium.



Shortly after my return, one of my good friends in the industry, who was also one of the planning committee members of the inaugural Product Development Actuary Symposium, stumped me with the following question: "Do you have any plans for a big project that will be your legacy with the section council?" I had never thought about a legacy nor my role in that way.

All three of these events conspired to trigger a new period of reflection.

Being a well-trained actuary (meaning knowing how to answer questions), I couldn't leave that question unanswered so I've been pondering it for a couple of weeks now. In the last few days or so, the two topics of

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reflection—the symposium and a legacy—have merged into one and here's what the reflection yielded.

My ultimate purpose in working with the section is to provide support for all of the section members who make product design a specialty—the support we need in order to serve our clients, companies and ultimate consumers of the products we design.

So, I asked myself, “What would I like to see for the section if I were to look at it 20 years from now?”

Twenty years from now I'd like to be invited to the 24th annual Product Development Actuary Symposium. This would mean that the work of the inaugural committee and the subsequent organizing committees had created something lasting and of value. (I'm very thankful that I was invited to attend the first meeting.) We would have created a lasting forum for like-minded practitioners where they could learn, network and engage in fair, open, honest and respectful discussion of current topics.

That would be a fine legacy. □



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## **Don't Forget to Vote in the Section Council Elections—July 12 through August 13!!!**

The following persons are candidates for the Individual Life Insurance and Annuity Product Development Section Council:

Jeffrey A. Beckley, Consultant, Indianapolis, Indiana  
David T. (Todd) Henderson, Western & Southern Financial Group, Cincinnati, Ohio  
Michael L. Kaster, Conseco, Inc., Carmel, Indiana  
Jason Michael Konopik, AmerUs Group, Des Moines, Iowa  
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Douglas L. Robbins, Tillinghast-Towers Perrin, Atlanta, Georgia

For further information go to [www.soa.org](http://www.soa.org) and click on the election information link.

## Does Preferred Wear Off?

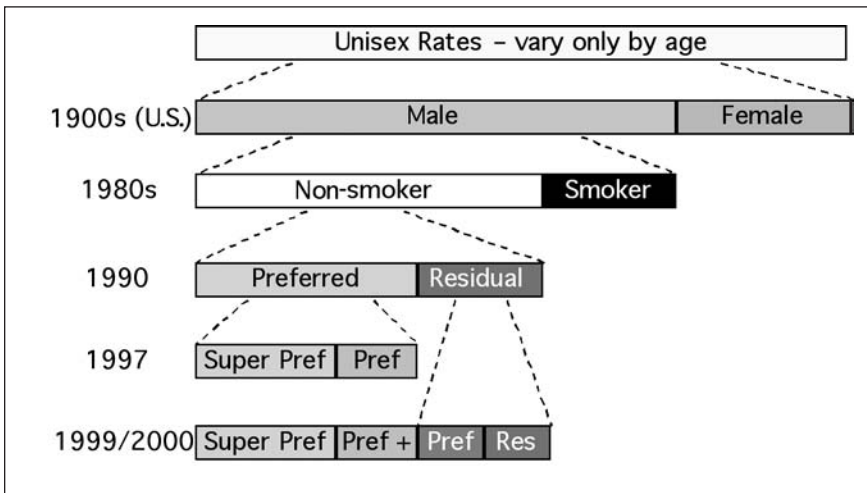
by Steve Cox

The information herein was presented to a group of clients in May 2003, reflecting years of research, experience and discussion with industry experts. The issue of whether “preferred” mortality wears off has been a frequently discussed topic in the U.S. life term market for a number of years. Because of limited insured experience studies, the discussion tends toward speculation sprinkled with mild research and insight. Presented here are a number of compelling arguments that underscore the opinion that, “No, preferred does not wear off.”

### What is “Preferred”?

More and more, life insurers are able to offer different prices to individuals who exhibit characteristics leading to statistically credible differences in mortality. Figure 1 shows the

Figure 1



evolution seen in life products over the last century—more divisions, more classes and more assumptions necessary as to how these various classifications will perform mortality-wise. “Preferred,” and later divisions, have arisen from the industry’s ability to test various fluids at the time of underwriting, and qualification for various classes is based on

factors such as blood pressure, cholesterol and family history. It is now common knowledge that “better” profiles have “better” mortality. The industry has wrestled with “how much better?” and “Does it stay better for years after underwriting?” since the advent of these more sophisticated classifications.

### Current Opinions

As with any hypothesis, opinions abound as to the “right” answer. Pricing actuaries tend to be aggressive in their opinions, and many have priced with the discounted mortality continuing over the pricing horizon. Valuation actuaries, whether conservative by their nature or conservative by their duty, have more of a mixed view.

The latter view is given in the Canadian Institute of Actuaries Educational Note on actuarial methods, which states, “It is reasonable to assume that mortality rates for preferred and non-preferred risks would revert over time toward overall standard regular underwriting mortality rates ... it would be reasonable to assume that the effects of preferred underwriting wear off *over the select period.*” <sup>1</sup>[emphasis added] The guidelines are loosely worded, but the typical approach is to apply the preferred discount over the *experience period* [i.e., that period supported by internal or industry mortality studies], and linearly grade the discount off over the remainder of the select period.

Supporters exist for the opposing view, but evidence is limited. Further, research being conducted by the actuarial and underwriting communities will continue to form the industry view.

<sup>1</sup>Canadian Institute of Actuaries Educational Note, *Mortality Methods*, July 2002, Section 610, p. 24

**But we know that *underwriting* wears off ...**

A long-held staple of the industry's mortality assumptions is the traditional select and ultimate mortality table. Age-old industry mortality studies have verified that newly underwritten business at a particular age will exhibit better mortality than a cohort of the same age, but underwritten in prior years. However, the nature of these select and ultimate (S&U) tables is that, over time, these two cohorts underwritten at different times will eventually have the same mortality expectation, as the knowledge gained via underwriting becomes less predictive of the subgroup's mortality. This is the "wearing off" of underwriting. For a 15-year select period (as in the widely used SOA 1975-80 tables), this is saying that two people of a particular attained age, one of whom was underwritten 16 years ago, and one underwritten 25 years ago (or any number greater than 16), will have the same mortality expectations. The positive predictive value of underwriting is no longer material.

Because of the evidence that illustrates how underwriting wears off, many have leapt to the conclusion that preferred will wear off, as well. After all, preferred factors are simply some of those very factors used in underwriting to determine standard.

However, it is interesting to note what has happened over time to the select period—the period in which underwriting is deemed to still be predictive.

Table	Select Period
1930-39 Miller's Table	3
1946-49 Basic Table	15
1965-70 Table	15
1975-80 Table	15
XXX(~1995)	20 (19) grade to 3 at 84
2001 VBT	25 to age 69 6 at age 88 1 at age 92

We are seeing a lengthening of the select period in more recent mortality tables. However, research into older mortality tables shows evidence that, in fact, selection did last longer in the underlying experience, but was not incorporated into the final table. Additionally, one can argue that the advent of blood testing in the 1980s has led to a different insured population, with the value of that increased depth of underwriting leading to longer predictive power.

One element of the actuarial/underwriting process that will always impact the analysis of select periods is the analysis of the impact of lifestyle changes of the population. Certainly the industry's mortality experience is impacted by changes in smoking, dieting, and exercise habits (especially of the insured population) of the last couple of decades. Mortality table builders will always be challenged by the impact of these trends, and it is a matter of opinion how much those factors just mentioned will have on recent select periods.

**Select-to-Ultimate Ratios**

Another aspect of the S&U mortality table to analyze is the ratio of select-to-ultimate mortality. This is the ratio of the mortality rate of a person age 'x' who has just undergone the underwriting process, to the ratio of a person of the same age who is now in the ultimate period of the mortality table (i.e., underwritten more than 15 years ago for a table such as the 75-80 table).

Figure 2

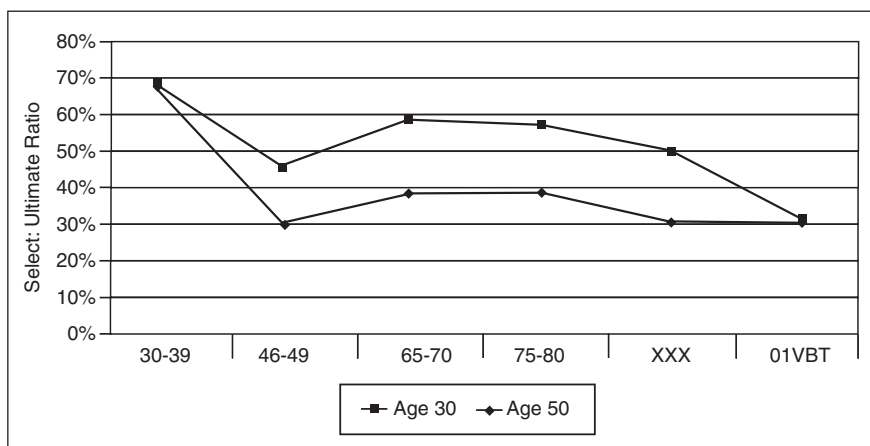


Figure 2 shows how, for the last few mortality tables, select-to-ultimate ratios have actually been fairly stable. Even with the advent of fluid testing, the S:U ratio for 50-year-olds has been substantially

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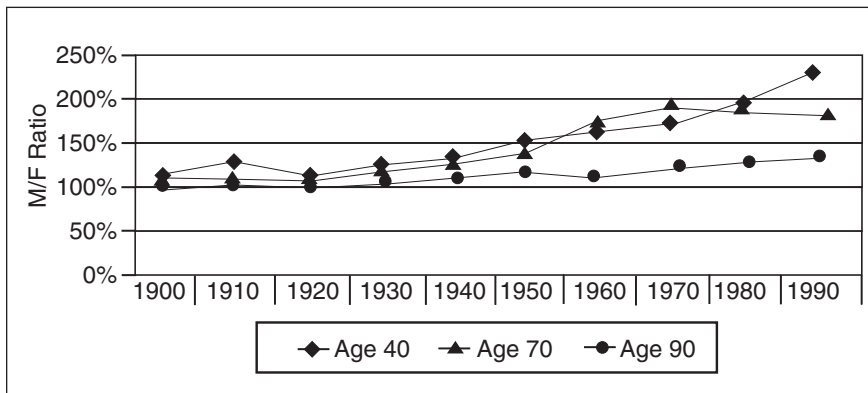


unchanged, while the younger ages have seen more predictive power gained from additional underwriting.

### S:U Ratio Impact on Preferred

It is interesting to translate the S:U ratio analysis over to what it means to preferred mortality. Even for an “aggregate standard” life, underwriting has eliminated 70 percent of ultimate mortality for the first duration. One question is, how much more can be

Figure 3: Population M/F Ratios



underwritten away by preferred criteria? There is a limit to this number—you cannot underwrite away all accident risk, and preferred underwriting is certainly not fool-proof on all impairments.

If one believes that preferred does wear off—following the guideline mentioned earlier that all mortality reverts to overall standard—then clearly preferreds have a *lower* select-to-ultimate ratio, and therefore must have a steeper sloping mortality curve than “aggregate standard,” and a *much* steeper mortality slope than their non-preferred cohort. The reasoning is obvious, since it is ‘known’ that preferreds have better mortality in the early years (better select mortality), but must revert back to the same ultimate mortality.

On the other hand, if one believes that preferred does *not* wear off, then the claim could easily be that both preferreds and non-preferreds have the same select-to-ultimate ratio and have the same slope on their mortality curves. This would mean that both cohorts could have 70 percent of their ultimate mortality underwritten away and have roughly parallel mortality curves.

Later in this article, we will revisit this issue as we consider mortality experience of various cohorts.

### A Slight Diversion—Does Gender “Wear Off”?

The fact that female mortality is lower than male mortality is a well-documented fact. It was also big news within the last few years that the gender gap has narrowed—as measured by the difference in male versus female life expectancy from birth. After many years of the gap increasing, most recent information showed that the gap had decreased.

It is certainly revealing to look at the various ages independently. While life expectancies did slightly converge, the ratio of male mortality to female mortality increased at two of the three ages shown in the graph below. Only in the age 70 group did the male-to-female mortality ratio decrease—the fact that so much mortality occurs during those ages led to the convergence of life expectancies.

Analyzing this data as it relates to preferred requires one to examine how the male-female ratio changes by age and determine how this has developed over time. Until the 1990 data, the male-female ratio from ages 40 to 70 did *not*, in general, change. Stated otherwise, gender does not begin to “wear off” until after age 70 (Figure 3).

If the analogy can be made that preferred is similar to gender in the genetic context, and we see that gender does not “wear off” during the primary insurance ages, then one may make the leap to say that preferred does not wear off since it, too, has a strong genetic basis.

(The 1990 data for the youngest ages is interesting, but it is not obvious how much this data was impacted by AIDS mortality in young males. Additionally, the impact that female hormone treatment can play in the equation for older ages, as well as the many other confounding variables—access to health care, smoking habits by gender, women in the workplace, etc. remains to be seen)

### Does Smoking Wear Off?

Perhaps it is a stretch, but one could make the argument that preferred has some similarities to smoking in the lifestyle context. That is, a person has some control over whether they are preferred or not—does he/she exercise, eat right, receive cholesterol treatment and so forth. While a stretch, it is worth discussing briefly.

Examining smoker:nonsmoker mortality ratios is a challenge—whether in insurance studies, population studies or clinical studies. As stated in the SOA's Final Report on the 2001 VBT Tables, "First, the long-term relationship of insured lives mortality rates by smoking status is unknown. Separate smoking distinct classes have not been utilized in insurance products long enough to produce ultimate duration smoker distinct mortality. Second, the definition of smoking status has changed over time."

To have the numbers for the sake of completeness, the 1975-80 and VBT tables both have a slight decrease in the smoker:nonsmoker mortality ratios from age 40 to 70—from roughly 210 percent at age 40 to 160 percent at age 70. For ease of table construction, both tables have the ratio very close to 100 percent by age 90. However, because of the lack of credible definitions and data, it is difficult to rely on these numbers. Conventional wisdom is that beyond a particular age, the impact of smoking is very small, as those who have survived to that point have a genetic predisposition to dealing with the negative impact of smoking. One could easily make that same statement on preferred criteria—once a person lives to a certain age with high cholesterol, then they may very well have a genetic predisposition to deal with the negative impact of high cholesterol. But, again, the age where smoking becomes less predictive is arguably beyond the pricing horizon of mainstream preferred applicants.

### Mortality Study Analysis

Of course, we are challenged by having limited industry mortality data on preferred insureds—only about a dozen years' worth. This is certainly not enough to draw conclusions about preferred wearing off.

Mortality studies are typically conducted by comparing actual mortality results to mortality results as predicted by a standard industry table (tabular mortality), such as the 1975-80 table discussed earlier. A common analysis to determine if preferred wears off is to examine the *actual-to-tabular* mortality ratios for the preferred class, by duration. For example, preferreds may show a 30 percent actual-to-tabular result for durations 1-3, then 33 percent for durations 4-6 and 40 percent for durations 7-10. These

ratios would reflect the actual mortality rates experienced, divided by the mortality rates *predicted by the table*.

Typical analysis of the question at hand would be to analyze the ratios as described above. If the ratios for the preferred group increased by duration, then one might conclude that preferred is wearing off. However, this type of analysis is flawed.

First, the slope of the underlying mortality table would be pivotal in the analysis. The underlying table would have to be "right"—particularly the *slope* of the underlying table. This cuts to the heart of a hot actuarial topic—the slope of most recent industry tables is dramatically different from tables that have been the industry standard for years. In fact, the advent of preferred underwriting may very well impact that very argument, if preferred dominates the exposure in the early durations of recent industry tables.

Second, since this analysis needs to be done over a number of years, how does one account for the impact of mortality improvement in the analysis? Assumptions can be made, but the impact of those assumptions would be significant.

It is my belief that examining ratios in this manner is flawed, and that a better way exists.

### Recommended Approach for Examining "Wearing Off"

A much better approach is to examine the ratio of *preferred-to-residual* mortality results. This measures the mortality results of the preferred cohort against the mortality results of their non-preferred counterparts. This would be the *ratio* of those two groups' actual-to-tabular ratios, or the ratio of their mortality rates.

There are significant benefits to this approach. First, the results would be independent of the underlying table (assuming that issue age, gender, etc., distributions are not wildly different). Second, the issue at hand could be directly analyzed—***if the preferred-to-residual ratio converges over time, then preferred is wearing off.***

This ratio will likely start at around 65 percent (under the broad assumption of "old" mortality being 100, and preferred/residual splitting it into 80/120). If this ratio increases over a 20-duration study, then that would indicate that the two subgroups are becoming

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**This cuts to the heart of a hot actuarial topic—the slope of most recent industry tables is dramatically different from tables that have been the industry standard for years.**

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“more alike.” It answers the fundamental question, “Does the preferred cohort stay proportionally better than its non-preferred counterparts?”

### The Results Say ...

What is one to do when there is limited industry experience? One approach is to analyze clinical studies. While this approach does have its challenges, many of these challenges can be addressed, and a wealth of information exists which can help answer the question.

### Framingham Study

The Framingham Study is a well-known clinical study in medical circles. This was a study commissioned by the National Institutes for Health more than five decades ago. One of the stated goals of the study was to evaluate the relationship between potential risk factors determined in healthy individuals to the subsequent development of disease and death. The focus of the study was heart disease, and it has been the origin of most of what we now know about heart disease—thousands of articles have been written based on Framingham data. A limited access dataset was obtained from the National Heart, Lung, and Blood Institute (NHLBI), the sponsor of the Framingham Study. The conclusions drawn do not necessarily represent the view of the NHLBI or the Framingham Study.

Each exam attempted to measure scores of potential risk factors. For this project, we targeted the results for total cholesterol, HDL cholesterol, systolic blood pressure, diastolic blood pressure, Metropolitan Relative Weight (MRW), smoking status and gender. Based on these factors, we “underwrote” the dataset to get an insurable population, and tracked the results over time.

### Framingham Results—Rank Movement

The first analysis is to see if those that are preferred at an early exam are still preferred at later exams. If preferred wears off, we would expect that the preferreds are somewhat randomly distributed in the population in later exams. However, if preferred does not wear off, then we would expect that the preferreds would still be relatively “better” within the cohort at later exams. For this test, we studied Exam 2 results versus Exam 10 results (16 years later).

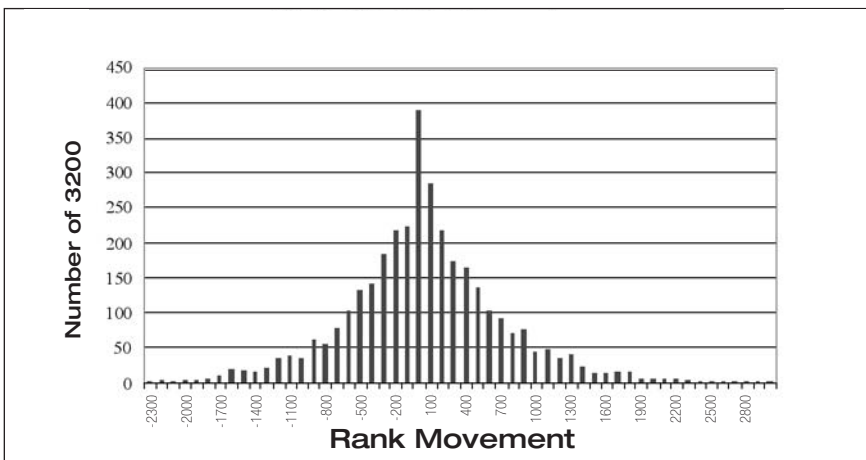
Rather than create arguments about what to do with those who terminate in the study, those who were in the study at Exam 10 were ranked from 1 to approximately 3200 based on three different factors: total cholesterol, systolic BP and relative weight. All three return similar results, so the results from relative weight will be displayed.

After ranking based on Exam 10 results, these same entrants were ranked based on their values at Exam 2 (more values were available at Exam 2 than Exam 1). Then, the change in a person’s numerical rank is determined. A histogram plotting these results is shown in Figure 4.

Of the people who were in the top half at exam 10, 79 percent were also in the top half at Exam 2. Similar results are seen for cholesterol and systolic BP, with both having results in the mid-70 percent range. This shows a strong positive correlation—if you were “good” at Exam 2, then it looks very likely that you will be “good” 16 years later at Exam 10. Yes, this is not terribly mathematical or statistical. But the purpose of this exercise was to show a strong correlation.

Can one deduce whether preferred wears off based on this? Of course not. But it is very compelling information, and does not seem to support that the preferred cohort had reverted to the aggregate cohort over a 16-year period, under the assumption that “good values” translate to “good expected mortality.”

Figure 4: Relative Weight Rank Movement



The study started in 1948, when 5,209 residents of the town entered the study. Each person was tracked and examined every two years, totaling 20 examinations covering 40 years. All entrants were between the ages of 30 and 62 at the first exam.



## The Pivotal Information—Mortality Results from Clinical Studies

All of the information presented to this point is interesting and thought-provoking, and can lead a person to a variety of conclusions. Soft spots exist in those analyses, and applying that information to preferred mortality can be a stretch. However, it is very difficult to argue with the facts—and the facts presented here are mortality results based on clinical studies.

Certainly, one must be especially prudent when analyzing mortality results from clinical studies for the purpose of making insurance-related conclusions. Clinical studies often involve impaired individuals who would not qualify as an insured population. However, several studies do exist that study the general population, and often data is available that allows the researcher to “underwrite” the population to get an “insurable” subset of the clinical study.

Two such studies that were used for this purpose are the Framingham Study (discussed earlier), and the NHANES study. NHANES is the National Health and Nutrition Examination Survey, conducted by the National Center for Health Statistics. Four different studies have been conducted, and the NHANES II study is the most useful for these purposes.

Framingham studied 5,209 residents for over 40 years. NHANES II examined 20,322 individuals between 1976 and 1980, of which 9,250 were passively tracked through 1992 (only those between the ages of 30 and 75 at outset were tracked).

Mortality statistics were accumulated for each study. Each group was “underwritten” for qualification for “old aggregate standard” based on a number of typical insurance application criteria. This standard group was then split into a “Preferred” subgroup, and a “Residual” subgroup based on industry criteria that would be used in a traditional system. The general levels for standard and preferred are shown in Figure 5.

Recall that in the Framingham Study, each person was re-examined every two years. For purposes of this mortality study, each examination where the listed values were available created a new “entrant” into the mortality study. Additional details are available as to the methods used in tabulating exposures and deaths.

Both populations were slightly older than a typical newly insured population in the term brokerage market—52-years-old was the average entry age. Both populations were roughly 50-50 in gender distribution. Framingham was 54 percent smoker, whereas NHANES was 38 percent smoker. Lastly, 63 percent of the Framingham standard entrants qualified as preferred; NHANES sees 68 percent qualifying. These qualification percentages do not seem out of character for many companies writing preferred business.

As stated earlier, our favored method to determine the wearing off of preferred is to examine the ratio of preferred to residual mortality rates. This ratio is calculated in each population over the first 10 years of exposure, and then calculated over the period beyond year 10, up through year 20. The theory is that *if the ratio of preferred to residual mortality trends toward 1.00, then preferred wears off. If the ratio stays constant, then preferred does not wear off.*

The results are displayed in Figures 6 and 7.

In both datasets, the preferred class remained proportionally better than their residual counterparts during the second decade of exposure relative to the first decade. Assuming a typical pricing horizon is 20 years, this evidence strongly suggests that the pricing process should continue to assume preferred mortality is significantly better than residual over the first 20 years.

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**If preferred wears off, we would expect that the preferreds are somewhat randomly distributed in the population in later exams.**

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Figure 5

<b>Standard</b>	
	<b>Cholesterol&lt;=320</b>
	<b>SBP&lt;=160</b>
	<b>DBP&lt;=95</b>
	<b>MRW&lt;=174%</b>
	<b>Ages between 30 and 70</b>
<b>Preferred</b>	
	<b>Cholesterol&lt;=280</b>
	<b>SBP&lt;=140</b>
	<b>DBP&lt;=90</b>
	<b>MRW&lt;=139%</b>

## Going Beyond Year 20

NHANES, of course, does not have data beyond 20 years available. Framingham data beyond the 20th year is of questionable credibility and shows mixed results. Overall, the

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Pref:Resid ratio goes from 62 percent to 68 percent. Males show the most convergence, from 66 percent to 82 percent, while females held steady at 53 percent versus 54 percent in the prior decade.

Convergence in the third decade should not be a surprise in these datasets, given the average age at entry in the early 50s. It was shown earlier that the male:female mortality ratio begins to narrow between the ages of 70 and 90, and it was noted that one could arguably compare gender to “preferred” in the genetic context.

### Summary

Certainly this analysis is not meant to replace industry studies of insured lives. One could also argue that the approach taken is not true “preferred” because, for

example, family history—consistently an industry factor—is not included in the criteria. Also, the clinical groups are not insured populations.

However, until the industry develops long-term mortality experience on insured lives, we must search for clues to the right answer in all places. The data presented here provides extremely compelling evidence that over a typical pricing horizon for typical insured ages, there is no reason to believe that preferred and residual lives have converging mortality expectations. Certainly companies need to adjust this data depending on their specific markets, particularly if the company focuses on older ages or utilizes a more streamlined or simplified underwriting approach. But for mainstream products, preferred appears to not wear off. □

Figure 6: Framingham Preferred/Residual Ratios

Yrs	MN	FN	MT	FT	All
1-10	63%	55%	65%	56%	63%
11-20	66%	50%	64%	55%	62%
Yrs	All M	All F	All NS	All SM	All
1-10	65%	56%	60%	62%	63%
11-20	66%	54%	58%	61%	62%

Figure 7: NHANES/Residual Ratios

Yrs	MN	FN	MT	FT	All
1-10	55%	83%	65%	43%	65%
11-20	66%	51%	70%	37%	61%
Yrs	All M	All F	All NS	All SM	All
1-10	61%	67%	67%	57%	65%
11-20	69%	48%	63%	54%	61%



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# Mortality Table Slope—The Discussion Goes On

by Douglas Doll

The article by Steve Cox, “Does Preferred Wear Off?” continues a discussion on mortality slope that has gone on through several articles in this newsletter. I want to recap the discussions thus far, and summarize some additional discussion that occurred at this year’s Product Development Symposium.

- August 2002. Larry Warren shows that the slope of the 1990-95 table is steeper than that of the 1970-75 table and concludes that the actuary utilizing the 1975-80 table may unwittingly be taking an aggressive posture when it comes to projecting future mortality.
- November 2002. Michael Taht notes that the 1990-95 table data is not homogeneous, because different durations represent different eras, so its slope may not be the right one. He asserts that recent improvements in underwriting can persist for a long time, although much will wear off at high attained ages.
- November 2003. Tracey Polsgrove reports on the Academy’s Illustrations Work Group analysis of late-duration mortality assumptions. She notes that using a constant low percentage of an old table (e.g., 30 percent of 1975-80) produces mortality at high attained ages that appears low compared to recent tables such as 1990-95 or RP2000. She acknowledges that there is no clear answer, but suggests that, given lack of credible data, the actuary may choose to use more conservative assumptions.
- July 2004. Steve Cox writes that, over a typical pricing horizon, the differences between preferred and residual risks are expected to persist.

The topic of mortality slope came up at least three times at the recent Product Development Symposium and its preceding seminars. In the

seminar, “The Illustration Actuary: A Professional Perspective,” Chris Shanahan gave a number of reasons why a simple flat percentage of the 1975-80 table may not be an accurate assumption:

- There has been significant population improvement since 1975-80, but the improvement varies greatly by age. The maximum improvement is in the 45-65 age group. Implications of this are less steep mortality for younger issue ages and steeper mortality for issue ages 50-65.
- To the extent improved underwriting wears off in later durations, slope may be steeper. The effect of this could vary by age and gender.
- Changing cohorts over time means that reliance on “modern” tables such as 2001 VBT also can be wrong.
- Issue ages over 70 introduce added complexity. The original 1975-80 table stopped at issue age 70, and various extensions may not be appropriate.

In the symposium itself, there were two sessions where mortality slope entered into presentations. The handouts for these sessions are available on the SOA Web site at <http://handouts.soa.org>. In the session “How’s Life? An Overview of the Permanent Life Market,” Scott Witt showed a series of graphs based on an assumption that the only homogeneity issue with the 2001 VBT table is the advent of blood testing. Adjusting for this, and assuming that preferred underwriting causes a constant percentage mortality reduction in all durations, he concluded that using a flat percentage of the 1975-80 table for issue age 65 preferred is equivalent to assuming 2 percent per year mortality improvement.

In the session “Lapse Experience,” Jay Biehl spoke on the ultimate mortality implications of lapse assumptions. His main theme was that, while in-force face amount becomes small at the end of the typical pric-

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**There has been significant population improvement since 1975-80, but the improvement varies greatly by age.**

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Figure 1

Effect on Mortality Rates of Different Survivorship				
Proportion Living			Mortality Ratio	
Attained Age	Insured	Residual	Insured	Residual
75	50%	50%	80%	120%
85	26	19	85	120
95	6	2	95	120

ing horizon of 20 or 30 years, the mortality per thousand increases greatly over that time, and the present value of mortality beyond the pricing horizon can be significant. Similarly, the value of mortality for high issue ages is much larger than the face amount portion. Jay offered what he called “tidbits” of information. Here are three of them:

- Each percentage point of face amount above age 70 represents 5-10 percent of expected mortality.
- For a typical level premium product, 50 percent of the present value of premiums comes before duration 6, but 50 percent of the present value of mortality comes after duration 11.
- On a lifetime basis, for issue age 45, changing the lapse assumption in years 21+ from 5 percent to 4 percent increases the present value of premiums by less than 1 percent, but increases the present value of mortality by 8 percent.

I would like to add one more consideration to the ones described above. This pertains to mortality at very high attained ages, and is an additional argument as to why the differences between “preferred” and “residual” classes are expected to converge. The higher survivorship of the preferred class implies that the aggregate group is comprised mostly

of originally preferred risks. For example, consider a population at age 75 whose aggregate mortality is 100 percent of 1975-80 male ultimate. Split this population into 50 percent of the population preferred at 80 percent of 1975-80 and 50 percent residual at 120 percent of 1975-80. At higher attained ages, assume that the residual class maintains a ratio of 120 percent of aggregate. After taking into account the shifting proportions of these two groups due to different survivorship, we can solve for the ratios of preferred to aggregate mortality. The results are seen in Figure 1.

In Figure 1, I kept the residual mortality ratio constant. At the very high attained ages, the residual class ratios might actually decline. I have heard of studies indicating that smoker mortality is less than nonsmoker mortality in ages beginning in the 90s. The rationale for this phenomenon is that the weaker lives in the higher mortality group are “weeded out,” leaving a smaller, but stronger, group at the high attained ages. In this case, convergence would be more pronounced.

So, where does all this discussion leave us? Different persons likely will come to different conclusions. I expect the discussion will continue, and look forward to additional insights from others. □



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# SOA 1995-2000 Mortality Study

by Tom Rhodes

## Introduction

In May 2004, the Individual Life Insurance Experience Committee (ILEC) released its report on Mortality Under Standard Individually Underwritten Life Insurance Between 1995 and 2000 Anniversaries (1995-00 Report). The 1995-00 Report contains yearly submitted data from 10 to 12 companies. It covers standard issues (preferred and standard combined) analyzed by issue age, gender, nonsmoker/smoker, face amount and medical basis. These results are analyzed by individual year and the entire five-year period.

The ILEC views the 1995-00 Report as a “catch-up” report. The 2000-01 Report that includes over 20 companies will be released in October 2004. Thereafter, annual studies will be issued every year. This article will focus on selected trends over the five years in the 1995-00 Report. The results are shown based on the 2001 VBT; the complete report also shows results based on the 1975-80 table.

## Overview of Results

Throughout the 1995-00 Report, the progression of Actual to Expected ratios (A/E ratios) generally shows an increasing pattern from 1995-96 to 1996-97 and then decreasing through the end of 1999-00 shown in Figure 1.

The overall trend indicates an improvement in mortality. Select male mortality had slightly greater improvement as A/E ratios improved from 91.1 percent in 1995-96 to 83.3 percent in 1999-00.

The insured population is subject to two main sources of decrease in mortality. The first source is a secular decrease in mortality in the general population. Intercompany improvement over 1995-2000 was consistent with improvement in the general population. The second source of decrease is the trend toward higher face amount policies with more underwriting requirements.

It should be noted that the 2000-01 Report will use improved system capabilities to study results by face amounts and by the Preferred/Standard indicator submitted by companies.

The most reliable nonsmoker and smoker data is within the first 15 durations, as shown in Figure 2 on page 14.

The overall trend of improving mortality exists in the nonsmoker A/E ratios. In contrast, smoker A/E ratios do not show mortality improvement.

Readers who expected smoker ratios to be twice nonsmoker ratios should be reminded that the 2001 Valuation Basic Table (2001 VBT) has composite and smoker distinct tables. In the 1995-00 Report and subse-

continued on page 14

Figure 1

Select A/E Ratios by Face Amount Based on the 2001 VBT Combined Nonsmoker, Smoker and Unknown Smoker					
Durations 1-25	95-96	96-97	97-98	98-99	99-00
Males	91.1%	93.5%	87.5%	83.4%	83.3%
Females	87.8%	87.9%	86.8%	87.3%	83.9%
Total	90.4%	92.2%	87.4%	84.3%	83.5%

quent reports, the A/E ratios based on the 2001 VBT are consistently calculated by applying its composite table to unknown smokers, its nonsmoker table to nonsmokers and its smoker table to smokers.

### Detailed Select Results By Issue Age

For the 25-year select period, the 1995-00 Report results by issue age groupings are shown in Figure 3.

The mortality improvement over the five one-year studies is greatest for the issue ages 20-49. From 1995-96 to 1999-00, the A/E ratios decrease in every issue age grouping except for 60+.

### By Policy Year

For the 25-year select period, the 1995-00 Report results by policy year grouping are shown in Figure 4.

The mortality improvement over the five one-year studies is greatest for both policy years 1-2 and policy years 3-5. From 1995-96 to 1999-00, the A/E ratios decrease in every policy year grouping except for 6-10.

### By Face Amount

For the 25-year select period, the 1995-00 Report results by face amount bands are shown in Figure 5.

Within each study year, there is a general pattern of decreasing A/E ratios as amount bands increase for all years in the study (except for some expected fluctuations in the highest amount bands). From 1995-96 to 1999-00, the A/E ratios decrease in every face amount grouping except for 50,000-99,999.

### Ultimate Mortality

For the ultimate durations of 25 and over, the experience is shown in Figure 6.

In general, the ultimate A/E ratios also decreased over the five-year period. Male A/E ratios show a greater improvement than female A/E ratios. The ultimate A/E ratios are much higher than the select period A/E ratios. The ILEC is in the process of producing a more detailed analysis of older age mortality against both insured and U.S. population tables, which will be available late this year or early next year. □

Figure 2

Select A/E Ratios by Face Amount Based on the 2001 VBT					
Durations 1-15	95-96	96-97	97-98	98-99	99-00
Nonsmoker	87.4%	91.5%	86.1%	83.5%	80.6%
Smoker	93.1%	106.0%	99.2%	99.7%	98.0%

Figure 3

Select A/E Ratios by Face Amount Based on the 2001 VBT Combined Nonsmoker, Smoker and Unknown Smoker					
Issue Age	95-96	96-97	97-98	98-99	99-00
0-19	100.4%	96.8%	99.8%	88.4%	92.1%
20-29	92.0%	82.6%	79.3%	81.2%	80.0%
30-29	88.4%	87.3%	78.2%	77.2%	76.6%
40-49	91.5%	92.2%	84.6%	81.9%	75.1%
50-59	89.2%	95.1%	90.6%	88.5%	86.2%
60+	90.7%	94.2%	92.9%	87.3%	91.7%
Total	90.4%	92.2%	87.4%	84.3%	83.5%

Figure 4

Select A/E Ratios by Face Amount Based on the 2001 VBT Combined Nonsmoker, Smoker and Unknown Smoker					
Policy Year	95-96	96-97	97-98	98-99	99-00
1-2	85.4%	92.3%	73.2%	79.4%	70.3%
3-5	96.0%	90.3%	83.1%	80.2%	71.9%
6-10	84.9%	93.2%	91.4%	88.1%	88.1%
11-15	92.6%	98.6%	92.5%	88.7%	87.1%
16-20	92.4%	82.8%	82.0%	77.0%	86.2%
21-25	98.4%	85.8%	84.6%	79.6%	83.3%
Total	90.4%	92.2%	87.4%	84.3%	83.5%

Figure 5

Select A/E Ratios by Face Amount Based on the 2001 VBT Combined Nonsmoker, Smoker and Unknown Smoker					
Face Amount	95-96	96-97	98-98	98-99	99-00
<25,000	110.1%	111.3%	110.8%	99.7%	100.1%
25,000-49,999	104.7%	102.1%	99.9%	96.9%	98.5%
50,000-99,999	96.5%	104.1%	100.7%	99.1%	99.3%
100,000-249,999	89.3%	91.7%	87.2%	84.9%	85.1%
250,000-499,999	79.2%	82.5%	75.2%	71.1%	75.4%
500,000-999,999	84.0%	78.8%	70.6%	70.6%	76.6%
1,000,000+	75.1%	81.3%	79.7%	78.0%	60.4%
Total	90.4%	92.2%	87.4%	84.3%	83.5%

Figure 6

Ultimate A/E Ratios by Face Amount based on the 2001 VBT Combined Nonsmoker, Smoker and Unknown Smoker					
	95-96	96-97	97-98	98-99	99-00
Males	112.9%	103.8%	100.4%	99.6%	96.5%
Females	120.9%	106.2%	114.1%	111.8%	112.8%



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## Recent Developments in the Annuity World

by Tim Pfeifer

The annuity marketplace continues to operate in a dynamic environment that is impacted by demographic, strategic and environmental changes. Through it all, annuities have continued to evolve and solidify their position as a key financial security product for the entire population.

The discussion which follows focuses on recent developments in the major sectors of the annuity market—variable annuities, fixed annuities, equity-indexed annuities and immediate annuities.

### Variable Annuities

Variable annuities have continued their rebound in sales from the declines of the bear market. This sales rebound has been driven primarily by guaranteed living benefits (GLBs). Such benefits are unique to variable annuities.

By now, most people are familiar with the three major types of GLBs:

- Guarantee Minimum Income Benefits (GMIBs)
- Guarantee Minimum Account Balances (GMABs)
- Guarantee Minimum Withdrawal Benefits (GMWBs)

We will not attempt to redefine them again here.

However, what has been interesting in the market has been the shift in focus within carriers as to the preferred variety of GLB to develop and offer. Today, the GLB of choice is the GMWB. A number of companies are on their second or third version of such a design. New designs generally charge 35 to 60 basis points annually for the benefit. More and more feature an incentive for policyholders who do not initiate withdrawals within a specified timeframe. These incen-

tives include waiver of GMWB charges for life after that threshold point, or reduced charges prospectively. Other GMWBs allow for a benefit reset feature at defined intervals.

The second most popular GLB in terms of new development is the GMAB. Today's GMABs are characterized by relatively long waiting periods (10+ years), asset allocation requirements and annual charges between 25 and 100 basis points.

GMIBs, the original GLB, continue to be designed and sold, but have slowed in terms of new development. This slowdown can be attributed to greater pricing uncertainty (e.g., policyholder behavior), concerns over market conduct issues, and challenges in competing against a couple of strong market leaders. New designs tend to have seven-to-nine year waiting periods, and benefit bases equal to premiums rolled up at 5 percent or the maximum anniversary value, if greater.

In general, the prices of GLBs are increasing. Some of this is due to the lack of widespread reinsurance availability, impending NAIC capital requirements and pent-up market competitive forces trending in this direction. Of significant note is the fact that insurers have redirected their risk management approach for GLBs from reinsurance to dynamic hedging. Most of the top 20 variable annuity carriers now operate or outsource a hedging program to support their sales of GLBs. Future GLB products will become more heterogeneous than they are today, as hedging becomes a driver of new design ideas.

Death benefit guarantees on variable annuities have stabilized over recent times, with the greater of a premium roll-up and the maximum anniversary value typically the most generous death benefit. A few companies have introduced new death benefits with strong initial levels in excess of account value, which are effective in 1035 Exchange sales situations.



Other key topics in the variable annuity world today include the continued displacement of C-share (no front or back-end loads, but annual charges) sales with L-share (back-end surrender charges lasting two to four years) sales. L-share product compensation is continuing to creep up, in some cases approaching B-share (back-end surrender charges lasting five to nine years) sales. In 2003, 20 percent of variable annuity sales came from L-shares. Also, regulatory concern over market timing, late trading practices and suitability issues has consumed large amounts of time of many variable annuity carriers. It remains to be seen whether such areas are problematic for many life insurers, but the time and expense spent in research and regulatory response for such topics today is high.

### Fixed Annuities

Fixed annuity sales dropped in 2003 after a very strong performance in 2002. This is explained primarily by the rebound in the equity markets and the continued downward pressure on interest rates.

In the fixed annuity market, carriers have struggled to maintain targeted profitability levels. This has been due to interest rate compression relative to regulatory minimums.

Although the new annuity Standard Nonforfeiture Law will provide some relief, some carriers continue to subsidize new sales' rates with narrowed spreads on in-force business, raising the bar for the competition.

In reaction to recent interest rate levels, the market has tended to move back into one-year rate guarantees instead of multi-year rate guarantees. Few reps and customers want to lock in current rate levels for multiple years at recent low levels. The implication of this trend has been that market value-adjusted sales dropped substantially in 2003. In recent months, market rates have increased materially, raising the prospect for a shift in new product focus in the future.

Other outgrowths of the recent rate patterns include a general drop in sales rep compensation levels. This has played out differently in different distribution channels. Wirehouse distribution has seen significant compensation declines, independent agents have seen moderate declines and the bank distribution only small declines.

Certain design "untouchables," such as return of principal guarantees, have received renewed looks as the cost of the guarantee in sacrificed credited rate is assessed. Bailout provisions have been re-explored as a mild alternative to a true multi-year guarantee.

Fixed annuity designs with rising rate guarantees or the potential for such rate increases have been popular. Five-year rate guarantees with stair-step rate increases such as 15 basis points per year have been popular with banks. Additionally, products with credited rates linked to the performance of an outside index or benchmark (e.g., Treasuries) provide some level of certainty to the customer that they will enjoy a return that keeps pace appropriately with market movements. Either design requires some sacrificing of the initial first year rate to allow for the locked-in future increases.

Bonus rates payable in the first year continue to be used to enhance the attractiveness of the product in the initial sales process. Such bonuses are typically modest, 100 or 200 basis points at most.

Finally, a recent development emerging in fixed annuity products is the construction of multiple value tiers which are available to the policyholder as the result of specified contingent events. The basic tier (say, a 3 percent interest rate credited tier) may be available for elective withdrawals, a 4 percent tier available upon life annuitization, a 5 percent tier available for nursing home confinements, etc. A number of options can be devised to provide substantial flexibility to the fixed annuity.

### Equity-Indexed Annuities (EIA)

This variety of fixed annuity has strengthened its claim to a segment of the annuity market. More and more companies are in the EIA pipeline, even some variable annuity writers.

The new direction in the EIA market is characterized by lower sales compensation and simpler products. The distribution of the products is still dominated by independent agents and brokers, but banks and wirehouses are beginning to make some room for EIAs in their offerings.

The EIA variation of choice today is the annual ratchet product. Multi-year point-to-point products and high water designs still

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**Although the new annuity Standard Nonforfeiture Law will provide some relief, some carriers continue to subsidize new sales' rates with narrowed spreads on in-force business, raising the bar for the competition.**

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exist, but these are not the areas of intense development. Annual ratchet designs are appealing to producers and customers because of their “similar feel” to standard fixed SPDA products. They also appeal to policyholder desires to see some index credit every year.

The S&P 500 Index without dividends continues to be the index of choice for the EIA line, although a few products feature the Dow or NASDAQ indices. Other moving parts which drive the calculation of index returns are caps, averaging, participation rates and spread fees. Today, annual caps with or without averaging dominate. Participation rates are advertised as 100 percent under such designs. Simple binary designs, in which the policy’s annual return credit is either X percent (if the S&P increases) or 0 percent (if the S&P decreases) are also being seen.

Nearly all EIAs are nonregistered products, largely justified as such on the basis of minimum cash value floors which equal or exceed the minimum SNFL floor. Under the new SNFL, EIAs may be permitted to guarantee a lower credited rate floor than declared rate fixed annuities and still comply with the requirements. This extra allowance is a recognition of the EIA’s unique place as an index-driven fixed annuity. Some EIAs include a market value adjustment, which may move the contract into a security classification if the MVA is unbounded.

In the future, we anticipate continued creativity in EIA design, with a special focus placed on simplicity. Given the current level of complexity seen in some current products, we believe that plenty of room exists to simplify these products. Rising interest rates should provide a lift to the EIA product line, as the option budgets available to support index credits will enlarge.

## Immediate Annuities

The year 2003 was rather disappointing for the immediate annuity market. Variable immediate annuity (VIA) sales dropped significantly, as policyholders looked for guarantees. Fixed sales (SPIA) rose moderately, although some of the SPIA sales were linked to funding programs for life insurance programs.

Many companies are eager to sell more SPIA business and are looking for a pricing edge or investment edge. SPIA products are not typically sold on the basis of features or creative design, such that lowest price tends to rule. Some companies follow distinct protocols for pricing larger cases (e.g., \$1 million +), characterized by lower compensation and lower mortality.

Some carriers have begun to explore sales of immediate annuities to annuitants with modestly impaired health. Under reasonably conservative mortality assumptions, such annuitants could expect 10 to 15 percent higher benefits than would be offered under standard healthy life pricing. Clearly, carriers must be cautious not to bifurcate their overall pricing mechanism in approaching the impaired health market.

Certain products offer special wrinkles, such as liquidity for life contingent benefit types, increases in benefits after issue in the event of specified contingent events (e.g., disability), or enhanced early death benefits. Equity-indexed immediate annuities (EIAs) also are getting a second look by some companies.

## Summary

This article merely scratches the surface of a very active U.S. annuity market. As our world and industry change, annuity developments will occur as they always do, and carriers with the quickest and most insightful reactions will succeed. □



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## Update on NAIC Activities

by Larry Gorski

This report is being written midway between the Spring NAIC meeting held in New York and the Summer NAIC meeting. It will bridge the gap between the meetings by discussing the activities of the conference calls between the two meetings.

Some operational changes have taken place at the NAIC since the Winter 2003 NAIC meeting that may affect NAIC activities in calendar year 2004. The Life and Health Actuarial Task Force (LHATF) is now chaired by Leslie Jones (South Carolina) and the Life Risk-Based Capital Working Group has been merged into the Capital Adequacy Task Force, formerly called the Risk-Based Capital Task Force.

### C-3 Phase 2 Project (Risk Based Capital and Reserves for Variable Annuities)

C-3 Phase 2 continues to move along the path to adoption for the year end 2005. At the March NAIC meeting, the American Academy of Actuaries (Academy) provided a status report to the LHATF on the progress of both the Academy RBC and reserving work groups. The Alternative Methodology factors for RBC were presented at the meeting. The factors for reserving purposes were released in April. The regulators exposed for comment the so-called "standard scenario" methodology. The standard scenario concept is being framed as a mechanism for putting a floor on aggressive actuarial assumptions and a tool to assist regulators when auditing an insurer's cash flow model. Different economic scenarios are proposed for RBC and reserves.

The LHATF had a conference call on April 12 to discuss the single scenario methodology. One of the major items of discussion was the use of the 10-year constant maturity treasury rate as the basis for the annual equity return assumption. Fund drop and return assumptions based on the 10-year constant maturity rate would be dynamic, in the sense that the standard scenario would change from valuation date to valuation date as interest rates change.

Also discussed was the possibility of using a fixed equity drop and return as the standard scenario. The strengths and weaknesses of this approach were discussed without making any decision as to the best approach.

A second LHATF conference call occurred on May 13. The first hour of the two-hour call resulted in a tentative decision that the VA reserve requirement take the form of an actuarial guideline. A few regulators expressed concern that some insurers may challenge the enforceability of an actuarial guideline on the basis that the requirements go beyond CARVM and are "making new law." The next several items on the agenda were addressed in rapid-order fashion. The regulators agreed that the reserve requirements should apply to all in-force business, reserves should be calculated at the 65 CTE level, and, unless the Academy analysis of the Alternative Methodology identifies flaws, the Alternative Methodology would be acceptable. The regulators were supportive of a standard scenario floor, and they recognized that reserves could be calculated using models based on dates prior to the valuation date. The consensus view for the guideline's effective date was 12/31/05 with some type of phase-in.

The Academy's Variable Annuity Reserve Group Modeling Subgroup is evaluating the standard scenario concept and will report on its findings at the June NAIC meeting. While it is possible that the Academy C-3 Phase 2 RBC recommendations may be adopted at the June NAIC meeting for implementation at 12/31/04, a few remaining tasks need to be completed for that to occur. The Academy is working on recommendations concerning the content of the actuarial certification, requirements for documentation and modifications to the Modeling of Hedges section of the Academy C-3 Phase 2 September 2003 Report.

The NAIC's Capital Adequacy Task Force (CATF) heard a report from the Academy Life Capital Adequacy Task Force C-3 Phase 2 Work Group. After the presentation and

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**C-3 Phase 2  
continues to  
move along the  
path to adoption  
for the year  
end 2005.**

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**While no specific product designs were discussed, the nature of the comments made by conference call participants made it clear that some participants felt that some product designs attempt to avoid the reserving requirements in AG 38.**

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discussion, the CATF voted to expose the Academy recommendation. In addition, the standard scenario approach was exposed for comment. This action leaves the door open for adoption at the June NAIC meeting of the Phase 2 RBC requirements with an effective date of December 31, 2004.

### **Standard Valuation Law**

At the March meeting, LHATF discussed the Standard Valuation Law (SVL) and the “patchwork” approach to keeping it current in light of new products. LHATF asked the Academy for input as to a comprehensive modification to the SVL. Based on comments during the meeting, it appears that the intended scope of the regulatory request will not include health insurance. After the March meeting, the Life Valuation Subgroup of the Academy Life Practice Council formed a work group to respond to the request. It is developing recommendations for the June NAIC meeting. A unique feature of this project is that LHATF asked the Academy to consider the implications that it has for the NAIC’s General Nonforfeiture project.

LHATF also discussed the idea of developing a “valuation manual.” The idea was suggested as a way to reduce the number and impact of state variations from the Standard Valuation Law.

The Academy reported on a survey of 200 insurers concerning life insurance deficiency reserves. A large majority of the respondents indicated that formulaic deficiency reserves should be replaced by asset adequacy analysis testing of reserves, but some did express a contrary view. LHATF did not take any action with the report.

### **Actuarial Guideline 38 (AXXX)**

One of the surprises of the March NAIC meeting was a brief discussion of Actuarial Guideline 38 (AG 38). During the “Any Other Matters” portion of the meeting, one member of LHATF gave a five-minute presentation concerning new developments in life products subsequent to the adoption of AG 38. Specifically, there is concern that some new designs of secondary guarantees in universal life are intended to exploit deficiencies in the reserve formulas of AG 38. The goal of the presentation was to determine if there was sufficient regulatory interest in scheduling a conference to have an in-depth discussion on the question as to whether AG 38 has been

effective from a regulatory perspective and whether new designs violate the “intent or spirit” underlying AG 38. A conference call was scheduled for May 17. The purpose of this call was to get the LHATF members to a common level of understanding of the issues.

The LHATF call on May 17 included a large number of participants, including both regulators and actuaries representing insurers. Regulatory actuaries focused on the language in AG 38 that acknowledges that “No statute, regulation or guideline can anticipate every product design, and common sense and professional responsibility are needed to assure compliance with both the letter and spirit of the law.” While no specific product designs were discussed, the nature of the comments made by conference call participants made it clear that some participants felt that some product designs attempt to avoid the reserving requirements in AG 38. The immediate course of action being considered by the regulators is to gather information on new product designs that have the potential for avoiding some of the reserve requirements in AG 38. LHATF will review a draft survey questionnaire at the June NAIC meeting. The regulators did not express a consensus view as to the need to amend AG 38. First, a few regulators expressed the need to review specific, concrete examples before a decision as to whether an amendment was needed. Secondly, some regulators wondered whether the problem is one of “professionalism” and not one of “loopholes” or ambiguities in AG 38. A representative of the Academy Life Practice Council Life Valuation Subcommittee suggested that the Academy and regulators should consider a “long-term solution” instead of simply tinkering with the language in AG 38. The discussion on this topic at the June NAIC meeting promises to be interesting.

### **Annuity Nonforfeiture Model Regulation**

Slow but steady progress concerning finalization of the Annuity Nonforfeiture Model Regulation continues to be made. As a result of the discussion during the March NAIC meeting, the concept of “premium buckets” as a possible unit for applying the requirements of the Annuity Nonforfeiture Law was dropped. Also, additional assignments concerning the concept of “substantive



participation” and non-equity equity indexed annuities were given to the Academy work group. While the draft Annuity Nonforfeiture Model Regulation was not in its final version, it was deemed to be ready for exposure at the March NAIC meeting.

### Nonforfeiture Improvement

During the March meeting, the LHATF had a lively discussion of the report from the Academy Nonforfeiture Improvement Work Group. One regulator argued that products with similar economic benefits should provide similar nonforfeiture benefits and that nonforfeiture benefits should not simply be driven by the classification of the product (e.g., universal life vs. traditional life). He also recommended that the Academy group considering a generalized approach to valuation work with the Academy Nonforfeiture Improvement Work Group.

The report identified three possible courses of action:

- (1) Continue on the initial path and pursue a broad revision to the nonforfeiture law
- (2) Narrow the scope to exclude components that may bring significant risk to the current tax status
- (3) Defer general nonforfeiture revision until a time when the balance between benefits and risks is more favorable.

LHATF indicated a preference for the first approach. LHATF did not schedule any conference call before the June NAIC Meeting on this topic.

### Disclosures Concerning Exposure to Liquidity Risk

At the March meeting, LHATF exposed for comment a recommendation to include additional disclosures concerning exposure to liquidity risk in the life company annual statement (2005). This issue was discussed

during a conference call on April 26. The document exposed for comment at the March NAIC meeting with a minor addition was adopted by LHATF and sent to the NAIC Blanks (E) Working Group for their consideration.

### The NAIC Capital Adequacy Task Force (“CATF”)—Projects In Addition to C-3 Phase 2

In addition to materials related to C-3 Phase 2, the Academy Life Capital Adequacy Task Force was prepared to submit several recommendations at the March NAIC meeting but, because of time constraints, this did not occur. A conference call of the CATF took place on March 31 to discuss the remaining Academy recommendations. The Academy recommendations dealing with the following projects were exposed for comment by the CATF: treatment of preferred stock (“effect of notching”); treatment of dividend liability under modco reinsurance transactions; treatment of equity-indexed annuities in C-3 Phase 1; C-1 treatment of certain reinsurance transactions involving affiliated companies; additional RBC requirements for unauthorized reinsurance; and RBC treatment of guaranteed indexed separate account products.

The Life RBC Subgroup met via conference call on May 14. This call dealt with risk-based capital charges for Low-Income Housing Tax Credit investments (LIHTC). The basic idea is to report these investments in Schedule BA in a new category and include the guaranteed LIHTC investments with “Commercial mortgages-insured or guaranteed” and the non-guaranteed LIHTC investments with specific risk mitigants in the “All other in Good Standing” category for RBC purposes. The pretax RBC factors for these two categories are 0.14 percent and 2.60 percent respectively. Based on experience, the 2.60 percent RBC factor is adjusted by the Mortgage Experience Adjustment Factor. After a brief discussion, the subgroup decided to forward the proposals to the CATF at the June meeting. □

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**While the draft Annuity Nonforfeiture Model Regulation was not in its final version, it was deemed to be ready for exposure at the March NAIC meeting.**

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# Distribution Dynamics: Strategies for Maximizing Share of Mind and Share of Wallet

by Janet Deskins

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**There are many strategies that carriers can employ, but in every case, the key is aggressive channel management.**

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The financial services distribution playing field is in a state of flux. Career financial advisors, banks, personal producing general agents and broker dealers have stepped out of their traditional product arenas and are offering fixed annuities, variable annuities, mutual funds, advisory services and group products.

The *American Banker* reported in January of 2004 that for the first time ever, a bank sold more than \$4 billion in annuities, two-thirds of which were fixed annuities. One carrier sold \$3 billion in fixed annuities through banks in the third quarter of 2003.

In this increasingly competitive arena, how can carriers maximize share of mind and share of wallet within the different channels?

There are many strategies that carriers can employ, but in every case, the key is aggressive channel management. Aggressive management is important due to the diverging economics and growth outlooks across channels, and increased distribution power. Carriers need to either have a consumer-focused strategy, a producer-focused strategy, an alliance-focused strategy or some combination of the three. Once this focus is determined, the requirements for point-of-sales support, wholesaling support and technology support can be determined.

## Charting a Course

To select the right strategy and execute it successfully, there has to be a clear understanding of the dynamics of the carrier, the producer and the consumer.

Carriers need to decide whether to aggressively seek new distribution or just better penetrate existing distribution. Some are clearly segregating manufacturing from distribution and investing in distribution companies.

Producers are realizing the need to pursue new strategies in order to maintain significance within a competitive environment that now includes accountants, boutique regional

and national trust companies and the ever-growing online providers such as mycfo and financeware. They are struggling to solidify their positions within the marketplace by enhancing their expertise and emphasizing the full scope of their capabilities. To this end, many are joining marketing organizations to:

- Learn about leading-edge strategies
- Gain access to better case design and technical support
- Increase networking opportunities
- Associate with market leaders

Consumers are smarter and better informed than ever before. They have access to instant information for comparisons and expanded choices for acquiring products. They want financial security and the right combination of:

- Information
- Access to specialists
- Leading products
- Guidance
- Integrity
- Spectacular service
- True relationship

The over-50 market of annuity buyers now makes up one-third of the population. This translates into great opportunities for expanding share of mind and share of wallet if their needs are identified.

## Essence of a Producer—Focused Strategy

With these dynamics as a background, let's look at an example of aggressive channel management that uses a producer-focused strategy. The core of the producer-focused strategy is to get the professional in front of clients. To maximize share of mind and share of wallet, the producer-focused vision is to be the preeminent provider of specialized financial services to the high-net-worth and

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# Who Needs Applied Actuarial Research?

by Randall C. Wright

**M**ore than 60 actuaries from industry, consulting and academia got together at the first annual Applied Actuarial Research Conference (AARC) to answer this question: "Who needs applied actuarial research?" The conference was held March 8-9, 2004, at the University of Central Florida in Orlando, and we decided that we all need applied actuarial research! Due to the enthusiastic response, plans are in the works for AARC II next March in Orlando, and any product development actuary hungry for new ideas should join us.

The mission statement for AARC neatly summarizes the goal of this gathering:

*The purpose of the AARC is to bring academic actuaries and practitioners together for the discussion of actuarial issues and research methods for practical purposes. The conference will provide an opportunity for identifying research topics, methods and outcomes that are much needed for practitioners in various actuarial fields and for introducing the latest methods and technology applications to real-world business problems.*

## Highlights from AARC I

What we found when we arrived at the first AARC was an energetic, talented and accessible collection of actuaries eager to share ideas. In such an intimate setting, there was ample opportunity to follow up on any presentation. And what a collection of stimulating presentations! The conference opened with an overview on the current state of applied actuarial research from top representatives of the SOA, the CAS, insurance companies, academia and consulting. I found it especially helpful to have several CAS and SOA research actuaries present to discuss in more depth the research initiatives they sponsor and encourage. If you've ever said to yourself, "The SOA should do a study on ...," then here's your chance to find a sympathetic ear.



Elias Shiu from the University of Iowa followed with a keynote address on applications of option pricing theory, which is a perennial hot topic in actuarial circles. Other highlights for me included Hsin-Yi Tseng's analysis of the pricing impact of the two-year suicide exclusion and Rob Brown's review of the interplay between health care costs and pension dynamics. We were exposed to fuzzy logic, optimal annuitization strategies and several views on social security funding. But it's not fair to play favorites; the complete program is available at the conference Web site, [www.aarconline.org](http://www.aarconline.org). The program spanned the entire spectrum of casualty, health and life insurance practice.

## Why "Applied" Actuarial Research?

What we kept coming back to at the conference was the desire to put practicing actuaries and academic actuaries together for the purpose of identifying research questions that originate in the reality of current practice but require more sophisticated techniques than the typical deadline-oriented company actuary can manage. Company actuaries need help, and our academic counterparts are hungry for good (and real) problems to solve. One feature we want to

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add to the next AARC is a forum in which practicing actuaries can present questions that need better answers than we can provide with the tools and time available to us. I learned at AARC that there is an established actuarial research exchange at [www.aerf.org/exchange/](http://www.aerf.org/exchange/) to put academic actuaries in contact with companies or organizations that want to post specific research proposals.

### Why You Should Join Us

When AARC II convenes in March 2005, you'll have the opportunity to bring your questions and talk at length with some of the brightest minds in actuarial science (who are also sometimes among the most famous). If

you're a company actuary, this is a chance to be exposed to techniques you won't hear about otherwise in a setting where the goal is to focus on real actuarial practice. If you're a consultant, this is an opportunity to bring some great ideas to company actuaries who are looking for new ways to do things. And if you're an academic actuary, thank you for wanting to know more about the products and risks that actuarial science is all about.

To sweeten the deal, AARC is an economic conference with all the sunshine and fun that Orlando has to offer in March. So start working on your questions and your answers now, and I hope to see you next year at AARC II! □

### Distributing Dynamics ... • from page 22

corporate marketplace by allowing producers/financial advisors to retain their independence and client relationships, while offering access to tools and technology that scale can provide. Drilling down to some more specific goals, independent financial professionals would be able to provide:

- Responsive, personal, results-oriented customer service
- Comprehensive, best-of-breed selection of financial solutions and products
- State-of-the-art technology and practice building resources
- Access to world-class marketing and sales strategies and support

The tactics to support these goals start with product offerings. If all the products that the independent professionals need are not available through current sources, alliances should be formed. This would allow a broader offering to producers, which helps them be their client's chief financial advisor. The next tactic could be centered on sales concepts. Any concept that is launched should use an "e-wholesaling" medium. If

traditional wholesalers are used, they should be able to direct sales concepts/ideas to specific client situations for each financial professional they visit.

Through focused support, producers would continue to enhance their expertise of specific concepts or products, while receiving practice management and professional development training and tools. Access to market research or consumer demographics information would further develop prospecting and marketing initiatives.

This is one brief example of some goals and strategies that need to be a part of aggressive channel management. Annuity products continue to become more and more commoditized—available everywhere at a similar price. To maximize share of mind and share of wallet with any distribution channel, the focus must be on differentiating from the competition with service quality. Whether producer-focused, consumer-focused or alliance focused, identifying what service excellence means and excelling at it will lead to distribution success. □



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# Return of Premium Term

by Keith Dall

**R**eturn of premium term riders have been around for a long time. Generally, they have been used in the mortgage term marketplace, but now they are starting to hit the mainstream term market. More and more insurance companies are taking another look at the market appeal of the return of premium concept, but it is not without its risks.

Most companies use a rider to add the return of premium provision, but some companies file it as part of the base policy. This article will refer to the benefit as a rider.

## Marketing

The marketing of return of premium term products offers great sales pitches. There are a number of catchy phrases that I have recently seen on Web sites.

*“Wouldn’t you like to get your money back when you don’t die?”*

*“No-Cost (ROP) Term”*

*“Coverage when you need it, money back when you don’t”*

*“Win-Win-Win”*

The last marketing quote refers to a “win” for the policyowner whether it is a death benefit to the beneficiary, a conversion to a permanent level premium plan in case the insured becomes uninsurable and finally the return of premium to the policyowner if the policy persists to the end of the level premium term period.

## Premiums

While the catchy sales pitches assist the producer in making the sale, the relatively high premium for term insurance makes the sale more difficult. For a typical male, preferred at issue age 35, the return of premium term policy for a 20-year level term period is about two-thirds higher than the same policy without the rider. Likewise, a 30-year term policy with a return of premium rider is 25 percent higher than the base policy.

As Figure 1 shows, even though the return of premium rider drastically increases the premium on the policy, the premiums are still lower than a universal life policy with the 20th year cash value equal to the sum of premiums.

While the universal life policy offers permanent insurance with flexible premium, the return of premium term policy may fill a void in the marketplace between term and universal life insurance.

## Rate of Return

In addition to the sales pitches, producers are able to quote a very high rate of return for the policyowner. After-tax guaranteed rates of return of 14 percent are quoted on one insurance Web site. These rates of returns are calculated by using the rider premium as the investment and the total premium for surrender returned after 20 years as the return.

The rate of return stated above is from the maximum time period of 20 years. Typically, the return of premium rider does not return any premium through the first five years and then grades up to 100 percent of the paid premium in the 20th year. Therefore, the rate of return is zero in the early years and grades up from there.

## Pricing

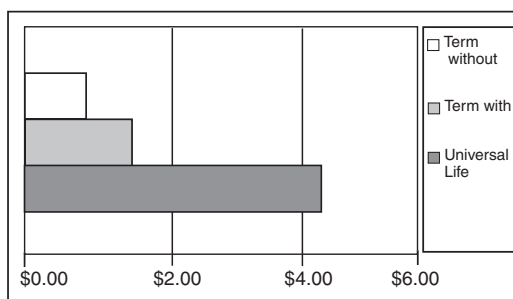
While there are advantages to the producers in higher commission amounts and great sales pitches and advantages to the

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**In addition to the sales pitches, producers are able to quote a very high rate of return for the policyowner.**

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**Figure 1: Premium Rate Per \$1,000 for a 35-Year-Old**



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policyowner in high rates of return, the insurance companies should be careful in pricing the return of premium rider. The rider increases the uncertainty of earnings due to uncertain persistency effects and the increased sensitivity of profitability to the net investment earned rate. Also, the higher reserves create a greater surplus strain and the relative premium levels by term period change the mix of business by term period.

Everyone seems to have a different opinion about the ultimate lapse rate on return of premium riders. The range is generally from about 6 percent, which is similar to a base policy, to 3-4 percent, which is similar to a permanent plan, to 1-2 percent, which

Within the XXX Model Regulation there is a provision for an unusual pattern of guaranteed cash surrender values. An unusual pattern is considered when the change in cash surrender values is greater than 110 percent of the premium paid in the period plus 110 percent of the valuation interest rate on the prior cash value plus premium. The reserve floor is then equal to a term reserve to the next unusual cash surrender value period plus an endowment equal to the cash surrender value at that same period.

The reserve for the endowment may create deficiency reserves, as the gross premium for the endowment would assume lapse rates in the calculation, while the statutory reserve is calculated without lapses.

### Miscellaneous Items

The regulators recently completed an NAIC survey on return of premium riders and most of the respondents indicated that their state does require a demonstration of compliance with the Standard Nonforfeiture Law.

The reinsurers have not been very active in the return of premium market mainly because the rider premium is based on persistency risk rather than a mortality risk. This may change as more insurance carriers enter the market.

Similar to universal life insurance, the total premium paid is the basis in the contract and therefore there is no taxable gain in returning the premiums. However, companies do have to be careful in complying with the definition of life insurance according to I.R.C. Section 7702. Some of the older ages for the longer-term periods may require increasing death benefits due to the corridor.

### Summary

In summary, the return of premium rider can be beneficial to the policyowner, producer and insurance company, but it is not without its risks. Look for more companies to jump on the bandwagon and add a return of premium rider to their product portfolio. □



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assumes the policyowner will take advantage of the higher returns. The lapse rate is the most important pricing assumption. Reducing the ultimate lapse rate by 50 percent can reduce pretax profit margins by a significant amount, for example, from 10 percent to 6 percent.

The variability of earnings due to investment rates increases when the rider is added to the policy. This is because of the higher reserves that have to be held. If interest rates keep increasing and the premium levels remain the same, the profits on the return of premium riders will increase.

### Reserves

The reserves are much higher for policies with the rider than without. Typically, the reserve is the higher of the XXX Model Regulation reserve and the present value of the endowment.

## 2004 SOA Annual Meeting in New York

This year the SOA annual meeting will be held in New York City on October 24-27. As usual, there will be a variety of interesting topics. The Product Development Section is sponsoring 10 sessions and a hot breakfast. Here is a brief description of the sponsored sessions.

### Critical Illness Insurance—A Stroke of Genius?

The current climate for critical illness insurance in the United States, and the issues to be overcome for this product to take off as it has in other countries.

### Life Settlements Go Mainstream

A description of the life settlement marketplace, the pros/cons for an individual policyholder and potential implications for insurance companies.

### Contemporary Risk Appraisal

New underwriting tools now used in various markets, impact of preferred exceptions and business decisions and new ideas for assessing risk at older ages.

### What's New and Exciting With Fixed Annuities?

Current trends in product design, current regulatory issues and addressing the conflicts between competitiveness and profitability.

### Illustration Actuary Update

Overview of regulation and supporting guidance (e.g., ASOPs and practice notes), and of emerging issues and challenges facing illustration actuaries.

### Life and Annuity Product Development—Year In Review

Recent regulatory actions and initiatives, what's hot (and what's not) in product development and predictions for the next year.

### Payout And Income Annuities—The Next Big Thing ... Again

Product designs, underwriting approaches and other considerations for the current and future income annuity market.

### Term Insurance Update

Current topics including preferred mortality study and other mortality issues, the reinsurance market and return of premium and other ancillary benefits.

### Better Pricing In An Uncertain World

Stochastic vs. deterministic pricing—when is each appropriate, and how is profitability measured in a probabilistic world?

### What's Backing Your Guarantee?

Methodologies for analyzing and managing the risks of product guarantees on individual life and annuity products. □



### Coming in September!

The SOA e-mail newsletter will debut this fall, bringing you news you can use!

Get the latest details about:

- SOA activities & initiatives
- Educational opportunities
- Exam information
- National and global issues for actuaries
- Business news
- And much, much more!

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