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Results of Three Surveys Completed by the Mortality and Underwriting Survey Committee

Track: Product Development

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Summary: This session presents the results of three surveys recently completed by members of the Society of Actuaries Mortality and Underwriting Survey Committee. The surveys explore mortality improvement, older age underwriting techniques and how decisions on lab testing are made. This session also informs the audience of which surveys were to be conducted in 2001. Those present were given an opportunity to provide input on what the surveys should include.

MR. ALLEN M. KLEIN: I will start by telling you a little bit about each of us. Mary Bahna-Nolan is the vice president of product development for North American Company for Life and Health Insurance in Chicago. At North American, Mary acts as the chief product actuary and her responsibilities include overseeing all product initiatives and implementation activities. She is also the vice chair of the SOA Product Development Section Council, a member of the SOA Mortality and Underwriting Survey Committee and a previous member of the SOA Task Force on Preferred Underwriting.

I currently work for CNA Re Life Insurance and am responsible for all of the actuarial financial reporting, claims and audit functions of the life reinsurance area. I am the chair of the Mortality and Underwriting Survey Committee, chair of the Preferred Underwriting Task Force and I also serve on a couple of advisory boards such as the Reinsurance Group of America (RGA)/Washington University Longer Life Foundation.

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Note: The chart(s) referred to in the text can be found at the end of the manuscript.

I will provide a brief history of the survey committee and explain how it works. Then we will discuss the three surveys that have been completed. Mary will discuss the laboratory testing decision-making, and I will discuss the older age underwriting practices survey. Then, Mary will cover the mortality improvement survey. The first two surveys have been published and are now available on the SOA Web site. Attendees present at this session are the first to hear about the results of the mortality improvement survey. At the end, I will discuss our future plans with the new surveys that we are working on, and then we will have some time for questions.

In 1994 we created the Preferred Underwriting Task Force, which basically had two missions. One was to do a preferred underwriting survey and the other was to see if we could do a preferred mortality study. We did two preferred underwriting surveys, and completed them in 1996 and 1998. Then, we began working on a preferred mortality study, called "The FIRST Study".

Because the preferred underwriting surveys were successful, our group decided that we could probably complete other surveys that were just as meaningful for the industry. In January of 1999 I went before the SOA Board of Directors and received approval to form a permanent survey committee, now called the Mortality and Underwriting Survey Committee.

At our first meeting in April of 1999, we came up with the following mission: "To survey the life insurance industry, to collect, organize and disseminate on a routine basis, information on current and emerging industry practices."

We currently have 21 members, including two SOA staff members, two underwriters and two technology experts. We continue to add members all of the time. We have set goals to complete three surveys every 12–24 months. We want to provide timely information that's generally not available anywhere else.

The committee meets every 12–18 months, usually for two days at a time. The first day we discuss the previous surveys and how to improve them, how to improve the process and any other changes that we want to make. We currently have a list of about 40 survey ideas compiled from our various meetings. We look for any new ideas and then vote on the top three that are most relevant to the industry. Once we've done that, we choose which sub-committees to participate in.

The second day we meet as sub-committees and begin to compile a list of possible questions. The process just gets started at this meeting and generally takes a few months or more to complete. We don't work on it full time, as everyone has other things to do. However, in that few months' time, the sub-committees weed out the questions that are repetitive, not meaningful or confusing, and then double-check for inconsistencies to ensure clarity and simplicity.

A peer group of reviewers, as well as one or two of the companies that we work for

then tests the survey. The bottom line is that we try to make sure the survey is as clear as possible. We also have testers tell us how long it takes to complete the survey.

Once the survey has all of the recommendations incorporated into it, the SOA mails or e-mails it to the appropriate people. We usually give companies about a month to complete and return it to the SOA, who then confidentially compiles the results because we don't want any of the committee members to see individual company responses.

Once the SOA completes its summary, it goes to the sub-committees where the results are reviewed and analyzed. Then the sub-committees create a report. We take the wording very seriously. For example, we will say something like 50 percent of the respondents "indicated that something happened," instead of saying 50 percent of the companies "said or did this."

There is a subtle, but important difference with the wording. Just because the company said they "did it," doesn't necessarily mean they "did it." They may have misunderstood our question or they may not have wanted to admit something. So we try to be very careful with the wording that we use.

Sometimes we come across results that look strange. If they look really strange, we will ask the SOA to contact the company to make sure the results are accurate. If they are, we go ahead and publish them. We don't pass judgment on what we might think the answers should have been. We do, however, try to provide insight to make the report more meaningful and useful.

Finally, once we think that we are done, we go through a peer review process again. We have people on the other sub-committees look at it. We have peers in the field review it just to make sure it's right. It also gets reviewed by the SOA attorneys and editing staff. I'm pleased to say that there have been very few changes from the SOA editing staff, if any, on what we have done. We do a pretty thorough job. All of this is accomplished through a series of face-to-face meetings and many conference calls. With that, Mary is going to discuss the survey on lab testing.

MS. MARY J. BAHNA-NOLAN: Fifteen-to-twenty years ago, companies began actively using lab testing with the onset of HIV. Since that time, lab testing has had an enormous impact on the industry and the way that we underwrite.

The industry was quick to discover the protective value of the comprehensive blood study or blood chemistry tests such as cholesterol, lipids, liver function and prostate specific antigens (PSA). This recognition or use of lab testing and results quickly led to the preferred marketplace and the competitive term marketplace. In addition, alternative testing and collection methods, such as using urine and oral fluid, quickly followed.

To provide some background, the purpose of the survey was to gather data on how life insurance companies make decisions involving laboratory testing. This survey differed from previous ones in that it did not specifically address lab-testing limits and it did not try to make a decision as to what method was appropriate for lab testing.

The survey was conducted in the summer of 2000, when 101 companies responded, including U.S. and Canadian companies, as well as five health insurance writers. The responses primarily came from the chief underwriters of these companies.

Most questions asked for responses such as "rarely," "sometimes" or "often;" or "low," "medium" or "high." The survey committee used two different analysis methods to evaluate each response. They either ranked the number that responded to "often or high," or ranked it based on "often" minus "rarely" or "high" minus "low" or the difference between the highest response and the lowest response, ignoring those that responded to "sometimes" or "medium."

They used the method that demonstrated the most differentiation. The survey asked respondents to rate the major driving forces towards making a change in lab testing. These responses were rated as "rarely," "sometimes" or "often," and ranked by the "often" minus "rare."

All 101 companies responded to the survey. The most common result was in protective value, where an overwhelming 71 respondents rated it as "often," and the "often" minus "rare" number was 70.

Other forces that rated "high," "sometimes" or "often," or the difference between "often" minus "rare," included the competition's testing practices, innovations in lab science such as testing and technology, medical advancements, the impact to the agent or the client, overall mortality trends and specific product pricing such as mortality and expenses.

The survey also asked respondents, once the decision is made to evaluate a change, what factors are used to evaluate that change and how they weight? They weight on a basis of "low," "medium" or "high." Again, protective value was the overwhelming favorite, with 87 of the 101 responses being the difference between "high" and "low."

The impact on the agent/client, overall mortality trends and the impact on sales also weighted fairly high, and became more important in the actual evaluation as opposed to the decision. Other factors were the specific product pricing, medical advancements, innovations and lab science and competition's practices. When protective value studies were done, at least 55 of the respondents performed those studies in-house. The most common sources for data were published industry studies, lab and reinsurance partners and in-house studies.

One interesting note was that performing studies in-house was noted as "often" almost as much as using published industry studies, but it was noted as "rare" a significantly greater number of times. Twenty-nine companies rated performing in-house studies as "rare" versus four companies who used published industry studies.

Respondents were also asked if they used competitor information, and if so, what their sources for that information were as they apply to lab testing. The three most common sources for obtaining information were reinsurers, industry surveys and an informal survey where they call a few of their competitors to ask some specific questions. Surprisingly, obtaining information from agents rated low, as did extensive in-house surveys and using the Internet.

We also asked the question, "Who makes the decisions for lab testing and how much weight does each player have, on a "low," "medium" or "high" basis?" The chief underwriter had the most influence, with 85 respondents rating that decision-maker as "high." The medical director and the pricing actuary commonly had influence, but not as much as the chief underwriter. Marketing and agency rarely had much weight.

We also asked, "Once the evaluation is done, what is the most difficult part in making a decision?" Overwhelmingly, performing the actual protective value study rated the highest, followed by finding the resources to actually do the study and the impact that it would have on the budget. Other factors having much less impact were selling key decision makers such as senior management on the changes, gathering the competitive information and agent acceptance of any change.

We also asked companies how long it takes them to actually go from an evaluation of a change in lab testing results to implementation of that change. For most companies, it takes anywhere from one-to-six months. For more than seven percent of the companies, it takes over one year.

We also asked respondents, "What is the hardest part in implementing a decision to change, or what were the difficulties faced in implementing those changes once that decision was made?" No single implementation issue was overwhelmingly difficult for the respondents. However, the top items noted were finding the system resources to program or code any expert underwriting systems and coordinating with other company projects. That probably also ties in with the system or other resources, as well as training the field.

Two respondents actually wrote in that one of the most difficult things they faced in implementing a change was coordinating with the paramedic vendors. From our own company experience, I can say that this is definitely a challenge.

The conclusions of this survey are that the chief underwriter, with input from the medical director and the pricing actuary, generally makes the decisions regarding the lab testing. The changes are mainly driven by protective value studies and it

usually takes companies six months to implement a change once the decision is made to do so.

That was a quick overview of the lab testing decision survey. With that, I will turn it back over to Allen to discuss the results of the survey in older age underwriting.

MR. KLEIN: Thanks, Mary. The purpose of this survey was to explore practices that underwriters use in assessing older-age applicants. We did the survey in the summer of 2000, and had 88 U.S. and Canadian life insurance companies respond. Not all of the companies answered all of the questions in the survey, which I'll point out as we go along. Also, the percentages we are sharing are based on the number of companies that responded to each particular question.

First of all, we asked, "When does older age begin?" We had 73 companies respond to this. The responses varied from ages 50–76, with an average of just under age 65. The most common responses were ages 60, 65 and 70.

The interesting thing to note is that based on a lot of geriatric literature and conversations I have had with geriatric experts, many have determined that for insurance purposes, older age should really start at age 50. The industry should start asking questions around age 50. There are people at this age affected by symptoms related to older age. Only 10 percent of the companies indicated that they start old age at age 50 or 51. I think this number is going to grow if we do a survey again in the future.

We asked the maximum issue age at which several products were routinely issued. The first product was term, and 80 companies responded. The answers ranged from ages 50–90, with an average of just over age 70. The most common responses were ages 65, 70 and 75. And not surprisingly, this had the lowest average age of the four products.

The next product was permanent, and 85 companies responded. The range was from ages 65–90 with an average of just over age 80. The most common were ages 80 and 85.

For preferred, only 72 companies responded. The range was from ages 50–90—a bit wider than preferred. The average was just over age 75, with the most common responses being ages 70, 80 and 85.

Lastly, we had joint and last survivor, where the least number of companies responded (only 45). The range here was from ages 65–91 with an average of age 83.5. Not surprisingly, this had the oldest maximum issue age. One thing we forgot to ask was whether this was an average age, a joint equal age or the equivalent level age. We don't know that, but it still gives an indication. The most common years for joint and last survivor again were much higher—ages 80, 85 and 90.

We also asked, "Do you make any exceptions to this maximum issue age?" We were really surprised that only 10 percent of the companies said that they did. We expected this number to be much higher. We think that a lot more companies do make exceptions, but for whatever reason, only 10 percent admitted that they did.

This next question was really interesting. It was open-ended. We asked for three items that companies felt were the most important indicators in mortality at the older ages. Sixty-nine companies provided 199 different responses. We tried to categorize the result, which wasn't easy, but we tried to summarize them in some way.

Table 1 shows this summary. Although Activities of Daily Living (ADLs) had various combinations of answers, the category with the most respondents was "medical history and condition." The second most common response was "family history," with 19 percent of the responses.

Table 1

Indicators of Mortality at Older Ages

<u>Indicator</u>	<u>% of Responding Companies</u>
Medical history/condition	61
ADLs/Physical activity	39
Mental health/status	29
Cardiovascular	25
Health condition/history	23
Family history	19
Lifestyle/mobility	14
Financial	14
Falls	13
Testing	13
Other	38

The four items that really apply to older age versus all ages include ADLs, mental health, lifestyle/mobility and falls. The other category is pretty big and included cancer, smoking, spousal questions and social activities.

When we asked about the availability of certain resources to help assess the underwriting practices for older ages, the most common responses were medical director, reinsurer, Internet research and geriatric literature. It's interesting to see that Internet research is so high. It's new and is used quite a bit. Just a few years ago it probably wouldn't have even been on the map.

We asked whether companies took different actions or had different requirements or limits for the older age applicants based on various sources of information. Again, the most common responses were the "Attending Physician's Statement" (APS) at 66 percent, "paramedical exam" at 58 percent and "physical exam" at 42 percent. None of these responses are surprising.

Then we asked whether companies requested different underwriting requirements for older ages, and if so, whether they interpreted them differently (Table 2). They answered that "APS", "electrocardiograms" (EKGs) and "physical exams" were not only requested differently for older ages, but interpreted differently as well. However, there is a much smaller percentage in terms of interpreting the results differently than in terms of just requesting the information.

Table 2

Most requested differences in:

Requested underwriting requirements

- Attending physician statement (72%)
- Electrocardiogram (66%)
- Physical exam (48%)

Interpreted underwriting requirements

- Electrocardiogram (25%)
- Attending physician statement (22%)
- Physical exam (15%)

We asked whether companies made changes to the normal readings for older age applicants. Again, the most common responses were "blood pressure" at 59 percent, "PSA" at 28 percent and "total cholesterol" at 24 percent. Then we asked a follow-up question—whether those differences were higher or lower. For the most part, the results were higher.

There's one interesting thing to note here. For cholesterol and build, most responses were "higher," with only a few responses being "lower." This is important because recent research has shown that very low cholesterol could be an indicator of upcoming health problems. The same holds true for build. If one is too thin or not heavy enough in older age, it is a good indicator of mortality as well. So I expect that future surveys will indicate the lower side in both of these areas.

Here's another interesting thing to note. We asked companies whether they "specifically asked about," "did not ask about but considered," or "did not consider" a number of non-medical underwriting criteria. They asked about 69 different items in total. I'm only going to show those items that had at least a 65 percent response rate in the next few tables.

Table 3 shows that three items in particular apply more to older ages than to all ages. These include "prescription drug use," "being under the regular care of a physician" and "depression."

Table 3
Non-Medical Criteria - Ranked by Specifically asks

Prescription drug use	(77%)
Tobacco use	(77%)
Under care of a regular physician	(76%)
Aviation risk	(69%)
Hazardous avocation	(68%)
Depression	(68%)
Family History	(67%)
Traffic violations	(66%)

Table 4 shows the responses to the result "does not ask about but considers." Every one of the following really applies to older ages versus the general population: ambulation, mobility, falls, oxygen use, loss of balance, physical therapy use, memory problems, pacemaker use and cognitive skills. Again, these are the items companies reported that they consider.

Table 4
Non-Medical Criteria - Ranked by Does not ask, but considers

Ambulation/mobility inside/outside	(72%)
Falls	(72%)
Assisted mobility (e.g., crutches or cane)	(70%)
Oxygen use	(70%)
Trouble with loss of balance	(67%)
Physical therapy	(67%)
Mobility	(66%)
Memory problems	(66%)
Pacemaker use	(65%)
Cognitive skills	(65%)

Items that are not considered include "teeth," "education," "pet ownership" and "sexual activity." Pet ownership was one that surprised me a bit. I thought that more and more companies were measuring pet ownership when looking at the older ages. In the other numbers related to pet ownership, only two percent said that they "specifically asked about it," 28 percent said that "they'd consider it, but don't ask about it," and 67 percent said that "they don't consider it."

In response to a question from the floor, the respondents checked off their responses and there were no responses written in. We were pretty comprehensive with these 69 items, but there might be others that we missed.

Next we asked about underwriting guidelines. Several questions that we wanted to learn more about include: How often are underwriting guidelines reviewed? When were they last reviewed? When will they next be reviewed? Then we tried to compare the answers to the same questions for the general population.

Overwhelmingly, the response to the question, "How often are they reviewed?" was "as needed." This is a good sign. I hope that this is accurate and that they are reviewed fairly often. This applied to both older age guidelines and general guidelines. In terms of when the underwriting guidelines were last reviewed, we received a good response as well. Fifty percent indicated that they reviewed their older age underwriting guidelines within the last year, and almost 60 percent indicated that they had reviewed general guidelines within the last year.

For the question, "When will they be reviewed next?" the largest response was "in the next year or two, "although there were quite a number of respondents that said "no current plan." I'm not as concerned about that because it sounded like an overwhelming majority had just reviewed them. We did not relate the answer from one question to the other because we did not see the company-by-company results for the question. Finally, it's another good sign that nobody said they would next review their underwriting guidelines "in three or more years."

Next, we asked companies whether there were certain obstacles that kept them from asking more comprehensive questions or doing more testing for the older ages. The obstacles that follow are a comprehensive list of those we provided.

The largest percent of responses (75 percent) were for cost of testing and the requirement of additional information. There is also agent pressure (60 percent), speed-to-issue (58 percent), protective value of test (49 percent), privacy issues (48 percent) and insult-to-the-applicant (41 percent). These are ranked in order of responses. Six companies indicated they are able to ask more comprehensive questions and do more testing as needed. Three of these companies indicated that none of the obstacles were a problem; but three of the others still listed obstacles.

When we asked about special products in marketing programs, 28 percent said that they offer some type of special life insurance product other than joint and last survivor for the older-age applicants. Again, we tried to categorize them. It is not perfect, but we had 15 write-in responses, which we put into four categories.

In terms of the underwriting category, one company said they issued standard through table four, another said they had multiple rating bands and another said that they used limited underwriting.

For the smaller face amounts, they mentioned \$15,000 and \$25,000. In terms of products, there was a whole life, variable universal life, graded benefit whole life and final expense. In terms of the limited pay, they listed single- and 20-pay plans.

In terms of retention, 56 percent indicated that they reduced their retention at the older ages. Two-thirds of these companies varied the reduction by age. We are not sure about the other 44 percent. We may not have asked the question in the best way. We are not sure if these companies don't reduce retention at the older ages, which I don't think is correct, or if they do reduce it by some means other than age, such as by rating.

Then we have some answers for the four products. In term, 24 companies responded with the age range of 60–76 and an average of just under age 65. The most common were ages 61 and 66.

We had more respondents for permanent. The average was almost age 69, with an age range of 61–81. Permanent had the same most common responses as term—ages 61 and 66.

For preferred, 28 companies responded, which is a small number. Preferred had the same age range of 61–81, with an average of age 68. Preferred also had the same most common—ages 61 and 66.

For joint and last survivor, 28 companies responded. Again, we are not sure if this is an average age or joint equal age, but the age range was 61–81, which had the highest average age of just under age 70.

We asked several questions about reinsurance for the older age market, such as, "What percentages of the older age applicants are submitted for reinsurance facultatively?" Then we asked, "What percentage of the older age issued and placed business is reinsured both facultatively and automatically?" Table 5 summarizes our findings.

Table 5

Reinsurance submitted facultatively on older-age applicants (1), and facultative (2) and automatic (3) reinsurance placed on older age issued business

% Submitted or Placed	(1) Submit Facultatively	(2) Reinsure Facultatively	(3) Reinsure Automatically 0-1
17%	16%	18%	
>1-10	20	28	12
>10-50	15	11	16
>50-90	4	5	7
>95-99	0	0	9
100	2	1	0

I want to point out that the majority is from 1–50 percent. The other thing that is interesting is that our responses ranged from 0–100 percent. There were companies

that did no reinsurance and there were companies that reinsured everything. I think this makes sense.

There are smaller companies that aren't comfortable in the older-age marketplace, so they will reinsure more, and maybe even all of the business. Maybe they have an arrangement with their reinsurer. Then there are the others that are comfortable with what they are doing in the older age market, but they don't reinsure any of this business.

Last, we asked about profitability. We asked companies whether they felt that their older-age business was profitable. This was more of an opinion question rather than a fact question. Forty-nine percent indicated that they felt their older-age business was profitable, which is good. Three percent felt that it wasn't profitable, which does not surprise me because there are some companies writing older-age business because they believe they need to, even though they don't feel that it is profitable. What troubles me some about the responses to this question is that 48 percent either "weren't sure," "didn't answer," or "didn't want to admit" to not being profitable. That is a pretty large percentage of respondents that do not know.

That was a quick summary of the older age underwriting survey. Mary is now going to talk about the mortality improvement survey.

MS. BAHNA-NOLAN: The purpose of the mortality improvement study was to gather data to find out if and how life insurance companies factor mortality improvements into the development of the assumption. It was not the intent of this study to make judgments on the appropriate development or use of mortality improvement factors.

We conducted the survey in the fall of 2000, and 67 insurance companies responded. Sixty-one responded on behalf of U.S. business and six responded on behalf of Canadian business. The results for this study, and what I'm going to present now, are still preliminary and may change slightly. We hope to publish this study soon.

Throughout the study, we used two different definitions for mortality improvement and asked specific questions with respect to the use of each one of these. The first question was generational, which basically is to bring historical experience up to the current era. If you use a table based on experience that went through 1998, it might bring mortality improvement up to 2001.

The second question was about duration. That's basically projecting mortality improvements into the future with such factors as using thoughts or analysis on medical advances, older age research or trends towards healthier lifestyles. These factors might be used to project the forward movement of mortality from the current point in time.

In order to understand mortality improvement we felt we needed to understand the underlying mortality that companies were using. Chart 1 shows that the majority of companies were using either the Society of Actuaries 1975–80 mortality table or their own company-developed table.

Thirteen percent indicated that they used the Tillinghast mortality tables. Most of these were generally used in conjunction with another table such as older-age extensions to 1975–80, and not many were using it as their primary underlying table.

Tables in the "other" category, which represented 18 percent of the respondents, included the 1979–81 U.S. population tables and the Society of Actuaries 1975–80 ultimate table, the 1980 CSO. One company was already using the SOA 1990–95 Table and one was using the CIA 1982–88 table. Variations of these tables were usually used as well.

We asked companies how frequently they reviewed their mortality assumption. Overwhelmingly, the majority, 69 percent, reviewed the mortality assumptions on an annual basis. However, two percent reviewed their mortality assumptions on a monthly basis. Only eight percent reviewed them every three-to-five years, and six percent reviewed them at the time of the product pricing. We don't really know if it was every month, every year or every five years.

We also asked companies if they use mortality improvement in both the generational and durational forms. Out of the 67 respondents, 36 percent (34 respondents) use generational mortality improvement. Twenty five percent (17 respondents) use durational, and 16 percent (11 respondents) used both generational and durational. More than half of the respondents (37) used neither type of improvement.

For the majority of the companies that were not using generational improvements, we asked why. The majority of the respondents felt that their mortality table, or what they were already using, was fairly current or up-to-date and there was no need to use them. For those companies that are using generational improvement, 97 percent actually bring the mortality improvement up to the current point in time, as opposed to some specified point in time that is of an earlier duration.

We also asked the reasons companies were not using durational improvements. There were two primary responses. The first and foremost is that the respondents just didn't feel it was appropriate. Issues or problems faced with illustration certification came in at a close second.

For companies that used either generational or durational improvement factors, the survey asked respondents which applications and/or products they apply those factors to, and how, if at all, they vary. The applications where the improvement factors were used are shown in Table 6. In these next tables, the percentages are

based on the number of companies that indicated they were using either generational or durational improvements.

Table 6

Applications Where Improvement Factors are Used

<u>Application</u>	<u>Generational</u>	<u>Durational</u>
Pricing	100%	94%
Financial Projections	75%	71%
Strategic Planning	46%	59%
ALM	63%	47%
Other	4%	6%

Table 7 shows the products for which mortality improvements are used. We asked this question specifically related to pricing in the last five years, but we didn't actually ask what products they were selling. Since 50 percent indicated that they used mortality improvement factors on their joint and last survivor, it's hard to know if that 50 percent means that 100 percent of the companies that responded are selling joint and last survivor, and only half of them use it on their product, or if only 50 percent are actually selling joint and last survivor. Unfortunately, that was one question we didn't ask so we can't do a comparison.

Table 7

Products for Which Mortality Improvements Are Used

<u>Product</u>	<u>Generational</u>	<u>Durational</u>	<u>Both</u>
Term	92%	71%	73%
UL	88%	71%	82%
WL	63%	47%	45%
VL	38%	27%	27%
Joint FTD	29%	18%	18%
J&LS	50%	36%	36%
Other	8%	9%	9%

We also asked companies how they vary their improvement factors (Table 8). Most companies vary their factors by more than one criterion, and more than one answer could apply. Only 22 of the 24 companies that indicated they use generational improvement, and 16 of the 17 that use durational improvement responded to this question. On the generational side, the majority varied the factors by product, smoker/non-smoker status, gender and risk class.

Table 8

Factors Vary By:

<u>Factor</u>	<u>Generational (22)</u>	<u>Durational (16)</u>
Product	59%	38%
SM/NS	55%	13%
Gender	68%	19%
Issue Age	36%	31%
Risk Class	59%	31%
Other	14%	31%

On the durational side, there was a lot less variation in the improvement factor and a lot more companies only used one factor. That shift is visible. Whereas for generational improvement, 55 percent varied by smoker/non-smoker, and only 13 percent varied their durational improvement on this basis. The same thing was true with gender.

We also asked companies what the basis is that they use to determine the improvement assumption. These results were fairly consistent for both generational and durational. Population studies for generational were 25 percent, inner-company studies were 54 percent and own-company mortality studies were 58 percent.

For durational, population studies were 47 percent, inner-company studies were 53 percent and own-company studies were 41 percent. Under "other" for durational, the results were 35 percent. One of the "other" determinants used for both generational and durational was actuarial judgment or opinion. That was noted quite often.

We also asked companies what methods they used to create improvement factors. We gave them a choice of three with "other" being a write-in. Regression was based on "historical experience," a "flat percent-per-year," or "other." The majority of the responses indicated that they create improvement factors as a "flat percent-per-year."

We asked how durational factors were calculated and whether it was on a simple basis, a compounded basis or some other method. The simple basis is if a company uses a one-percent improvement factor for 10 years and it applies one percent the first year and then the next year, applies just one percent. The simple basis is the same percentage each year as opposed to the compounded method, of which more than half of the companies responded to using. Most of the answers that were in the "other" category used some variation of compounded or simple, but they didn't use just the flat simple percent for X number of years.

We also asked how durational factors were applied by policy year. We did not ask the same question on the generational side. Companies generally either do non-zero factors for X number of years then grade to zero (just under half, or 47 percent of respondents), or use non-zero factors for the entire pricing horizon (about 41 percent of respondents). The X when they were non-zero for X years and then grading to zero usually ranges anywhere from 7-20 years, with the most common being 15 years, and 10 years as a close second. All 17 of the companies that responded to using durational improvement factors did respond to this question.

We also asked companies the level of the durational improvement they used by duration. We asked this specifically for a male issue age 45, for whatever the company's best non-smoker class was. We asked for each policy duration and the numbers were presented before the impact of any compounding if they used a compounded application. I think the levels were very consistent, at least for the first 10 years. They ranged anywhere from zero to two percent, with the most common factors represented by 28 percent of the respondents of either 0.5 percent or 1.0 percent. The exact same number of companies used either one. Fourteen of the 17 companies responded to this question, so some didn't want to share the information.

In the 15th policy duration, this factor range was anywhere from 0–4.2 percent. The 4.2 percent is a little bit off, and we do need to go back and take a look at it, but again, the most common factors that were used were 0.5 percent and 1.0 percent. By year 20, the factor range was much lower—anywhere from 0–1.0 percent with the most common factor represented by 64 percent of the respondents being equal to zero.

We also asked who the primary decision-makers were for using durational improvement. Forty-nine of the respondents indicated that it was the chief actuary or the senior pricing actuary, and 12 indicated that it was the individual pricing actuary. The respondents were able to check more than one response so these don't add up to 67. It is interesting to note that the chief underwriter and medical director were rarely the decision-makers in whether or not to use mortality improvement, although they often provided input for the improvement factor development.

We asked the respondents that were using durational improvement what their justifications were for doing so. If the company or the respondent was not using durational improvement, we asked what the top three justifications for doing so would be if they later made the decision to use it.

Ninety-four percent of the respondents indicated that improvements in medicine would be a top justification. The trend toward healthier lifestyles and technological advances also rated fairly high. Other justifications were extrapolations from past experience, the impact or effects preferred underwriting is expected to have and the

fact that other companies are using it. We had about a 19 percent response to that.

We also thought that we would ask not only what companies are specifically doing, but also what the personal attitudes of the respondents with respect to mortality improvement use were. We asked respondents what their personal beliefs towards the use of mortality improvement in pricing by their competitors and by their reinsurers were, as well as by the life insurance industry as a whole. We asked for the responses despite use with their own organization. For the majority of the questions, all 67 responded.

We asked them if they believed that they use mortality improvement in pricing "none of the time," "some of the time," "most of the time," "all of the time," or if they "don't know." Very few respondents believed that mortality improvement in pricing is used "none of the time." I think only one company believed the competitors don't use mortality improvement at all.

Most of the respondents believed that competitors, reinsurers and all companies use generational mortality improvement "some," "most" or "all of the time." And interestingly, for direct competitors, about 59 percent of the respondents believed they used them "some" or "most" of the time. Sixty percent of reinsurers believed that they used generational mortality improvement "most" or "all of the time." An interesting note was that more than 55 percent felt that all life insurance companies used generational improvement either "most" or "all of the time," versus the 36 percent of our respondents who indicated that they do so. There was definitely a mismatch there.

With respect to durational improvement, the numbers shift a bit. Sixty-seven percent of the respondents felt that their direct competitors used durational improvement "some or most of the time," and four percent felt that they used it "all of the time."

With respect to reinsurers, people seem to feel they are using durational improvement more often than direct companies. Fifty-one percent felt that the reinsurers use durational improvement "most" or "all of the time," with 33 percent indicating they felt they used it "all of the time."

With respect to all life insurance companies, 85 percent of the respondents felt that all companies use it "some most of the time," versus the 25 percent who indicated in our survey that they used durational improvement. There is definitely a mismatch between what people think is being used versus what companies actually indicated they're using.

We also asked respondents if they personally believed that the use of generational and durational mortality improvement was appropriate. All 67 respondents answered this question. With respect to generational improvement, 58 of the 67, or 87 percent, personally believed it was appropriate, and 21, or 31 percent, felt that

durational improvement was appropriate.

Of those who personally believed in using improvements, 59 percent were currently using generational improvement and 60 percent were currently using durational improvement. One interesting note is that three respondents were against using durational improvement but they indicated their companies were using durational improvement.

That concludes the mortality improvement survey. Again, we are in the process of finishing the compilation of the results and hope to get that survey out soon. It still needs to go through the peer review process, so hopefully in early fall of 2001 we will have something available.

MR. KLEIN: First of all, I'd like to thank all of you who have contributed to these surveys and I encourage you to continue to do so, or begin to contribute if you haven't done so before. This helps everyone get a better idea about current industry practices.

If you have any ideas, I encourage you to let Mary or me know. I also want to thank the SOA staff for all of their hard and timely work on compiling all of these results. I think that it is really important to get the results out to you quickly, so it takes a big effort from everyone. We work hard to get all of this done, but we also have a lot of fun doing it.

We are always looking for ways to improve what we are doing. The SOA staff, just this year, looked at some new survey software and the very last survey that we sent out in mid-June of 2001 used this new software. One of our members works with a survey expert, so at our next big group meeting we will have this person try to help us further improve the process.

Also, we can take on a few new members if people are interested. If we do take on a few more members, we'll probably end up doing four surveys a year instead of three.

We are currently working on three new surveys. The first one is another preferred underwriting survey. Unfortunately, it has gotten off to a slower start than the others, but it is ready to pick up again. Mary is heading up that one.

Next, we are doing a survey on technology. This is an interesting one because we are going to go to three different types of people in the company—actuaries, underwriters and technology experts. They are pretty close to finalizing that survey. My understanding is that the survey should probably be out by September of 2001.

We are also doing a survey on Regulation XXX, which is very timely. I'm happy to say that when we sent out the survey—and this is with the new software—seven companies responded the very first day. One week later, we had 15 responses.

Again, we need about a month to complete it, and we appreciate the quick responses.

We are planning to turn around the Regulation XXX survey quickly. We hope to get results to everyone by November of 2001 in order to be available for year-end analysis and to look at what other companies are doing versus your own plans. In general, we're targeting the second half of 2002 to finish other surveys, at which time we'll also start up with three or four new surveys.

Before I turn it over to the audience for questions, I have one question for you. I'm interested in knowing if you prefer receiving surveys by hard copy, by regular mail or via e-mail, which sends you to a Web site where you can click on the answers and type them in. Would you prefer receiving, through regular mail, a hard copy to hand-write your answers, or an electronic version? How many prefer electronic? (Just about everyone raised his or her hand.) That's what I figured. Thank you.

FROM THE FLOOR: To whom do the surveys go? Do you have a list of people that you send them all to or do you try to identify the chief underwriter, the chief actuary, the CEO, etc.? I am asking this because I haven't seen any of these surveys and I know that there is at least one of them that I should have responded to. I'm a little nervous. If we did respond, who is writing the answers down?

MR. KLEIN: We do have a list of chief actuaries and chief underwriters to whom we send the surveys. I'm not quite sure how we are going to get the list of technology experts. There may be some reinsurers on the list as well. They typically get all of the surveys that we send out even though we want them to respond to some of the surveys and not others.

MS. BAHNA-NOLAN: For the mortality improvement survey, we specifically did not send it to reinsurers. We sent it to direct companies and tried to target the pricing and product actuaries where we could. We were planning on doing a follow-up survey with only reinsurers.

MR. KLEIN: This group was going to send the survey to reinsurers as well, and I thought it would be too confusing to try to look at both responses.

FROM THE FLOOR: How are the results distributed?

MR. KLEIN: That's another good question. We send the results back to all of the contributing companies. Within a week or two after that, we post the results on the SOA Web site. We let all of the contributors have the results for a couple of weeks before anyone else sees them.

FROM THE FLOOR: Again, going back to this group that's being defined, is it somehow up to them to try to distribute the survey through their company? Does it go back to the people who did the submission?

MR. KLEIN: Yes.

FROM THE FLOOR: If they don't move it beyond their desk, nobody else in the company sees it?

MR. KLEIN: That is possible. On the first page, we ask for the contact and we send it to that person, so it might not be the chief actuary who fills it out. It might be someone else.

FROM THE FLOOR: Do they eventually get to the Society Web page (www.soa.org)?

MR. KLEIN: Yes. That is within a couple of weeks after we send out the results.

MR. GORDON GIBBINS: Clearly there are many people in every company, whether they are reinsurers, direct writers or a combination thereof that would probably like to see the results. The last thing to mention is that the Academy of Life Underwriting has a survey committee as well. I don't think there's any overlap from what I've seen on these surveys, although the potential does exist. I encourage the SOA committees to work with the Academy of Life Underwriting Committee. Maybe there can be some cross-pollination to determine the target group of whom you are sending the surveys to.

MR. KLEIN: Thanks. I completely agree with you. I am planning to contact them to see if there are any projects we want to do jointly with them.

MR. JACK LUFF: To follow up on that point, when the surveys or any reports like this go on the Society Web site, a flyer is sent with the next issue of *The Actuary*, indicating that that material has been posted. We have found that most people just throw out that material and don't even look at it. But we certainly get the message out, at least into your mailbox. What happens to it once it reaches your mailbox is up to you.

FROM THE FLOOR: In regard to the older-age survey, did you take into account the companies that do business in New York? I ask this because I know, especially with term; one can't sell to the older ages because of things like cash value problems.

MR. KLEIN: We did not separate New York-domiciled companies from companies outside of New York. I don't know how many of our respondents are New York-based. I think that is one of the reasons though, that the averages for term were much lower. I'm not sure if it was completely New York-related or just term-related, but those averages were much lower.

Chart 1

