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Health Insurance And The Valuation Actuary

Track: Health
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Summary: Participants discuss the role of the valuation actuary in health insurance. Topics include:

- *The need for contract reserves for rate restricted products (or current National Association of Insurance Commissioners issues)*
- *What type of asset testing satisfies asset adequacy testing for short durational health business*
- *When cash-flow testing or gross premium reserve analyses should be performed on A&H benefits*

Ms. Karen Bender: Mike Francescone is an actuary at UNUM for long-term disability (LTD) valuation. He's also currently on the SOA task force to review LTD reserve standards. Mike is going to be talking about LTD reserves in general. He's not going to limit the focus of his discussion to contract reserves. Frank Knorr is an actuary at Duncanson & Holt and he was on the SOA Long Term Care Valuation Methods Task Force. Frank will discuss reserves for long-term care. The scope of my presentation is going to be medical reserves. I will include group and individual, traditional fee-for-service, as well as managed care.

Life used to be easy as a valuation actuary for medical insurance. We used to have essentially, three types of reserves. We had a claim reserve, which was incurred but not reported (IBNR) claims, claim expense, claim settlement, and loss adjustment which has many different names. On the premium side, we had unearned premium reserves which was for individual type policies and employed modal premiums.

Note: The charts referred to in the text can be found at the end of the transcript.

On the group side, you might have some advanced premium, depending upon how you recognize your earned premium. But contract reserves were the exception rather than the rule. For level premium policies, which were more individual again, issue age, that type of thing, you had to have contract reserves. For group policies, those policies that either had dividends or some sort of retrospective refunds, we always had to have deficiency reserves. In group insurance, we like to think that they were extremely rare, because you can change your premiums fast enough. It didn't warrant having to establish deficiency reserves. The exception to that would be conversion of policy. We had to have contract reserves, but there was a mismatch between the premium and the claims. By this, I mean, stop-loss policies. Now when you're collecting the premiums, maybe for the first ten months there are not going to be any claims. Your claims aren't going to come in until the eleventh, twelfth, or even after the end of the contract year. Some people would even consider that an IBNR reserve, as opposed to a contract reserve.

I'll throw two others up that I didn't mention. One would be extension of benefits reserve, which a lot of people used to just incorporate as part of the IBNR and litigation reserves. I'm classifying at the contract reserve anything that is not a claim reserve or a premium reserve. By default, then I'm classifying as a contract reserve.

Life has become extremely complicated. There are many reasons for this and I'm going to list the reasons first and then talk a little about each reason, as we go forward. Some of the reasons for the complication include the movement from indemnity to managed care, state regulations, NAIC activity, Section 8 Opinions, which give us the opportunity to do cash-flow testing and of course, premium valuation or asset adequacy. The Actuarial Standards of Practice (ASOP) also make life more complicated because they make us think about a lot more things than maybe we had to think about in the past. Maybe we should have thought about them in the past, but we really didn't focus as much.

For the qualification to valuation actuary, once you were qualified it was almost self renewing. Now, you need to ensure that you're qualified to initially give opinions, and you also need to ensure that you're getting your continuing education credits. This allows you to be able to continue to give opinions.

Moving from indemnity to managed care, with indemnity we have fee-for-service claims and those reserves are pretty straightforward. We have IBNR reserves and we have the claims settlement expenses. Our main concerns with those types of reserves were inventories. There has been a big change in the inventor. Current concerns include the quality of the data, understanding the definitions of incur dates, paid dates, do the paid claims balance out to the accountings, and credibility.

With managed care, we're still going to have fees-for-service claims. Very few managed care systems have eliminated all fee-for-service claims. You're still going to have those same types of reserves. You're also going to have the same type of concerns. Now we have provider arrangements. We can't withhold. We can't risk pool or have provider stop losses. I have classes like capitation in its own separate category because it seems to warrant that. With capitation, you also need to understand the scope of the services that are covered under capitation contract, as well as the default risk. What happens if that capitated provider defaults and cannot deliver those services? Where's the liability to the insuring entity?

Provider arrangements provide specific challenges above and beyond what we are used to in the old fee-for-service indemnity environment. One of the major challenges I've seen is recordkeeping. Many times provider contracts will be negotiated and signed, and then they think about, how are we going to implement this? Or, how are we going to keep track of this? Are we even able to pull the kinds of data that we need to administer the contract? Which is definitely not the desired state of affairs. Those things do happen.

The quality of the recordkeeping is also dependent upon who is keeping what records. If the insuring entity is keeping track of these records on a fee-for-service basis, they may be using some sort of pseudo fees-for-service mechanism, then you probably have a pretty good chance that the quality of these records are going to be as good as the quality of the records for your other paid claims. However, if the providers are maintaining these records, they may be submitting them to the insuring entity only periodically, once a month, once a quarter. Unless there is an incentive for the provider to expend their resources necessary to do the quality control items that the insurers just take for granted you may have a real challenge and the completeness of the records, and the quality of the records. Watch for duplicate records and the completeness of the data. That gets to be a real challenge.

Risk pools are another pool area that the valuation actuary needs to consider. What are the risk pools? Lots of times they could be hospital risk pools, referral risk pools, risk pools for drug, or whatever they are. Who is liable for what? What is the mechanism that you're going to use to determine what transfer of monies are going to be completed? When is this recordkeeping or the settlement? When does that have to be done?

Provider stop loss can be a complicating factor for the risk pools, as well as even withholds. This one can be a real challenge, especially in the first year. My advice to actuaries that are involved with trying to do valuations for risk pools that incorporate provider stop loss is to use the pure premium's estimate that was

employed in the development of the provider stop loss in the beginning if one was completed. It's not unusual in my experience, that there is this provider stop loss in the contract that there's really no estimate as to the value of the provider stop loss.

The actuary also needs to test a peer premium, if there is one, for reasonableness with other outside data. Capitation can include all of these: recordkeeping, risk pools, and provider stop loss. It is very important in capitation to know who is responsible for what. What are the scope of the services? Are there services that are not included in the capitation that the actuary needs to consider? Also, are there some types of incentive payments that the providers can receive in addition to capitation? Conversely, are the providers at risk for something where you have a reverse capitation almost coming back to the insuring entity?

The valuation actuary has to see the provider contracts. You have to understand who is assuming what risk, and you have to ensure that the additional provisions are made for the insuring entity's liability, as of the valuation date.

Health Maintenance Organizations (HMOs) have presented additional considerations. Now up to this point in time, I've been saying insuring entity, as opposed to insurance company or HMO. For the commercial market, this distinction is becoming very blurred. Insurance companies are acting more like HMOs and many HMOs are acting more like insurance companies. However, there are some additional considerations for HMOs that are rather unique. One of them is the change in the mix of the members. By mix of members, I'm talking about commercial, Medicaid, and Medicare. Some states are becoming very aggressive in their Medicaid contracting. Some HMOs are becoming very aggressive in their Medicaid enrollment. These present several challenges to the valuation actuary, when you're considering doing a gross premium valuation. What is going to be the impact on an HMO with 75% of their members who aren't Medicaid members. If there is a significant change in the capitation for the HMO, does the actuary need to comment on that in his or her opinion? The Medicare plus choice is going to be a whole new world for HMOs. Many HMOs aren't Medicare risks, but this is going to be accelerating. Again, Medicaid and Medicare members have different costs. They probably are going to have different provider arrangements, as far as whistles, different incentive arrangements, possibly different risk pools. You need to consider all these things when you are doing that.

When I refer to contracting process, I'm referring to the Medicaid process and the Medicare risk process and the impact of getting the contract and the rate approval process. This applies towards the commercial population. Many states require HMOs to get their rates approved before they can implement them. How successful has the HMO been in receiving the rates that they've requested and if they haven't

been successful, then you need to figure that in when you're doing gross premium valuation.

I consider point-of-service (POS) contracts separately. Uncovered services does not apply only to POS contracts. But I think that they can become more important POS contracts. Uncovered services are defined as those services which are provided to members by either noncontracted providers or providers that do not have hold harmless provisions within their contracts. Some states have regulations that when uncovered services reach a certain threshold of your total medical expense, such as 10%, you have to set up additional reserves. I know at least one state that says that you have to set up a margin of 20% of the reserve for the uncovered services. That doesn't mean 20% margin on all your reserves. It means, what is your reserve for the uncovered services and do you have to add 20% to that?

I think that probability of reaching the threshold is greater for HMO plans. They have a significant number of their members in POS plans, and that those members are taking advantage of the out-of-network benefit. The valuation actuary has to become familiar with all the different state laws. They also need to know whether this exists and whether the HMO is coming close to that threshold.

The Health Insurance Portability and Accountability Act (HIPAA) became a complicating factor for the valuation actuary and particularly in group insurance. While I'm not going to go through all the provisions of HIPAA, the two main ones, in my opinion, impact the valuation actuary. Those are that all group contracts are now guaranteed renewable and guarantee issue for groups of 2–50.

What is the impact on the valuation actuary? Well, our contracts are no longer technically, monthly renewable contracts. I think there's more stress on rate adequacy. Potentially, it's going to take you longer to correct a previous rate inadequacy. Also, for large group writers, you can't get off the risk anymore. That was always an out, a viable alternative for many carriers, that if you just had a larger group with experience that's very adverse, you can just cancel it.

Now remember HIPAA doesn't have anything to say about rates. Theoretically for the large groups you can get off the risk by just increasing the rate very rapidly. However, a lot of states have passed small group reform. That, coupled with HIPAA, puts more stress on the rate adequacy. In my opinion, it can impact the underwriting cycle. It's going to make the underwriting cycle deeper and more difficult to get out of, once you're in a situation where you have some premium inadequacies. All these combine to increase the need for a gross premium valuation.

I've referred to the state laws briefly. They also impact your need to do a gross premium valuation. If you have a lot of individual business, you'll have some minimum loss issues in many states, and the rate approval process varies dramatically by state. In some states it's very easy to get your rates approved. In other states, it's more challenging and you have to take that into consideration when you're completing your gross premium valuation. For small groups, some states have minimum loss ratios, although not all. Many states have a maximum rate increase for specific groups. By this, I mean, for a typical NAIC the maximum rate increase you can give to any particular group is trends, less change in demographics, plus 15%, say for change in underwriting standards status. Even for small groups there are some rate approvals in the various states, that really depend upon the individual states.

The valuation actuary also has to be aware of the minimum reserve standard in each of the different states and the NAIC activity which has complicated our lives. I have presented to you two draft bills of the NAIC. One of them is the actuarial opinion and memorandum regulation. The other one is the health insurance reserve model regulation. I'm certainly not going to go through all the details of these two bills. I'm going to try and focus on the impact for the medical reserves and for medical contract reserves.

I provided the latest version of these two model bills and the changes are underlined. They are the changes from the previously accepted model bills. For the actuarial opinion and memorandum regulation, the big impact on that for medical actuaries, is that long-term care and noncancelable health insurance are now classified the same as media annuities for determining what companies have to do Section 8 Opinions. The long and the short of it is that more companies are going to have to be doing Section 8 Opinions. Also, that the reserves must meet the minimum standard in the state of filing. Now there's a big difference of opinion. The actuaries, especially the valuation actuaries, would like the reserves to have to meet the minimum of the state of domicile, and the regulators definitely want all the reserves to have to meet the minimum of the state of filing.

This is not going to resolve it as it is right now, the verbiage is that you have to meet the minimum standards in the state of filing. That can be a real challenge for actuaries who are signing statements for companies that are licensed in multiple states.

The health insurance reserve model regulation also addresses contract reserves. It defines the contract reserve as anything that's not a premium reserve or a claim reserve. That's how I use their definition. It says that when it's required, and essentially, it's the standard situation, the level premium type things and also, if as a

result of the gross premium valuation, the present values, the future benefits are greater than the present value of the future premium of the contract user.

It does introduce a new concept. It introduces that of a rating block. Now a rating block can apply to small groups, it can apply to pools of individuals. The purpose of this concept is that there is a difference of opinion in how the verbiage of the previous law read. There is a school of thought that says the previous law read that in the case of, say, a community rated block of business, that you would have to set up contract reserves for those people whose rates were overstated and were going to be used to subsidize another group. In a typical small group pool you'll have some preferred groups, standard groups, and substandard groups. Obviously, the rates from the preferred and the standard groups are being used to subsidize the rates for the substandard, even if there is rate variation.

What this rating block concept allows is that these can be considered a single entity for the purposes of gross premium valuation. If the premium for the block is calculated such that for the block as a whole, it's supposed to be self supporting for the next year, then contract reserves are not necessary.

Many of us probably know a lot about Section 8 Opinions. Essentially what it requires is the actuary has to address a lot of things other than simple IBNR and claim settlement expense. They have to consider cash-flow testing and asset adequacy as well.

There are many sources that can help valuation actuary in determining what we need to do to meet the requirements of Section 8 Opinions. There are two ASOPs that I focus on as when to do cash-flow testing, *ASOP No. 14* and *ASOP No. 22*, statutory statements based on asset adequacy.

ASOP No. 14 says that cash-flow testing is not necessary, especially if your C3 risk is minimal, which is the case for health insurance. Our big risk is the obligation risk. You have to demonstrate that you've taken into consideration the obligation risk. *ASOP No. 22* says that a gross premium valuation is an acceptable way of taking into consideration the C2 risk.

We also have to make sure that the assets that are supporting the reserves have a reasonable liquidity asset matching. For health valuation actuaries, this is a new concept. If the only asset that is supporting your reserve is the building, I'm afraid you're in the world of woe. You just have to have some reasonableness that the assets are relatively liquid in the case of a determination.

There are three practice notes that deal with the need to do gross premium valuation. I had the opportunity of working on one of them. This was written prior to HIPAA and possibly needs to be updated. When it was written, we decided that you need to do a gross premium valuation, if your premium structure was inadequate, and if, there was reason to believe that you could not change that premium structure in sufficient time or magnitude to correct the situation.

The large group practice note says that you need to consider gross premium valuation or contract users, if you have multiple year rate guarantees and/or if you have a limit to the maximum increase that you can give on a rate guarantee basis. In other words, you ought to guarantee the rates. But you said, the second year, the rates won't be any higher than five percent above the first year rates. The final note is the individual major medical health practice notes and is the traditional reason for needing contract reserves when the present value of future benefits exceed the present value of future premium.

In conclusion, the valuation actuary has to consider the need for claim reserves, premium reserves, and contract reserves. The need for contract reserves has expanded. They have to have consideration for managed care, rating limitations, guarantee issues, and valuation laws. Don't forget the traditional needs. They haven't gone away. We still need them. If you have a level premium, dividends or retrospective refunds, or if there's a mismatch between the premium and the claim, as of the valuation date, you will need them. There could be others, but that's usually the classic example. So life has become more complicated.

Mr. Frank E. Knorr: I will discuss long-term-care valuation. I'll start out talking about the scope of the responsibilities of the valuation actuary. You can think of this as the defining what the reserves are that we have to work with. My second topic is minimum standards, these are the rules of the game according to the NAIC. Then we'll go on to the risks of the product, and the product designs, that is, what kind of things can cause losses. Then finally, we'll talk about the tools for assessing whether you're winning or losing.

For long-term the valuation actuary is concerned about the reserves in Exhibit 9 and Exhibit 11. I should point out that these are the places where you would find them in the life insurance blue blank. If the long-term care is being sold out of a property/casualty company, or a health services company you still have the same responsibilities. They may not have the same place in their annual statement. I should also point out that long-term care also has a couple of extra exhibits in the annual statement. There is a long-term-care insurance exhibit and a long-term-care experience recording form at the end. That is part of an annual statement reporting. The reserves in my examples all refer back to Exhibit 9 and Exhibit 11 reserves.

In Exhibit 9, we have additional contract reserves. These are also referred to as policy reserves, or I like to refer to them as active life reserves. The reason that we need these contract reserves is because for the most part, long-term is guaranteed renewable and for the most part, it's level premium. Now that I've said that they're level premium, I'll show you what the curve of the premiums look like. Chart 1 is the cohort of long-term- policies. The x axis here is the policy durations. Overall, the premiums decrease but per policy, they're level premium. So the only reason that this curve decreases, is because of lapses and mortality.

If we look at the counterpart to this, (Chart 2) the claims, you see that claims don't decrease, they increase at first. The claims increase up through a point where the claims per policy in force, actually continues to increase but, since the mortality is so high at this point, the total claims start to come down because people are just dying too fast. The mortality rate overtakes the increase in the claim cost per policy.

So when you bring them both together, when the net premiums are greater than the claims, you add to the contract reserve, and when the claims are greater than the net premium, you subtract from the contract reserve. Going back to Exhibit 9, the rest are all claim reserves. The present value amount that you do on claims is the major part of long-term-care claim reserve, and this is because claims can last three to six years. Those are typical benefit periods. There's a lot more lifetime or unlimited benefit periods going on. This amount can be quite substantial.

Exhibit 11 has the accrued portion of the claim reserve, so even though it says IBNR, when you have an IBNR, that IBNR needs to be split into the portion that has accrued already, goes into Exhibit 11, the unaccrued goes into Exhibit 9.

The NAIC minimum standards. The morbidity persistency, interest, and method are the things that define the reserves. They define the minimum standard. The morbidity is the table established by a qualified actuary. This is typically a function of what was assumed in pricing. That is, typically some kind of modification of the 1985 national nursing home survey for the institutional care, and a modification of the 1982, 1984 national long-term care survey for non-institutional care, and then adjustments of things that the actuary may consider reasonable.

We have two components for persistency. The mortality component, the 1983 Group Annuity Mortality Table is a conservative table that goes out to age 110. That's what appears in the NAIC Standards. They also restrict the lapses. It restricts lapse rates in the first four policy durations to 8%, and thereafter, it's restricted to 4%. If your pricing is more optimistic than that, then you have to use an even lower lapse rate.

The interest rate is tied to the life insurance dynamic interest rate and that's currently at 4.5%. I believe there are some states where the interest rate in the model is not defined this way. In those states, they may have a 3.5% interest rate, but then they also have different methods. They may say that two-year preliminary term is all right. The method, if you read the model language for all types of health insurance, except long-term care, two year preliminary term is allowable, for long-term care it's one year preliminary term.

What are the risks? We have morbidity risks, persistency risks, risk of mismanagement, and investment risk. The morbidity risk is by far the greatest risk and it's the risk that the number of claims that actually come in are greater than expected, or the average length of claim is greater than expected. Part of the risk is the newness of this long-term care as a line of business. The most mature experience that anyone has is on policies that may be ten years old and those policies have not been sold for several years. It really doesn't apply. Morbidity is also a function of the underwriting and the claims administration where a lot of progress has been made.

With persistency, there's a risk of policies lapsing sooner than expected. In that case, you don't recover your acquisition costs, and policies lapsing longer than expected. To demonstrate that, I'll explain that what the difference in the premiums would be if we subtracted 3% from the lapse rate. The premiums for longer durations are significantly greater percentage-wise than what had normally been expected. On the other hand, if we look at the claims, they're significantly greater percentage-wise from the claims that were originally expected. This is assuming the exact same claim cost per policy.

If you combine the two, you're not setting up as much active life reserve or contract reserve in the beginning to sufficiently fund those reserves. The term "lapse supported" has a negative connotation. You won't hear me referring to the long-term as lapse supported.

In addition to persistency and morbidity, we also have the risk of mismanagement. We have a lot of aggressive companies out there. A lot of experimentation. A lot of opportunities to make mistakes, investment risks. Insurance companies are investing at rates a lot higher than 4.5%. If you look at the yield curve of treasury investments, which are pretty safe, those are a lot higher than 4.5%, but there still is a risk that four to six years from now, when we are still adding to the active life reserve and still building up the assets that support that, that the yield growth will be a lot different.

In essence, we have a lot of C2 risk, a little C3 risk. Here are some product designs where there are risks involved. It's more and more benefits for family members and home care benefits. Alternative care facilities had been introduced as a cost containment benefit, but it can be abused. Activities of daily living (ADLs) can be interpreted in a lot of different ways, by the claim department. Inflation protection, increases your net premiums, also increases your claims, but when we compare it to the base plan, the increase of the premium is a constant percentage increase. The increase in the claim cost is exponential so it really magnifies any kind of errors that you may have made in the claims, in the incidence rate.

Some nonforfeiture benefits have risks. There is a new kind of contingent nonforfeiture, If there are rate increases and that sounds scary, a new benefit is added, right when you've proven that you need higher rates. We have other things that are types of nonforfeiture benefits but I would say that one thing that I feel good about so far is that there are really no cash value benefits or there are not a lot of cash value benefits when a policy lapses. You don't have a great disintermediation risk. People are not going to lapse their long-term-care policy because interest rates have risen and they can get a better return.

Long-term-care products are not issued as or marketed as investment products. They are risk products. Spousal discounts is not that risky, except for the fact that it kind of shifts the claims. Earlier claims are smaller, but for later claims, you may have both spouses filing a claim at the same time. Care coordination and HIPAA all add to things that make it complicated.

The valuation actuary takes this list and hands it to the reinsurer's valuation actuary, and they have to worry about it. There are some things that we can do to assess the risk such as modeling cash flows and gross premium valuation to see what the sensitivity is. Let me read from *ASOP No. 14* which is, When Do You Do Cash-Flow Testing? Cash-flow testing may not always be necessary if the actuary can demonstrate that a block of business is relatively insensitive to changes in economic conditions or if the valuation actuary is able to demonstrate that the experience will almost certainly be less severe than provided in the reserve. It's clear from that and the rest of *ASOP No. 14*, that this testing of cash values really refers to intrasensitive products. Not so much to long-term care. Still, cash flows need to be projected. You need to understand what the impact of varying the morbidity the persistency by small amounts are and then also considering that they're not independent of each other. As you lapse more policies then your claim cost per policy would increase. You would expect this since the sicker people keep their policies. Also, when you have rate increases, you need to consider the probability of having a rate increase approved. Once it's approved, then you have lapses, you have anti-selection from those lapses, and monitoring all this can get expensive. Considering the economy,

if you have inflation in the medical profession or in long-term-care services, that has an impact and you need to consider what that impact might be.

What are tools for assessing past experience? You have your Schedule H. Schedule O also falls in that, where you can assess your claim reserve. The long-term-care experience reporting forms that are required can also be used, even though these were originally designed to test pricing assumptions. The reason for that is, the state regulators want to have something to point to when a company files for a rate increase. But this has a lot of good stuff in these exhibits, if you could figure them out. They are not simple.

Mr. Michael K. Francescone: I will discuss methods of testing Long-Term-Disability (LTD) reserves. I will not discuss how to set reserves and how to reserve any particular contract features, but more about how to develop indicators to develop a sense of competence that reserves that are being held are appropriate or that something is going awry with the reserves.

First I will explain a claim reserve runoff test. These are somewhat familiar to most disability actuaries, but I'd like to cover a couple of subtleties that are in those tests, that may not be apparent to all. Next I'll discuss paid claim indicators. These are indicators that are frequently used in the property/casualty industry, but they're applicable to the LTD industry. I'll cover a couple of them, but there's a whole host of indicators that can be developed and used in looking at LTD. Finally, I'd like to speak a little bit about actual-to-expected termination rates, once again, there's some subtleties in these rates that are not always obvious.

First thing is claim reserve runoff tests. These tests sometimes called Schedule H or Schedule O tests, and as I said, they are very familiar to most disability actuaries. I believe they're frequently used more as qualitative as opposed to quantitative indicators. There are subtleties to these results which are often overlooked. These tests are used to test the adequacy of a reserve over a period of time. The test basically tests the reserve at the beginning of a study period, versus the paid claims that are paid throughout the study period, and the reserve at the end of the study period.

Since the test implicitly assumes that the reserve at the end of the study period is appropriate, it's important that the study period be long enough that the paid claims be significant relative to the ending reserves. In practice, however, this is not always possible, and frequently, runoff tests are done over just a single year. It's what we call Schedule H test. Although the results of these single year tests can provide valuable information about the adequacy of the reserve balance, the results are often misinterpreted. These tests provide a simple method to test reserve and

determine the alternative reserve balances. The following tables show how (Table 1 and Table 2).

TABLE 1
LTD CLAIM RESERVE RUNOUT RESULTS

Duration	Reserve B-O-Y	Paid Claims	Reserve E-O-Y	Gain (Loss)
			$140	----
1	$130	$26	80	$24
2	120	24	100	(4)
3	110	22	95	(7)
4	100	103	0	(3)
Total	$460	$175	$275	$10

TABLE 2
LTD CLAIM RESERVE RUNOUT RESULTS

Duration	Reserve B-O-Y	Paid Claims	Reserve E-O-Y	Gain (Loss)
			$140	----
1	$130	$26	113	$(9)
2	120	24	92	4
3	110	22	83	5
4	100	103	0	(3)
Total	$460	$175	$288	$(3)

In Table 1, you can see the reserve at the beginning of the year is $460, paid claims of $175, and the reserve at the end is $275 for a gain of $10. You can see that the gain is coming primarily in the early durations, with some small losses thereafter. I can just contrast that with another situation in Table 2. Same reserve at the beginning of the year, same paid claims, a little different reserve at the end of the year. There's a Schedule H loss of $3. The gains and losses are spread a little bit more by duration.

If you look at the two Schedule H's, you'd have a gain of $10 in Table 1 versus a loss of $3 in Table 2. But which result is better? How do you compare them? In order to do so, one needs to determine the claim cost development from beginning of the year to the end, as is shown in Table 3. In this case, we have the beginning claim cost, which is essentially the reserve at the beginning, and then the ending claim cost, which is the reserve plus the paid claims. Just to add parenthetically, we have ignored interest in all these calculations. That's a complicating factor, but it doesn't really add much to the discussion.

TABLE 3
CLAIM COST DEVELOPMENT

(1) Beg. Claim Cost	(2) End. Claim Cost	(3) Annual Development (2) / (1)	(4) Duration From	To	(5) Cumulative Development	(6) Duration From	To
$130	$106	.82	1	2	.92	1	5
120	124	1.03	2	3	1.13	2	5
110	117	1.06	3	4	1.10	3	5
100	110	1.03	4	5	1.03	4	5

In looking at the development, from the beginning to the ending, we get annual development factors. A development factor of less than one, indicates a reserve sufficiency, and a development factor greater than one indicates a reserve deficiency. If we then multiply from the bottom of the table up, we get cumulative development factors, which basically say what is the adequacy of the reserve from the current time until the end of the benefit period? In this case, once again, you can see that the opening reserve shows a sufficiency, while the others show deficiencies.

By applying the cumulative development factors to the current reserve, we can arrive at an estimate reserve, redundancy, or an adequacy, as is shown in Table 4. By taking the current reserves, and applying the development factors, in this case, the development factor is the factor I've shown in Table 1, minus one. Once again, negatives are favorable. We get to see an overall reserve sufficiency or deficiency. So in this case, we show a deficiency of $13 or more than 3% out of reserve, even though the Schedule H result showed a favorable result.

TABLE 4
RESERVE SUFFICIENCY / DEFICIENCY

Duration	Current Reserve	Dev't Factor	Reserve Suff / (Def)
1	$140	(.08)	$11
2	80	.13	(11)
3	100	.10	(10)
4	95	.03	(3)
Total	$415		$(13)

I'd like to just look at Table 2 for a second. In this case, remember that we had a Schedule H loss of $3. I won't bore you with all the details, but what you see in Table 5 is that I'm applying the factors to the current reserve, we show a reserve sufficiency of $4. Therefore, a Schedule H runoff gain resulted in reserve deficiency as Schedule H runoff loss resulted in a reserve sufficiency. Why?

TABLE 5
RESERVE SUFFICIENCY / DEFICIENCY

Duration	Current Reserve	Dev't Factor	Reserve Suff / (Def)
1	$140	(.08)	$11
2	80	.13	(11)
3	100	.10	(10)
4	95	.03	(3)
Total	$415		$(13)

Well, the answer lies in the tail of the claim curve. To the extent that a runoff exists in the high claim durations, a runoff gain or loss exists in the high claim durations, it affects every duration prior to that. To the extent that it exists only in the first duration, it affects only that duration.

I'd say in my experience of looking at claims that are runoff results, most of the volatility occurs in the first duration, where the effective incidence on the IBNR is present. Beyond the first duration, the runoff results are usually fairly stable, as they're dependent upon mortality and recovery curves. Social Security can impact them a little bit, but they usually are fairly stable.

Next I'd like to talk to about paid claim indicators. Though the claim reserve run out tests are perhaps the best test of ultimate reserve adequacy, they can at times, take several years or more to tell their story. As I mentioned before, they're highly dependent upon the ending reserve. In some situations, the runoff test can be very misleading over the short term. Take for example, the case where your claim department processing has become more or less aggressive. Such a change has an impact on the inventory of claim reserves. Since most LTD reserving applies factors to the inventory of reserves, by strictly looking at a current reserve, one can get a very distorted view of ultimate reserve.

In cases like these, it's useful to have other methods of determining claim reserve appropriateness. The paid claim development approach is one such method. This method is frequently used in short term disability, but it's also applicable to LTD and it's very often used with property and casualty companies, as I mentioned before.

Table 6 is an example of how this works. In this case, we're looking at a cumulative payments on a five year benefit LTD product and payments are representative. They're not real payments by any means. If you look at the payments, what we're trying to get at in this approach is what would that fifth column look like, year five, for all those disability years. Once we know what the ultimate payments will be in

that fifth column, and if we subtracted the payments made to date, we'd know the reserve. This approach completes the triangle.

TABLE 6
CUMULATIVE PAID CLAIMS BY YEAR OF
DISABILITY YEAR AND DURATION

	Duration				
Dis Year	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1993	$7	$37	$63	$84	$100
1994	8	42	71	96	
1995	8	46	77		
1996	9	51			
1997	10				

Using the development factors. Table 7 shows the relationship of the, the cumulative payments in the second year, to the cumulative payments in the first year, and cumulative payments in the third to the second, etc. As you can see, frequently, the most volatility occurs early on and beyond that, but the patterns are fairly consistent. Usually, there is a lot more data to evaluate. In this case, we've selected some factors to use. We first selected annual factors and just the ground of what those factors mean. A factor of 5.65 would mean that if the cumulative payments in year one were $1, then the cumulative payments through the year two would be $5.65.

TABLE 7
PAID CLAIM DEVELOPMENT FACTORS

	Ration of Claim Payments			
Dis Year	**Year 2 to Year 1**	**Year 3 to Year 2**	**Year 4 to Year 3**	**Year 5 to Year 4**
1994	5.29	1.70	1.33	1.19
1995	5.25	1.69	1.35	
1996	5.75	1.67		
1997	5.67			
Selected – Annual	5.65	1.69	1.34	1.20
	Year 5 to Year 1	Year 5 to Year 2	Year 5 to Year 3	Year 5 to Year 4
Selected – Cumulative	15.37	2.72	1.61	1.20

Just to do one more. If the cumulative payments through the year two were $1 then the cumulative payments through year three would be $1.69. Once we have the annual factors, we can derive cumulative factors by multiplying on this table from right to left. Once again, the ground you want those factors mean, a cumulative

factor of 15.37 in the year one indicates that if we paid $1 through the first year, the ultimate payments would be $15.37. I just like to point out that the payment pattern in these tables reflect the reporting lag, recovery curves, mortality curves, as well as the pattern of Social Security, of acquiring Social Security and other offsets. In practice, these patterns are fairly consistent over time.

Once we have cumulative factors, to calculate a reserve, one merely takes the product of the cumulative development factors, times the payment in a particular duration, and then subtract the payments made to date. Once this reserve is calculated, it's then compared to the reserve held to determine whether there is a redundancy or deficiency. It's very useful when there's changes in benefit processing.

In performing this kind of exercise, one needs to consider how to handle certain unusual payments such as legal and financial settlements, as well as advanced pay and closed claims. The result needs to be interpreted, after taking into account any unusual payments, less than an incorrect assessment be made. I'd like to point out that although I've shown the process to be relatively mechanical, like all reserving it entails a large amount of subjectivity, and judgement, and should be accompanied by a fair amount of scenario testing. Segmentation by reserving and pricing parameters, particularly elimination period, could be quite enlightening.

A reserve balance can be determined by using cumulative payments or annual payments. Payments over some particular time period. Typically it's annual. Could be quarterly, monthly. While this approach of tracking paid claims may provide early indications of changes in the overall adequacy, it does not distinguish between changes in incidence and recovery or duration.
Claim duration, however, can be measured by relating the cumulative paid claims to the cumulative reported claims.

By dividing the paid claims by the number of reported claims, we can then arrive at the cumulative dollars per incurred claim. I just point out once again, parenthetically, that these kinds of metrics are very useful in measuring the ultimate liability for a particular time period. By applying the ultimate cost to every claim that's reported, it gives a very early indication of what your ultimate liability will turn out to be.

By taking a cumulative paid claims and dividing by the average monthly indemnity, we arrive at what I call an effective duration. An effective duration can be tracked for any particular year or quarters in order to determine how a particular block is performing. Note that this indicator is impacted by contingencies other than determinations, namely, acquisitions of other offsets, particularly Social Security. It,

therefore, needs to be interpreted with overall knowledge of what's going on in business. It can also be impacted by changes in the mix of claims and occasionally, greater segmentation is required to fully understand the indicator.

Information regarding the duration of paid claims can also be utilized by the monitoring tool of your claim organization, especially if the duration is tracked by cause or disability.

Last item I'd like to talk about is actual-to-expected (A/E) termination rates. While the runoff in the paid claim tests can provide information as to whether a reserve is appropriate or not, they do not easily lend themselves to a detailed comparison to the underlying reserve assumptions. Actual-to-expected termination rates are tools that allow for such comparisons. Underlying any tabular claim reserve or assumption regarding mortality, recovery, and a chance of acquiring Social Security offsets. There are other contingencies, but I believe these are the key ones.

By systematically comparing the actual rates to expected rates, the actuary, as well as management, receives immediate and ongoing feedback concerning the fundamental contingencies of risk. Knowing the claim outcomes, compared to the expectations, is invaluable in understanding the block of claims. I'll caution, however, against the temptation of using one ratio to write an overall measure of mortality or recovery experience. Variations in recovery, mortality, and Social Security by reserving parameter, and in particular by duration can have material impacts on the overall reserve adequacy.

TABLE 8
LTD ACTUAL TO EXPECTED CLAIM TERMINATIONS

Duration	Actual Terminations	Expected Terminations	A/E Ratio
1	2,200	2,000	110%
2	600	570	105%
3	250	260	96%
4	50	60	83%
5	20	25	80%
Total	3,120	2,915	107%

Table 8 shows the A/E terminations by duration. At first glance, it appears to be extremely favorable. Expecting 2900 terminations and we're getting 3100 with an overall ratio of 107%. In fact, however, there is the favorable results in the early durations, and unfavorable and getting worse in the later durations. A pattern like this probably would indicate a significant reserve inadequacy. Once again, managements typically look for one simple answer, but I caution against communicating one ratio without explaining exactly what's in there.

As with other reserve indicators, conclusions derived from A/E ratios need to be tempered with actuarial judgement. Among the items to be considered is the treatment of financial settlements, the impact of advanced pay and closed claims, handling of survivor benefits upon death, and a treatment of claims that reopen. One thing you'll find in looking at A/E ratios is that depending upon when you look at them, they look different, as claims that are closed tend to reopen.

Most important perhaps, is the consideration of whether the ratios are based on monthly indemnity or claim count. Since most reserve curves are based on monthly indemnity, I find that the A/E ratio based on the same, are the most revealing. In any event, when used with appropriate judgement and knowledge about the business, A/E ratios are powerful tools in management of LTD and disability income reserves.

I'd like to conclude by saying that the appropriateness of a disability reserve balance is not assured by strict adherence to either a well known industry table or even a well constructed table of your own. There were too many dynamic variables to rely solely on a static reserve basis. I believe that by developing key reserve diagnostics similar to the ones that I've described here and using them on a frequent and ongoing basis, as well as communicating into your management's valuation actuaries can avoid problems for both themselves and their companies, while gaining valuable insights into the dynamics of their business.

Ms. Bender: I'm going to focus my illustrations on medical reserves, because that's what I feel most comfortable with. I'd like you to set up a gross premium valuation as of December 31, 1997, and do it for three years. Based upon the results of that gross premium valuation, you discover that 1998 is probably not going to be a good year. In fact, you think there's going to be a loss in 1998. However, you're going to have gains in 1999 and you're going to have gains in the year 2000. If you do the present value of each of these years, that is a positive number. Do you, as a valuation actuary, have to set up a contract reserve for that loss for 1998? We've had some discussions of this at the valuation actuary symposium and we've had some truly differences of opinion. Some accountants are requiring that this be established. At one time, I would have said definitely not, as long as your gross premium valuation was a positive number. You might want to comment on it in the *Actuarial Memorandum*, or you might want to comment on it in the *Opinion*. There seems to be some different schools of thought, as to what should or should not be. A regulator said, if you were doing a gross premium valuation out 20 years, and you showed a loss in the 19th year, should you have to set up a reserve for that? My answer to that was I don't think you should be doing 20 years of gross premium valuations for medical insurance. I'm talking about traditional group insurance. LTD, long-term maybe, but I'm just focusing on your traditional small

group, large group insurance. My answer is that I don't think we should be doing them that long. We can assume different loss or different premium increases. Our experience has been three years of good earnings, three years of down earnings. Now that underwriting cycle has changed a bit, although I think you may have an opportunity to revisit some aspects of the valuation.

Mr. Dennis M. O'Brien: I'm not a regulator, but I'll put a regulator hat on for a minute and ask a question. You say you have projected a loss for next year followed by two years of gains. Did you have the same pattern at last year end?

Ms. Julia T. Philips: I guess from the regulatory point of view, I don't have an official answer, but I will say that my understanding of gross premium valuation is that if you'd add up the present value, then you get a positive number. I have never heard that you should pick a year. I'm also a little bit surprised because I thought that's what surplus was for. Before I even worry about compliance, I would ask if I have enough surplus to cover that projected loss next year. In fact, the first thing we, as regulators, would do is quick look and see how much capital and surplus the company had. I keep hearing that cash-flow testing isn't necessary on medical insurance. My reaction is, well, if it's so simple and straightforward, why not just do it? Some companies actually do a very simplified form of cash-flow testing. What would happen if insurance rates jumped 3% or 5%, would our assets be able to cover fluctuation?

Mr. Marlin Mueller: While I'm not an accountant, I'm an actuary, and I do have some familiarity with general accounting principles. What it is that's underlying your issue even though they are multi-year contracts. Obviously, you don't have a good matching of your revenue and expense flows. If one year is going to be negative and another year is going to be positive, and actually, if it is in fact multi-year contracts or something along that line, you should be looking at a premium reserve that would more match the premium recognition in conjunction or parallel to your cost.

Ms. Bender: Sometimes in group insurance, in particular, once you realize that you're in a lost position, it just takes you a while to realize the rate increases, to be able to turn the ship around, especially if you have a large block and you have 12 month rate guarantees. Obviously, if you have six month rate guarantees, you can do it faster than if you have 12 month rate guarantees. I'm not sure there are many things you can't do that anymore in small groups. For large groups, in reality, most of these rates are guaranteed for 12 months. For individuals, you're not going to be able to get the rate increases approved quicker than at least six months impact. So what I'm really referring to is the situation where by the time you realize that you had a rate deficiency, you've taken what you believe is corrective action. That's

why for the second and third year, you're projecting positive results. It's just this interim time. By the way, my opinion has always been the same as Julia's. That this an issue for surplus. This is not really a valuation issue. To me it's going to magnify the losses when you're in these cycles, because you're going to have to essentially reflect that loss a full year ahead of time. If you were perfect, you'd break even the next year, because you just released the reserves. You wouldn't have to have a contract reserve any more.

From the Floor: One of the things that you indicated was that the model regulation requires contract reserves for noncancellable policies. Under HIPA, does all of our group insurance now become a noncancellable policy or is the bailout provisions in terms of terminating a block of business or terminating a whole statewide block of business, provide us enough of a loophole?

Ms. Bender: Well, I'm going to qualify something. I said that noncancellable contracts are now classified the same as long-term. Noncancellable health insurance are classified the same as immediate annuities for determination of when companies have to complete Section 8 Opinions. There's a whole series of qualifications, if your ratio is this, that, and the other. Noncancellable policies generally have a characteristic, that you also can't change the rates. So that would not be the same in group insurance. Even after HIPAA, you can still get out of a market. You just would have to cancel all the policies in that particular state for that particular market. You're going to pull out a small group, I think you'll have to pull out of all the small groups. So I don't think that even HIPA precludes you from pulling out entirely. That's my opinion. However, many states have guidelines so that you can't come back for five years. At least in small group markets.

From the Floor: Karen, I'd like to throw my two cents in on your original question. I think that if you are projecting a loss in the next year, and then followed by a couple years of gains, I assume that those gains are because rates will be increased. I think that you have to look at the probability of that group continuing after the year of loss. If that is certain, then you can go ahead and talk, think about what the probability is of having the rates and then the probability of having those rates be adequate in those two following years. But if it's annually renewable, the group may not be around for those final two years.

CHART 1
LONG-TERM CARE-INSURANCE
SAMPLE PREMIUMS

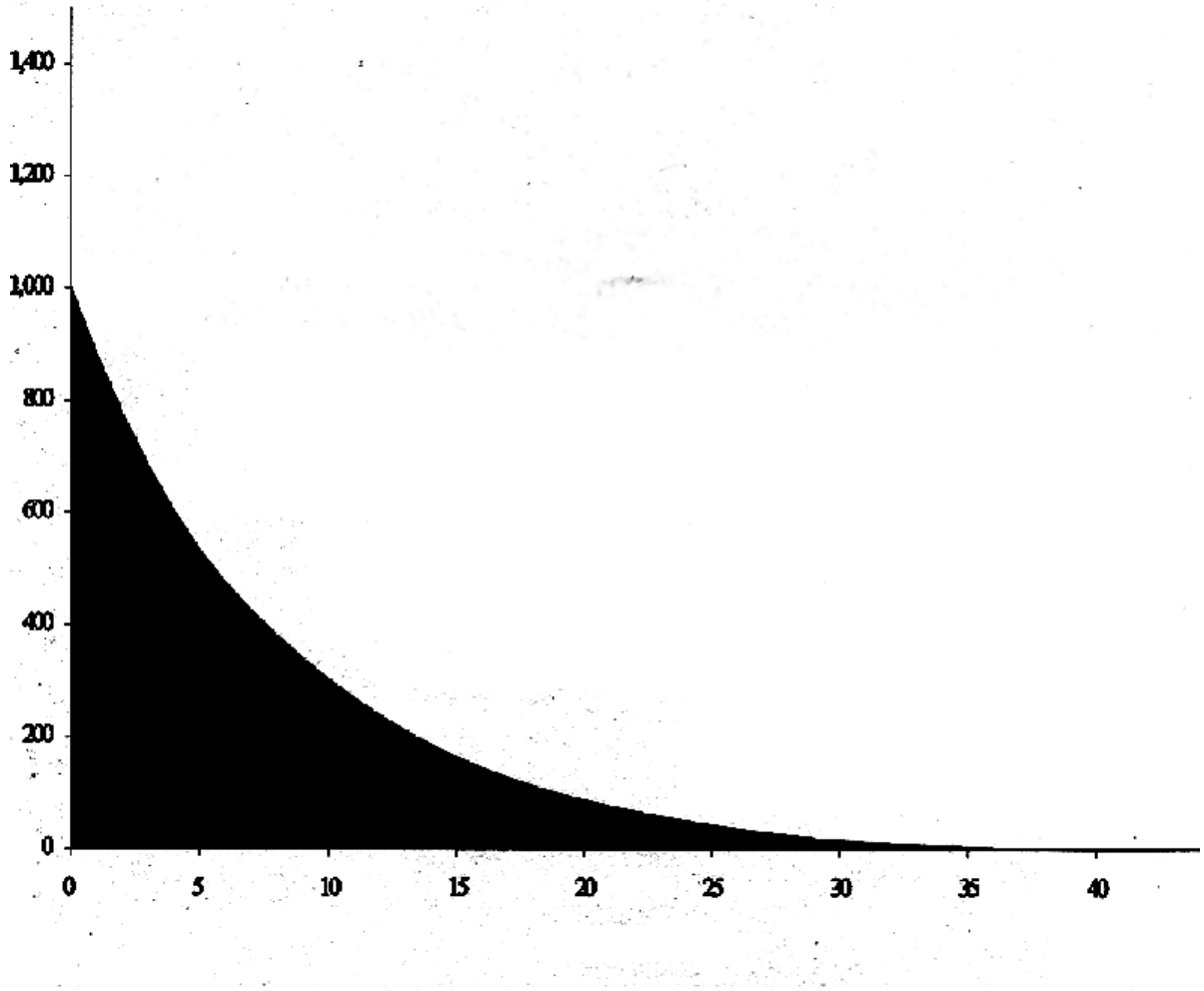

CHART 2
LONG-TERM CARE INSURANCE
CLAIM BASE PLAN