RECORD, Volume 25, No. 3*

San Francisco Annual Meeting
October 17-20, 1999

Session 62PD
Mortality–Do The Limbo?

Track: Reinsurance
Key Words: Mortality, Reinsurance

Moderator: JAMES B. KELLER
Panelists: JAY D. BIEHL
STEVEN A. MOORHEAD
Recorder: JAMES B. KELLER

Summary: A large proportion of new and in-force business is being ceded by direct-writing companies into the reinsurance marketplace. In this "lively" session, various factors driving this activity are discussed. The panel bends over backwards to address a number of questions including:

- *Is there a difference of opinion on mortality assumptions between the reinsurer and the direct writer? If so, who's right?*
- *If the reinsurer is right, what are the implications to the direct writer?*
- *If the direct writer is right, what are the implications to the reinsurer?*
- *Are there other driving forces behind the large amounts being ceded?*

Mr. James B. Keller: Table 1 shows the ordinary life business written on a direct basis in the U.S. from 1994 to 1998, and also the recurring reinsurance over that same period of time and the percentage being reinsured. As you can see, direct business in the U.S. has been growing at a compound annual growth rate of roughly 5.5%. Over that same period of time, recurring reinsurance has been growing in excess of 30%. Obviously, this is due to a greater percentage of the business being reinsured. It is predominantly due to first dollar quota share on the term products.

TABLE 1
ORDINARY LIFE BUSINESS WRITTEN
(DIRECT BASIS) VOLUME (BILLIONS)

	1994	**1995**	**1996**	**1997**	**1998**	**CAGR**
Ordinary Life Issues	1070	1091	1134	1225	1325	5.5%
Recurring Reinsurance	213	268	350	507	678	33.6
% Reinsured	19.9%	24.6%	30.9%	41.4%	51.2%	

Source: Lincoln Re

We hope to examine this phenomena from a direct and a reinsurance viewpoint. What are the forces behind this increased use of reinsurance, and how is mortality viewed? Is mortality more difficult to assess than in the past? Is the speed of change in underwriting, preferred classifications, and secular medical improvements making the practice of looking at the past less useful?

Table 2 shows the annual compounded change in mortality for an age 45 male in the last 4 SOA experience tables. The last two tables show that insured mortality has been declining rapidly. Is this due to secular mortality improvement? Some, but not all. Were there changes in underwriting over this period of time? Does each subsequent experience study reflect more nonsmokers, particularly by amount? Does the 1985-90 table reflect the effect of more preferred nonsmokers and some blood testing? As such, will the same be true when the 1990-95 table is released, reflecting even more preferred nonsmokers and greater use of blood testing? Clearly, there is no single item that has been causing the decrease in mortality. There are definitely multiple items and the speed of change has increased. The difficulty is to understand the multiple factors and their effects on mortality in order to determine mortality in today's environment.

TABLE 2
ANNUAL COMPOUNDED IMPROVEMENT
FOR AGE 45 MALE AND
INVESTMENT SCENARIOS

SOA Experience Table	Annual Compounded Improvement
65-70/55-60	0.6%
75-80/65-70	3.2
85-90/75-80	2.1

Source: Lincoln Re

Steve Moorhead, vice president of actuarial for Zurich Kemper Life is responsible for life reinsurance. He will provide the direct company's viewpoint. Jay Biehl, second vice president and former director of research and development (R&D) at Lincoln Re has been responsible for underwriting R&D and actuarial research. Today, he is responsible for pricing, product development, and retrocession. Jay will comment from a reinsurer's view. Jay is also chair of the SOA's Individual Life Experience Committee. As such, Jay will discuss the latest studies, caveats about them, and what's on the horizon. At the end if there's time, Steve and I will have a short discussion on Regulation Triple X and the X factor, and mortality assumptions between the direct company and the reinsurer.

Mr. Steven A. Moorhead: My presentation looks at the increased use of reinsurance from the viewpoint of a direct-writing company, with particular emphasis on products that contain a high level of mortality exposure such as low-cost term and universal life products with long-duration guarantees.

I view reinsurance the same as any other service that a company purchases. You must feel that the value of this service is worth the price you pay, and this

relationship can be measured with a cost-benefit analysis. As Jim has pointed out, the use of reinsurance has increased dramatically in recent years. To me, this raises the question as to what has changed in the reinsurance cost-benefit analysis for direct-writing companies. To answer that question, let's take a look at history. About five years ago, the following items were viewed by many direct writers as the major benefits of reinsurance:

- Stability of earnings
- Surplus relief
- Product development for new markets
- Underwriting
- Claims administration
- Industry knowledge
- More credible experience

These are very important benefits, and I think nearly everyone agrees that these items were worth the price paid for the insurance. However, since it was felt that it was an expense item, the use of reinsurance was limited to the lowest level by most direct writers such that the previously mentioned benefits were achieved. Most reinsurance was on an excess amount basis with a retention level set to protect against large profit swings from death claims and to provide the desired level of surplus relief. The reinsurers, as mentioned earlier, also provided much expertise in claims, product development, and underwriting.

What has changed? As Jim showed, the amount of reinsurance on a recurring basis has increased dramatically, indicating that something must have happened. There are three major areas where a great deal of change has occurred. First, the recent product changes mean more risk to the insurance company. Second, the NAIC Model Life Insurance Illustration Regulation requires actuaries to certify pricing standards for illustrated policies. Third, many direct writers have become subject to new, perhaps more stringent, profit measures.

How low can you go? An average term gross premium in the U.S. has decreased by 9.5% per year from 1994 to 1999. Lower gross premiums may be interpreted as having more risk than higher premiums. Even with similar risk classes there is a huge annual decrease.

In addition to charging lower premiums, direct insurers are guaranteeing premiums for longer periods of time. Ten years ago, a ten-year guarantee was a standard. Today, 30-year guarantees are common. Longer duration guarantees mean more risk for the insurance company, and many things can happen over a 30-year period.

Another change that is partly responsible for the reduction in premiums is the use of more risk classes. The use of more risk classes implies that both direct-writing companies and reinsurers have better underwriting standards and have the data needed to make these ever-finer distinctions in mortality classes. This can be risky since the data to justify these additional classes may not be readily available to

most direct-writing companies, leaving them without sufficient data or the expertise to make forward projections.

A third change is the Life Insurance Illustration Regulation. If a policy form is illustrated, an actuary must certify that it is self-supporting, as defined in the regulation, using today's current experience assumptions, not just mortality but all experience assumptions. This means that improvements in assumptions, including mortality, may not be used in the testing. However, guaranteed reinsurance arrangements can be used in the testing. The regulation provides for personal liability of the actuary. If you're signing that certification, then you want to be confident in your testing.

A fourth change for some direct-writing companies are the financial results expected by their management. In some cases, this has resulted in the use of new profit measures, such as embedded value, that may require the use of current experience assumptions. How can this impact you? Assume that you expect mortality improvement to continue at 1% per year in your pricing, producing a reasonable pricing internal rate of return of 15%. However, if you have to do embedded value calculations using current assumptions—that is, with no projected mortality improvement—that may produce only a 5% internal rate of return. This disconnect could cause a problem with your management.

Some of the changes that have occurred at the same time as the recent increase in the use of reinsurance include: increased competition with premium decreases, long-term guarantees, an increase in the number of underwriting classifications, the Life Insurance Illustration Regulation, and new profit measures. Even after identifying these changes, one must still ask: "Is it just a coincidence that the use of reinsurance increased while these changes were happening? Or are there new benefits for reinsurance to direct writers? Or are they somehow connected?"

There is one more advantage to direct writers that has changed—the cost of reinsurance has decreased dramatically. In many cases the cost of reinsurance has decreased even more than the gross premiums charged by the direct writers. That's a big benefit for direct writers. Given that the cost of reinsurance has decreased so dramatically, we must ask if reinsurers put a higher value on the business than do direct writers. Since the title of this session is about lower mortality, let's assume that there are major differences of opinion in expected mortality between direct writers and reinsurers. If that's the case, why? Perhaps for the reasons listed below:

- Reinsurers have more credible experience with larger blocks of business
- They may have more stable experience, again, because of larger blocks of business
- Many reinsurers have simply chosen to be underwriting experts, while many direct writers have chosen to be insurance agencies and count on reinsurers for underwriting help

Reinsurance can increase the benefits of the changes visited previously. First, release from risk. By using long-duration guaranteed reinsurance premiums, direct

writers may consider that they have "locked in" their profits at issue. This is true even if direct writers have the same future expectations as do reinsurers for all the pricing assumptions. Release from risk has always been an important benefit of reinsurance. However, with the product changes already mentioned—premium decreases, longer guarantees, and more risk classes—direct writers may now feel there is more risk from which to be released; this may have taken on added significance.

Another change involves pricing assumptions. If you feel there will be future improvements in pricing assumptions, whether in mortality or in any other areas, the use of guaranteed reinsurance allows at least some of these improvements to be used in pricing and illustration testing. Embedded value calculations may also require the use of current assumptions, but as with the illustration testing, the use of guaranteed reinsurance allows at least a portion of the expected improvements to be taken at issue on a present value basis.

Now that we've looked at the benefits of reinsurance, it's reasonable to ask: Is there really a difference of opinion on the value of the business between direct writers and reinsurers? Or do direct writers just place enough value on the benefits of reinsurance to pay for its cost? If there is a difference of opinion, what is it? It could be any of these listed items, not just mortality, but expenses, taxes, cost of capital, pricing objectives, and persistency. All of these you have to make judgment calls on and set your best expectations.

Mortality has two items listed under it: baseline and projected improvements. The baseline is an important item. What is your starting point? What really is your current experience today? You need a large, credible block of experience to set those assumptions, and with all the new risk classes that have recently evolved direct writers should ask themselves if they have a good baseline starting point for their mortality assumptions. Direct writers must also decide what sort of projected improvements they think there will be. Again, that improvement must be projected by risk class.

Now that we've seen the benefits, what is the cost of reinsurance? The benefits can vary by company. Are you most interested in the present value of profits or in their absolute value in later years? That's a question that will vary by company, but it is a question that you must answer. When you are looking at the cost of reinsurance, you need to include sensitivity testing because there are so many assumptions and changes that could occur. While you must answer the question of the cost of reinsurance for yourself, here's an example of the type of testing that could be done.

The following is an example with made up numbers, but they may reflect what you would actually see. Let's say that you want to test mortality improvement. If you reinsure 0%, 50%, or 100% of your new business and actual mortality improvement comes in at -1%, stays the same, or has a 1-2% improvement per year, what is the actual cost of your reinsurance? If the direct insurer ceded 100%,

it in essence has locked in a 15% rate of return. Mortality improvements can fluctuate without affecting pricing that much.

If you're satisfied with a 15% rate of return and want to be released from the risk, this may be the way you want to go. On the other hand, if you believe there will be mortality improvements going forward, you may want to consider whether you should be using close to 100% reinsurance (again, this is simply an example). Perhaps you are using a mortality table for pricing with a 70% actual-to-expected ratio. What if it's 60%, 65%, or 75%? You can use this grid to quantify what the real cost of reinsurance might be. You can also combine all of your best estimates together to establish what the cost of reinsurance may be.

I ask again, is the recent increase in the use of reinsurance due to a difference of opinion on future profits or are there other reasons? Some of these other reasons might be:

- Reinsurers' underwriting expertise
- Product development expertise
- Credibility of experience (Do you have enough experience to set your assumptions?)
- The use of current assumptions, illustration testing, and embedded value
- Release from risk (With all of the risk items mentioned, you might be willing to lock in what you can get up-front)

Two additional questions for direct writers:

1. Have you clearly stated your reasons for using reinsurance, or are you simply saying we should use 90% coinsurance because that gives us a good rate of return on pricing?

2. Have you quantified the cost?

I suspect that the answers to these questions will vary from company to company, but I recommend that you consider these questions and feel comfortable with your position.

Regardless of the reason, the use of reinsurance has increased dramatically. There are consequences of this for both direct writers and reinsurers. By using 90% quota-share coinsurance, direct writers locked in their pricing profit margins. If future experience turns out better than what is assumed in the pricing, the direct writers have given up future profits. Reinsurers would be the opposite of the direct writers, depending upon what happens with future experience and assuming the companies have the same tax consequences. Only the future can tell if direct writers or the reinsurers win on the level of future profits.

There are three views that a direct-writing company may have in regards to reinsurance. Whatever viewpoint a company has on reinsurance, it should be based on an analysis of the costs and benefits, which vary for each company.

That concludes my presentation from a direct writer's perspective. Jay will now give a reinsurer's perspective.

Mr. Jay D. Biehl: I'm going to speak on two different subjects today. First I'm going to speak from an industry perspective on my role as the chair of the SOA's Individual Experience Studies Committee. Second, I'm going to speak from a reinsurer's perspective. Many of my comments dovetail and compliment some of the things that Steve talked about, but address them from a slightly different angle.

When I took over as chair of the SOA's Experience Study Committee two years ago my goal was primarily to get the studies up-to-date. In 1998 we were able to produce the 1985-90 basic table, and we did some different things with it than previous versions of the table. Primarily, we took the table out to a 25-year select period, as it became clear that a 15-year select period just was not long enough because there was a huge increase from the 15th year select q into the ultimate q's at a lot of the ages, in particular at issue ages 30-60 years old. We expanded the select period and added a lot more information for older issue ages and older attained ages, knowing that companies were selling to older ages and needed some guidance in that particular area. We're currently working on the 1990-95 basic table. I'm going to comment on that in a little more detail.

When I look at the basic tables, I struggle to understand exactly what the charge of the committee is and what it is not. It is to produce the experience of the period. It's not to make judgments about the period. It's not to exclude things from the period. It's not to try to make the table that's produced into a current-day pricing table. It is supposed to reflect the experience of that period—warts and all. In the 1985-90 table there were many AIDS-related claims. There was a lot of discussion about excluding those claims from the table. The fact of the matter is that those claims did exist in the period from 1985 to 1990 and they should be reflected in the table, which they were. We need to ensure that people using those tables understand what's in them so they can make their own adjustments and judgments.

I say it's not to represent a current-day pricing table, but the reality of it is people start with the basic tables as their pricing tables frequently. Many companies develop their own experience and use that as their pricing tables, but others use the basic tables as a starting point for their pricing basis. Twenty, 30, or 40 years ago that was not a big issue because the tables were produced on a more timely basis, but, more importantly, the speed of change was much slower at that period of time than what it is today. Underwriting practices and product changes did not change as quickly then as they do today, so the experience that came out in those tables at that time period was much more relevant to what was going on then.

Today, however, lots of things change and they change very quickly. Looking at the experience in the 1985-90 or the 1990-95 tables, you wonder how relevant it is to the products that are being underwritten today. From both the preferred perspective, even nonsmoker/smoker status, there's a lot of underlying data in those tables that is on an aggregate basis. We also must think about what is in the

1985-90 or what is in the 1990-95 table. It's experience exposed in that period of time, but it's for all issue years back as far as it goes. You have policies issued in the 1940s or 1930s that are part of the experience from that period in the 1990-95 or 1985-90 range.

When we think about the industry-produced tables, it's easy to see why they've lost some level of relevance over time. They don't reflect today's underwriting criteria or the nonsmoker/smoker status, and much of it is done on an aggregate level basis so we have to make sure that those basic tables provide more relevant information to companies as they try to use them. We're trying to provide more guidance over what's going on in the underlying experience.

We're also going to try to pick up the pace. The 1985-90 table came out eight years after the end of the exposure period. The 1990-95 tables are going to come out five years after the end of the exposure period, but we must do better. We have' to publish the table within a two- or three-year window after the end of the exposure period to be as close to the period of time as we possibly can.

We also have to give more guidance as to what is and is not available. What biases underlie the tables? What's in the table? What's not in the table? The AIDS claims example is a prime example. We need to give guidance and make sure companies understand, to the best that we can identify them, what AIDS claims are underlying the table. If you want to ratchet those up for underreporting and extract those from the table, that's your call as a pricing actuary using that table. We try to give as much information as possible to make the biases, such as nonsmoker/smoker data, more relevant.

With the 1990-95 table we're planning to produce the experience of the period, but we're also looking to surround some of that actual experience and extrapolate beyond it, particularly with the older ages. Maybe with the nonsmoker/smoker data we'll supplement around the data that we have available to try to shore it up, but we'll clearly identify appropriately what is actually underlying experience and what the committee has extrapolated. The flip side of that is timeliness. We can't spend too much time looking at the data and trying to extrapolate it. We have to produce the 1990-95 table and get it into people's hands.

I want to briefly talk about why more companies don't contribute to the table. There are roughly a couple dozen companies that contribute to the SOA's annual ordinary studies. I think there are several reasons as to why more companies don't contribute. As a committee we talked about a number of these issues. We talked about sending companies a letter to try to raise the awareness and get contributions from more companies to enhance the studies. Why don't companies contribute on a regular basis? I think it comes down to a few things. First, it takes a lot of time and energy to extract the information and to provide it to the SOA to do experience studies. Many direct companies don't have a real credible block and may not do a lot of experience studies on their own. And so, to go beyond that and to submit it to the Society takes time and energy away from other priorities.

Second is the timing issue. When I say timing, I think about it from a couple of perspectives, one of which is from a budgeting or planning standpoint within your organization. As a contributing company you need to know what time of the year we're looking for things to come to us and what the timing is on our response back to you. That includes the feedback of analyzing the data and identifying problems. That feedback is very important because the contributors have to get information back to see the value and the benefit of making contributions.

My final point is the publication process, which also comes down to the timing issue. The SOA needs to do a better job of making sure companies know when we're going to ask for data, when they're going to get it in their hands, and when it's going to be published. In time I think we'll significantly improve the process, and companies will start to see its value. I'm very interested to hear feedback. Steve Kellison is the vice president for the SOA Board. You can comment to him, you can comment to Jack Luff, or you can comment to me directly. I'd love to hear comments about how we can improve the process and encourage companies to contribute.

I said there are a couple of other things that I want to comment on surrounding the 1990-95 table. One is the FIRST study. This group came out of a preferred underwriting task force. The annual ordinary contributions that have been made are all different issue years exposed through a certain period of time. There are' a lot of different factors that have contributed in the past, from underwriting requirements to products and lots of different things. Even though standard lives go into the contribution, we do have the ability to segment a little bit by non-med, par-med, and medically examined business. But we're not real consistent on how to classify individuals who fall into a non-medical category because of amount limits but are medically underwritten because you found something. Is that non-medical or medically underwritten business?

The FIRST study is trying to attach the underwriting piece of the puzzle to the ordinary contribution. They're starting with new issues in 1998 and later. There are some issues that they have to work through as a committee, but they're trying to look at it from this point forward and attach the underwriting information to it so that you can start to determine if you have homogenous blocks of business to look at, or very varied blocks of business. Because it's starting from 1998 and later, it's going to take several years before there are years of experience to really report on. This committee is trying to develop one format that can be adapted to be used for contributions to the FIRST study, to the annual ordinary study, or to the impairment study capture system (a study that the Mortality/Morbidity Liaison Committee completes). We're trying to simplify the contribution method to make it a little easier so that if companies want to contribute to all three studies they can do so with the same format by choosing different fields.

The other group that's really looking for the 1990-95 basic table work to be completed is a group that is looking at the 2000 CSO work. The subgroup that I'm on, chaired by Michael Taht, is working to build upon the information available by the individual experience studies committee. In the latest addition of *The Actuary*

you might have seen a flier that asks for additional data to be contributed that helps us surround the data that is contributed for the annual ordinary study. In particular we're looking to shore up several of the things that I mentioned earlier—the nonsmoker/smoker contributions, preferred lives underwriting processes, and elderly—from both an attained age and from an issue-age basis. There are lots of things that need to be supplemented around the table that we are producing.

There's another group that's looking at valuation issues and what the loadings ought to be on top of an experience studies table. There are lots of other issues to look at, such as lower valuation mortality resulting in lower tax reserves. The goal of the subcommittee that I'm involved in is trying to make a report by the end of the first quarter of 2001. But, given that the 19'90-95 basic table time frame is the spring of 2000, that means there are some other issues, including how to formularize the table and make it on a dynamic basis so that it can change from year to year that are going to take the experience that comes out of the 19'90-95 table. We would then produce a report by the first quarter of 2001. We hope to get more accomplished over the next 18 months. That's it for my industry hat. I'll switch gears a minute here and move on to the reinsurer's perspective.

Jim and Steve both agree the changing landscape over the last 10-15 years is probably greater in scope and dynamics than what has happened 150 years prior to that. You look at preferred products today and you look at preferred non-tobacco kinds of classes and you can get mortality that's 30% or even lower of the 19'75-80 table. Granted, the 19'75-80 table is an aggregate table (it's not preferred or even on a smoker-distinct basis), but you're still looking at a table that was from the experience of that point in time; a pricing basis today is 30% of that table. It's no wonder that people are confused and have a difficult time trying to understand the dynamics of mortality and what's going on. Things are changing.

I think what happens, not only in the life insurance industry but in lots of industries, is that the different companies do what they do well and they outsource what they don't do as well. One of the dynamics that has happened within the insurance industry is that client companies, direct-writing companies, have tended over the last several years to focus on a couple pieces of the puzzle: expense management and distribution. They bring that competency to the table.

Reinsurers, on the other hand, don't view distribution as our competency; that's not what we do. We understand mortality management. We don't work directly with agents and brokers. We work through the client companies to work with agents and brokers. The reinsurers have focused on mortality management while direct- writing companies focus on the other pieces of the puzzle. Together they represent the strengths of both organizations. Now, there is a phrase, and Steve used it too, of "locking in profit." I disagree with the phrase "locking in profit" when pertaining to a direct-writing company because the connotation is that whoever is on the opposite side of that transaction has "locked in a loss." And that's not what is going on from a reinsurer's perspective. We're trying to make money by putting deals together that have profitability expectations in them just as much as the direct-writing company has.

Direct companies are not "locking in profit," but exchanging a stream of uncertain cash flows for a stream of certain cash flows. You're getting rid of the volatility within the mortality risk and ' trading that in for a stream of reinsurance premiums that you know to be fixed. Historically, mortality costs have been viewed to be fairly comparable, whether you were looking at it from a reinsurer's perspective or whether you were looking at it from a direct-writing company's perspective. You tended to see what was viewed to be the cost of reinsurance, and to compensate you reinsure on an excess basis. But there's a difference. There's a discontinuity between how reinsurers are viewing it and how the direct-writing companies are viewing it. You really start to see that if the cost is lower than what you thought it was and use reinsurance to manage a volatile stream of earnings, it creates a win/win situation. Wall Street does not like volatility, yet in the insurance business there is risk and volatility happening from period to period, quarter to quarter, and year to year.

The ceding companies' view is that mortality is going to be higher than what's in the reinsurance quotes, so I'm getting a bargain on the cost of my reinsurance, and the added benefit of minimizing volatility. It's a win/win situation, but the key is that mortality will be what mortality will be. We're only going to know what mortality will be—who is "right" at the end of the day when the last policy is either lapsed or dead. Then we'll know what the true mortality on that block of business really was.

If you looked at it from a 30- to 40-year time period you have to manage things on a yearly or quarterly basis for numerous reasons. Reserving practices, pricing implications, and differences in perspectives in the beginning or along the way are not totally relevant because mortality will be what mortality will be. The ceding company has protected itself from the downside, but when you protect yourself from the downside you've also limited your upside potential. There is nothing wrong with that, but it's a realization that you have to understand both sides of the equation when you give away the risk. What you've done is locked in a much more narrow, predictable stream of earning.

From a reinsurer's perspective, the first thing we look at is the mortality risk that we're taking. We're going to take deals that make sense to us. We're going to take the risk on the upside because we think the potential on the upside is attractive. When we put together multiple deals, the volatility from any one of those deals all of a sudden gets smaller and smaller. Again, we concentrate on the mortality risk. The more mortality risk that you have, the more the volatility decreases over time. And for us, that produces a more predictable stream of earnings. The volatility risk inherent in that is something that we have to understand and be comfortable with.

I mentioned ceding companies—direct-writing companies focusing on expense management—and reinsurers focusing on mortality management, and the reality of it is that they are connected. You can't just go down one path and not have an implication to another path. Over time, the preferred underwriting process has led to low mortality expectations. And part of the preferred underwriting process is

that you expend money in the underwriting process. It has led to more paramed exams, more blood profiles, etc., which you will, as a direct-writing company, look at as an expense. You also get the benefit of lower mortality that is being produced by that effort. You also have to look at those costs not only in terms of the actual expenses in the underwriting process, but the cost of the time it takes to go through the underwriting process.

The trick is balancing simpler underwriting with mortality expectation. Underwriting requirements have evolved for a reason. From a cost-benefit perspective you get benefit for the cost. If you didn't get benefit for the cost, the underwriting requirements in place today wouldn't be there. It costs money for blood profiles and parameds, but the decrease in the mortality expectation makes those expenses worthwhile.

Ceding companies and reinsurers have to understand where the other is coming from. We expect that ceding companies are diligent in the way that they are managing mortality. Doing the underwriting process well and expending the necessary cost are what leads to the reinsurance premium, which ultimately feeds back to the direct-writing company and how they factor in their costs, which ultimately leads to the cost of the direct premium. They are all connected and we are very closely tied as to what the expectations are, what unfolds over time, and how diligent companies are with the mortality management piece even if they are ceding 90% of the risk.

There are two primary ways mortality management can slip over time, one of which is exceptions to preferred classes and the practice of squeezing more and more lives into preferred that don't really fit the criteria of the expectation. When you take an individual who does not meet a preferred definition and you put him or her into a higher class, you've affected the mortality in both classes. You've increased the mortality of the class that they were supposed to be in, and you've increased the mortality of the class that they're put in. In general, those people who are borderline risk and don't really belong in a preferred class have worse mortality expectations than the preferred group. If they are truly on the fence, if they're truly a borderline risk in the lower class, they probably have mortality expectations that are slightly better than that class in general. So when you pull those best risks out of that class you've deteriorated the mortality in both of the classes. There are implications to exceptions from both sides.

The second piece is changing the underwriting requirements. I mentioned that underwriting requirements are expensive and annoying to applicants, slow down the process, and have an implication to your not-taken rate. Obtaining good underwriting requirements are key to mortality management. If you start to slip in some of those areas, then there will be ramifications. One other piece I just want to briefly mention here is Lincoln's *Reinsurance Reporter* publication. In it is an article about the difference between oral fluid and blood collection. The piece that I found really interesting was the mortality expectations on an absolute basis for those under age 40 in a preferred marketplace. Non-tobacco status is next to nothing. You're starting with an expectation. Mortality has been driven down very,

very, very far, which is the name of this session. When you give up something from a blood or an oral fluid perspective, even on those individuals under age 40, you don't have to give up very much on an absolute basis to have a significant impact on a percentage basis. And this really is the more pertinent information in driving your mortality costs and your premiums.

The final piece of the puzzle that I want to mention briefly is that over time the emphasis on mortality expectation changes by discipline. It has started primarily from a product development perspective and with pricing actuaries. Regulation Triple X and the role that's thrust upon the valuation actuary from an X factor perspective, both on a prospective and retrospective basis, means that there's really another audience that has to truly understand the mortality implications as they start to unfold from beginning to end. That's not to say that valuation actuaries have not had to understand the mortality implication, particularly those who have done GAAP accounting. You still need to get to a pricing level mortality expectation and load that for provisions of adverse deviation, but the X factor and Regulation Triple X really have taken it to a whole other level.

Suffice it to say that there is strong motivation to really understand what is happening with the mortality as it plays out over time. Steve and Jim are going to speak more on the X factor, and discuss it both from a reinsurer's perspective and from a client company's perspective.

Mr. Keller: As many of you know, many states are in the process of adopting Regulation Triple X, effective January 1, 2000. Within that regulation is a provision for calculating deficiency reserves utilizing something called the X factor. The X factor has both prospective and retrospective aspects. Utilizing your best guess on current mortality, the X factor is prospectively set. As experience develops, the valuation actuary must review the actual experience and opine (and modify if necessary) on the appropriateness of the X factors.

There are many questions in the industry on the X factor. Larry Gorski, actuary of the Illinois Department of Insurance, has written a paper on the valuation actuary's role in the accept/reject appraisal of the X factor in light of actual experience. The Actuarial Standards Board (ASB) is currently working on a Standard of Practice. My guess is that this will be a topic that will evolve over time.

There are some questions on the workings of an X factor between a direct writer and its reinsurer. While at this point these are opinions on the regulation, many have run past state insurance department actuaries.

Mr. Moorhead: We're all starting with an important point here, namely the partnership dealings between a direct writer and a reinsurer.

For the many reasons discussed earlier, direct writers have looked to reinsurers for help on a number of items, and I don't think that the X factor will be any different. In fact, I know that I've started asking these questions, and probably many of you have as well. If you are reinsuring a significant amount of your business, I think it's

reasonable to ask if a direct writer can use the reinsurers' overall X factor. Does that mean that the reinsurer can use the same X factor for all of its business regardless of the ceding company, which would mean, in essence, that all companies doing business with that reinsurer could use the same X factor?

Mr. Keller: That means' probably two questions. Question 1: Can the reinsurer use an aggregate expected mortality (X factor) on all of it's business? Yes. The direct company and the reinsurer have the same responsibilities and freedoms under guideline Regulation Triple X. Each can determine the aggregation of what in particular sells for the X factor. While you may feel that it is easier administratively to have one X factor across all ceding companies, it would not be the most efficient—that is, the lowest deficiency reserves. So, can it be done? Yes. Will it drive the lowest deficiency reserves? No. If a reinsurer were to do that, could the ceding company use that overall factor for its X factor? The initial draft from the ASB specifically states that an X factor for a ceding company should be done on a gross basis without respect to reinsurance. The bottom line is the direct company's valuation actuary is responsible for determining the X factor based upon that company's experience, as opposed to a reinsurers' overall experience.

Mr. Moorhead: Well, again, speaking for a direct writer I'm always looking to our reinsurers for help. Let me say that if we are reinsuring 90% of our business on a first-dollar, quota-share basis and I know that the reinsurer keeps track of our mortality, can I rely on the reinsurer for its X factors both retrospectively and prospectively?

Mr. Keller: I think we want to differentiate between the words "rely upon" and "work with." Again, the direct valuation actuary has the responsibility and must opine upon the accepted gross business. That said, one anticipates that if you're doing 90% quota-share reinsurance, the direct company and the reinsurer are working hand-in-hand. This involves not only setting the initial mortality assumptions that drive the initial X factors, but also the subsequent experience studies for the retrospective analysis. I believe most of us anticipate deals like that. The two companies would be working hand-in-hand because both the direct valuation actuary and the reinsurance valuation actuary must reach a comfort level for the actual opinion.

Mr. Moorhead: And in true form for a direct-writing company looking for help, let me ask a follow-up question: Should the direct-writing company's ceded deficiency reserves equal the reinsurer's deficiency reserves? In other words, can we rely upon your numbers and pass information back and forth?

Mr. Keller: Here's a very interesting issue. Do the ceding company's ceded deficiency reserves have to equal the reinsurer's accepted deficiency reserves? Basically, no, with one exception—the state of New York. I believe New York is the only state that requires mirror reserving. Mirror reserving is not required in most states, which recognize the timing problems between accept and ceded. I believe most regulators we've talked to expect that the ceded reserves from the ceding company will be similar to the accepted reserves from the reinsurer, recognizing

some timing differences. Is it required by law? No, it's not required by law, save the New York mirror reserving law. At the same time, I believe it's anticipated that reserves will be the same and the two companies will be working hand-in-hand.

Mr. Moorhead: One last question, and this will be from a general interest standpoint. Jim, do you expect that the relationship between the ceding company and the reinsurer's X factors will be different between excess amount and first-dollar, quota-share reinsurance?

Mr. Keller: Most assuredly. On a quota-share basis, you can anticipate the X factors and deficiency reserves to be the same or very similar between the direct writer and the reinsurer. The profile of excess business (above a company's retention) is dramatically different, as is the mortality. On an excess basis, I anticipate that the X factors and the associated per-thousand deficiency reserves would vary dramatically between what a direct writer is setting up on an overall gross basis and what the reinsurer is establishing from that ceded company.

Mr. David N. Wylde: Do you think that it's legal for a ceding company to state in their reinsurance treaty that it will retain and maintain all deficiency reserves?

Mr. Keller: Can it be a legal contract? Yes, it can be a legal contract. The question is, does it violate the NAIC model regulation with regard to reinsurance risk transfer? If the coinsurance treaty states that the deficiency reserves are not ceded, I question whether it would be in violation of that model regulation and whether the ceding company would lose reserve credit for the base reserves. Is it a legal contract? Yes. Will the ceding company lose reserve credit? Probably so.

Mr. Joe Kolodney: What happens if the reinsurer accepts a set of X factors from a ceding company and then maybe three or four years down the road those X factors are proven to be inadequate? What is your responsibility then for the additional reserves that the ceding company might have to post in restructuring its reserve factor?

Mr. Keller: Both the reinsurer and the direct company have a responsibility to do the retrospective analysis. If that retrospective analysis suggests that the X factors have to be increased, then they must be increased by the direct-writing company. The reinsurer also has to do that analysis. If the reinsurer agrees with the analysis and is holding reserves on a company-by-company specific basis, as opposed to aggregating over all companies, then the reinsurer also will need to increase its X factor. If a reinsurer is aggregating its business over all companies, you could end up with a different analysis. The valuation actuary of the reinsurer has to comply with the regulation as with the direct company.

Mr. Joe Kolodney: Obviously, I'm saying "obviously," because the cost of the initial reinsurance transaction was priced under an assumption that the X factors would have some constancy to them. Now, what happens if, as a result of one of these exercises, reserves of the ceding company have to be increased by an

additional, say, $50 million? What does the reinsurer say about little things like the additional costs of holding those reserves?

Mr. Keller: We're probably going to have to go back to the NAIC model regulation. If a reinsurer does not wish to take on the risk from the ceding company of potential future X factor increases, it would be looking for the direct company to pay an additional premium for those additional reserves. On a coinsurance basis, you've exceeded the gross premiums; therefore, you could be in violation of the NAIC model regulation and the ceding company could lose reserve credit. It's a dangerous position to get into. I think it behooves the companies, both the reinsurers and the direct writers, to understand the model regulation and have a clear understanding of who is bearing what risks as opposed to any open litigation later.

From the Floor: Steve Moorhead indicated that one of the items for direct companies still going to reinsurance was that the reinsurers had presented themselves as underwriting experts. It seems to me that direct companies are asking reinsurers to underwrite less and less of their business. The fact that binding limits are going up with 80% quota-share business means much less business is being underwritten facultatively, probably both absolutely and certainly as a relative proportion of the business. In this circumstance, how does the underwriting expertise of the reinsurer flow through the direct-writing company when the direct-writing company is essentially underwriting all the business and also making claims judgments as well? The reinsurers' expertise doesn't have an obvious route to flow through to the direct-writing company.

Mr. Moorhead: I think there are two points here. I'd like to hear from any of the reinsurers in the audience on this, but what we have found is that when you go to large percentage quota-share arrangements, the reinsurers are very interested in the actual underwriting results that your company has produced over the years, if they have a history with you. Also, what are your underwriting standards? We have reinsurers doing underwriting audits to make sure we follow underwriting standards that are set up at the beginning when a product is put into place. We quite often talk to our reinsurers about the underwriting standards that we have to get their expertise. They have a lot of experience here. We use their expertise in that way. They don't look at every case but they help set the standards, and they help to assure that we do follow them.

You also mentioned claims. With 90% quota-share arrangements, we also rely on reinsurers to help in claims, as we always have. But one new thing we are looking to do is to ask the reinsurers to not have us send them huge claim files for every contestable claim that comes in. Rather, we'd like them to do back-end claims audits. You've all seen the huge underwriting files for some large cases, and, if, as a direct writer, you have to photograph and mail out copies to each reinsurer for each contestable claim, that becomes very expensive and slows down the process. I would also think that the reinsurers probably don't have buildings big enough to handle all of that paper and store it. From a claims standpoint we still rely on the reinsurers when there is a large claim. We'll call and say, "Here's a name, what do

you know about it?" And, we expect to see more back-end claims audits once we go to this simplified claims procedure.