

**1992 VALUATION ACTUARY
SYMPOSIUM PROCEEDINGS**

SESSION 3

Claim Reserves

**Stephen M. Maher
Stephen J. Rulis
Stephen P. Melek**

CLAIM RESERVES

MR. STEPHEN M. MAHER: Claim reserves for stop-loss products are generally more difficult to predict than most A & H claim reserves or life incurred but not reported (IBNR) reserves. The primary reasons are low claim frequency, high variability by amount, and the greater amount of time it takes for the claims to ultimately develop.

The relatively low frequency of claims means not only that there is less historical data on which to base projections of claim development, but there also is likely to be greater variability prospectively.

The fact that there is also high variability in the amount would be a lesser concern if not combined with the low frequency of claims. However, in combination, the problems created by the low frequency become compounded.

The IBNR is proportionally more significant since it also takes a greater amount of time for the incurred claims to develop. In addition, it becomes much more difficult to evaluate the impact of any factors that could influence the development of incurred claims, such as pricing or underwriting changes, mix of business, or changes in claim administration.

Basic Methodology

There are a number of different methodologies that may be used alone or in combination to estimate stop-loss reserves. The appropriateness of one method versus another will depend upon a number of factors including the volume of business, the amount of historical data available, and the actuary's interpretation of the data.

Claim Triangle -- The use of a claim triangle is appropriate where there is adequate historical data and sufficient volume to produce credible claim development factors. Therefore, this method is generally more appropriate for specific stop-loss than for aggregate stop-loss. In

1992 VALUATION ACTUARY SYMPOSIUM

addition, we have found that the use of the claim triangle does not reasonably predict the outstanding liability for any incurral period that is less than 50% developed. For this reason, we use an expected loss ratio to estimate the more recent incurral periods.

Average Claim Lag -- Another methodology would be to calculate the average number of days it takes the claims to develop. The IBNR is then calculated as either a percentage of claims paid or earned premium. For example, if we assume that it takes 97 days, on average, for claims to develop, then the IBNR would be estimated as $97/91$ (106.6%) of the last quarter's paid claims or as $97/365$ (26.6%) of the last year's paid claims. However, neither of these calculations give appropriate recognition to changes in the book of business. An improvement would be to relate the historical outstanding claim liability to premium and thus estimate current liability as a percent of premium.

A variation of this method would be to use the weighted average number of days (weighted by claim amount). This would be appropriate if the actuary believes that the claim lag by amount was not purely random, i.e., that either large claims take longer to develop or that they are settled sooner. Variations of these methodologies are often used for aggregate stop-loss.

Policy-Year Development -- An analysis that I've found useful is combining all data by policy anniversaries and calculating claim development factors by duration since policy anniversary. For policy years where the premium is not fully earned, I deduct a portion of the premium equal to the projected loss ratio for those renewal dates.

This methodology has several advantages. First, date of loss coding becomes significantly less important as long as claims are coded to the correct policy year. Second, it recognizes changes in the book of business, as well as underwriting or pricing changes. Third, it provides useful management information with regard to the performance of the book of business.

CLAIM RESERVES

Loss Ratio -- The use of an expected or assumed loss ratio by itself is generally not appropriate unless there is little or no historical information, as may be the case for a company that previously had not offered the product. However, it is often used in combination with other methods.

Paid versus Reported Claims -- The total claim liability can be calculated either as an incurred but not paid liability, using the above methodologies with paid data, or as the sum of an incurred but not reported liability and the reported but not paid liability where the claim development would be based on reported claims. The use of reported data, if available, is generally preferable. Depending on the lag between reporting and payment of the claim, the use of reported claim data can significantly accelerate the recognition of the development of claims.

Mix of Business Considerations

In order to accurately evaluate the stop-loss claim liability, consideration should be given to any material change in the book of business that might impact the development of claims. The specific contract provisions can have a noticeable impact on claim development. For example, advancement contracts have a significantly faster development than reimbursement contracts, and paid contracts develop faster than incurred and paid contracts.

The development of claims can differ materially from one claim administrator to another. We have found that stop-loss claims generally develop faster if the stop-loss carrier is also the administrator, since there is generally less need for review of the claim.

In general, the lower the specific deductible, maximum benefit, or margin used in determining the aggregate attachment point, the faster the claims develop. It is, therefore, necessary to understand how the mix of business is changing with regard to these items.

The final concern regarding the mix of business is often overlooked, and that is the distribution of business by renewal date. For specific stop-loss, it generally takes several months into the

policy year before any claims have exceeded the specific deductible. For this reason, it is important to consider the potential impact if a material portion of the business has renewal dates toward the end of the valuation period.

Other Considerations

In addition to mix of business considerations, there are a number of other items the actuary needs to consider in evaluating the claim liability. The contract provisions are important to determine when a loss is incurred. The date of loss coding methodology used by the claim department may not be consistent with the contractual date of loss or with the development methodology used by the actuary.

Reinsurance not only can have an impact on the net claim liability but also can impact the claim development factors. For example, if the reinsurance is an excess amount treaty or a transplant carve-out, it might be appropriate to ignore reinsured claim amounts in determining the development factors.

The impact of large claims, litigation, or specific delays in claims processing also should be considered and adjusted for if the actuary believes that these are not representative of expected claim development.

Finally, the actuary must be satisfied that the growth of business, pricing or underwriting changes, claim trends, or any variation in claim processing are either adequately accounted for in the methodology selected, or otherwise adjusted for.

CLAIM RESERVES

MR. STEPHEN J. RULIS: I'd like to share some thoughts with you on the valuation of group disability insurance products.

The majority of my comments will pertain to long-term disability (LTD) -- and I certainly think there are enough LTD claim reserving issues of interest to fill my allotted time, but I'm also going to discuss some aspects of short-term disability (STD) reserving. I won't be spending a great amount of time on long-term care claim reserving, but I'll try to make specific reference to LTC where there are overlaps and where it is appropriate. I'd like to direct most of those long-term care issues to the session on LTC valuation being held at this symposium. There is certainly a good amount of overlap between LTD and LTC claim reserving as far as disabled life reserves (DLRs) go, but the active life reserves needed for LTC's prefunding component generally do not have a parallel component in disability reserving.

Let's get right into group LTD claim reserves. My initial comments revolve around calculating a company's best estimate of LTD claim liability. I'll then talk about some issues that are specific to either statutory, GAAP or tax reserving.

The objective of LTD claim reserving is to properly account and provide for all LTD claims that have been incurred -- including those that have completed the waiting period and those that haven't. Of course, it's also necessary to reserve for both known claims and those that are unknown for whatever reason; some claims will be unknown because they have not been reported yet and others because they've been reported but are either not on the company's claim systems yet or are on the system but not approved yet.

The major distinction I'd like to make for discussion purposes is to distinguish between claims that have completed the waiting period and those that are still in the waiting period.

1992 VALUATION ACTUARY SYMPOSIUM

The theory behind the disabled life reserve for approved claims is certainly straightforward enough -- the DLR is simply the present value of future gross benefit payments less the present value of future offsets, where future gross benefit payments and future offsets are a function of the reserving termination rates and the benefit and offset end dates. The DLR may also account for the present value of future claim related expenses. Although in theory it seems straightforward, there are many intricacies and possible adjustments to a company's base DLR calculation that can turn the process into an extremely complicated undertaking.

I would say that its standard to take all known offsets into account (both Social Security and other offsets), as well as assuming a probability of Social Security approval for those claims in which Social Security status is currently unknown. The DLR may also account for the present value of future claim related expenses.

One issue that those of you reserving for long-term care products need to address is the probability of the daily or monthly benefit amount increasing or decreasing as the claimant moves from collecting home health care benefits to nursing home benefits or vice versa. This issue generally does not come into play with LTD because any changes in net benefit are planned, and can be precisely reserved for, such as cost-of-living adjustments (COLAs) kicking in or offsets ending.

We at ITT Hartford perform these same DLR calculations on claims that we classify as pending -- those that have been reported and are on our system but have not yet been approved. We then hold a percentage of the calculated DLR as our reserve for pending claims, where the percentage is the approval rate plus appropriate margin.

By studying our pending claim approval rates over the past few years, we've been able to quantify the likelihood that pending claims at given durations will eventually become approved. Then we test periodically and update these approval rates as necessary.

CLAIM RESERVES

Industry surveys have shown that group LTD claim approval rates are generally in the 90% range, plus or minus 5%. However, pending claim approval rates are certainly going to vary from company to company, and they are dependent upon how quickly reported claims are posted in the system.

For these pending claims, there also is a retrospective liability for net benefit payments that will be owed if and when the claims are approved. This liability can be expressed as the outstanding claim payments that would be owed if the claims were approved today, times the probability of the claims being approved.

Another aspect that a company may want to account for is the amount of benefit overpayment that will be recovered by the company if a claimant is approved for Social Security. Claim departments generally handle retroactive Social Security awards to existing claimants in one of two ways: either by withholding future benefit payments until the amount of overpayment has been recovered over time, or by collecting a lump sum from the claimant. In either situation, the company has a probability of recouping some overpayment, and this could lead to an offset of the company's reserve.

One way to quantify the IBNR liability for LTD claims is to measure the average lag time between the date of waiting period completion and the time a claim becomes reported on the company's system. If this average lag time is X months, then the liability would be an expected loss ratio times X months of earned premium.

The main reason I wanted to differentiate between claims that have completed the waiting period and those that haven't is because the valuation actuary is virtually guaranteed that anything he or she knows about claims still in the waiting period will be incomplete. History has shown that a material percentage of LTD claims will not be on the system by the end of the waiting period, either because of the claim's reporting lag or because of the time spent by the claim department processing the claim.

1992 VALUATION ACTUARY SYMPOSIUM

For this reason, we at ITT Hartford do not distinguish between known and unknown claims that are still in the waiting period. Rather, for each LTD policy on our books, we hold an expected loss ratio times Y months of earned premium, where Y is the number of months in that policy's waiting period.

Some companies may want to take advantage of the known claim information they have on claims in the waiting period (especially if there is a paperless claim system or some other reason to expect a short reporting lag). One possibility would be to adjust this expected loss ratio up or down depending upon the amount of early claim information available.

Having covered the mechanics of LTD claim reserving, the next step is to discuss some of the assumptions that make up a company's disability life reserve basis.

When talking about termination rates, it's convenient to start with the 1987 Commissioner's Group Disability Table (CGDT), which is also known as the 1987 Group Long-Term Disability (GLTD) Valuation Table (valuation because the termination rates are 10% smaller than those in the basic pricing table).

My understanding of the 1987 CGDT is that it was developed to produce reserves that would be adequate for the vast majority of companies selling group LTD, regardless of the companies' claim or underwriting practices, and regardless of the richness of benefits, definitions of disability, etc. For this reason, many companies have found that their own block of claims are terminating quite a bit more quickly than the 1987 CGDT would predict, and they've deemed it appropriate to utilize valuation termination rates based in part on their own experience -- perhaps grading into the 1987 CGDT at some point.

Later on in my discussion I'll touch on some of the regulatory guidelines and constraints on how statutory termination rates might differ from the 1987 CGDT. What I'd like to do now, however, is to throw out a couple of items to consider when calculating your best estimate of the company's liability.

CLAIM RESERVES

If your company had a credible amount of LTD claim and termination data, you might decide to review your old copy of Batten's *Mortality Table Construction* and then perform your own termination study. You'd probably want to count terminations and exposures by duration, age at disability, sex, and elimination period, and then you'd graduate the raw data into some appropriate termination rate matrices and add a margin of 10% or so.

You may also want to consider the effects that contract provisions have on termination rates. Claims with an "own-occ" to 65 definition of disability are going to terminate more slowly than those with a two-year "own-occ" clause followed by an "any-occ" definition of disability thereafter. A claimant is deemed to be disabled under an "own-occ" definition of disability if he or she is unable to perform the material duties of his or her own occupation; disability under an "any-occ" definition means the claimant is unable to perform the material duties of any occupation he or she might be qualified to work at, based on his or her training, education, and prior income level. Similarly, claimants who are collecting under a partial or residual disability definition may terminate differently from those who are fully disabled.

Varying provisions such as these could be handled with explicit factors to adjust for the variances, or they could be handled implicitly by developing termination rates appropriate for your current mix of business and then monitoring and adjusting the termination rates if the mix changes.

While I'm on this point, I'd like to stress the importance of good communications with your underwriting, claims, and systems areas. It's important to reserve for whatever benefit structures and contractual languages that have been sold, so you need to know things such as whether a case's COLA provision is applied to the net benefit or gross benefit, and how benefit information on claims with alternate integration is being passed to you, etc. For example, is the claim department passing you the primary or secondary benefit percentages, or is it passing you the actual benefit percentage being paid?

1992 VALUATION ACTUARY SYMPOSIUM

Similarly, you may want to consider the effects of claimant demographics on your termination rates. Do white collar and blue collar claimants terminate differently, or do termination rates vary by industry or benefit percentage? Do replacement ratios impact termination rates, or do you have more margin at certain ages than at others? If so, then shifts in claimant demographics could impact your reserve adequacy.

I'd like to note that the 1987 CGDT and most other LTD termination tables include claims for complication of maternity, but they exclude normal maternity claims. Therefore, a company selling business with a short waiting period (such as one or two months) and receiving a material volume of normal maternity claims may want to adjust their termination rates accordingly.

A possibility that hits close to home for me is the development of an entire set of termination rates that depend upon the diagnosis of a given claimant, because I'm currently winding up this type of project. The impetus behind our study was the idea that certain diagnoses, such as AIDS and complications of maternity, were certainly going to terminate more quickly than other diagnoses, such as musculoskeletal/lower back claims. Why not reflect this in the termination rates?

The first thing we did when undertaking our diagnosis-based termination study was to examine the claim runout patterns of each individual diagnosis. Then we grouped diagnoses with similar runout patterns together to count terminations and exposures. As a result, we've been able to calculate eight sets of diagnosis-distinct termination rates that are all based on a credible number of terminations. Our preliminary indications are that the magnitude of our total block of reserves calculated on this diagnosis distinct basis will be very close to the amount we are currently holding for management reporting. However, the amount of reserve by case may change materially.

The pricing and underwriting impact of reserves that vary by diagnosis is that cases with a disproportionate number of shorter or longer claims will have it reflected in their presale or

CLAIM RESERVES

renewal reserves. We believe our reserves will now be more appropriate on a case-by-case basis. Analysis of claim runouts by diagnosis could also be of interest when studying termination rates by industry or occupation.

The valuation actuary also needs to consider what valuation interest rate to use. A claim's valuation interest rate should certainly be supportable by the investment income rate being earned on the assets backing that claim reserve. In general, you'll want the earned rate less required liftoff to be greater than or equal to the valuation rate. Interest liftoff, or excess interest on reserves, is often earmarked as a source of profit or expense coverage.

I think there's a strong argument for using a valuation rate dependent upon the year in which a claim is incurred -- a new money method. The alternative would be to value all claims using the same interest rate and ensure that rate is supported by the aggregate portfolio rate of the LTD portfolio. A good rule of thumb to remember concerning valuation interest rates is that a 1% drop in valuation interest rate leads to about a 5% increase in reserves.

I mentioned earlier that assumed Social Security approval rates will have an impact on several components of the LTD claim reserves. Another item to consider is the impact that a claim's Social Security status has upon its expected termination rate. In the past, we've observed that claims with approved Social Security terminate considerably more slowly than those with unknown or denied Social Security status. Presumably this is because those claimants approved for Social Security are more severely disabled. The question to decide on then, is whether or not Social Security status should be considered when reserving for a block of claims.

If your company reinsures out any portion of its LTD business, then the reinsurance treaty provisions are another item that should be considered when estimating your company's liability.

The present value of known offsets other than Social Security, such as workers' compensation, pensions, etc., clearly should be deducted from a claim's gross reserve. What about other

1992 VALUATION ACTUARY SYMPOSIUM

offsets that are not yet known due to a reporting or approval lag or an offset waiting period? Should some reserve credit be taken for these unknown other offsets?

One possibility would be to study the lags associated with other offsets and use unknown other offset factors that are a function of duration. These offsets might also be a function of industry, since certain public employee groups are more likely to get pension offsets and certain blue collar groups more likely to receive workers' compensation. With public employee groups, it's important to understand the relationship of the pension offset and Social Security. If claimants simply receive one or the other, then it's important not to count the offset twice by assuming probabilities of both Social Security and the pension.

Finally, the actuary may want to consider a reserve deduction for claims that have already terminated but have not shown up as terminated on the system. I'd consider this termination lag credit analogous to the IBNR liability that's held for incidences not yet reported.

Until recently, there has not been a great deal of regulation regarding LTD statutory reserves. However, more and more states are now moving toward adopting minimum accident and health reserve standards. The most recent versions of the NAIC Model Bill on Accident and Health Minimum Reserve Standards that I've seen specifies a maximum valuation interest rate for LTD statutory claim reserves equal to the rate applicable for a whole life policy issued on the date that a given claim was incurred. This would be 5.5% for 1992 incurrals.

This version of the model bill also specifies minimum statutory morbidity standards equal to the 1987 CGDT termination rates, except that the insurer has the option of using its own experience to calculate reserves during the first two years of a claim. This minimum morbidity standard applies only to claims incurred after the effective date of the bill in a given state. To the best of my knowledge, few, if any, states have adopted the Model Bill precisely as it stands today.

CLAIM RESERVES

As I understand it, however, there has been action in states, such as Maine, Texas, and California geared toward adopting the NAIC Model Bill with a couple of major changes. The two changes that impact LTD valuation are:

1. A change in maximum allowable valuation interest rate to the rate allowed for single premium immediate annuities (SPIAs) less 1%. I believe this rate computes out to 6.75% for 1992, so we're talking about a drop in reserves of approximately 6% when compared with those valued at 5.5%.
2. The right for certain companies to use their own experience to calculate reserves during the first five years of a claim. This would be subject to the state insurance commissioner's approval and would depend upon an analysis of the credibility of the company's experience.

As I understand, there is a chance the NAIC will be considering these two revisions to the Model Bill. I also understand that the Actuarial Task Force reporting to the NAIC is working on possible guidelines regarding minimum numbers of claims to be considered credible. If the NAIC does in fact implement these two revisions, then I would certainly expect the number of states adopting this Model Regulation to continue growing.

LTD GAAP reserves have generally been quite similar to the LTD statutory reserves, although the differences may become more noticeable with the introduction of minimum statutory reserve standards. One difference in methodologies relates to the GAAP principle of recognizing profits in proportion to revenues.

Because of this principle, I'd expect to see GAAP profits increasing fairly proportionately to block size as a company's block of business grows. On a statutory basis, however, reserves may tend to have more margins in the early durations. Therefore, statutory profits may increase at a smaller rate than the rate at which the block is growing; i.e., statutory reserves may increase at a rate larger than the company's growth rate.

1992 VALUATION ACTUARY SYMPOSIUM

A company may decide to make some GAAP adjustments to its LTD DLR that it hasn't made for statutory purposes. For example, the GAAP valuation rate may be larger than 5.5% or 6.75%, if it can be supported by the earned rate less required liftoff. Also, a company may make some GAAP adjustments to its reserving termination rates that weren't made for statutory purposes, such as incorporating diagnosis distinct termination rates or recognizing other unknown offsets. A company also may utilize the same adjustments on both reserve bases with the adjustments lasting longer on a GAAP basis. For example, GAAP reserves may anticipate a probability of offsets other than Social Security during the first two years of a claim, while statutory reserves recognize such a probability for one year only.

The IBNR liability will probably be the same on both a GAAP and statutory basis, but a company might want to see less margin on the expected loss ratio for GAAP reserves.

Of course, GAAP reserves should contain margins for adverse deviations, with the margins released in proportion to the release of risk.

A final issue worth considering is the issue of lock-in of assumptions on a GAAP basis. Is it acceptable to change GAAP reserve bases after claim reserves have been set up, or are assumptions necessarily locked in at the time of incurral? There currently does not appear to be complete agreement regarding this issue.

Like many other products, LTD tax reserves are subject to a minimum allowable valuation interest rate called the applicable federal rate (AFR). I believe the AFR is 8.40% for 1992 incurrals; so, this assumption will most likely be different from your statutory valuation rate for 1992 incurrals. Since there are no published morbidity standards for LTD tax reserves, it is common to use the same morbidity basis for statutory and tax. Likewise, the waiting period and IBNR components of the tax reserve will most likely equal their statutory counterparts.

CLAIM RESERVES

I suspect that many companies will be performing and reporting on the results of a formal LTD cash-flow testing for the first time in 1992, now that standard valuation laws and regulations have been proposed or adopted in several states, such as Connecticut, Oregon, and Texas.

We at ITT Hartford have been performing LTD liability cash-flow projections for a number of years, mainly to assist our investment department in duration matching when investing our LTD assets, but our projections this year on both the asset and liability side will be a bit more formal.

The Standard Valuation Law (SVL) refers to seven interest rate scenarios where assets should be tested for adequacy relative to liabilities. These scenarios cover the entire realm of reasonable possibilities, ranging from a sudden dramatic drop or increase in interest rates, to gradual decreases or increases, to rates that fluctuate up and down. The SVL also mentions that an appropriate piece of the mandatory securities valuation reserve (MSVR) (which is now being separated into two components -- the asset valuation reserve [AVR] and the interest maintenance reserve [IMR]) can be included with the assets for testing purposes, if necessary, to support the risks in a given line of business.

Valuing the assets under these scenarios seems straightforward enough, but we're still considering the implications that these interest scenarios will have on our liabilities. For example, we're considering testing unfavorable termination rate scenarios on the liability side in conjunction with the low interest rate scenarios on the asset side, believing that economic forces may lead to this type of a relationship.

One last item I'd like to mention is if LTD assets are included in a portfolio segment with other assets, such as long-term care or life premium waiver, then it certainly seems appropriate to test these products as a block.

1992 VALUATION ACTUARY SYMPOSIUM

The Schedule H and Schedule O reserve adequacy tests are one way of testing long-term claim reserves for adequacy. The Schedule H test is designed to test a one-year reserve run-off by comparing the reserve on a given valuation date (e.g., December 31, 1991) to the present value of benefits paid after that date on claims incurred before the date. The Schedule O test is quite similar, but it's designed to test a multi-year reserve run-off because all benefit payments are included in the test, not just those paid after the valuation date.

Both of these tests would be expected to show that reserves were somewhat redundant, given the margins that are used in reserving termination rates and other assumptions.

It's also important to test the individual reserving assumptions. For example, actual versus expected termination rate comparisons and the monitoring and updating of key assumptions, such as Social Security approval rates, can help ensure that your LTD reserves have the margins you think they do.

Finally, it's important to maintain adequate gross premium structures. If gross premiums are inadequate, then expected loss ratios times premium will be producing inadequate IBNR liabilities.

Because of time constraints, I won't be covering short-term disability (STD) claim reserves in the same level of detail I've covered LTD claim reserves. However, there are a few points I'd like to touch on. Most of my comments apply equally to Statutory, GAAP, and Tax valuation. The three reserve bases will be equivalent in some situations, although it may be appropriate to use different margins for statutory purposes in some cases.

When deciding upon a seriation (or tabular) approach for STD versus an aggregate approach, I can see pros and cons with regard to each type of method. Seriation methods, where the present value of each known claim are determined individually, would probably be more precise. However, many companies are ill-equipped to capture all the relevant data at an

CLAIM RESERVES

individual claimant level for STD; furthermore, there are no published termination rate standards for STD.

Aggregate methods are certainly more user-friendly, and they can certainly produce adequate results, but it's necessary to watch out for items that could affect your block's claim run-out pattern when utilizing aggregate methods. For example, changes in your mix of business could distort reserve factors developed using aggregate methods.

One common approach for developing aggregate STD reserves is the production of STD claim triangles showing claim dollars by paid date versus incurred date. By building up a history of claim run-outs by incurral month, the valuation actuary can develop completion factors to quantify the run-out that remains from a given month's claims.

In order to minimize the risk of a change in business mix distorting the claim run-outs, it's not a bad idea to partition the block of STD business into a set of homogeneous groupings. However, these subsets of the company's STD block should be large enough to ensure credibility within each grouping. For example, we've found that our statutory business, such as New York disability benefit law (DBL) business, and our non-statutory business have substantially different runout patterns. Similarly, we've seen different runout patterns for policies with differing contract provisions, such as elimination periods and maximum benefit periods.

I'd certainly recommend testing reserves produced via completion factors for reasonableness whenever possible. One way of performing a reasonability test would be to compare your reserves to those produced using a loss ratio or other method. I also would recommend using a loss ratio approach for reserving until a given month's claims are at least 30% or 40% complete, because completion factors before this point would probably be unreliable.

In order to make informed decisions about which policies to group together when reserving, it's obviously important to understand all the contract provisions of your STD product, as well

1992 VALUATION ACTUARY SYMPOSIUM

as which policies contain which provisions. It's also important to understand the STD claim processing function. Have there been any processing changes, such as batching of claims, that might change the lag patterns or run-out patterns? How are continuations of prior claims treated?

It's important to know the answers to these questions, and it's also important to apply the completion factors consistently with the manner in which they were developed. For example, if continuations of prior claims show up as new claims with new loss dates in your claim triangles, then the completion factors need to be applied accordingly as if the second phases of these claims were incurred on these new loss dates. However, if claims that have been interrupted by a return to work show up with only one loss date when developing completion factors, then the factors should be applied to only the original loss date when reserving for these continuations of claims.

Since STD reserves tend to be much smaller than LTD reserves, the product is certainly less reliant upon interest earnings than LTD. For this reason, cash-flow testing is not as hot of an issue with STD as it is with LTD. I think the main consideration when investing STD reserve dollars should be liquidity, to ensure that any unexpected jumps in claim frequencies can be covered, and to ensure that existing claims could be paid if premiums were to stop coming in the door. Cash-flow testing is a tool that can be used to monitor whether the STD assets are adequately liquid.

The final STD item I'd like to touch on is the issue of reserve adequacy. Besides the Schedule H and Schedule O tests to which I've already referred, I certainly would recommend performing reserve reasonability tests whenever possible, such as comparing aggregate reserves to those produced by a loss-ratio approach. Also, the actuary can test his or her reserve factors for stability from month to month and monitor the mixes of business in each claim triangle grouping to reorganize if appropriate.

CLAIM RESERVES

MR. STEPHEN P. MELEK: Steve Rulis has done a good job addressing claim reserve issues related to disability products. I will address products with shorter term claim payouts, using primarily major medical-type products in the indemnity market and Medicare supplement products as examples. I'll also make a few comments related to HMOs. I would like to do this within the framework of the Actuarial Standard of Practice No. 5 -- Incurred Health Claim Liabilities. I'll briefly discuss the various issues and recommended practices (many of which may seem very basic) contained in this standard of practice and offer some ideas and examples for practically recognizing some of these relevant issues.

The Actuarial Standards Board included 15 items in the analysis of issues and recommended practices for incurred health claim liabilities. These items are shown in Table 1.

TABLE 1

**Actuarial Standard of Practice No. 5
Incurred Health Claim Liabilities**

1. Conservatism
2. Methods
3. Components of Incurred Health Claim Liabilities
4. Recognition of Plan Provisions and Practices
5. Incurral Date
6. Data Requirements and Assumptions -- General
7. Data Requirements and Assumptions -- Tabular Methods
8. Data Requirements and Assumptions -- Development Methods
9. Plans with Insufficient Data
10. Recognition of Trend
11. Recognition of Exposure
12. Recognition of Time Value of Money
13. Recognition of Claim Settlement Expenses
14. Follow-Up Studies
15. Reasonableness of Results

Let's examine each of these items more closely.

1992 VALUATION ACTUARY SYMPOSIUM

Conservatism

We must always remember that the setting of claim liabilities is not an exact science, but an art. A corollary in professional football may be the position of quarterback. We've seen many scientists in this position who understand the mechanics of handling and throwing a football. Bobby Douglass and Vince Evans come to my Chicago mind. But no one will ever confuse these "scientists" with the true artists who play the position -- Joe Montana being a more recent example of one who knew how to incorporate many different factors of the job and achieve great success.

Setting claim liabilities requires the incorporation of many different factors and considerations which will produce, at best, an estimate of the true liability (better estimates that you should have used, of course, will later become obvious to all "armchair analysts" at time of validation). We must incorporate into our development an appropriate margin for conservatism based on the purpose of the liability development.

This use of conservatism may become a challenge in times when corporate profit margins are eroding, when stockholders are demanding increased rates of return, when policyholders are seeking higher dividends, and when actuaries may even be feeling the squeeze of fewer professional opportunities and greater professional competition.

However, the increase in insurance company failures and heightened regulatory concern over ongoing financial stability and viability of insurance companies and other health organizations further support the requirement that we must make good and sufficient provision for such liabilities. If it is in the application of trend, the estimation of results over recent experience months where true data is limited or the incorporation of external factors influencing claims activity, appropriate conservatism is required.

Methods

No particular calculation methodology is mandated. Many methods of calculation are used today that may be appropriate. These include the commonly accepted development method

CLAIM RESERVES

and tabular methods. (Many of us might confess to having at one time or another sought divine assistance during a particularly baffling experience period, or at least to have wondered if the old dartboard would have produced a more accurate estimate that we had previously established for a particular block of business). We must be mindful of any applicable requirements (for example, statutory or GAAP requirements) in our use of our various different methods so that we are not incompatible with this standard if we follow them. Any deviations and supporting reasons must be disclosed.

The method we typically use for major medical and Medicare supplement products is the development method. This method uses historical claim runoff patterns to predict the future development of claims that exist as of the valuation date.

We will use this method to develop several different lag factor curves or completion factor curves using combinations of different claim payment experience periods and different formulas. We will also produce detailed supporting information that will aid us in the selection of the most appropriate of these completion factor curves with which to proceed. Once this curve is chosen and modified, if necessary, based on the supporting detail and other factors that I will soon address, we will calculate the resulting incurred claim costs and loss ratios by experience month/year. We then perform additional trend analysis to help us project the results for the most recent few months (typically 3) where the claims paid-to-date are the most incomplete. Lets look at the example in Table 2 which shows the results of a few simple approaches.

Here we've calculated various completion factor curves using different time periods and different formulas.

Our simple average method first requires that we calculate claim payment ratios by duration (claims paid-to-date through duration $t \div$ claims paid-to-date through duration $t - 1$) for each month of claim payment. We then calculate lag factors using products of claim payment ratios, completion factors as the inverse of the lag factors, and finally, straight averages of the resulting completion factors over the most recent N months of claim payments. Our weighted

TABLE 2
Calculated Completion Factors
Company XYZ—Major Medical Business

Monthly Duration From Incurral	Simple Average Methods Using Claim Payments From			Weighted Average Methods Using Claim Payments From	
	Last 6 Months	Last 12 Months	Last 24 Months	Last 6 Months	Last 12 Months
4	.741	.718	.685	.818	.769
5	.809	.790	.771	.885	.837
6	.854	.838	.827	.928	.881
7	.882	.869	.863	.952	.908
8	.910	.895	.891	.971	.930
9	.924	.910	.908	.979	.944
10	.936	.924	.922	.985	.955
11	.947	.937	.934	.990	.966
12	.957	.947	.943	.994	.974
13	.968	.955	.951	.996	.980
14	.974	.959	.957	.997	.985
15	.978	.963	.963	.998	.988

average method uses the most recent N months of claim payments but calculates a single set of claim payment ratios for this entire payment period, thus giving more weight to months having greater volumes of claims paid. Naturally, we get different curves using these different methods.

If we suspect a seasonal pattern, we also would develop curves based on runoff patterns of prior year's incurrals for each calendar month separately. We may use a single calendar year's results or, more likely, combine two or more calendar years in developing an appropriate curve.

In this example, we see a definite pattern towards a "speed up" of claim payments during the last two years. Weighted average results would yield a lower liability than arithmetic averages. We would analyze the underlying detail to help us understand the patterns of the numbers. But we have, at this point, not yet considered other issues required by the standard of practice.

Components Of Incurred Health Claim Liabilities

We must make provision for both reported and unreported claims, by either making separate determinations of liability or a total liability determination without reference to the separate components. The development methods discussed so far generally include both reported and unreported claims, so no additional determinations are needed.

The methods used by HMOs can be different. Claims may be tracked by reported month and service date. Cumulative claims reported to date are then completed using a completion factor based on historical patterns and a separate IBNR is determined. If claims are tracked for one or two months following the end of a reporting period prior to determining the claim liability, a large portion of the liability may be known (isn't that nice). Paid and reported-but-not-paid hospital and physician claims and prescription drug claims are generally known using this technique. A margin is normally not needed for those known claims. The IBNR is then calculated, and a margin is established as a percent of the IBNR. If the HMO requires a 45-60-day reporting of claims from participating providers, claims may be completed very rapidly. However, due to this rapid completion, a shift in the average reporting time of just one week could significantly affect the IBNR.

Recognition of Plan Provisions and Practices

We must recognize all pertinent plan provisions, including interpretations, administrative practices, and regulatory requirements. Have the benefits provided by the plans underlying all of our claim payment source data changed over time? How is the claim department interpreting the benefit provisions of the contracts? Has this always been the case or has their position changed? How are the claim adjusters actually paying claims? What changes have been made over time? Do they have specific "marching orders" from higher-up?

We need to know the answers to these questions. This generally requires an open discussion with the appropriate claims personnel, including managers and sometime supervisors. We also should carefully review claim activity reports that can include important information on incoming mail, unopened mail, work in process, pended claims, handled claims, denied claims,

1992 VALUATION ACTUARY SYMPOSIUM

paid claims, and importantly, inventory levels. We will do this in advance of our discussions with the claims department personnel since the review of this information will often lead to questions that we want addressed.

Table 3 shows a sample claim activity summary report. This illustrates what can happen with claim inventories.

As you can see, the average claim payment in this example dropped in September 1990 and remained at a level through September 1991 that was lower than that experienced in the first eight months of 1990. There was a corresponding increase in claim frequency during this time that was even larger. And what's important is, the inventory per policy exposed climbed dramatically in 1991.

We modified the outstanding claim inventory at the end of September 1991 to "allow for" a higher inventory level than prior periods because of the reduction in average claim payment. We then modified the claim payment data to reflect the buildup in the adjusted claim inventory level, in other words, the claim dollars that would have been paid out if the inventory buildup had not occurred. We then proceeded with our claim liability calculations.

For changes in plan provisions and claim payment practices, we have made different types of adjustments for Medicare supplement and major medical products. For Medicare supplement, we have had to adjust the basic data for the impact of Part B Physicians Cap programs. Table 4 shows an example of this.

We adjusted the claims-paid data by experience month (which was net of the physician's cap savings) to put all of the basic data on a gross basis. We then developed our completion factors using the gross basis and reduced the resulting claim liability to reflect the expected future claims savings from the Part B Physicians Cap program. We used a conservative savings rate based on the declining nature of the savings experienced during 1991.

CLAIM RESERVES

TABLE 3

**Claim Activity Report
Company XYZ
Medicare Supplement Business
(000s omitted from raw data)**

<u>Calendar Month/Year</u>	<u>Exposed Policies</u>	<u># Claims Paid</u>	<u>\$ Claims Paid</u>	<u>EOM Claims Inventory</u>	<u>Average Claims Payment</u>	<u>Claim Frequency</u>	<u>Inventory Per Policy</u>
9/91	354	97	\$12,000	84	124	.27	.24
8/91	343	90	12,000	79	133	.26	.23
7/91	332	103	14,000	66	136	.31	.20
6/91	325	95	12,000	66	126	.29	.20
5/91	319	103	13,000	65	126	.32	.20
4/91	316	94	12,000	74	128	.30	.23
3/91	311	91	12,000	60	132	.29	.19
2/91	308	94	12,000	36	128	.31	.12
1/91	305	107	14,000	29	131	.35	.10
12/90	301	79	10,000	26	127	.26	.09
11/90	298	84	10,000	19	119	.28	.06
10/90	283	94	12,000	13	128	.33	.05
9/90	279	78	10,000	16	128	.28	.06
8/90	275	77	11,000	24	143	.28	.09
7/90	271	81	11,000	17	136	.30	.06
6/90	269	65	10,000	21	154	.24	.08
5/90	266	67	11,000	23	164	.25	.09
4/90	265	53	8,000	40	151	.20	.15
3/90	265	55	8,000	30	145	.21	.11
2/90	265	56	8,000	18	143	.21	.07
1/90	265	55	8,000	24	145	.21	.09
1/90 - 8/90	2,140	509	\$75,000	197	147	.24	.09
9/90 - 9/91	4,074	1,209	155,000	633	128	.30	.16

For major medical claims, we have reflected the impact of managed care programs that were implemented at different points in time. This required modifying the data (which were net of these savings programs) to get all of the claims paid on a gross basis, developing completion factors using this adjusted claims data, and then reducing the calculated claim liabilities for the future expected savings resulting from the various managed care and claims savings programs — including PPO programs, prompt payments, claims rebundling, etc. Once these programs have been up and running for a substantial period of time, these adjustments may no longer be

1992 VALUATION ACTUARY SYMPOSIUM

necessary if they are already inherently reflected in all of the claims data being used for completion factor calculation purposes.

Incurral Date

We must understand at what point a claim becomes a liability of the plan. In other words, how is the incurred date defined? We would get this information from the plan provisions, interpretations, administrative practices, and any applicable regulatory requirements. The determination of incurral date should be consistent between claims incurred and unpaid and those not yet incurred if separate determinations of liability for those claims are being made.

TABLE 4

**Company XYZ
Medicare Supplement Part B Physician Cap Adjustment
(000s)**

<u>Calendar Month/Year</u>	<u>Total Part B Payments</u>	<u>Total Part B Physician Cap Savings</u>	<u>Savings Rate</u>
5/91	\$17,000	\$1,600	9.4%
6/91	15,200	800	5.3
7/91	16,600	1,000	6.0
8/91	16,600	1,200	7.2
9/91	17,800	800	4.5
10/91	19,200	600	3.1
11/91	16,000	600	3.8
12/91	16,600	400	2.4
5-12/91	\$135,000	\$7,000	5.2%

Recognizing different definitions and rules for incurral dates helps us to understand different payment patterns by incurred date. They also require us to use different development methods. If a "per cause" rule (where the initial date of injury or sickness or the date a deductible is satisfied is used as the incurral date) or if a "service date" rule is used (where the incurral date is the date of treatment or service, except that for a continuous hospital confinement, it is often the first date of such confinement), our regular development methods are appropriate. However, if a "calendar-year-per-cause" rule or a "calendar-year-all-cause rule" is used (where the incurral date is the earliest date of treatment or service in the calendar year), we use a

different method. We calculate a set of completion factors for each calendar month or incurral month using the last two or three years of experience for the same month of incurral. These calendar-year-per-cause and all-cause incurral date rules help to explain corresponding huge incurred loss ratios in January and puny incurred loss ratios in December. Another example would be if reinsurance benefits for a major medical line of business are based on claims paid in excess of x dollars during a calendar year for all claims incurred in that calendar year, the incurral date definition used can help explain some strange patterns of claim payments on large claims.

Data Requirements and Assumptions — General

Quite obviously, the determination of liabilities for health claims incurred but unpaid requires the use of data and assumptions. Projecting future claim payments sometimes requires data and/or assumptions that may be relatively constant among plans of coverage while, at other times, requires data and/or assumptions that may differ substantially between plans of coverage and over time. The data and assumptions we employ should be reviewed for reasonableness and should reflect the experience of the specific plans being reviewed, where appropriate.

We should make every effort to obtain accurate data that allow for separate identification of claim incurred date and claim payment date and any other dates required by the methodology. Any differences between systems -- generated incurral dates and plan-defined incurral dates -- must be recognized.

Differences in assumptions may be considered for valuation purposes. We may employ different claims trend, interest rates, contingency margins, or other assumptions between statutory and GAAP valuations.

As I have mentioned previously, we should review changes in benefit levels, exposure, claim filing, claim processing and accounting systems over time to help us determine the appropriateness of past claim lag experience for our current valuation needs. For example, the National Electronic Information Corporation (NEIC) is a private company jointly owned

1992 VALUATION ACTUARY SYMPOSIUM

by several insurance companies that currently electronically processes claims from hospitals and forwards them to the proper insurer. Recently, it was announced that the NEIC will be expanding such electronic claims processing to individual physicians. That means it will be possible for a health care claim to be filed automatically when a patient presents a medical credit card to the physician, eliminating the need to fill out forms and saving time and postage. This would most likely change the lag pattern for this type of benefit when so processed.

Another example is from the Workgroup for Electronic Data Interchange (WEDI). They have formulated recommendations that call for a speedier and more cost-efficient communications system -- one that uses integrated networks and national standards to ensure the compatibility of electronic data transfer systems used by insurers, providers, hospitals, government programs, and other participants in the health care system.

For Medicare Supplement, according to a June 30 letter to House members from a coalition of health care providers, insurers, and beneficiaries, slower Part B claims processing and bigger appeals backlogs would result if the House version of the fiscal year 1993 Medicare Administrative budget becomes law. House Bill 5677, passed July 28, 1992, appropriates \$16 million less for Medicare than the Bush administration's proposed amount.

I mention these items to illustrate that claims processing variations can be caused by external factors as well as internal factors.

The Health Care Financing Administration (HCFA) has produced carrier reasonable charge determination data on a quarterly basis which includes the number of claims and total covered charges. Table 5 shows a comparison of these results for 1989-91.

We regularly review this information to see if there may be a potential Medicare supplement claims backlog. We would use additional conservatism in our assumptions if we thought it to be appropriate. Last in this area, HCFA wants at least 75% of all Medicare physician claims

to be filed electronically by next year — and all of them by 1995. This new policy promises big changes for physician billers and, most likely, quicker claim payouts for insurers.

The actuary should also, under this standard of practice, consider the impact that large claims can have on distorting claim payments patterns. We frequently remove large claims from the basic data in our development of claim completion factors. Large claims are then analyzed separately and have their own liability established. Of course, they need to be defined, identified, and accurately reported in the claims system in order to do this. They may be defined, for example, to be claims in excess of x dollars by policy or by insured member in a given calendar year of incurral.

TABLE 5

**HCFA
Carrier Reasonable Charge and Denial Activity Report
(millions)**

<u>Quarter</u>	<u>Reasonable Charge Determination For All Claims*</u>		<u>% Change By Quarter Based On</u>	
	<u>Amount</u>	<u># of Claims</u>	<u>Amount</u>	<u># of Claims</u>
4Q 88	\$11,260.30	85.5		
1Q 89	12,422.50	91.5	10.3%	7.0%
2Q 89	13,465.40	97.5	8.4	6.6
3Q 89	13,497.90	95.8	0.2	(1.7)
4Q 89	13,014.00	94.8	(3.6)	(1.0)
1Q 90	14,077.60	100.8	8.2	6.3
2Q 90	15,174.90	105.3	7.8	4.5
3Q 90	15,146.90	104.0	(0.2)	(1.2)
4Q 90	15,305.60	108.8	1.0	4.6
1Q 91	16,169.90	111.5	5.6	2.5
2Q 91	17,115.90	117.4	5.9	5.3
3Q 91	16,993.20	114.0	(0.7)	(2.9)
4Q 91	17,661.60	118.8	3.9	4.2

* From Table 1: Reasonable Charge Determination Data, For All Claims, By Carrier

Data Requirements and Assumptions — Tabular Methods

When using tabular methods, we should select the table that we would consider to be most appropriate in the circumstances, considering the benefits, risk characteristics of the lives insured, and characteristics of the table. We should modify the table as appropriate when its underlying assumptions don't properly fit the valuation. Additionally, we should be aware of the significant variables and parameters for the proper use of the table and make every effort to see that the data are available to fit the required parameters. Steve Rulis has addressed this for LTD. For long-term care, if substantive claims data is available, a company can build its own continuance tables and tabular factors and may select parameters such as age, sex, elimination period, and benefit period. Or the 1985 National Nursing Home Survey Utilization Data may be used. However, these data may need to be adjusted to better represent the insured population.

Data Requirements and Assumptions — Development Methods

Claim development patterns may vary considerably among different plans and types of benefits. We have already addressed claim lag differences based on claim processing backlogs, benefit changes, and seasonal variations. Claim lags may also differ from one administration to another or when exposure changes. We need to be mindful of the data collection process and of changes that occur that could significantly affect lag patterns.

For major medical products, we have developed separate sets of completion factors for base policies providing inpatient benefits and for riders providing outpatient benefits. We have further split each of these subsets between claims incurred in the first policy duration and those incurred in renewal policy durations. Table 6 is an example that shows how these curves can vary.

As you can see, the completion factors are much lower for the first-year business compared with the renewal business and, early on, also lower for the base policy claims than the rider claims. But wait a minute, wasn't the claim lag for renewal business typically supposed to be longer due to the wearoff of company selection and insured antiselection that results in an

CLAIM RESERVES

increased severity of claims? Not in this case. The data consistently showed a longer lag for first-duration business — both for inpatient and outpatient claims. In the first policy year, insureds may be slower in handling their claims than in their renewal years. This may outweigh the expected effect of the wearoff of company selection and insured antiselection. The curves also show that outpatient claims have a different pattern of claim payment than inpatient claims (which we would expect).

By using this level of detail, we believe we are able to more accurately estimate the total claim liability, especially in periods where first-year claims are a significant portion of the total claims and when the distribution of inpatient versus outpatient claims is changing substantially as it has in recent years.

In Medicare supplement products, we often develop separate sets of completion factors for Part A benefits and for Part B benefits, and again, each subset is analyzed separately for first-policy-year incurred claims versus incurred claims in renewal policy durations. Table 7 shows an example of how those curves can differ.

TABLE 6

**Company XYZ – Major Medical Business
Completion Factors**

Monthly Duration <u>From Incurral</u>	<u>Base Policy-Inpatient*</u>		<u>Riders-Outpatient</u>	
	<u>First Year</u>	<u>Renewal</u>	<u>First Year</u>	<u>Renewal</u>
4	.392	.720	.558	.769
5	.576	.817	.685	.837
6	.711	.884	.775	.881
7	.806	.926	.838	.908
8	.873	.952	.882	.930
9	.915	.970	.912	.944
10	.947	.978	.930	.955
11	.958	.985	.945	.966
12	.966	.990	.960	.974
13	.972	.993	.975	.980
14	.978	.995	.985	.985
15	.985	.996	.989	.989

* Excludes Large Claims

1992 VALUATION ACTUARY SYMPOSIUM

The Part A benefits have longer tails (lower completion factors) than Part B benefits, as expected. Physician claims are completed more rapidly than the inpatient and skilled nursing facility claims. The renewal Part B claims, like the Major Medical example, are paid out quicker than the first-year Part B claims here. But notice that the opposite is true for Part A claims. This may be caused by the combination of increased severity of renewal inpatient claims for aging seniors, the wearoff of company selection and insured antiselection, or the insured's slowed claims submission capacity when hospitalized in renewal years compared with the first policy year -- which may be at the younger senior ages 65-70. Again, we believe that this level of detail better enables us to estimate the total claim liability. It requires being able to split the claims data in Part A and Part B components which can be accomplished using benefit codes, plan codes, or some other unique identifier. It also requires the ability to identify first-year business separately from renewal business using issue dates and incurred dates.

TABLE 7

Company XYZ -- Medicare Supplement Business
Completion Factors

Monthly Duration From Incurral	<u>Part A Benefits</u>		<u>Part B Benefits</u>	
	<u>First Year</u>	<u>Renewal</u>	<u>First Year</u>	<u>Renewal</u>
4	.664	.604	.722	.749
5	.791	.724	.821	.845
6	.853	.796	.876	.896
7	.892	.844	.908	.925
8	.919	.877	.931	.944
9	.938	.900	.947	.958
10	.952	.920	.959	.968
11	.962	.935	.967	.975
12	.973	.950	.974	.980
13	.980	.965	.980	.985
14	.985	.980	.984	.988
15	.989	.985	.987	.990

Plans with Insufficient Data

When we work with plans with insufficient data with which to develop completion factors, it may be appropriate to use lag experience from similar benefit programs of the same insurer or administrator with appropriate modifications. When no comparable data are available, we may

choose to use expected loss ratios or claim costs from our pricing assumptions or some appropriate modification to them.

Recognition of Trend

We should recognize trend factors in our claim liability determination. This would include changes over time in claims per unit exposed due to inflation, utilization changes, technology changes, economic condition changes, cost-shifting effects, and plan deductible changes. Trend rates may vary by type of benefit, and we should be careful in our use of these factors when plan benefits are changing.

Tabular methods used for LTD and LTC claims should consider changes in benefit levels over the lifetime of the claims due to the effects of trend. Inflationary benefits should be appropriately recognized in these tabular methods. For LTC, as Steve Rulis mentioned, you should consider "movement" trends between different claim statuses -- like LTC to and from HHC.

Our development methods require completion factors to be applied to claims paid through a specific date. These are usually unreliable for the most recent periods. In lieu of completion factors, we should evaluate these incurred claims in recent months using other methods such as utilizing incurred loss ratios and/or claims costs from prior periods with appropriate trend adjustments. We should consider the effects of trend on both the prior observations periods and the current period in which we are trying to develop the claim liabilities.

One technique is to look at claim dollars paid per exposed count by monthly duration from incurral for recent incurred months and compare the results to similar data from prior experience periods. Tables 8 A and B show an example of this.

Table 8-A shows the monthly claims paid per exposed count while Table 8-B shows these data accumulated through each monthly duration. Large claims for major medical business can be a real challenge to predict; it is much tougher than predicting the first name of any future

1992 VALUATION ACTUARY SYMPOSIUM

additional members to this panel. In this example, if you were to compare the claim payments per exposure for 1992 incurrals by payment duration from incurral to those for the second half 1991 incurrals, you may conclude that a substantial claims trend was emerging. However, compared to incurrals in the first half of 1991, the incurred claims paid-to-date in the first half of 1992 show a similar claim payment pattern, suggesting some sort of seasonality may exist. This pattern was explainable by the administrative practices and the reinsurance arrangement for this block of business and their effects on the large claims.

In other work we have done, we have used this type of claim payment detail to help us analyze trend patterns within the basic data itself and compare that to our expected trend rates incorporating inflation, utilization changes, cost-shifting, etc. We have had to factor in the leveraging effect on trend rates of different major medical deductibles. We've had to consider the impact of conversion to higher deductibles (downgrades) in lieu of rate increases, as well as the effect of a vanishing deductible benefit for claim-free insureds. Some plans, such as hospital indemnity and dental plans are less likely to be affected by inflation but are still affected by other trend factors, such as utilization.

Recognition of Exposure

Our determination of liabilities should take into account any material changes in exposure used in our calculations. This relates to changes in the number of policies, people, family units, or other units covered by the plans of insurance. Sometimes the exposure changes as a result of laws or regulations requiring that certain classes of individuals be covered.

Recognition of Time Value of Money

Whenever the time value of money will have a material effect in the determination of incurred but unpaid health claims, it should be recognized. This is rarely the case with Medicare supplement, major medical, dental, or other short-term disability claims. However, this should not preclude you from recognizing it in your work on short-term benefits.

TABLE 8-A

Company XYZ -- Major Medical Large Claims
 Monthly Claims Paid per Exposed Count -- by Duration from Incurred

Calendar Month/Year	Count	Monthly Claims Paid Per Exposed Count In					
		Duration 1	Duration 2	Duration 3	Duration 4	Duration 5	Duration 6
6/92	30,500	0.00					
5/92	31,200	0.00	0.00				
4/92	32,000	0.00	0.00	0.53			
3/92	31,900	0.00	1.27	0.04	3.25		
2/92	32,500	0.00	0.29	3.53	0.20	3.62	
1/92	33,600	0.00	0.03	0.64	1.40	2.12	7.37
12/91	33,800	0.00	0.31	1.18	1.33	0.19	0.16
11/91	34,000	0.00	0.00	0.49	1.60	0.47	4.07
10/91	34,600	0.00	0.15	0.08	0.19	1.84	2.95
9/91	35,700	0.00	0.41	0.11	0.00	0.00	0.21
8/91	37,900	0.00	0.12	0.41	0.08	1.66	0.27
7/91	40,100	0.00	0.01	0.78	0.86	0.00	0.03
6/91	42,600	0.00	0.01	1.66	0.75	0.79	0.13
5/91	43,800	0.00	0.02	0.42	1.42	2.47	1.28
4/91	43,900	0.00	0.15	3.03	0.16	4.61	2.11
3/91	47,300	0.00	0.23	0.33	1.23	1.42	0.86
2/91	49,100	0.00	0.11	2.76	1.12	3.14	2.16
1/91	52,100	0.00	0.03	0.24	4.52	2.12	7.77

For LTD and LTC claims, it is most directly recognized by using an interest discount with the tabular methods, the level of which depends on the purpose of the calculation. For statutory calculations, the rate must be consistent with all statutory requirements. For GAAP accounting, it should be consistent with GAAP standards.

1992 VALUATION ACTUARY SYMPOSIUM

TABLE 8-B

**Company XYZ – Major Medical Large Claims
Monthly Claims Paid per Exposed Count -- by Duration from Incurral**

Calendar Month/Year	Count	Monthly Claims Paid Per Exposed Count In				
		Duration 1-2	Duration 1-3	Duration 1-4	Duration 1-5	Duration 1-6
6/92	30,500					
5/92	31,200	0.00				
4/92	32,000	0.00	0.53			
3/92	31,900	1.27	1.31	4.56		
2/92	32,500	0.29	3.82	4.02	7.64	
1/92	33,600	0.03	0.67	2.07	4.19	11.56
12/91	33,800	0.31	1.49	2.82	3.01	3.17
11/91	34,000	0.00	0.49	2.09	2.56	6.63
10/91	34,600	0.15	0.23	0.42	2.26	5.21
9/91	35,700	0.41	0.52	0.52	0.52	0.73
8/91	37,900	0.12	0.53	0.61	2.27	2.54
7/91	40,100	0.01	0.79	1.65	1.65	1.68
6/91	42,600	0.01	1.67	2.42	3.21	3.34
5/91	43,800	0.02	0.44	1.86	4.33	5.61
4/91	43,900	0.15	3.18	3.34	7.95	10.06
3/91	47,300	0.23	0.56	1.79	3.21	4.07
2/91	49,100	0.11	2.87	3.99	7.13	9.29
1/91	52,100	0.03	0.27	4.79	6.91	14.68

Recognition of Claim Settlement Expenses

The present value of future claim settlement expenses necessary for the discharge of liability for incurred but unpaid health claims should also be considered a liability. For example, when claims savings programs are involved, which are considered in the determination of a net claim liability for incurred but unpaid health claims for a major medical product line, the future expenses involved with such programs should be considered a liability.

Follow-Up Studies

We should utilize validation or verification studies of prior claim liability estimates in making our current claim liability estimates. This consists of obtaining the claim payment data which is subsequent to the prior valuation dates plus the residual claim liability for the still remaining additional payments. The larger the percentage of the prior liability which has been paid, the

more reliance we should place on the results of the validation work. Of course, we should take into account any changes in circumstances over time when analyzing these studies.

Reasonableness of Results

Because all of this work that we have discussed ultimately results in us making estimates, we should satisfy ourselves that the results are reasonable. This entails considering a variety of different methods and/or assumptions along the way to develop a range of results, from which we make our final estimates.

A good check is to calculate the resulting incurred loss ratios or claims costs for recent experience periods that are implied by our estimates. These can be reviewed to see patterns of results that have emerged and they can be compared with expected results in business plans or other documents. We will have to be able to explain these relationships to senior management personnel (among others) in simple terms. We had better be confident that we have done a thorough job of considering all of the factors of this standard of practice and that we can communicate why the resulting estimates are both reasonable and appropriate. Any deviation from the standard should be explained, including its nature, rationale, and effect.

Finally, as part of the requirements of providing an actuarial opinion as addressed in the Financial Reporting Recommendation 7 of the American Academy of Actuaries, the actuary should be satisfied that the reserves meet the appropriate regulatory requirements, comply with relevant standards of practice, and are sufficient under moderately adverse assumptions to meet future benefit obligations to policyholders. The actuary must be satisfied that the aggregate reserves plus related future revenues are sufficient to pay all benefits as promised under moderately adverse conditions. The claim reserves are an important component of the aggregate reserves. If the actuary has not estimated the claim reserves under such a scenario of moderately adverse conditions, assumptions should be changed such that this is the case, and additional calculations should be made.

