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DYING YOUNG. NOT!

Moderator: DIANE M. STORM
Recorder: DIANE M. STORM

Discussion in the session will include:

- Status of new mortality table developments
- Impact of new mortality tables on annuity valuations
- Effect of new mortality tables on defined-benefit plan minimum funding and pension expensing

MS. DIANE STORM: I looked through the program book, and this was the only session that was titled with a joke, so I felt like I had to come up with something to share in the way of humor. "Communication with the dead is only a little more difficult than communication with an actuary." My secretary came up with that one. It originally said, attorney, but I changed it. So you can use it however you like. The possibilities are endless. Hopefully, the communication between actuaries in this session will be a little less difficult than communicating with the dead.

My area of expertise is pensions. I program, support and consult on pension plans. I do programming for a computer software company. My comments will deal with that area, so those of you that are life actuaries might want to put in your two cents worth every once in awhile and give me your perspectives also. The mortality tables commonly being used for noninsured pension valuations are the 1971 Group Annuity Mortality Table (GAM), 1983 GAM, the Uninsex Pension Table UP-1984, and maybe a couple others with smaller plans. Some of them are using 1983 IAM. Are there others being used for annuity products? Of course, 1983 GAM is the required one for group annuity products right now.

The 1983 GAM is the current standard table for insured group annuity valuation purposes. Soon it will be replaced by 1994 GAM, which is scheduled to be finalized sometime in 1994. It's somewhat dependent upon how we do with the uninsured pension (UP) 1994 tables, because they're suppose to come out at the same time.

Every few years the Society of Actuaries' various committees collect and report experience from different sources. You probably received the new reports recently, which contain four reports from mortality experience studies. The one that my committee did is in it, but the one that the 1994 GAM is going to be based on is not. It hasn't been reported yet.

I want to talk a little bit about the history of some of the tables that are used. I'm again focusing on the annuity tables so at the end maybe somebody else can tell us a little bit about the mortality experience from life insurance studies. One of the reports is on life insurance and I did read it, so I might be able to discuss the mortality trends for some of the life insurance.

The 1971 GAM table was based on 1964-68 experience. So the median was 1966. It was called the 66 Experience Table. It was graduated then projected using the scale D, which is about a 0.66% per year improvement. So it was projected out to 71, loaded 8% for males and 10% for females, and it was set up with a future

projection scale called scale E, which is about 0.6% per year. The female set back is approximately six years for that table.

The Society of Actuaries was asked to produce the 1983 GAM because of the introduction of variable interest products and those kinds of things into the insurance market. The committee looked at the most recent experience, but decided there wasn't enough of it, or whatever. They decided to go back and project the 1966 experience data again, but this time a little differently. They had noticed that the most recent experience was greater than the scale D that had been used before. So they used some form of census data to project from the period 1966-75. It was about 1.5% per year, and then from 1976 out to 1983 it was more like about 2.25% per year. Those are rates at age 65.

Then at a 10% margin, our load was added and for future projections a scale H was developed, which was about 1.5% improvement at age 65. Again female setback was about six years.

The next table I'd like to discuss is UP-1984. When the Employee Retirement Income Security Act of 1974 (ERISA) was passed, a standard table was needed so actuaries could determine their best estimate of assumptions under ERISA. A unisex table was thought to be the way to go for valuation and payouts. The pension benefit guarantee corporation (PBGC) uses the UP-1984 plus one for males and minus four for females. So they make a sex distinction. When the table was constructed, it was actually just a blend of male and female mortalities. The two were added together and it was weighted with a certain percentage for females and for males.

It was based on experience published in the 1976 reports, and that experience was uninsured pension experience with a mid-year of 1967. It was projected from 1967 to 1984. That's 17 years. In reality it was projected so that the total improvement was about 10%. In reality, improvement during that period was greater than that, making the table out of date before it ever got published.

I wanted to briefly mention a little bit about the projection scales. UP-1984 was not published with any projection scales. The 1983 IAM table as well as the 1971 GAM and 1983 GAM were published with projection scales that you could use to project the table out to some future year. Most of them were set up not to project more than 20 years so you would not want to project 1971 GAM past 1991 or 1983 GAM much past the year 2000.

I'd like to talk a little bit about the status of the new mortality tables. The various Society experience committees are continually collecting and studying mortality and morbidity experience. The Group Annuity Experience Committee is completing a study of 1986-90 experience, but it hasn't been published yet in the reports. This experience is being used by the 1994 GAM task force committee to develop mortality rates for ages 65-90 or 95, approximately. The task force is going to set the table like most of the annuity tables are set up with the retirement years coming from the experience tables and the other years coming from other sources. So rates for ages 15-55 will come from civil service retirement system data – that data coming from 1985-89 experience. So it's a one-year difference.

Ages 56-64 will be blended. On the extremes, the U.S. life tables will be used and blended from about 15-25, and about 90-95 or 100. These rates will all be combined and projected from 1988 to 1994. It appears they're going to use social security administration intermediate alternative II assumptions as published in the 1992 trustees report. I get all these little letters and memos and that's what is in the most recent one that I have received.

Then these probabilities of death are going to be graduated and loaded similarly to the past because they're for the insurance industry. And one new feature about this table is that it's most likely going to be published as a modified generational table. It's not totally clear to me exactly how this is going to work. For policies issued in a given year, say 1994, the mortality tables used would be GAM 1994. For a policy issued in 1995, it would be GAM 1994 with a one-year projection at all the ages when the annuity rates were calculated. So it is not truly generational out to the end of the table as each age is increased. Therefore, it won't be published and the kind of projection scale will be different than the one that currently is published with 1983 GAM.

Probably most of you are aware that the UP-1984 table is extremely out of date. In this book there are four Society of Actuary experience committees reporting including the report entitled, "1985-89 Uninsured Pension System Experience." This experience study shows mortality to be about 85% of that expected from the UP-1984 table – quite an improvement there. In comparing the group annuity experience of 1986-90 with the uninsured pension experience of 1985-89, the mortality rates were very similar at almost every age. Therefore, it is most likely that the 1994 GAM and the UP-1994, whatever name is given, will be based on the same basic table.

The next point on the outline is sex-distinct versus unisex. We have decided that we're not going to publish a unisex table. That's the reason for the problem with the name because most people think of UP-1984 as meaning unisex pension experience. But if it's UP-1994, it's going to mean uninsured pension experience. We could use a little input there. Maybe we should have a naming contest.

For the UP-1984 table, the underlying sex-distinct experience was used and weighted for a certain assumed percentage of females verses males. Therefore, the use of plus one for males, and minus four for females makes sense. In constructing the new UP-1994 table the sex-distinct rates will mostly be published and then it will be at the users' discretion to use an appropriate set back, or blended table that reflects the male/female mix of his or her plan or plans. Possibly for funding you'll still want to use sex-distinct mortality rates. And just figure out a set back or something for your actuarial equivalent.

The UP-1994 task force is still discussing how we intend to project from the 1988 experience to the 1994 experience. Or are we just going to accept the projection that's essentially been done by the GAM 1994 committee? If we go with the same projection as the 1994 GAM then the 1994 basic table without the margins or loads would be the UP-1994 table. Most likely we will publish it with a scale for future projection similar to the past GAM and IAM tables. I'd like to hear what you think about the generational approach that the 1994 GAM committee is thinking of pursuing.

The 1991-92 reports from the individual annuity experience committee shows experience from 1987 to 1988. The individual annuity improvement overall for this period as compared with 1986-87, for policy years 1-15, was 0.7%. There's also a report for individual life experience which is based on 1983-88 experience for policy years 1-15, compared with 1982-87. There is a significantly greater improvement for females, 3%, than for males, which is only 1%. This is completely different from the improvement that is showing up in the annuity, the GAM and the uninsured pension experience.

The individual life experience in the reports volume is for years 1976-86. This is the first experience study since the 1971-76 one upon which the 1983 IAM was based. There seems to be some improvement for ages 60-80 for both males and females, but less for females for contract years, one through five and all contract years. The main purpose of this study was to determine the adequacy of the 1983 IAM table, and it is stated in the report that the table is shown to be more than adequate for almost all types of annuities studied. In other words, the median for 1976-86 is 1983. That's when the 1983 IAM table was projected. The rates are still 10-12% higher on the 1983 IAM table than they are on the experience for this period.

The experience report for uninsured pension mortality, which is the committee that I was on, shows 0.7% improvement per year, 0.2% improvement per year for females in the late 1980s, as compared with more than 2% per year for the late 1970s. Our committee study shows that mortality improvement has leveled off. Table 1 is something that Mike Virga from the Civil Service Retirement System (CSRS) produced for me. He likes to work with numbers. As you look at experience for the 1977-87 social security versus civil service retirement system, you can see that social security would be more in line with the census information. Civil Service and Medicare are the largest contributors to the uninsured pension experience.

The uninsured experience that was contributed by the major consulting firms on uninsured pensions in the private sector was very similar to the civil service experience. The females didn't improve nearly as much as the males. The improvement is leveled off somewhat, although Mike Virga has experience clear up through 1992 and some in 1993 already. He feels confident that things are beginning to curve up again. But the other thing that he likes to see is a much broader period, so I added this last column which he sent to me as an addendum. You can see what the average improvement is for the longer period and it's still relatively high, although much less in females.

So at age 65, we can just look at a rate or two here. At age 65 for males, over the entire 68-92 period, the rate is about 1.5% per year, and for females it's about 0.5%. I really would like to get some input from you, before I go on to my valuation example, on factors that are influencing mortality improvement, or lack thereof, in recent years. I'd also like to know about any trends that you see, or any concerns that you have in your everyday work.

FROM THE FLOOR: Are you inviting some comments?

MS. STORM: Yes.

TABLE 1
Mortality Improvement Trends for
Social Security and CSRS

	1977-88 SS	1977-88 CSRS	1980-88 SS	1980-88 CSRS	77-92 CSRS	82-92 CSRS	84-92 CSRS	1968-92 SS & CSRS
Male Age Group								
25-29	0.96%	0.37%	0.82%	1.53%	0.63	0.37%	2.05%	0.25%
30-34	-0.95	-1.77	-1.64	-1.32	-1.43	-1.59	-0.39	0.24
35-39	-0.14	-.16	-1.45	0.03	-0.23	-1.13	-1.08	0.62
40-44	1.38	0.70	0.62	0.79	0.75	-0.16	0.81	1.41
45-49	2.26	2.47	2.06	3.19	2.08	1.19	1.35	2.09
50-54	2.25	2.82	2.13	3.89	2.65	2.72	2.40	2.12
55-59	1.68	1.42	1.90	1.86	1.79	2.12	2.81	1.82
60-64	1.72	.98	1.33	0.98	1.25	1.40	1.87	1.41
65-69	1.34	1.42	1.29	1.10	1.46	1.27	1.43	1.53
70-74	1.05	1.34	1.09	1.56	1.67	1.76	2.12	1.53
75-79	0.61	0.93	0.61	1.05	1.41	1.77	2.15	1.23
80-84	0.35	0.37	0.27	0.54	0.85	1.17	1.53	0.87
85-89	0.19	0.10	0.01	0.31	0.53	0.61	1.09	0.71
90-94	0.03	0.01	-0.32	0.69	0.25	0.04	0.07	0.43
Corr. Coeff.	0.931		0.877					
Female Age Group								
25-29	1.00%	-0.67%	0.48%	0.07%	0.24	-0.07%	1.47%	0.56%
30-34	0.55	1.12	-0.21	-0.47	0.65	-0.81	1.19	2.87
35-39	1.61	0.32	0.83	-0.74	0.68	-0.25	1.04	1.52
40-44	2.45	0.01	1.97	1.03	0.84	0.84	1.85	1.03
45-49	2.20	1.56	2.08	1.32	1.50	0.52	0.94	1.55
50-54	1.48	0.59	1.32	1.52	1.04	1.03	1.36	1.09
55-59	0.81	-0.28	0.94	0.62	0.07	0.27	0.43	0.19
60-64	0.51	-0.64	0.31	-0.81	-0.57	-0.48	0.05	0.04
65-69	0.08	0.06	0.18	-0.27	0.13	-0.12	0.32	0.52
70-74	0.15	-0.04	0.16	-0.15	0.39	0.50	1.04	0.98
75-79	0.47	0.10	0.34	0.15	0.56	0.97	1.38	1.20
80-84	0.75	0.09	0.59	0.35	0.62	1.13	1.58	1.16
85-89	0.58	-0.23	0.43	0.03	0.24	0.43	1.08	0.68
90-94	0.28	-0.15	-0.07	0.26	0.16	-0.14	0.41	0.44
Corr. Coeff.	0.417		0.749					

MR. JOHN M. BRAGG: Glad to hear that there's a lot of progress in the 1994 tables. My firm is Bragg & Associates, and we do specialize. Our niche is experience studies, particularly for life and health. We have a large number of companies that send for data. Since we are trying to supplement what the Society Committees do, I go to Society Committees myself. We do have a tremendous amount of data, particularly in the life insurance world, but some is health insurance too. My comments were just going to be on what does it look like in the life insurance world compared to what you had covered with annuities?

MS. STORM: I was going to turn to this new reports book.

MR. BRAGG: The life insurance world is all divided by smoking and nonsmoking. Another thing is select and ultimate. It's an entirely different world in a way. Our firm has 1991 BRAGG tables. And our ultimate probabilities of death are generally lower than 1983 GAM. We have a new study on older age mortality. It has 13,000 deaths in it. There's no doubt there's a tremendous improvement.

MS. STORM: Yes. The current report is of the individual life insurance experience committee, and it was really hard to go through. There are 25 primary tables by issue age, policy year, and sex, and like you said, smoker or nonsmoker, as well as all kinds of different facts. So it was hard to find any real overall improvement figures in here. But it says, "the overall ratio in table one for experience between 1987 and 1988 anniversaries during the policy years 1-15 is 85.6%." That's down 0.7%. That ratio is compared to the 1975-80 basic table which is continuing the on-going trend. In other words, it's been the same kind of improvement in the recent experience.

MR. BRAGG: It's running 58% of the 1965-70 experience. It was 100% then, so what percentage is that? Tremendous improvement causes concern and worry. And yes, it is the nonsmoking males that are improving. I don't know where they came up with that improvement on the females. I haven't seen it. I haven't been back to my office by the way, but the female is not really improved very much from what I see, although it's awfully good to start with as we all know.

MS. STORM: Well, you can tell from the Social Security, the uninsured and the Civil Service information, that the general population, anyway the female improvement, is considerably less over the last few years than the male improvement.

MR. BRAGG: Well, I think that's really true in the life insurance world too. Maybe we've found a glitch.

MS. STORM: Oh, you think that they published this backwards?

MR. BRAGG: I know there have been a large number of female claims which can impact certain years and not impact others. So you have to really read that with a grain of salt.

MS. STORM: Also, the life insurance experience can be based either on the number of contracts or the amount, so depending on the weighting, improvement is different.

MR. BRAGG: The amount is nearly always the weights. The reason for improvement is what you would expect. It's the quitting of smoking, it's the improved medical care and holistic lifestyles becoming popular, the jogging and all that.

MS. STORM: Are you seeing anything in direct correlation with acquired immune deficiency syndrome (AIDS) in your study?

MR. BRAGG: We definitely studied AIDS, and we have a number of companies that send us their AIDS claims. We try to find out the answer to that question. And there are AIDS patches we follow. There are tables for the 1940s and 1950s that are a little bit higher than they use to be. That is what I call an AIDS patch. It

seems to peak. It really peaks around in the 1950s, to tell you the truth. Everybody thinks it peaks in the 1930s.

MS. STORM: But you're finding that cause of death in the 1950s?

MR. BRAGG: It's higher than you would think. Of course, there may be an anti-selection angle. Now it definitely wears off in later years like the 1970s and 1980s.

MS. STORM: That's why we haven't seen anything in the annuity experience at all. The people that are dying from AIDS are dying before they ever start receiving annuities.

MR. BRAGG: Yes. So in the life insurance world it is a bit more of a problem. Now you know, in 1988, the Society of Actuaries came out with elaborate projections about how horrible the AIDS epidemic is going to be. Well, of course, that hasn't happened.

MS. STORM: At least in this country.

MR. BRAGG: The number of cases is a lot lower than was ever predicted. It is increasing you know; we keep track of trend. And the AIDS impact is increasing, but it hasn't reached the proportion that was predicted. But the main thing from the view point of the annuity is it's all in the 1940s and 1950s. There are AIDS patches down there. And when we get to the 1970s and 1980s, you see very little of the problem.

MS. STORM: Mr. Bragg mentioned three things that might account for mortality improvement: stopping smoking, improved eating habits and lifestyle changes.

These also are all the medical advances. How about some negative things? For instance, what about environmental problems, like smog or the ozone. Do you think it is too early to tell from those factors?

Why do you think female mortality hasn't improved as much? Do you think they've become smokers?

The females are not quitting smoking as much as the males are. We have this over-age study. It shows that there are more smoking females over age 65 than there are smoking males.

FROM THE FLOOR: So they haven't quit as much as the males have. Maybe that's part of it.

FROM THE FLOOR: Maybe the male smokers die off and the female smokers are more resistant.

MR. BRAGG: Another interesting thing we've discovered is that female mortality is not very good in the 1950s and almost approaches the male mortality. I don't know what it is; I'm no genetic expert, but the mortality occurs in the menopausal years.

MS. STORM: It's in the early 1960s. It's negative at some of these experience places. The improvement is actually going down.

MR. BRAGG: It's really quite a phenomenon that the life insurance companies are concerned about, too. In the 1950s and 1960s, female mortality isn't very good. But below that age and above it, it is far better than the male.

MS. STORM: But I think the female mortality is still better. The raw probability of death improvement is what has really dropped off which means that the difference between the probability of death is getting less at all ages.

MR. BRAGG: It's the female smokers, specifically.

MS. STORM: I'm wondering about my personal favorite – increased stress. I mean I think the female in the work force is a fairly recent thing. The percentage of females full time in executive stress-type positions has really increased in the last 20 years.

MR. BRAGG: I agree entirely. When I say that's where it's not as good, I think that's one of the main reasons. It relates exactly to what you're talking about.

FROM THE FLOOR: Just a comment on stress. I find I have more stress with my kids at home than at work. You still have two different tables – male and female. Do you have problems with discrimination in a pension plan? Can we still pay out on male and female rates, which means paying out females at a higher rate. If you charge females more for insurance, aren't you running into a discrimination problem?

MS. STORM: I think that what you need to do is use a table, with a medium range set back, for those purposes. I think you can still value your liabilities and normal cost using the sex-distinct mortality. That's not a problem. It's the payout that is probably a problem. Although as far as payouts from a pension plan are concerned, the only thing that has been decided in court cases had to do with defined-contribution (DC) plans. But I think it's been generally accepted that we should take this as a real indication that unisex mortality is a good idea for actuarial equivalence, and pay- outs. I'm not sure exactly what you were talking about when you discussed insured.

FROM THE FLOOR: I meant in a pension plan. I still have plans with male and female rates where females are being paid out more. In most cases, the females are lower paid so it's not discrimination. I'm not too familiar with life insurance and health insurance practices. Do they use different tables?

MS. STORM: I think for valuation purposes they've got it broken down by smokers, nonsmokers, male, female, and by the kind of insurance policy that the person is getting.

FROM THE FLOOR: Purchasing insurance is particularly based on a select-and-ultimate process. The tables show a big block starting with periods 1, 2, etc.

MS. STORM: There's different mortality depending upon how long you've had your policy.

FROM THE FLOOR: That continues until the select period wears off. Then they will have different rates for smokers and nonsmokers as well.

MS. STORM: But the premiums that you charge for that are based on sex. The premiums that you charge would be based on sex-distinct mortality, yes. That's not covered by ERISA.

FROM THE FLOOR: How does it cause you to discriminate the benefits you payout? What are the actual mortality rates for males and females?

MS. STORM: That's right.

FROM THE FLOOR: What are you going to use for valuations that come from a different source of rules? On the life insurance side, there is no requirement to use the same rates for males and females. There were some states that started to promulgate that like the District of Columbia, if I'm not mistaken, and maybe Massachusetts. Companies were pulling out of those states rather than sell insurance in them. But, they could not afford to do that. You have unisex tables that came about from the pension requirements. The unisex table is used for paying out benefits. That doesn't change. You would have to decide on a blend of males and females to come out with a unisex table for your payout in benefits; with terms of pricing life insurance you don't have that distinction.

MS. STORM: Right.

FROM THE FLOOR: Can you make a distinction in your premiums? Are you going to make that distinction in your valuations?

MS. STORM: Right. Well, we can briefly discuss my example. I thought it would be nice to compare what happens with valuations. Since I'm not a group annuity person, I did not do a comparison of what's happening to group annuity valuations. This is a real case. I did change a few people from males to females to give it a little better mix. This is a small manufacturer with 35 actives and 13 terminated vested, preferred vested. It's an aggregate calculation with a $10-per-month benefit. I put in a little age service. The retirement age is 65. I didn't use anything real exciting for assumptions: 7% for funding and one run using the UP-1984 table using the plus one for males and minus four for females.

I did a second run using the rates that aren't published yet. I have access to the 1988 experience that's been projected to 1994 which will be the basis for the 1994 GAM table. It is possible that these rates will actually be the UP-1994 rates. I did a regular 412 valuation, and then I also did a *Financial Accounting Standards (FAS) 87* calculation. The regular one is based on aggregate, and the *FAS* is projected unit credit.

The total cost for the plan with UP-1984 was $17,885. With the 1994 Basic Table, it was $20,514 which was an increase of 15%. So you can see how really outdated the UP-1984 table is. Keep in mind that this is without any of the margins or anything in the 1994 table which most pension actuaries have been using for tables like the 1983 GAM. They have been using these tables for their private pension plan

evaluations, which have all the loading in them. This should give you a feel for how out of date the UP-1984 table is.

I've been attending another meeting this week. Marty Slate, who is now the Pension Benefit Guaranty Corporation (PBGC) director, said that the PBGC is going to propose some legislation and is in the process of writing it up. They are going to discontinue using UP-1984. He said, they are going to be changing to 1983 GAM. I didn't get a chance to go up and talk to him afterwards, but I'm wondering what they're going to put in the legislation, because of something that he said to the effect that they were going to use the table that was the standard table required by the insurance commissioners of each state. So I have a feeling that when the 1994 GAM is published, that will be the table that the PBGC is going to use.

The PBGC is definitely getting rid of UP-1984, and this is a good time for us to publish the 1994 GAM. I would like to see them put as recent a table as possible in their legislation.

MR. NAFTALI TEITELBAUM: As you correctly point out, Mr. Slate is saying that you have to use a mortality table approved by the National Association of Insurance Commissioners (NAIC), meaning in the majority of states. Now when we come out with the 1994 table, and by the time it gets approved by the Society in 1994, I don't know that all states will rush and approve it in the next month. It may take several years before the majority of states come in. You can expect three or four years now on 1983 GAM.

MS. STORM: His projection for when this change would take place was 1995. So I think that possibly by 1995 it will be clear to them that there's a new table at least on the way, even if it's not approved in the majority of states at that time.

In looking at the FASB experience comparing service cost, the service cost improved about 6%. Obviously, one of the differences is that the unit credit normal cost (service cost) does not have any relationship to how much assets there are in the plan. Whereas, the funding up at the top does. I had a certain amount of assets in the plan to begin with. I didn't sit down and figure out a pension expense number to see what the total pension expense increase would be, but I think that the improved mortality wouldn't effect the *Financial Accounting Standard (FAS) 87* calculation quite as dramatically as it's going to effect the funding.

I would really like more discussion and possibly ideas on whether we should name the new table UP-1994, or something else? That's a problem. And maybe we can have more discussion about the problem of unisex verses sex-distinct as far as publishing a table. I did a little impromptu phone survey, and called a couple of my friends that work for larger consulting firms and asked, "What do you think about us publishing a UP-1994 table that is sex-distinct." Their response was that they really have to have a unisex table. I don't know why?

MR. JOHN A. LUFF: I'm the staff liaison to the Experience Study Committees. Diane has made the effort to do this presentation all by herself. I'd like to start off my comments by correcting a couple of things Diane said.

As you correctly indicated there are two experience studies that are going on in the Society committees at present. One is the study that relates to uninsured benefits. This study is made and printed in *TSA Reports* every five years. The other experience study that is on-going is a biannual report. It goes back to 1981 in the current series. Experience through 1988 has in fact been published. As Diane indicated, the experience through 1990 has been somewhat well processed. It is the experience data through 1990 that is the basis for the 1994 study, but experience through 1988 has been reported.

Diane said the disadvantage here is that she's really been working towards a moving target. Certainly there have been some changes that have occurred. There will be some material coming out shortly in this area. We'll read that very carefully.

Another point that I want to mention is the approach that is going to be recommended for group annuity valuation with the GAM 1994 table is a modified generational or a projected mortality approach. The base table for 1994 will be published along with the projected scale. You would use the 1994 mortality rate for age 65, you would use the 1995 rate for age 66, the 1996 rate for age 67, and so forth.

MS. STORM: How far out are the mortality rates going to be projected? Obviously you're going to have to project this out a lot farther than normal.

MR. LUFF: The intention is that this projection would apply through the end of the table.

MS. STORM: So, 40-50 years then?

MR. LUFF: The way that we're developing the mortality table at the moment is without a final age. It caps out at 0.5 at 115, and for some ages prior to 115. The projection scale improvement is zero at 115, but in fact, it is slightly higher than zero at 114.

MS. STORM: That was one of the things that was noted in some of the discussion that took place. The mortality table that's been constructed so far doesn't end up at 0.99 like most of the ones you've been familiar with in the past. This one ends up at 0.5 and that's the last rate, 0.5 for the last five years or more.

MR. LUFF: There are three projects underway in this area. The one project relates to the development of the mortality table as mentioned before. The expectation relative to this work as I stand here is that it will be published sometime in the middle of January. My expectation is that this will go the traditional Society of Actuaries route.

MS. STORM: One of the memos said that the goal right now is to have the 1994 GAM table for final draft before the Spring Meeting.

MR. LUFF: Whether it will be before the Spring Meeting depends upon the extent of the comments that are received. Certainly the use of projected mortalities for however many years into the future, or valuation of this type of benefits, is something that probably is going to be of some concern. The group involved did put out a survey last summer, which was part of last year's Valuation Actuary Symposium

material. It included a survey on a number of these issues, one of them being these projected mortality rates for valuing benefits. Approximately 50 questionnaires were received from this survey part of the document. In fact, all but three people were either in favor or strongly in favor of that proposal. All three of those opposed put their names on the form and we talked to all three of them. Two of them liked the idea, but were concerned and only one was dead set against the idea.

The other two things that are going on are the things that Diane alluded to; how will these pieces fit together? We've got a baseline to work from, but how will things work in practice?

MS. STORM: A separate task force was set up to determine if there is a need for updated published termination rates to be used in the valuation of pension plans. That was part of the work of the Uninsured Pension Experience Committee that was kind of spun off. I haven't heard how it is progressing. I ended up on the other task force that is to decide whether there is a need for a new UP table.

MR. DANIEL M. WALSH: I have a technical question about recent mortality studies. At what age does the number of deaths fall off to the point where they have little or no typical credibility?

MS. STORM: Do you have a thought on that, Jack?

MR. LUFF: I think as far as the Insured Group Annuity Committee was concerned, the feeling was that in the development of the table, we had very solid group annuity experience for ages 65-85.

MS. STORM: And as noted previously, the experience used after blending probably 80-90 or 85-95 was from the U.S. Life Table Mortality. So the table construction is not going to be totally based on the experience at the outer ages. It's going to be based on U.S. life tables. At the preretirement ages, it's going to be based on civil service tables.

MR. LUFF: Diane mentioned that the mortality experience from Civil Service and the Uninsured Pension Study was very similar. In fact, the experience in the Group Annuity Study also was very similar to the Civil Service experience.

MS. STORM: One of the things I noticed when I was reading through the report of the Individual Annuity Committee was it asked for contributors. It only had eight companies contributing to the Individual Experience Report that's in this current reports volume.

MR. LUFF: The question was do we expect mortality to improve forever? The work that the Group Annuity Mortality Committee is most impressed with is some studies that were done by the Social Security Administration where they have looked at the longer term trends in mortality and things of this nature. The feeling is that the recent improvement probably will fall off. Certainly the possibility of some medical break-through could change this.

MS. STORM: We had quite a bit of discussion in our committee about whether there is an absolute age past which nobody is going to live. Naturally, it is only a speculation right now. I think in the civil service data there were a few people in the higher age range, 120-130, but not enough to even look at.

A couple of years ago the Society sponsored a session in Chicago about predicting the future of retirement. I think that most of us decided that probably what's going to happen is people are going to work part time, but they are going to retire. I think the current early retirement ages may go away. But there's going to be a real need in a few years for the expertise of the baby boom generation. If they retire, there will not be enough skilled labor at the younger ages to make up for the difference. There will not be a large enough base of people to handle all the jobs that are out there that require skill. So I think what you're going to see, rather than people not retiring, is people partially retiring. They're going to work part time. You already see the trend where people retire and then they go out and start their own consulting business or something else. I don't think that's going to effect the large pension plans or their assumption of when people are going to retire.

FROM THE FLOOR: So you would keep the retirement age assumption at 65?

MS. STORM: Are you thinking about the fact that the Social Security retirement age is going to 66?

FROM THE FLOOR: Yes, but I also think, looking at this realistically, that people live longer, and we know with the financial situation we are looking at that it will be necessary to work longer just to provide for everything. People may work until age 70.

MS. STORM: I think I'm probably going to wait until I see that happening.

Well, right now age 65 is more or less a mandated age at which you are entitled to your benefits; that is, age 65 with five years of participation under an ERISA plan. You can assume that people are going to stay until 66 or 67, or later, but their benefits are going to be different than the age-65 benefit. Because full benefits are payable at 65, under the provisions of the plan, I think that's going to be somewhat of an incentive for people to retire at that age, at least until Social Security retirement age increases to 66 or 67.

MR. TEITELBAUM: Jack, I'd like to comment on what you were saying, but first I'll give an explanation of the U.S. Life table, and what the group annuity committee felt. The U.S. Life table, as you know, is from the U.S. census, but the advantage is that they also do on-going temporary studies to update their information. Every year the trustees of the social security administration make a report to Congress. The committee took the results from the 1992 report of the trustees to Congress, which had the most updated information of central death rates at quinquennial ages. It took those mortality rates and used them in two parts of clarification. Male and female separate.

First, they projected from 1988 to 1994 because the experience was as of 1988. So they used that experience to project forward to 1994. From that they derived the

basic 1994 table. When they project into the future, they use the mortality rates of 2004, 2009, 2014 and 2019, and then take the mortality improvement rates from 1994 to those other four ending periods. And because as everybody has been mentioning this, a trend downward in improvement rates. It would have been too much to assume that the early improvement rates like 1994-2004 would represent the future. So they took the average of those four. The 1994-2004, the next five-year period could be average. So you sort of cut it in half almost. And that what was assumed to be the mortality improvement rate for the future. That experience by the way, differs somewhat from what the UP table was coming out with. The basic table, GAM 1994, has some loadings in there, which create disparity in what pension people use. They don't use loads, because this is for a valuation table. It hasn't been decided yet what's going to happen with it. But this is an explanation of how U.S. Life Tables figure into projection of mortality and a generation table.

Diane, you illustrated that present values in the case you presented were increased by 10-15% when using the 1994 GAM table. It is informative to note from the paper "The Effects of Mortality on Immediate Annuities" published in Volume XL of the *Transactions* that using projected mortality in annuity pricing versus the absence of projection could result in a 4% higher single premium being required. The absence of such an increased charge means that the issuing company will spend the present value of its entire profit margins on higher annuity payouts. That paper also showed the effects on reserves of a company's entire annuity portfolio when mortality improvement was added to mortality rates.

When the paper describing the derivation of the 1994 GAM table is published, it will compare annuity values, as well as reserves on the portfolio given in that paper, assuming 1983 GAM mortality and 1994 GAM mortality are using generation table assumptions. It will be quite interesting to see what differences emerge.