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## **Session 14PD**

### **Latest News In Life Mortality Studies**

**Track:** Reinsurance

**Moderator:** THERESA A. CHOKA

**Panelists:** FAYE ALBERT  
THOMAS E. RHODES  
MICHAEL S. TAHT

*Summary: What should we expect from the individual life mortality studies currently under way? The panel, including a member of the SOA Life Experience Committee, provides an update of the work currently being carried out by the SOA, contributions to SOA studies, and the development of the New Valuation Basic Mortality Table.*

**MS. THERESA A. CHOKA:** "I'd like to begin by introducing our three speakers. Tom Rhodes is currently responsible for experience studies, dividends and support for in-force business for Guardian. Tom is the chairperson of the SOA Individual Experience Study Committee. He is on the SOA Life Insurance Valuation Mortality Research Task Force, the 2000 CSO Academy Committee, the Mortality and Morbidity Liaison Committee, and the ACLI Mortality Table Section 7702 Task Force.

Mike Taht is a consultant in the Atlanta office of Tillinghast-Towers Perrin. His primary area of practice is individual life insurance and annuities, including mortality analysis, financial modeling, financial reporting, distribution strategy and

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

product management. Tom is also active in the industry, providing assistance in the development of a new valuation mortality table as the chairperson of the SOA Individual Life Insurance Task Force and a member of the Academy's new CSO Task Force.

Faye Albert is president of Albert Associates, an actuarial consulting firm. Her primary areas of practice are experience studies, asset modeling and retirement community demographics. Faye is currently the chairperson of the CSO Task Force for the American Academy Actuaries. She also serves on the SOA Board of Governors. She is a past vice-president of the Conference of Consulting Actuaries and a past-president of the Chicago Actuarial Association.

**MR. THOMAS E. RHODES:** I'm going to be talking about submitting existing data to support change. Basically, it's important that you give your end-of-year inforce data, your death data, and, surprisingly enough, lab data that already exists for you and contribute it to the Society. In that way, we can support change, whether it be through the 2001 CSO Table or other respects. I'm going to talk a little bit about why submitting data is important through the 2001 CSO glass. So I'm going to talk about the history of the 2001 CSO Table and why I got involved, what would have happened if the data was not submitted to do the 2001 Table, what actually happened and mortality and some new approaches.

For me, the 2001 CSO process started when the IRS business plan threatened to set 7702 mortality independent of the 1980 CSO. This is a real threat to the industry. The IRS thought that the 1980 CSO Table was out-of-date mortality. They suspected that the life insurance industry would play games with mortality to state tax reserves as high as possible. The key risk is that if they implemented their own 7702 mortality, which they're capable of doing, it would make whole life and many universal life (UL) products not life insurance under the definition of life insurance. I'll come back and explain this point later. But this galvanized me to spend over two years of my life and help with the industry leading the effort to change the CSO mortality as quickly as possible. The SOA, the Academy, and the ACLI have been instrumental in this effort. Also, changing the CSO Table is critical for term writers.

They want lower reserves, and lowering the reserve from 1980 Table to the 2001 CSO Table fits within everyone's agenda. So the process is moving ahead quickly. The SOA Individual Experience Study Committee appealed for and received data, just as I'm hoping you will give me data to continue on this work. We produced the 1995 Basic Tables which are basic inter-company experience. We continued work to develop analysis for smoker and non-smoker factors. This is really essential work for the 2001 CSO Table. The 1995 Table is the basis, and to that some valuable additional data was added first from Bragg Associates and also for older age males from Veterans Administration (VA) data.

What if this data was not submitted? We would have been in an untenable situation. I asked Mike right before the presentation how would he like to try to justify the 2001 CSO Table with no data and get it through? It just wouldn't happen. If we didn't do that, then we couldn't argue through the ACLI that we're rapidly moving to replace the 1980 Table. This is the risk that we faced. Let me explain it a bit. You have valuation reserves based upon the 1980 CSO, such as determining your cash values. Tax reserves are based upon the Commissioner's Table approved in 26-or-more states that produce the lowest reserves, the ultimate 1980 CSO. Then you have the Section 7702 definition of life insurance. The IRS, not through the Society or not through the law, can determine 7702 mortality, determine what life insurance is through reasonable mortality. So, fortunately, you have cash values on the 1980 CSO which are required by state law, and you have the 1980 CSO Cash Value Test, and they're the same. So, everyone's happy. But if the IRS lowers the mortality and has lower cash values, then all of the sudden the 1980 CSO cash values are not life insurance, and this puts the industry at risk.

The IRS can determine 7702 mortality. The 7702 mortality lowers the cash value test and guideline premium test. Both whole life and most UL plans would not be life insurance under this. So this is what we want to avoid by having data and rapidly coming out with the 2001 CSO Table. Fortunately, you heard our plea and gave us data. I also hope that you will give us data again. We need data to continue doing this work. The Individual Experience Study Committee released the 1995 Basic Tables, male and female. Issue ages 0 to 72 were based upon experience. For ages above 73 we had to extrapolate because there wasn't

experience there. It features a 25-year Select and Ultimate Table. We set a  $q_x$  equal to 1 at age 120 which should help out with the current problem of many people reaching age 100. This has been a major step forward.

It's important to realize that the 1995 Basic Table data is actual experience. It's really industry experience from 1990 to 1995. It provides a basis for regulators to evaluate inter-company mortality variation. It's also the foundation for the 2001 CSO Basic Tables. But you must be careful. Just do not grab this off of the SOA Web site and use it. It has certain experience features. From 1990 to 1995 there was a lot of untested male business issue ages 20-40. There were high AIDS claims. If you just use the table, you'll get very strange results. Also, female experience at older ages show an increase in mortality. It isn't quite clear what the reasons are, whether it's lower amount policies, whether the underwriting is more geared towards male than female lives, or what the reasons are, but it's just something to be aware of. Also, the 1990-95 Table lacks experience. At issue ages over 72 we didn't have experience. We worked with Bragg Associates to get additional data, and for older issue age males we used Veterans Administration World War II data. Also be aware that there's no non-smoker data in durations 11 and over in the 1995 Basic Table.

Now I'd like to talk a little bit about mortality and new approaches. One of the key topics that I run across all the time is that underwriting varies by product. You see, mortality varies by underwriting and not product. I'm getting a bit tired of hearing about how term plans have lower mortality. As an actuary, I must say that mortality varies by underwriting. Term writers do very strict underwriting, and that's the connection.

Also we must look at inter-company mortality variation. There is great regulatory concern for individual company reserves covering their mortality. I think Mike might have a few things to say about that. It's an issue under the 2001 CSO Table, and if we didn't have the data, we wouldn't be able to argue the points successfully. As we move forward into the future, there's a lot of talk about varying mortality by underwriting class. Again we're going to need data in order to make our case and move forward on that after the 2001 CSO has gone forward.

So, data exists to study these underwriting variations. You can use the face amount bands and smoker status in existing Society data. Basically take your higher amount non-smoker policies should be more of your preferred type risks. You can write to LabOne, Heritage Lab, Clinical Reference or Osborne Laboratories. They will send you a copy of your data in a standard format for free. If we have this data, the SOA and Medical Information Bureau (MIB) can do objective, confidential studies on inter-company mortality variation on submitted data. So, this is very critical. The SOA has produced the 1990-95 and 2001 CSO Basic Tables.

I was a bit taken aback that we only had eight companies contributing data for 1996-2000. Fortunately, I've worked hard and have gotten commitments so that I can tell you now that we'll have another study out in 2002. I could spend a lot of time discussing the different formats and things like that, but it's really as simple as taking your inforce end-of-year and your death data perhaps in the seriatim, the current SOA format, and sending it to us, along with lab data.

Why should you submit existing data to support change? We can use it for support when doing future mortality-related changes. If variation reserves for preferred risk are to have any chance of existing in the future, we need data to support it and convince the regulators of the safety of this. We will need to track improvements in overall mortality. Mortality improvements have not stopped with the 2001 CSO Table. We have to move forward aggressively in tracking future mortality improvements. State regulators will ask questions on the mortality effects of these changes both on an industry and an inter-company level. The Treasury will continue to ask questions on tax reserves, and the IRS can still change 7702 mortality. So we not only have to quickly get 2001 CSO Table approved, we have to follow that up and show that we are still monitoring mortality. So please submit data so the SOA and the Academy can objectively answer questions to state regulators, the Treasury and the IRS.

**MR. MICHAEL S. TAHT:** I'm going to talk about the Valuation Basic Table or, as Tom referred to it, the 2001 Basic Table. I've been chairperson of the SOA's Individual Life Insurance Valuation Mortality Reserve Task Force since July 1999. When I accepted the role, some people said congratulations. Others, the majority,

offered condolences. Both were correct. It's been an interesting two years. We are right at the end of our mandate and have a product that is finished that we're happy with. I'm going to talk about that, but also about the different steps that led to the creation of the Valuation Basic Table.

To review our charge, it initially had other components in addition to creating a Valuation Basic Table. In the development of our table, we focused first on a Composite Mortality Table that combines non-smoker/smoker and aggregate experience. Then we developed smoker/non-smoker distinct tables. We did have consideration for preferred mortality. I will tell you that we did not create separate preferred and standard non-smoker tables.

Going a couple years back to 1999, the Life and Health Actuarial Task Force (LHATF) asked the SOA for assistance in developing a new Life Insurance Valuation Table. It took the SOA actually quite a while to find someone to chair the task force. In the end, it was decided that it would be best if the task of creating a new valuation table would be split into two projects. The first was to develop an experience table that would be appropriate for a Valuation Mortality Table. That led to the task force that I chaired, the SOA task force. The second was to look at how that experience table should be loaded for margins. That led to Faye's task force, the Academy's 2000 CSO Mortality Table Task Force.

LHATF indicated that at a minimum we'd want to look at the current approach which would be male/female, smoker/non-smoker distinct tables. There was some consideration given to having one table that could be used for all companies and modified based on your experience. I'm not going to focus on that. It's kind of fallen by the wayside as we focused our attention on getting a Valuation Basic Table completed.

In looking at a Valuation Basic Table, some of the key issues that we faced were what do you do with older-age mortality? As Tom said, experience past issue age 72 and experience for attained ages above 85-90 in the SOA study was quite limited. How would you address that in creating a table? How do you construct smoker/non-smoker distinct tables? Experience does exist, but it's really only

credible for the first 10, maybe 12, durations. People have not been issuing smoker-distinct policies to cover someone who is attained age 90, issued at age 25. It just doesn't exist. Consideration must be made as to how to modify for new underwriting standards.

When the 1980 CSO Table was put in place, you didn't have preferred classes, let alone super-preferred, super-duper preferred or preferred smoker. All that is new since 1980 CSO. Can you create a table and then a process by which individual company experience gets reflected, or is it possible to create a formulaic version of the table? As I said before, we really focused on getting a Valuation Basic Table together. The last two points are two points that I'm not going to discuss much further in this presentation. As I said, we put together a Valuation Basic Table, and we also agreed that we would put a report together to discuss the key issues. The draft version of that went on the SOA Web site in April 2001.

I'll talk about the Composite Mortality Table first. The process that we took was really in four steps. First was to look at available experience and solicit more where required. Our primary source of experience was the 1990-95 Experience Tables and the underlying data which consisted of 5.7 trillion exposures and \$14 billion in claims. So it is a substantial body of experience. However, even with that much experience, there are concerns about the amount of experience at older ages and the amount of experience for smoker/non-smoker distinct policies, especially when you get past duration 10. So we had to look for ways to address that issue.

After reviewing the available experience and soliciting experience where appropriate, we focused on creating a Composite Mortality Table based on smoker/non-smoker and uni-smoke experience. The reasons for that were that was the greatest body of experience and it ensured that when we delivered a Valuation Basic Table on a smoker/non-smoker distinct basis and a composite basis that there would be some consistency between the different tables. Any inconsistencies would show up when you're doing reserve testing on the 2001 CSO Table. It was important to do the composite table first. Then we looked at taking that composite table and creating separate smoker/non-smoker tables, and the challenges there are the tables are select and ultimate, going all the way out to age 120, whereas

the data doesn't exist that far out. We had to look for ways to appropriately create a table that covered not only periods where we had experience, but also periods where we didn't have experience. The fourth step was to consider certain issues that we ultimately didn't reflect in the table, specifically preferred mortality.

With respect to the Composite Mortality Tables our area of focus was the 1990-95 experience. As I said before, there were certain key areas we focused on in terms of modifying the 1990-95 experience. We focused on older age mortality and looking to other sources to see if we could augment what we already had. We looked at the smoothness in the select period of the table. The 1990-95 Experience Table is created with fit in mind. The Valuation Basic Table is to be used in the creation of the 2001 CSO Table. So, in creating a valuation table we placed a greater emphasis on smoothness. We also looked at mortality improvement since 1990-95. That was a central year of 1992. We're in 2001. That's nine years. We thought it appropriate to look at what has happened or anticipate what's happened in that period.

Let me talk a bit about the 1990-95 tables since they provide the major block of experience underlying the Valuation Basic Table. They include experience from 21 companies covering the period 1990-95. The tables were created with a 25-year select for males and females. There was data submitted both on a 15-year select period and a 25-year select period. I know that Tom and Jay, in reviewing experience, gave careful consideration as to how to combine both sets of data into an appropriate select period. They spent a lot of time reviewing the data to say, is a 25-year select period appropriate? Their conclusion was yes. One thing I should say is that the format's 25-year select. That doesn't mean someone issue age 92 is having 25 years of selection within the table. That's the format. At older ages the select period is less; and if you look at the table, you can see that.

The 1990-95 Experience Table also produced separate smoker/non-smoker factors. This is based on the smoker-differentiated experience, and it's for issue ages 20-72 and durations 1-10. We did have a body of smoker/non-smoker differentiated data. However, it didn't go all the way out to the end of the select period. There was also mortality expressed in face amount bands. Now one thing to remember with the



experience tables is that the underlying data is ordinary insurance. It's fully underwritten. It includes preferred. It also includes conversions as of original issue date. However, it excludes extended term insurance business, reduced paid-up, substandard, and simplified issue and guaranteed issue. So, that gives you a flavor for the data that's included and excluded in the development of the table.

What did we do with older age data? As Tom mentioned, issue age data above 72 and above attained age 90 is lacking. We looked to a couple different sources. We looked to the Veterans Administration and got male ultimate mortality data from them. Their block of experience was over 60 billion in exposure and about 2.2 billion in claims. We also commissioned a study from Bragg to look at their older age select experience. It had about 1.8 billion in claims, and was used to try and get a sense of what is happening in the select period mortality above issue age 72. The end of the Valuation Basic Table is 120, same as the 1990-95 Experience Table. We did have some debate internally. Do we need an end date to the table? However, in the end we decided 120 would be it.

In terms of looking at the difference between a focus on fit and a focus on smoothness, there were two areas where we felt we needed to address smoothness. The first one was for younger male mortality, probably issue age 20-30, duration 6 and above. You actually see it more in durations 10, 11, and above. If you look at the 1990-95 Experience Tables in comparison to 1975-80, there is a large hump in mortality in both tables. The 1990-95 experience was 150% of the 1975-80 experience at certain issue age durations in this range. Looking at what's happened to AIDS mortality since then, there's been a significant drop-off, at least in terms of AIDS deaths, nationally since 1995. By looking at changes in underwriting procedures since the time that those policies would have been issued, you notice that they would have been issued in an environment where the vast majority were not testing for AIDS. We thought it reasonable to smooth out a lot of that hump. Also, in durations 10-25 we did maybe place a greater emphasis on smoothness so as to ensure that the reserve factors would be smooth as well. I've already talked about the select period.

I would like to discuss mortality improvement. In putting the table together, we thought it appropriate to consider what's happened from 1992 to at least the start of the Valuation Basic Table. Mortality improvement was utilized as follows. For up to attained age 45, there's higher mortality improvement for males than females and we graded both males and females at 0.0%. For attained ages 55-80, we graded males at 1.0% and females at 0.5%. For attained age 85, we graded to 0.5% for males and females. We graded it to 0 above attained age 90 for males and 0.5% for females. We looked at both insured experience and experience with the general population. When looking at insured experience we focused on improvements in ultimate mortality. Improvements in select mortality have been greater, but our task force believed that that is due primarily to changes in underwriting methodology, more emphasis on preferred risk and more emphasis on getting better mortality information in the underwriting process, than a general improvement in mortality.

We talked about do we project mortality improvement past the start date of the table? Are the tables going to be used for issues in 2001 and beyond? We did not consider it only because we don't know what's going to happen with mortality improvement. We can make assumptions, but we thought that we would leave mortality improvement up to an anticipated start date for the table.

We looked at several comparisons of the Valuation Basic Table, such as comparisons to the 1990-95 experience, population and 1975-80 table. There are a couple of things I would like to point out. At around attained age 16 for males, there was a ridge, and that's been partially smoothed out with the Valuation Basic Table. This ridge was due primarily to new drivers. In Canada actually the ridge has been kind of smoothed out with more strict licensing requirements. So that might be something if states take that approach.

In the attained age range of 30-40, there is a split between population and experience mortality on the 1990-95 table versus the Valuation Basic Table and the 1975-80, primarily due to the impact of AIDS. When we got out into attained age 50-55, 60-65, 70, the Valuation Basic Table was the lowest. It was lower than

experience at those ages, not because the experience is different but because of the impact of factoring mortality improvement to bring it up to a start date of 2001.

When we look at female composite on a log basis, which gives a better sense of what's happening, there's a less pronounced ridge at age 16. In general, the mortality experience is actually closer than males, and we don't see the difference in mortality due to AIDS that we'd see with male composite mortality.

When we looked at 1990-95 experience, population and 1975-80 as a percentage of the Valuation Basic Table, we saw, in the mid-30s and early 40s, some differences between experience in the Valuation Basic Table, primarily an issue of smoothness. At attained age of 60-80, the 1990-95 Experience Table is higher than the Valuation Basic Table, again the impact of mortality improvement. However, it's a little less pronounced in the males. At the end of the table, age 95 and above, there were differences. That's primarily differences in extrapolation. There's really very little data at those attained ages to be utilized. The graduation process was used to ensure smooth reserves when the table is loaded up to the CSO table.

We looked at select mortality issue ages of 25, 35, 45, 55 and 65 for a male composite. When we looked at that, the Valuation Basic Table is quite close to the 1990-95 experience which is what you would hope for. It was, again, similar for females.

Once the composite tables were completed, we focused our efforts on developing smoker/non-smoker distinct tables. Now, we utilized the results of the 1990-95 Experience Table, and, as I said before, that has 10-year smoking/non-smoking factors for issue ages 20-72. However, we augmented that data with other sources, both insurance and non-insurance. Part of the reason for that is in looking at the 1990-95 experience on a smoking-distinct basis, there are differences in the average policy size between smokers and non-smokers. If we carry that a bit further, the average smoker policy might have been subject to different underwriting on average than the average non-smoker because you have less non-smoker policies as a proportion issued under a \$100,000 face amount which seems to be that magic line for AIDS testing. When we looked at the ratio of smoker to

non-smoker mortality in the 1990-95 study, it was pretty wide and wider than other studies that existed. This was evident at certain ages, and this sort of caused us some concern that it is different. We asked, what is the impact of the different underlying demographics of the two experience bases? We looked to other data, as I said, insurance and non-insurance, to try and get a sense of what is the appropriate ratio of smoker to non-smoker mortality?

Another key consideration that we looked at was how do we extend the impact of smoking out into the end of the select period and out to the ultimate durations? The research that we did indicated that this differential exists well into the ultimate durations. So it's not as if it goes away after 15-20 years.

We also compared the ratio of male and female non-smoker mortality to composite mortality. The female non-smoker mortality, as a percentage of composite is just slightly higher than male, near 85-90%, peaking at attained age 40-45. When we looked at the ratio of males and females who are smokers to composite, we saw that male smoker mortality as a ratio of composite is higher than females until about attained age 50, and then the female differential is higher thereafter.

I guess another piece of the puzzle in putting the smoker/non-smoker tables together is we also assessed the prevalence of smoking within the insured population. We did that by looking at both insured data and general population data, and prevalence was generally around 14% (14% of the population would be smokers and 86% who be non-smokers). Those two sets of data were used to create the smoker and non-smoker factors which were then applied to the composite table to get the smoking-distinct tables.

Last point I'm going to talk about is preferred risk class. We did have numerous discussions within the task force as to whether we should come up with separate preferred tables. We had two big issues to contend with. We had really no identifiable, credible experience. We could have overcome that. But then we also had the lack of a generally accepted definition of preferred. A number of people have said to me, "Mike, you found a way of coming up with smoker/non-smoker distinct tables without having data." We had data for a number of durations, good

data up to duration 10, and generally if you say you're a smoker, it's pretty well understood what smoker is. Those who chew tobacco might say otherwise, but it's pretty much a common definition. When you get into the realm of preferred mortality you've got to contend with the lack of experience, and it's more profound, that lack of experience, than for a smoker or non-smoker distinct mortality. You also have to contend with what is preferred? Preferred is many things to many people. If this table was not to be used in a regulatory framework or as the underpinnings of a regulatory framework, it may have been possible to develop preferred tables. So, the Valuation Basic Table is complete. What is next? The first thing is that the Valuation Basic Table is being used by Faye's task force to create a new CSO Table, which is its primary use. In putting the Valuation Basic Table together I think a number of challenges come to light, especially when you think of a one-size-fits-all table. How do you treat preferred classes? I mean you've got companies that have large blocks of experience that will say my experience is better, and that hasn't been reflected in the Valuation Basic Table for reasons I mentioned. Should that be brought into the framework? How would you do that?

How do we treat simplified issue, guaranteed issue? Those issues have been raised subsequent to the creation of the Valuation Basic Table. It's an issue that people haven't been really challenging in the past because they've been comforted with the level of mortality in the 1980 CSO Table. What if your experience is a lot better than industry? Should you have to have valuation mortality that's based on the whole general experience even though you can demonstrate you've got credible experience that's much better than industry? These are issues that are not going away and will continue to persist. As more companies view their business as more concentrated, they will look and say term riders are really focused on getting the best risk. Then, I think some of these issues will become greater and not lesser in the future.

When it comes to the Valuation Basic Table, we are complete. There have been some issues raised by regulators in terms of the Valuation Basic Table, and we're working through them and trying to discuss the issues that they've brought up. We will see how that goes. I think there's a LHATF call on October 29, 2001 to further discuss the Valuation Basic Table and the issues that they've raised. Hopefully this

will be something that we can say is final from the Society's standpoint very soon, and they can go on and create a new CSO Table.

**MS. FAYE ALBERT:** I would like to update you on the status of the new proposed CSO Table. As Tom indicated, the life insurance industry was extremely interested in getting a new Valuation Table available for companies to use as quickly as possible. After the 1990-95 experience was available and that was taken to be incorporated into a new Valuation Basic Table that Mike started working on, the Academy immediately started working also to try and see what would be appropriate to suggest as a Valuation Table that could be used by regulators in the industry in the United States as quickly as possible. We took a similar approach to what previous valuation standards had taken. That is we will take the basic experience, add a margin to it that should be adequate to cover most companies in the industry, and that would be available for companies to use as a sort of safe harbor. This mortality should be what most companies would expect, and setting reserves using that kind of mortality should be adequate for most companies. That was the approach that we took.

The purpose of the margins that we're adding to the table is to first have some confidence that the table reflects the underlying experience that's used in its construction. We then take that table and add some margins so that the expected mortality under the new table is within the experience that most companies will have. In addition to that, there are some random fluctuations. We want a little bit of margin for that, and possibly some unknown fluctuations. Previously we had about a 20% overall margin in mortality tables. Since mortality has been improving we thought, and the actuaries representing the NAIC on the Life and Health Actuarial Task Force (LHATF) thought, a 15% margin would be adequate. That's what we adopted. We took the basic expected mortality table and added 15% margins overall to what the mortality would be. We started to test that using the 15% margin. Of the 21 companies that were in the 1990-95 experience study, the suggested valuation of mortality would cover about 15 of the 21 companies in the experience. So, we thought this would cover most of the industry.

Also, we know that the mortality has improved and has been improving since the 1980 CSO table was created. That is another reason that we wanted to respond as quickly as possible. We found that the new table is less than 70% of the old table up to age 50, and the mortality never exceeds 90% of the old table. The significance of the improvement in mortality really can't be over-emphasized. You can certainly understand why many people were thinking that it was time for us to have a new table.

We tested the suggested CSO table to make sure that the ultimate reserves were generally less than the select and ultimate reserves. That's because of the slope of the mortality. We weighted the average reserves for smokers and non-smokers and determined that that was approximately equal to the reserves for composite. So for those companies that were not going to do valuations based on smoker-distinct mortality, reserves would be about what we would hope. We examined the reserves for smoothness; that suggested some problems with the underlying basic table, and so we fiddled around the experience table a bit. That's the connection between the Academy committee and the Society committee.

We reviewed the relationship between the reserves under the suggested 2001 CSO Table and statutory reserves. We found that, after about 10 years, the new reserves are going to be about 80% of those using the 1980 CSO Table. That's using a distribution of most of the kinds of business for different types of policies that are issued in the industry. The differences in mortality and reserves are even more pronounced for term insurance.

In response to the commissioners' request, there was a review of whether the reserves under the new table were going to be overall sufficient for most companies. This is kind of a slippery thing to figure out, and, in fact, this is sort of where the Academy has been hoping or walking in the direction of saying each company really needs to understand what their own experience is and establish reserves that are appropriate for their business. The regulatory authorities in the United States aren't really satisfied or aren't comfortable relying on individual actuaries' adopting their own experience for calculating reserves. As I said, this new table is intended to be a safe harbor. So the commissioners were interested in our

testing whether the reserves would be adequate for most companies using it. So we've done additional analysis.

There have been many, many people on the committee that I've been chairing that have done a lot of analysis. So, if you're interested in looking at the report, we have lots of numbers suggesting that these reserves, although they're lower than the 1980 CSO, should be adequate for most companies to use. We're hoping, as I said, to be able to finish up this work as quickly as possible and have the NAIC be satisfied with the new suggested table for adoption at their December 2001 meeting. However, that's a very quick timeline that we're facing now, and we have a lot of work ahead of us. As Mike suggested, talking to people, talking to the commissioners, getting information out to the Life and Health Actuarial Task Force (LHATF) of the NAIC takes time. Then after these people are satisfied, there's work to be gotten out to all the rest of the commissioners for their review before the December 2001 NAIC meeting.

**FROM THE FLOOR:** What consideration has been given to tax reserves, and when will the new table be required for tax reserving? Also, do we have any indication of how the transition will work for 7702?

**MR. RHODES:** One of the things that is important to realize is that, as I stated in my presentation, tax reserves are based upon the commissioners' table which is approved by 26 or more states and which produces the lowest reserve. We did quite a bit of work, as Faye alluded to, towards the end of making sure that, on a uniform basis, the ultimate reserves produced the lowest reserves and not the select and ultimate, and in aggregate that's true. However, since you have a 25-year select period, if you take a 10-year level term policy, it's just not going to work. However, those have minimal reserves to begin with. So we paid close attention constructing the table that the ultimate reserves would produce the lowest reserves; and in my graduation and smoothing it tested that out thoroughly, especially when it was pointed out at some ages it didn't hold. So we made sure.

In terms of when it will be effective, let us say that it takes two years from once the NAIC approves until 26 states approve the tax table, then from that point some



companies can use that as the tax table. Then you have three more years until you have to use it. So there is about a five-year timeframe.

In terms of 7702, we're currently undergoing how the regulations need to be modified so that the 7702 mortality can be implemented. You don't want a situation where, let us say, that the 7702 mortality is updated, but you still don't have some states which have implemented the 2001 CSO Table. That would give a timeframe in which in those states you wouldn't have policies which would meet the definition of life insurance. That's work that the ACLI is currently pursuing with great interest. We need industry support for the IRS.

**MR. TAHT:** I think that with tax reserves there is an explicit three-year transition written into the regulations. Section 7702 does not have that written in. There's no explicit sort of language to handle transition period. I believe that's another issue that you're looking at.

**MR. RHODES:** There's no law such as when 26 states approve this, it becomes the table. The IRS has to be dealt with separately. That's another reason why I'm asking people to contribute data, because they'll continually ask questions such as are we keeping up? As long as we can demonstrate that we're proceeding, they're satisfied.

**FROM THE FLOOR:** What will happen to the XXX factors?

**MR. RHODES:** I'm not presenting myself as the final authority on XXX. There has been in the past some extended discussion over it. However, if you look at the appendix, the factors to apply to the 1980 CSO were intended to demonstrate the current lower mortality. So if one visualizes plunking in the 2001 CSO Table instead of those factors times the 1980 CSO Table, that would be one logical approach in which to implement XXX.

**MR. TAHT:** The one issue that comes to mind is what happens with x factor of 20%. With XXX, that does not change, to my understanding.

**MR. RHODES:** I'll have to say that some transitional arrangements still have to be worked through. I worked through some of those issues when implementing the 1980 CSO. Once a state passes the 2001 CSO, let's say it's done in New York, then you can go and file new policies in that state immediately. Typically what the states are anticipating, and many people are anticipating, is that term products will be resubmitted first and then other products at a later date. A typical approach would be to have that so many years, say, 3-5 years, after the law is passed in a state, that all products that a company sold would have to be reissued and redone. The anticipation is that it's done gradually. If you look at it from the state's point of view, once they pass the law, they're going to have policy form submissions from every company who wants to sell business there. You wouldn't apply retroactively. The law states you can once it's passed, but until you actually submit the form, and it gets approved under that specific act, you cannot sell it on that basis.

**FROM THE FLOOR:** What approach is likely to be taken with respect to guaranteed issue, simplified issue, and extended term insurance?

**MR. TAHT:** I think at this point there is discussion within LHATF in putting together the model regulation specific with respect to simplified issue and guaranteed issue. I'm not certain where that will fall out, if there will be any guidance that you have to use the ultimate version of the table or a percentage of the ultimate. That hasn't been decided yet, but there has been discussion at the regulator level with respect to simplified issue and guaranteed issue. In constructing, at least the Valuation Basic Table, one area that we did look specifically at was nonstandard information of extended term insurance. With the 1980 tables, there were separate tables for extended term. We did not put specific extended term insurance tables together for two reasons. The first was that there was a lack of experience -- the prominence of extended term in 2001 versus 1980 is much less. Second, we did receive some experience from one large writer that indicated that there was not a differential between extended term experience and basic experience.

**MS. ALBERT:** Let me just expand a little bit on what Mike said. Once there was universal life, it wasn't clear exactly what extended term was. So it was hard to get that experience separately. The other thing that I would say to you regards the

mortality that you use for simplified issue or guaranteed issue. In the past, many companies have gone to use ultimate experience, and usually insurance commissioners have accepted it. The thing to do is think about what you think is appropriate. Then the Commissioner might be willing to listen to what you say. If you have any experience of your own, compare it to the Valuation Basic Table. That might be something that insurance commissioners might listen to if you calculated reserves on that basis.

**MR. DANIEL J. MCARTHY:** It's non-controversial that underwriting affects mortality experience, but it's also true that lapse rates affect mortality. The 1990-1995 period followed a decade of the highest lapse rates in history. Now, a lot of that business got re-written, but it had the effect of pulling out a lot more healthy lives. I would be interested in your comments on the effect of that, particularly in the mid- to late select period. So, what we call mortality improvement in later years might really be persistency improvement.

**MR. RHODES:** We have attempted to look in the Individual Experience Study Committee at this issue of lapse and mortality, and we haven't been able to do a sophisticated correlation type analysis. I believe, Faye, that you've done some work on the effect of lapse on mortality rates some years ago.

**MS. ALBERT:** Yes, but we didn't look at this aspect of it.

**MR. RHODES:** As I tried to stress in my presentation, the 1990-95 experience is just industry average experience during that time. I'm also stressing that there is an ongoing need for companies to submit data and to give us the data. I fully expect for the experience that you're going to currently be giving us from this point onward to show different patterns from the 1990-95, not only in the male AIDS experience, but it would be also interesting for the women and for this lapse concern. It's another reason why we go on and keep on doing these studies.

**FROM THE FLOOR:** I have a couple of questions about mortality improvement. Mike, you mentioned that you used improvement factors for the period from 1992 to 2001. Were those annual improvement factors?

**MR. TAHT:** Yes.

**FROM THE FLOOR:** When you talked about the mortality improvement from the 1975-1980 table to the 1990-1995 table, you said that the mortality in the new table is less than 70% of the old table at ages up to 50. That's an improvement of over 2% per year. How much of that is the result of better underwriting versus everything else. Second, for the valuation table, why would you only reflect 1% improvement when we have been seeing 2%?

**MS. ALBERT:** I don't know that I could really segregate it very well, but I would say that probably it's primarily better mortality period. Looking at the life tables, mortality has just been improving a lot. I think that companies are more sophisticated in sticking people into better underwriting classes, but regular people still buy insurance, too.

**MR. RHODES:** I would add to what Faye says, that in the period under study there have been tremendous advances in cardiac care, and that reflects into the greater percentage of reduction in male mortality as opposed to female mortality.

**MS. ALBERT:** We didn't really look at the mortality improvement since 1980 and project forward. What we tried to look at was the improvement in mortality over the last 10 years and project that forward. We did also try not to anticipate better mortality improvement than might be expected. There have been some indications recently that mortality hasn't been improving quite as much as it had.

**MR. TAHT:** We looked at mortality improvement for a number of different sources. We looked at the movement from the 1985-90 Table to the 1990-95 Table as a proxy for improvement in insured mortality. We looked at improvement in annuitant mortality and pension mortality. We also looked at improvement in population mortality. When you look at the improvement in insured mortality from 1985-90 to 1990-95, in the early select durations you do see ratios at 2% and, in places, even higher. However, when you look at some of that other mortality experience and mortality improvement, it's much less. In some cases, mortality has

gotten worse. In taking an aggregate approach to it, we felt it more appropriate to reflect only 1% improvement. I know underwriting continues to improve. However, a lot of the dramatic shift in underwriting was the implementation of lower blood testing limits in reaction to AIDS and the impact that that had. That had a ripple effect throughout the table. As new tables come out in the future, I expect to see that persist further out into later durations. For better or worse, we focused on general mortality improvement, not necessarily mortality improvement that would come from changes in underwriting. I guess another reason for that is we had some issues with respect to the slope. If you reflected the mortality improvement at the select duration, it's been real high, and less at the ultimate, you are making it even a steeper sloped table, and we questioned whether that was appropriate. You brought up the point in terms of persistency's impact and changing levels of persistency over the time period study. The impact of changing underwriting standards also has an impact on what that 1990-95 Table represents. We did have some serious discussions as to can we back out the impact of underwriting? Can we back out the impact of changes in persistency? In the end, we believe that it was better to rely on the available data than to try and make these changes. We did have numerous discussions to this point. Where we looked to other data was areas where the Society data was deficient, specifically older ages.

**MR. RHODES:** To just re-emphasize my point, I agree with what you're saying. The 1990-95 period has effects. We really need to look at more data, keep on contributing the data, and I expect will give us a basis to lower mortality even further.

**FROM THE FLOOR:** I think you have done a wonderful job. When we talk about life mortality data being credible, we don't quantify it. I think there is an opportunity to do that. It would be more salable to the public and the regulators if we said, for example, that the credibility at the higher ages is only 70%.

**MR. TAHT:** In terms of the credibility of the data, that there's huge volumes of data. I guess as a rough proxy for credibility, at least in analyzing company-by-company data, we tend to focus on cells with 40 deaths or more. Most cells had that when we were analyzing company-by-company experience. There's a huge

volume of data. But even with that huge volume of data, you still get differences in mortality. You can have differences in mortality depending upon who's contributing on a company-by-company basis. So, you've got statistical credibility, and you've got credibility from a company coverage standpoint. Adding some statistics in terms of credibility would improve the end product. We added data where there was very little, if any, experience available.

**MS. ALBERT:** I just wanted to indicate to you that, despite the time pressure for this table, we did do some analysis of the variability among the companies in the experience study so that we could see that the information about the number of companies' mortality that would fall within the range of the table was actually done on a company-by-company basis. I think that that speaks very much to the problem that I mentioned, that individual companies vary widely. The actuary that's at the company is in a position to know if this table is really the right thing for them to be using.