1993 VALUATION ACTUARY SYMPOSIUM PROCEEDINGS

SESSION 9

Long-Term Care (LTC)

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LONG-TERM CARE (LTC)

MR. JAMES M. ROBINSON: The evolution of LTC insurance presents the valuation actuary with several interesting and difficult problems. The LTC coverage form shares many of the characteristics of other life and health insurance products such as LTD and whole life insurance. Much insight can be borrowed from our work with other products, but much remains uncertain with respect to future LTC utilization and regulation. This panel will discuss valuation issues and experiences associated with this very challenging product area.

I am a senior consultant with the Milwaukee office of Coopers & Lybrand. Until recently I was an actuarial science professor at the University of Wisconsin at Madison where I spent a good deal of time studying the actuarial aspects of LTC. I have been exploring LTC issues since 1989. I am now working with Bart Munson, specializing in LTC consulting to insurance companies and regulators. I am a charter member of the Society of Actuaries LTC Valuation Methods Task Force.

Dennis O'Brien has been with Transport Life Insurance Company since 1981 and is currently vice president and actuary. Dennis has worked on pricing and valuation for Transport's LTC insurance plans since their inception in 1986. Dennis has served on the Actuarial Standards Board (ASB) LTC Task Force and currently serves on the SOA LTC Valuation Methods Task Force and the American Academy of Actuaries Committee on Health.

Mark Newton is a Senior Associate Actuary for John Hancock Mutual Life and is responsible for reporting, analyzing, and projecting financial results for the retail LTC profit center. This includes reporting on GAAP, statutory, and tax bases as well as cash-flow testing and analysis.

Doug Kolsrud is vice president and actuary of AEGON USA, Inc., and is primarily responsible for corporate actuarial activities including profit measurement systems, pricing standards, asset/liability management, mergers and acquisitions, and financial reporting. Doug is currently a member of the AAA Committee on Life Insurance Financial Reporting.

Appointed Actuary: Problems and Considerations (Background)

MR. DOUGLAS C. KOLSRUD: As the corporate actuary of AEGON USA, my responsibilities extend to all business units for which our LTC division is one of 11. AEGON USA had about $47 million of LTC insurance earned premium in 1992, primarily through its subsidiaries Life Investors Insurance Company of America and PFL Life Insurance Company. AEGON USA's major lines of business are single premium deferred annuities (SPDAs) and life insurance, which together make up over 98% of our statutory reserves. LTC makes up about 0.4% of our statutory reserves. The LTC division is fully staffed with its own actuaries and thus is responsible for most of the pricing and financial reporting functions. Among corporate actuarial responsibilities are establishing pricing standards, monitoring profitability, staying abreast of industry topics (e.g., tax laws, risk-based capital or RBC, and so on) and coordinating cash-flow testing activities.

The appointed actuary for our companies resides in the corporate actuarial department but relies heavily on each business unit to perform much of the work. The appointed actuary coordinates the workflow, reviews assumptions and results, and has ultimate responsibility for the integrity of the actuarial opinion and memorandum. In addition, corporate actuarial is responsible for much of the asset work that is needed in the cash-flow-testing process and possesses a significant amount of "asset expertise."

I hope my contribution as a panelist can bring a corporate perspective to the session. As may be the case at your company, many of the issues or concerns we have in corporate are different from those at some of our divisions including the LTC division.

The ultimate goal of the appointed actuary is to ensure that future cash flows together with existing reserves make adequate provision for future benefits and expenses. To that end, the appointed actuary has to make assumptions as to how cash flows will behave in the future. For cash-accumulating products, an important assumption is the future cash flow from invested assets and the interaction among asset cash flows, liability cash flows, and profitability. In order to

perform cash-flow testing, life actuaries have devoted a great deal of time and energy to understanding asset cash-flow characteristics. Although asset cash flows may not be a significant driver of profitability for most health products, the same may not be said of products with larger reserve balances such as LTC and disability income products.

The whole study of assets and their cash flows has become increasingly complex as Wall Street has become quite creative in its construction of fixed-income assets. For example, commercial mortgage obligations (CMOs) have become quite popular with many insurance companies in recent years. CMOs have cash flows and returns, which can have a great deal of variability depending on movements in interest rates. For example, you may buy a premium CMO with an expected lifetime yield of 8% at purchase. However, due to a rapid fall in mortgage interest rates and subsequent mortgage refinancing, you may get your principal back much more quickly than anticipated and end up with an actual yield substantially less than 8%.

I would like to spend the next portion of this session looking at the potential variability of results for LTC products due to interest rate movements. First, Table 1 presents an inventory of a hypothetical asset portfolio for a block of LTC insurance. Let's assume that this portfolio was constructed by the corporate investment department with little regard for the nature of the liabilities and little input from LTC product-line management. A couple of items worth noting are (1) over 1/2 of the assets are in mortgage-backed assets, which although they are of high quality, can have some yield volatility in certain interest rate environments, and (2) the entire portfolio is comprised of only 38 assets, which does not normally represent a well-diversified portfolio and can cause some fluctuations in asset cash flows. These asset characteristics may or may not be appropriate for the LTC liabilities. However, in many cases, since asset performance is assumed to be an insignificant profit element for the LTC product or the product line is a small component of the company's total portfolio, the composition of the asset portfolio is given little attention. As will be demonstrated, this may be a risky approach.

TABLE 1
LTC Asset Portfolio

	Book Value	Number of assets
Investment grade bonds	30%	17
Below investment grade	7	3
Commercial mortgages	7	1
Mortgage pass-throughs	27	10
CMOs	29	7
Total Assets	100%	38

I have taken the existing asset portfolio together with expected liability cash flows and projected future statutory profits under 40 randomly generated interest rate scenarios. I have assumed that the liability cash flows are not sensitive to movements in interest rates. The present value of future statutory profits are determined and then ranked from high to low. Chart 1 presents the distribution of the 40 scenarios with the horizontal dotted line representing the median, the middle shading representing the middle 80% of scenarios, and the end shadings representing the upper and lower 10th percentiles. You will note that profitability ranges from 62% to 128% of the median, with the middle 80% ranging from 78% to 122%. As a frame of reference, an interest rate assumption of 8% grading to 6% over 20 years would fall at about the 10th percentile. As an additional frame of reference, in order to obtain a comparable range of profitability by varying the morbidity assumption, morbidity would have to range from 115% of expected to obtain the minimum scenario to 91% for the maximum scenario.

Chart 2 depicts the progression of the net asset yield of the portfolio for the median, maximum, and minimum scenarios. As you might expect, maximum profits occur in high yield scenarios and minimum profits in low yield scenarios. Note that the portfolio yields drift apart fairly quickly, differing by 345 basis points by end of year five. For many of the projection years, the yields differ by approximately 600 basis points. This is largely attributable to the large amounts of cash flow generated by the mortgage-backed security portfolio in a falling interest rate environment. In a well-matched portfolio, yields would drift apart much more slowly because only product cash flows would be subject to the lower interest rates.

CHART 1

Impact of Assets on Profits

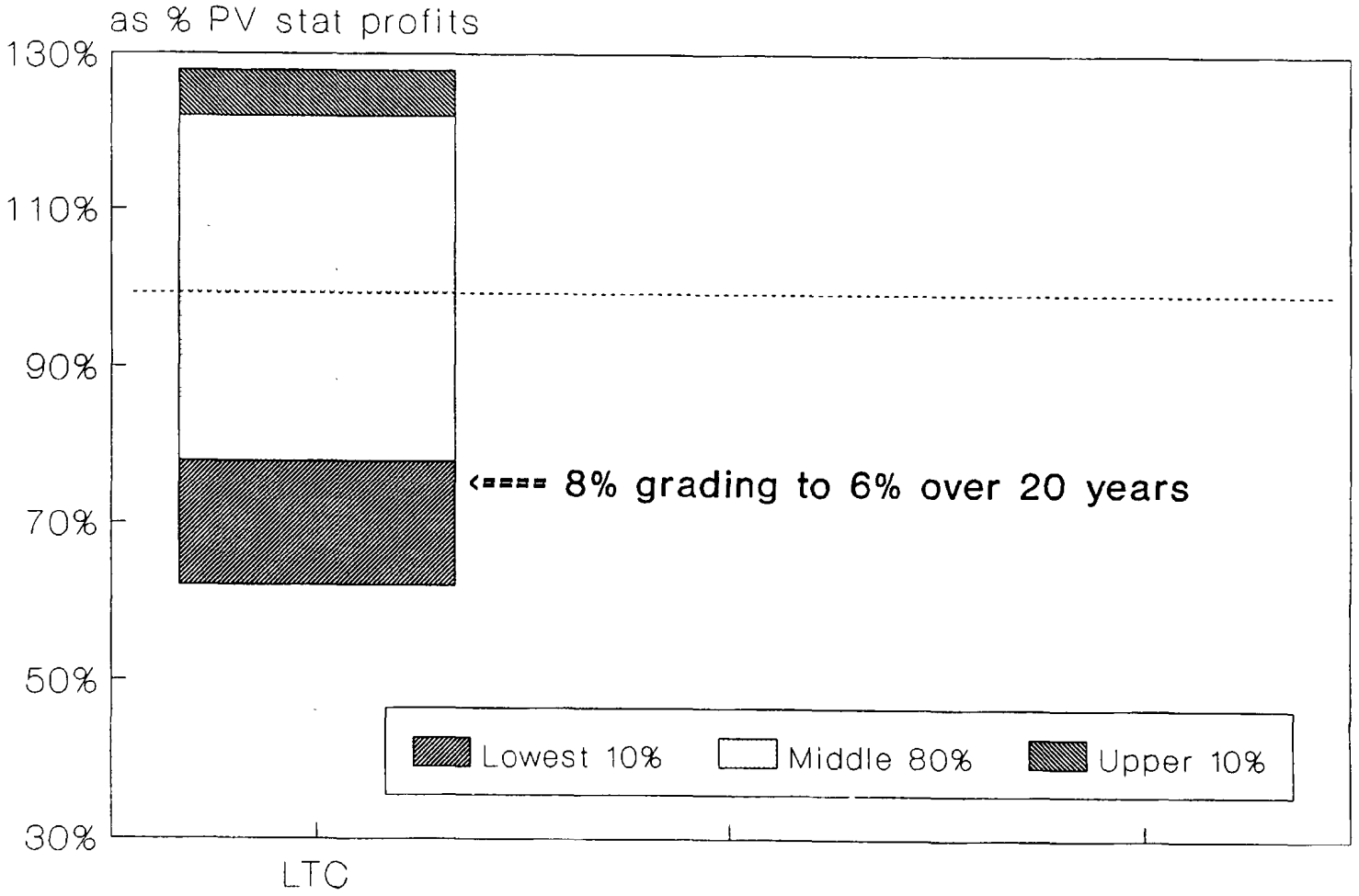


Chart 3 displays the 90-day and 10-year Treasury rates, for the minimum and maximum scenarios, used for the reinvestment of cash flows. As you can see, the 10-year Treasury rates get as high as 15% in the maximum scenario and as low as 4% in the minimum scenario. Again, new-money assumptions can have a significant influence on portfolio yields since they can impact both the speed at which you receive asset cash flows and the rate at which you can invest both asset and liability cash flows.

In summary, as LTC assets become a larger portion of an insurance company portfolio, it becomes more important that management, be it corporate or the product line, understand and measure the impact of investment decisions.

The next topic I would like to briefly touch upon is the recent adoption of the NAIC RBC requirements and their impact upon LTC products. The NAIC, with assistance from industry representatives, developed a formula to establish minimum capital requirements for life and health insurers. Each insurer will be required to file an annual report with the state insurance commissioner containing the calculation of its RBC for the calendar year-end. There are regulatory actions that must be taken if RBC levels fall below certain thresholds with mandatory state control of the company being the most severe action.

The RBC formulas are separated into risk categories: asset risk (C-1), insurance risk (C-2), interest rate risk (C-3), and business risk (C-4). Since LTC products are not perceived to have interest rate risk (in the sense that its liabilities are not interest sensitive) and business risk is an evolving concept, I will focus my attention on C-1 and C-2 risk.

The C-1 risk category takes each security of an asset portfolio and assigns it a risk factor. Whereas investment grade bonds have risk factors ranging from 0% to 1% of statutory statement value, below investment grade bonds have risk factors ranging from 4% to 30%. Thus, you can see the capital cost can vary substantially depending on the quality of asset purchased. The C-2 risk component is broken into two components: 5% of Exhibit 9 claim reserves and a percentage of earned premium depending on which classification is used. There is no specific

CHART 2

Portfolio Yields

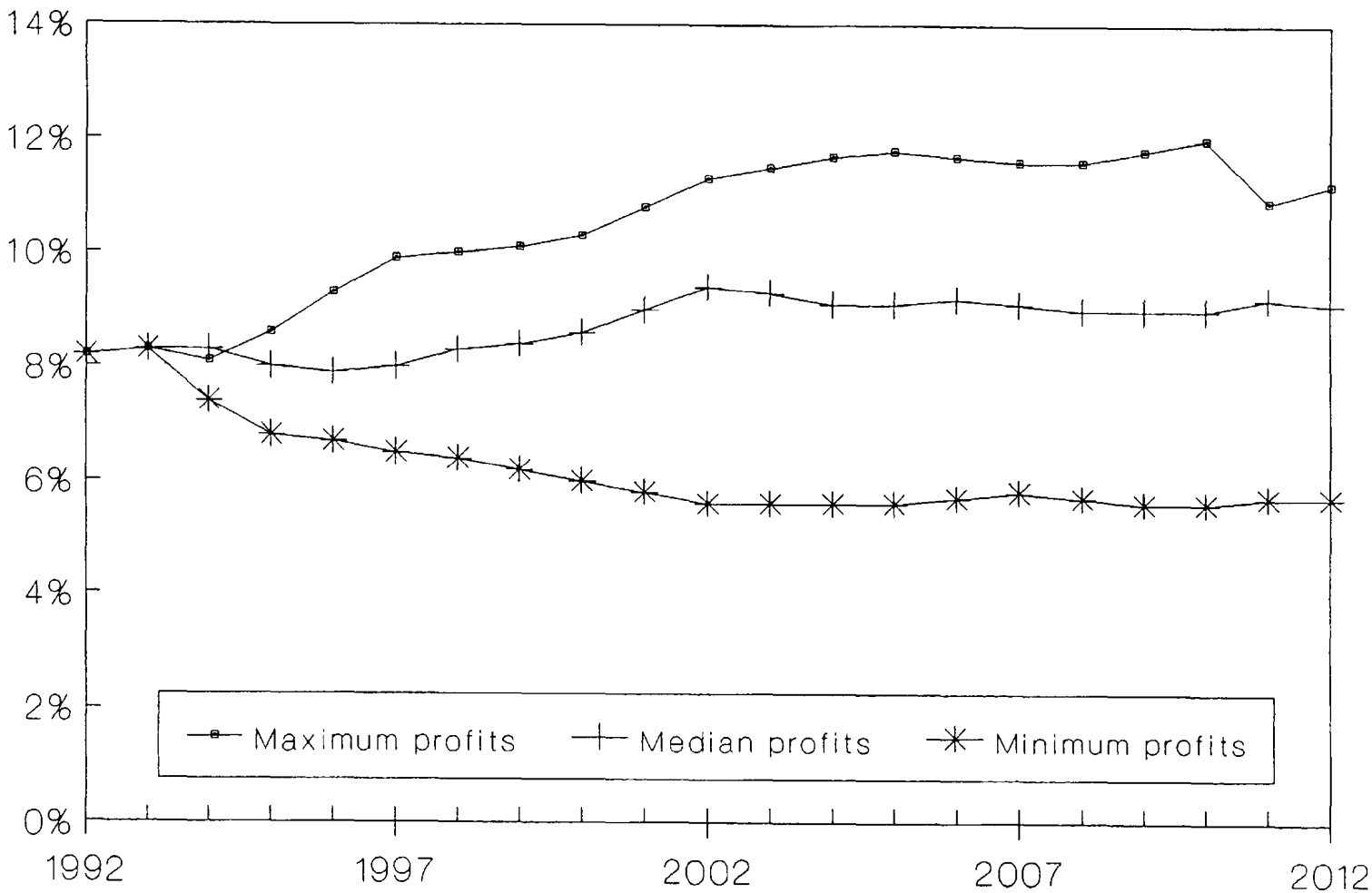
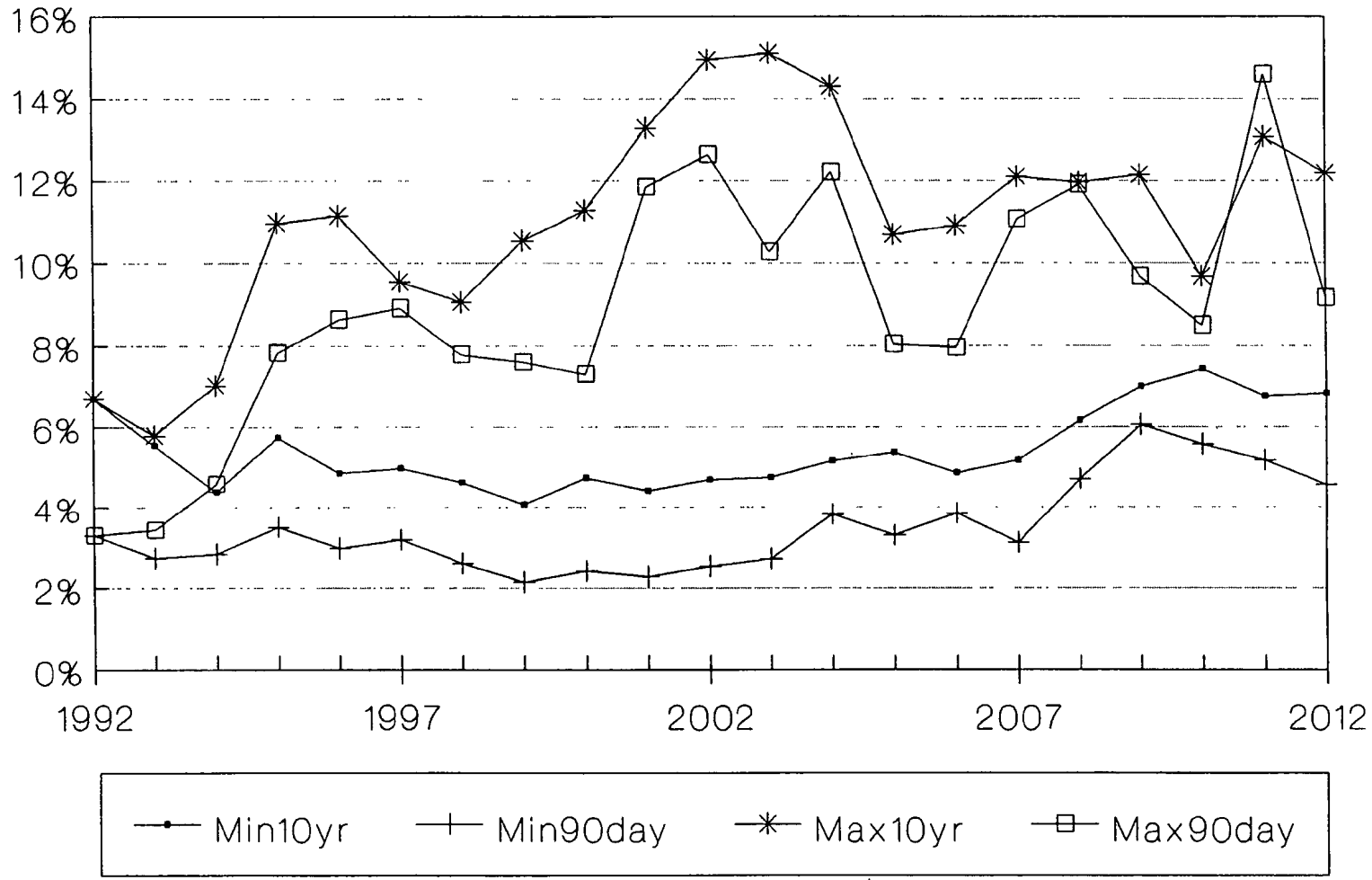


CHART 3

New-Money Rates



earned premium category for LTC. Possibilities include 12% of earned premium for limited benefit policies anticipating rate increases, 8% for limited benefit policies not anticipating rate increases, and 35% grading to 15% noncancelable disability income. I would suspect that categorization will vary from company to company until something more definitive is determined.

It is important to recognize that capital requirements have a cost. Pricing and profit measures that ignore the cost of capital are not facing the reality of the costs of writing business. Pricing business to earn a rate of return without recognizing the cost of capital can drag the real rate of return far below the expected return. Table 2 demonstrates the impact that required capital can have on profitability. I've constructed a typical LTC product that is priced at a 17.2% internal rate of return (IRR) before consideration of the cost of capital. I've then looked at IRRs assuming all assets are invested in investment grade bonds and different levels of C-2 capital based for the different risk categories. You can see the significant impact on returns which decline to a range of 10.4% to 12.4%. To look at the impact of C-1 risk capital, I assumed that all assets were invested in below investment grade assets rather than investment grade assets. For the 12% C-2 risk category the return dropped from 11.8% to 10.2%. I would note that I made the simplifying assumption that the new realized return after defaults from investment grade bonds is the same as that for investment grade. To the extent that lower grade net yields are higher, the difference would be diminished.

TABLE 2

Impact of Surplus

C-1 Capital	C-2 Capital	Rate of Return
None	None	17.2%
Investment grade bonds	Limited benefit (8%*1.5)	12.4
	Limited benefit (12%*1.5)	11.8
	LTD (25%*1.5)	10.4
Below investment grade bonds	Limited benefit (12%*1.5)	10.2

Finally, in 1992 AEGON USA did not include LTC in its cash-flow testing due to LTC's immaterial impact on the aggregate results. However, even for the smaller blocks of business at our company, I feel it is important to understand the profit profile of the products, and we will be incorporating LTC into our cash-flow testing this year and will continue to refine the process in the forthcoming years.

LONG-TERM CARE (LTC)

The Appointed Actuary and LTC -- Problems and Considerations

MR. MARK D. NEWTON: How much does an actuary need to know before working in LTC? Actually, let's start by asking ourselves whether the actuary really needs to know anything about LTC before operating here. What are some of the assumptions that make this business seem so easy to get into?

First, there is the assumption that the business is relatively uncomplicated. This is partly true -- because most of the policies now available are simply structured. When benefits are triggered after an elimination period, an indemnity-like daily benefit is paid until recovery, death, or the benefit period runs out. Compared to everyday medical policies this seems incredibly simple.

Unfortunately this picture is a little too simple. Policies have quickly evolved into complicated creatures. Under modern policies, one can now be eligible for benefits under three different scenarios; a confinement scenario, an activities of daily living (ADL) dependent scenario, or a cognitively impaired scenario. Now let's face it. How many kinds of policies give you three trips to the plate to get one hit?

And the complicated provisions aren't the only ones to watch out for. Here are a couple of innocuous definitions from one policy:

> We will pay benefits only if the care and treatment provided is Medically Necessary.

or

> Medically Necessary ... will be presumed to be met if you receive 14 consecutive days of Skilled Nursing Care.

Simple as these provisions seem, they are about as close as you can get to a "ticket to ride." So even though this business appears simple and reads simply, perhaps it is not as uncomplicated as it seems.

Second, there is the assumption that current claims are unimportant because the bulk of claims are expected in the distant future. Well, this is partly true, too: most of the claims are expected in the distant future. But timing is everything, as they say. LTC is a relatively low incidence/ high claim amount coverage. Just a few "poorly timed" claims can make a meaningful difference to your experience. And to your management.

Also, despite our diligent research, best judgment, and good intentions, the truth is that the vast majority of LTC coverage in force is still in the early durations. Reliable pricing data are hard to come by. I wonder how sure we are of some of the longer-range assumptions we made in pricing our products. For example, interest rates are an easy one. Come to think of it, I wonder how sure we are now of some of the shorter-range assumptions we made in pricing our products. Anyway, the point is that even the near-term claims are important.

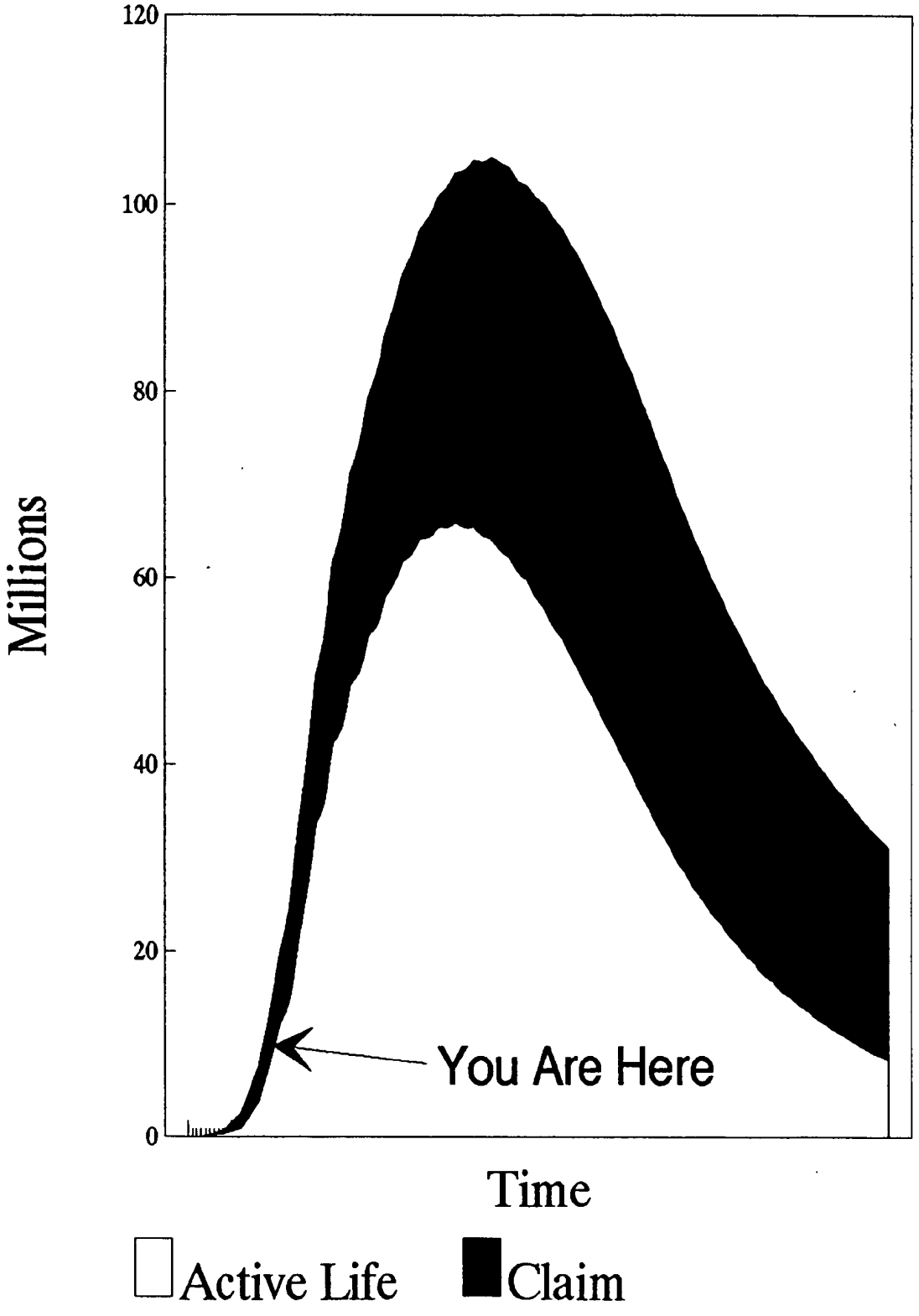
Third, there is the assumption that written business is small so that the line deserves little attention. Cash-flow testing should immediately disabuse anyone of this notion. Chart 4 shows the projected liabilities for our "little" individual LTC business from our cash-flow testing in 1992. Keep in mind that this does not assume that our business keeps growing. It only projects the liabilities of the fixed group in force as of June 30, 1992.

I showed this chart to our corporate actuary in 1992. I practically had to hold the oxygen mask to his face to get him through the rest of the presentation. Now, of course, he's used to it. The oxygen, that is.

Now, to be fair, this chart projects statutory liabilities, and we all "know" that those are overstated because the interest rate used is so low and that withdrawal rates used in the development of the reserves are so conservative. On the other hand, that interest rate is not as low as it used to seem, and if your lapses are anything like ours, lapses are likely to be a good deal less than previously anticipated. So although your business is small now, it will certainly be big enough soon to seriously affect your surplus position.

CHART 4

Statutory Reserves



Fourth is a category I'll call "soft assumptions." These are other areas worth considering:

1. Coverages are changing rapidly. It's worth keeping up with the market if only because you can expect to be upgrading policies as new policy series are introduced.
2. Regulation is fragmented. It seems that the level of required reporting is large given the size of the market and, even more so, the size of the business written. Robert Wood Johnson states, add another level of complexity.
3. New proposals from states abound. Many are quite reasonable and manageable. Others are more unusual. Some even venture into the realm of outlandish. Perhaps the Florida proposals fit this category.
4. Consumer-group-type pressures have a long way to go yet.

Cash-Flow Testing

I wonder if your experience is similar to ours, where 1992 was the first year the individual LTC area did cash-flow testing. It did take us a while to set up the work and do it, truth to tell. But so far cash-flow testing has been like a dog whose bark is worse than its bite.

I don't mean to belittle the experience or its usefulness. On the contrary! I just mean that, because it was our first year, our work and time was largely concerned with setting up a model sophisticated enough to handle the projection period required and learn something useful from the experience.

Now what I would like to do is provide you with some understanding of sensitivity testing as it would apply to this line, then share with you what our results were. Yes, that is certainly what I'd like to be able to do. However, I'm unable to do that for one simple reason: we didn't do much in the way of sensitivity testing.

Why didn't we? Well, it turns out that, if you assume that your assets starting out are equal to your reserves, under any New York interest scenario the assets quickly go north of the liabilities. That is good. That's real good. But it is not terribly surprising. Individual LTC products are priced assuming they will produce surplus eventually after being a heavy drain on

surplus in the early durations. Cash-flow testing, by "spotting" the line with assets equal to statutory liabilities in those early durations, quickly produces surplus and after that, "never looks back."

But even though it's not terribly surprising it's not terribly useful either. A more interesting test, at least from a line actuary's point of view, is whether and under what circumstances the line will produce positive surplus given the actual assets it has or from a "new issue" type of scenario. In my opinion, if you're looking toward a successful LTC line, you need more rigorous testing.

Why? Because the risks to us and to the public are great if we fail at what we must do. LTC is breaking new ground for many companies, and happily, it seems to me that most of them have really "done their homework" in terms of market development. And in turn, most actuaries have done as well at attempting to set pricing assumptions appropriate to the market. So far, so good. But this is just a start. It is as if we are climbing Mt. Everest and we have successfully set up camp at the top of the foothills. Yes, we have brought some provisions. Yes, we have tried to prepare for a long journey. Yes, we took gear for the climb, and yes, we know it will be cold along the way. But it would be ludicrous to continue the journey if we did not first plan our responses to possible disasters or unplanned events. Neither would we continue if we were not monitoring our progress against our initial assumptions and changing our strategy when conditions warrant it. The moral of the story is that a more useful testing framework is one that is less static and more risk-management oriented.

And cash-flow testing is a start. It is a framework that, used creatively, can lead to active management and strategy as well as meet regulatory needs. Take our case, for example. Our lapses so far are not nearly what we expected them to be. What consequences does this have? If it is or might become a serious problem, what strategies can we deploy to affect lapses?

This year we plan to test a variety of assumptions. We'll start with some obvious ones. We'd like to know which ones matter most, and of those, which ones we can influence directly or

indirectly. Then we can develop action plans for early intervention in the event problems become apparent.

MR. DENNIS M. O'BRIEN: I have been with Transport Life Insurance Company in Fort Worth, Texas, for the past twelve years. Transport is a large writer of LTC insurance. We began writing in 1986 and currently have about 100 million in annual premium in force.

Consideration: Testing Done for 1992

I think most people are interested in what large LTC writers are actually doing. I am going to describe what valuation and analysis methods were actually used by Transport for 1992, as well as to identify areas where we hope to make some improvements and refinements in our methods as we go forward.

Active Life Reserves

Transport has developed a value-oriented method of analyzing all of its lines of business. The method was developed primarily for GAAP analysis, but was modified to produce a gross premium valuation underlying the valuation actuary work for 1992.

I will describe the method in some practical detail in case someone might be interested in doing something similar.

We started with valuation extracts that are already produced out of our statutory valuation system. The extracts contain records showing valuation units by plan code (benefit combination), quinquennial issue age (for LTC, for this analysis we modified it to use individual issue ages), and duration, as of the valuation date. Transport already had in place a PC-based valuation system, which calculated statutory and GAAP benefit reserve factors and passed them against the extracts to calculate total company statutory and GAAP benefit reserves. The system was originally established so that we could easily test the effect of assumption changes on the reserves.

We made some modifications to this system to help us get a value-oriented look at our GAAP balance sheet. Our intention was to find the natural margins supportable out of the current GAAP balance sheet, with different scenarios as to prospective experience and rate increases.

We calculate the prospective natural margins as follows:

Natural Margin =

(Present value, PV, of future premium
- PV of future benefits, commissions and expenses
+ the net GAAP liability) /
PV of future premiums.

Like many A&H companies, our main expense variation is first-year versus renewal. Therefore, we were mostly interested in calculating the present value of future benefits and present value of future premiums according to a variety of scenarios.

First of all, we modified the factor generation programs to accept calendar variations in assumptions for premiums and morbidity. Then further modifications were made to generate two alternative factor files. The first alternative factor file has the PV of future benefits per unit (instead of the usual reserve factor of the PV of future benefits less the PV of future net premiums.) The other alternative file contains the annuity factor (i.e., the present value of future premiums per $1 of premium in force on the valuation date) for each valuation age and duration.

Next, we developed a second valuation extract file that had the valuation units replaced by the annual premium in force.

By passing the PV benefits factors against the regular valuation extract file, we get the total PV of future benefits. By passing the annuity factor file against the modified extract file, we get the PV of future premiums.

For each line of business, once we had calculated these two difficult items, we did the rest of the above calculation on a simple spreadsheet.

We have found this type of analysis very useful. In conjunction with some of the sensitivity tests for certain lines of business, we put in various rate increase scenarios. In each case, we tested the lifetime loss ratios against regulatory requirements. These tests give us a feel for what level and timing of rate increases might be needed to support a GAAP prospective margin objective under different adverse prospective assumption scenarios.

For LTC, we did sensitivity testing on variations in interest (tested lower), persistency (tested ultimate lower), and morbidity raters (higher level, steeper slope.)

We were easily able to rearrange the values from this system to calculate a gross premium valuation and compare this to the statutory benefit reserve. We came to the conclusion that in the adverse assumption scenarios tested, for guaranteed renewable lines of business, rate increases should be obtainable to mitigate the adverse experience.

This method has some advantages and disadvantages. The main advantage is that it relies on already existing and very detailed data on the valued benefits. Thus there is little or no possibility for modeling error. The main disadvantage is that since it is PV-oriented, it doesn't tell us much about the emerging cash flows.

We are currently working on a much simpler model to give us an idea of the incidence of cash flows. We anticipate "truing up" the simplified cash-flow model to reconcile to the present values as calculated by the more detailed system.

Asset Adequacy

Ideally, the actuary could determine exactly what types and maturities of asset are needed to immunize cash flow needs from each line of business; the investment department would purchase such assets, and they could be appropriately allocated to each line of business. In our company,

there is a good news/bad news situation with how we stack up versus the ideal situation. The bad news is that investments are generally made at the corporate level with little regard for immunizing cash flow needs. The good news is that the quality and liquidity of most of the assets is very high. Transport ended up being content with a rather gross overview of the quality and liquidity of assets.

MR. ROBINSON: Our next topic is claim reserves. Dennis and Mark have prepared comments on LTC claim reserve experiences with Transport and John Hancock.

MR. O'BRIEN: Transport used a PC-based claim reserve valuation system. For each open LTC claim, the system estimates the remaining future benefits based on assumed continuance rates, the benefits units, plan of insurance, and amount already paid. The incurred but not reported (IBNR) factor is set by applying the expected loss ratio to the most recent five months of earned premium. (Although we have quite a few claims incurred within five months of the valuation date that have already started payments, we also see cases of claims that remain unreported long after the incurred date. We generally don't deny such claims based on timely proofs of loss clauses in the contract, so they should be reserved as unreported. Five months was chosen as an appropriate (and we hope conservative) estimate of the average amount of unreported claims. Another key assumption is how to determine when a claim is closed. Currently, we close a claim for reserve purposes either when we have definite evidence that the insured is deceased or discharged from care, or when there has been no claim activity for five months.

We do testing of the claim reserve development at least annually.

MR. NEWTON: We have aggressively updated our approaches to claim reserving. Our objectives in making the transformation were simple:

1. The approach had to be as accurate as possible.
2. The methods had to be simple administratively.
3. The system had to be versatile enough to meet other needs.

Accuracy seems to speak for itself. Perhaps I could just share with you what I really mean. In the beginning, we had to admit that we just didn't know how long claims would continue. What I mean by accuracy is that the system had to be constructed so that corrections in length of stay could be identified and folded into the reserve assumptions as quickly as possible. This we have accomplished and are able to automatically check our assumptions quarter-by-quarter. I'll have more on this shortly.

The methods are simple to use. After the claim data are available, we can quote disabled life reserves in a few minutes. IBNR takes another few minutes.

The system is versatile. Using the principles of "object-oriented" programming, the small set of files performs all valuation quotes, all ongoing and ad hoc experience analysis, all year-end work including all claim input to the special LTC reporting requirements, and the claim experience contribution to the Society of Actuaries study.

Disabled life reserves are calculated using a seriatim method. A claimant file is matched with a claim factor file, and reserves are calculated on GAAP, statutory, and tax bases. The IBNR calculation combines the expected claims (on a pricing basis) for the last several quarters with asset of lag factors. This set of lag factors is based on actual experience and is checked annually for accuracy.

More interesting than the way we calculate reserves, though, is the way we calculate whether our reserves are right. Here's the concept. We admit that LTC is essentially a new business and that the sources of data for pricing and reserving are not as reliable as we'd like. Therefore we must do two things in order to provide information useful to managing a line of business:

1. We must make assumptions and test them continuously. If they are wrong, we must admit it and fix them immediately.
2. We must build a credible base of data designed to answer our questions about reserving and rating.

We check our assumptions by different methods. Our primary means of checking is done quarterly and is called the Claim Study. All total it's about 15 pages of nothing but charts, graphs, and conclusions every quarter. Of course, sometimes it's longer. Most of the report looks at actual-to-expected ratios of claims in a wide variety of ways.

One way is looking at claim runoff. Here is an example of a page of the report (Chart 5). By the way, numbers have been changed to protect the innocent. The top half of the page is designed for actuaries. The bottom half of the page was invented for the marketing people. It shows in graph form the actual-to-expected ratios for each incurral year over time.

Unfortunately, even these simple graphs have met with mixed success. One of our marketing people was disappointed to see only one of the graphs going up over time.

Anyway this discipline of carefully checking our assumptions and pricing has been invaluable. It has helped us find some real mistakes we were making in a variety of areas. In fact these data led to pinpointing problems in some very surprising areas. It's been invaluable financially and very useful as a method for demonstrating responsive financial performance to senior management.

We carefully review our claims every six months. This checks for problems in claim management, underwriting, and helps identify trends or problems that we need to stay on top of.

Each year we review our claim reporting lag for changes. We also perform a source-of-earnings analysis. This makes us aware of areas where our actual results are diverging from our pricing assumptions. It's not an answer in itself, but a useful exercise for looking into problem areas further.

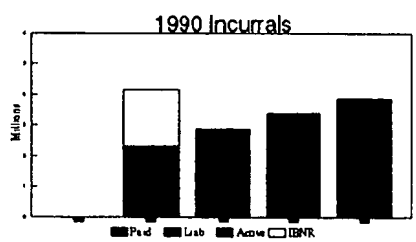
If this seems like a lot of work, you're right. It is. But how valuable it is! Knowing what we have learned from this and the value of the changes we've made, I can't imagine working

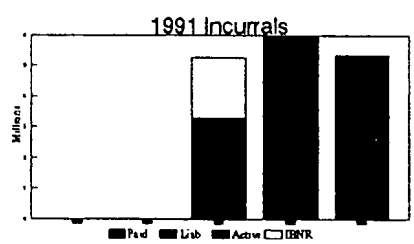
CHART 5

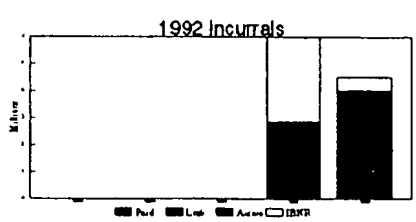
Claim Runoff Pattern

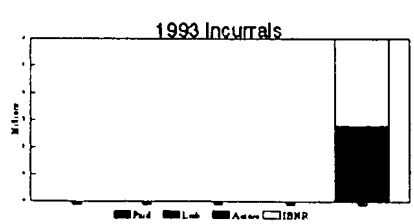
Incurred Claims	End of Period	Incurral Year 1988	1989	1990	1991	1992	1993	All Years
Reported	1989	$447	$1,581	$0	$0	$0	$0	$2,028
	1990	289	1,056	4,149	0	0	0	5,493
	1991	282	880	2,872	5,243	0	0	9,278
	1992	284	761	3,392	6,005	6,331	0	16,773
	1993	284	747	3,879	5,339	4,520	6,438	21,206
Expected		335	1,564	3,163	5,121	7,265	4,944	22,392
Actual/Expec Ratio	1989	133%	101%	0%	0%	0%	0%	107%
	1990	86%	68%	131%	0%	0%	0%	109%
	1991	84%	56%	91%	102%	0%	0%	91%
	1992	85%	49%	107%	117%	87%	0%	96%
	1993	85%	48%	123%	104%	62%	130%	95%
Breakdown of Incurred								
Paid-to-Date	1989	126	77	0	0	0	0	203
	1990	248	306	181	0	0	0	736
	1991	282	489	979	424	0	0	2,173
	1992	284	597	1,835	1,910	294	0	4,920
	1993	284	632	2,445	2,550	949	92	6,951
Claim Liability	1989	7	73	0	0	0	0	80
	1990	7	45	134	0	0	0	185
	1991	0	14	70	263	0	0	347
	1992	0	5	76	157	365	0	603
	1993	0	5	79	116	286	332	818
Claim Reserve	1989	236	690	0	0	0	0	926
	1990	34	660	2,017	0	0	0	2,711
	1991	0	378	1,816	2,614	0	0	4,808
	1992	0	159	1,481	3,908	2,213	0	7,761
	1993	0	109	1,355	2,673	2,795	2,346	9,278
IBNR	1989	78	741	0	0	0	0	819
	1990	0	45	1,817	0	0	0	1,862
	1991	0	0	7	1,943	0	0	1,950
	1992	0	0	0	30	3,460	0	3,490
	1993	0	0	0	0	491	3,668	4,159

Notes: All numbers exclude claims expenses. Reserves are based on GAAP assumptions.
Expected based on actual claims costs used in pricing assumptions All numbers in thousands.









RLTC Claim Study; July, 1993

without the management information we provide. We think it's an essential part of running our business.

MR. KOLSRUD: AEGON's approach to claim reserves is to establish the present value of amounts not yet due by applying a set of factors to claim amounts. The factors vary by coverage type, elimination period, benefit period and are discounted for interest. This same approach is used for pending claims. An IBNR reserve is established by applying anticipated loss ratios to incurred premiums and reducing such amount by the incurred claims already expensed. Some conservatism is included in the loss ratios due to the uncertain nature of LTC claims experience. We monitor loss ratios regularly to ensure that reserves are sufficient.

MR. ROBINSON: We next consider the current status and ongoing development of practice guidelines for LTC insurance, including actuarial standards of practice, practice notes and valuation standards. The practice guideline on LTC can be obtained from the Academy of Actuaries. A request form is located at the end of this chapter.

You should all be aware of actuarial standard of practice No. 18 covering LTC insurance. Dennis will comment on this standard shortly. Some other standards affecting LTC insurance include:

- No. 5 Incurred Health Claim Liabilities
- No. 7 Performing Cash-Flow Testing for Insurers
- No. 8 Regulatory Filings for Rates and Financial Projections for Health Insurance
- No. 14 When to Do Cash-Flow Testing for Life and Health Insurance Companies

Practice notes, as opposed to standards of practice, are intended to provide a safe harbor and are not intended to set additional standards. Since industry practice in LTC is not well-established, you will note that the draft practice note for LTC insurance is simply a set of extracts from actuarial standard of practice No. 18.

Dennis will now discuss No. 18 in more detail, after which I will return with a brief update on the activities of the SOA LTC Valuation Methods Task Force. Any remaining time will be used for questions and comments.

MR. O'BRIEN: The only standard promulgated is ASB standard of practice No. 18 on LTC insurance. I was a member of the task force that developed this standard and thought I would share a little of the behind-the-scenes thinking that went into the standard.

The task force deliberately tried to make this document more educational than the usual ASB standard. Those actuaries who are not involved on a daily basis in pricing or managing LTC business, but find themselves in the position of valuation actuaries for LTC reserves, can find a lot of background material in this standard. There is a lot of space devoted to the things that ought to be considered by the actuary in setting up LTC reserves (as well as other aspects of LTC practice). The tone of the standard is kind and gentle in that there are a lot of "the actuary should consider" statements and very few of the "the actuary must" statements. This was meant to deal with the very wide range of products, pricing methods, underwriting practices, and so on, currently in use in the LTC market, and to allow some flexibility to the valuation actuary in how to deal with these in setting up reserves and testing their adequacy.

Active Life Reserves Under No. 18:

There is one conspicuous "must" statement in No. 18 regarding active life reserves, namely that "contract reserves should be held for all stand-alone LTC coverages funded by a level premium payment pattern." It's hard to imagine that any company issuing such coverage wouldn't hold contract reserves, but the task force heard that such cases exist.

The items to be considered in reserves include (but are not limited to) the following:

- Coverage and plan features
- Benefit structure (indemnity versus service or reimbursement)
- Renewal guarantees
- Nonforfeiture values

- Benefit increase features
- Premium waiver
- Return of premium provisions
- Trends in LTC costs
- Voluntary terminations
- Underwriting practices
- Geographical location/distribution
- Distribution system
- Existing or pending laws or regulations
- Mortality

As you can see, there are a lot of things that could affect the propriety of any given method for calculating LTC active life reserves.

Claim Reserves Under No. 18

The standard here simply describes various methods that could be used to establish appropriate claim reserves, including tabular methods, development methods, case methods, and expected claims methods. The last two methods are mainly for use in cases where there is not a high volume of claims. The standard points out that "development methods should be used with caution."

I am going to share some additional information that the ASB task force on LTC considered when writing the portion of the standard on claim reserves. We tallied up the advantages and disadvantages of the tabular versus development claim reserve methods as we could identify them (Chart 6).

The task force also reviewed some rough tests of how tabular reserves would work out versus the use of development methods if the claim termination rates and the types of claims (long term versus short term) varied from the assumptions used in setting up the methods. These tests were done under the following assumptions:

CHART 6

Advantages and Disadvantages of Tabular and Development Claim Reserves for LTC Coverage

TABULAR

Advantages:

Traditional method for long-term claims with continuing, predictable payment patterns.

Necessitates clear, explicit assumption regarding claim payment pattern.

Sensitive only to variation in prospective termination rates.

Recognition of actual distribution of open claims by benefit limit.

Sensitive to opening and closing of claims.

High average reserve per claim makes calculation cost effective.

Analogy to long-term disability claims.

"Lumpy" payment patterns don't cause illogical reserve fluctuations.

Disadvantages:

More difficult to calculate for health companies used to using the development method.

DEVELOPMENT METHODS

Advantages:

Development factors can be changed to strengthen (or weaken) reserves without a "change in method."

Most health companies are used to this method.

Disadvantages:

Need to study a history mature enough for the longest claim to be paid out or forced to make a guess at high duration completion factors.

Not sensitive to opening and closing claims.

If separate lag tables are not developed by benefit limit, reserves will be very sensitive to changes in distribution of claims by benefit limit.

Many assumptions are implicit (including IBNR if used for this).

Bad development can "sneak up."

Illogical fluctuations in reserves for "lumpy" payment patterns.

1. All claims occur at the beginning of the month.
2. The model includes two types of claims: type 1 claims have a benefit limit of one year, and type two claims have a 10-year limit.
3. Assumed and actual both assume an equal (level) number of claims are incurred for each duration.
4. Assumed termination rates are approximately those in the 1985 National Nursing Home Survey. Termination rates assumed and not shown are 3% per month for durations 25 through 36 and 2.5% per month thereafter.
5. Assumed has a 50/50 distribution of one year and 10-year claims incurred each month.
6. Interest is ignored.

The graphs (Chart 7) show the calculated reserve/adequate reserve if termination rates and distribution of one year and 10-year claims do not develop as anticipated. As is easily seen, the tabular reserves generally do a better job of approaching the adequate reserves if the characteristics of the actual claims do not correspond to those assumed in setting up the method.

While the task force came to the conclusion that the tabular reserves definitely appeared preferable, the use of development methods is not prohibited by the standard.

Cash-Flow Testing Under No. 18

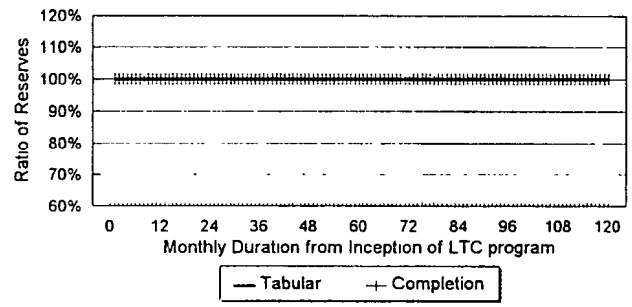
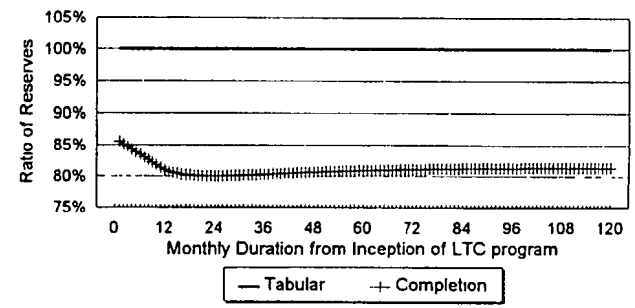
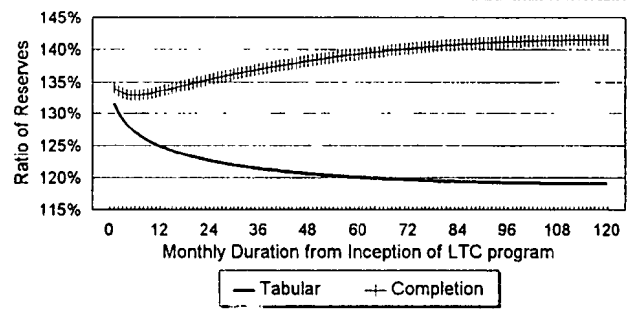
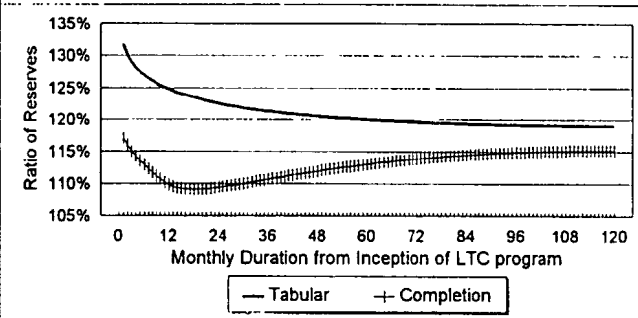
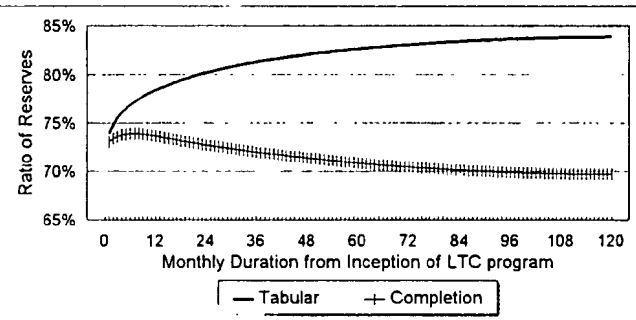
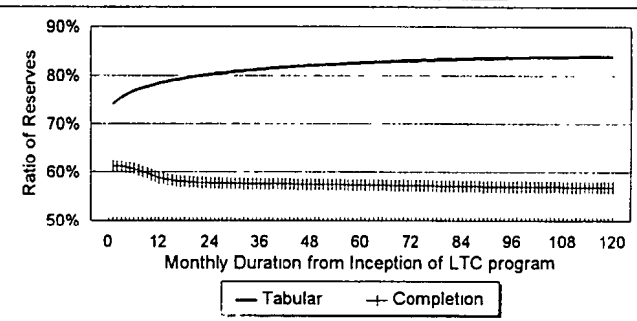
Cash-flow testing is not strictly required under No. 18, but is stated as something the actuary should "consider."

MR. ROBINSON: Dennis and I are both charter members of the SOA LTC Valuation Methods Task Force, constituted in late 1991 at the request of the NAIC Life and Health Actuarial Task Force with the following charge:

> This task force will develop recommendations for the valuation of long-term care insurance products, incorporating, as appropriate, an interim method, available data, the Valuation Actuary concept, and methodologies suitable for the type of product being valued and its underwriting characteristics.

CHART 7

Calculated Reserve/Adequate Reserve

Actual / Assumed Claim Termination Rate	Actual claims distribution of 1-year claims vs. 10-year claims*	
	50/50	33/67
100%		
120%		
80%		

* Calculated Reserves assume 50/50 distribution

An Interim Report to the NAIC Life and Health Actuarial Task Force was delivered on November 5, 1992. The LTC Valuation Methods Task Force met very recently in Chicago.

Given this short introduction, I will make some brief comments.

Active life reserves might more appropriately be called contract reserves, since companies hold such reserves on all policies in force, whether they are paying premiums or are in claim status. The method of calculation, in practice and anticipated by the task force, is similar to that used for individual LTD insurance.

Appropriate morbidity assumptions remain the most troublesome aspect of the task force's charge. Although two years have passed since the inception of the task force, little insurance company LTC experience has become publicly available. The SOA LTC Experience Committee has been working on an intercompany study based upon the contributions of nine major LTC insurers. Results may be available later in 1993. The Experience Committee is also working with Duke University to construct home care incidence rates and a continuance table based upon the 1982, 1984, 1989 National Long-Term Care Surveys.

In the interim, the Valuation Methods Task Force anticipates adoption for nursing home benefits of the SOA 1985 National Nursing Home Survey Tables published in the 1988-90 *Reports of the TSA*. The task force is developing software similar to that used with the 1985 Individual and Group Disability Tables. This software will compute claim costs and reserve factors from the 1985 National Nursing Home Survey Tables with consideration given to selection at issue, antiselection at lapsation, benefit limits, elimination periods, waiver of premium, inflation protection, nonforfeiture benefits, and so on.

The task force is currently working with the National Long-Term Care Surveys and limited company experience to obtain initial home care utilization assumptions, that is, incidence rates and continuance tables. The valuation software mentioned previously will blend this home care data with the nursing home assumptions. We anticipate that stand-alone nursing home and stand-

alone home care policies will require some claim cost loadings relative to the corresponding components of a comprehensive LTC plan.

Please note that the software is not part of the recommended valuation methodology, but is simply one approach to implementing the task force recommendations. The final report of the task force will provide complete assumptions and calculation specifications needed to replicate the software's output.

With respect to mortality assumptions, the task force currently favors the 1983 Group Annuity Mortality table for contract reserves. These values are somewhat lower than the unloaded 1980 Commissioners Standard Ordinary rates and extend to age 110. Since no benefits accrue to those who die under most LTC policies, lower mortality rates are viewed as conservative. We are currently considering both sex-distinct and blended mortality tables.

For plans without nonforfeiture benefits, lower lapse rates in renewal years usually produce higher reserves. The task force currently recommends lapse assumptions no greater than the lesser of 8% and 80% of the pricing lapse assumption. These lapse rates would be in addition to the mortality rates described previously.

For plans with nonforfeiture benefits, it is not clear what constitutes a conservative lapse assumption.

The task force continues to consider appropriate recognition of excess first-year expenses. The current NAIC model health valuation law requires one-year preliminary term. The IRS appears to favor two-year preliminary term. The AAA Committee on State Health Issues has suggested new individual health reserve techniques using an explicit expense allowance.

The NAIC recently embraced model legislation requiring nonforfeiture benefits in LTC policies and is wrestling with model regulations as we speak. It appears likely that some form of

shortened benefit period (SBP) nonforfeiture option will be mandated. As a result the task force faces some new problems:

1. The SBP nonforfeiture benefit is paid up and, therefore, noncancelable. What morbidity loadings are appropriate for the valuation of this noncancelable LTC benefit?
2. If positive lapse assumptions are used in contract reserves, the calculation will be complicated by the need to include the net single premiums for SBP benefits generated by future lapsation.
3. The NSP for SBP benefits at lapsation need not be less than the contract reserve, especially if the policy provides for a SBP scale in excess of the statutory minimum. Lapsing policies might very well require substantial reserve increases. In life insurance we avoid this problem by requiring the contract reserve at all policy durations to exceed the contract cash value. Should the contract reserve on LTC policies be required to exceed the NSP for the SBP benefit in the event of lapse?
4. Again, it is not clear what constitutes a conservative lapse assumption.

Since the panel has already commented extensively on claim reserves, I will limit my treatment to one item: waiver-of-premium claim reserves.

With respect to waiver of premium, if the contract reserve assumes that premiums are collected on all policies, including those in claim status, then it seems appropriate to require an explicit waiver-of-premium claim reserve. If contract reserves anticipate waiver while in claim status, no waiver-of-premium claim reserve may be needed.

MR. NEWTON: I'd like to add an editorial comment in this area. What should our role be? Well, it could be a very narrow one in the sense that we limit our role to our job function in our company. Or it could be much broader. Here is something from the July 1993 issue of the *Actuary of the Future Newsletter*:

> The Society of Actuaries could define the role of the actuarial profession as relating to support for:
>
> 1) Long-term care insurance pricing and reserving

2) Long-term care insurance pricing and reserving, plus CCRC pricing and reserving.
3) Long-term care issues generally.
4) Public policy development.

Now many of us may not have the time or inclination to become as widely involved as the development of public policy. But, in a small way, there is one thing I'd ask you or your company to consider doing. That is to contribute to the Society's LTC Intercompany Study. Some of you may be familiar with this already. If your company is not contributing already, there are a couple of reasons why you might consider it this year. First, the study quality gets better the more data we have to work with. Second, contributing data has been vastly simplified this year. The original "requirements" were exhaustive and appeared imposing. The new requirements offer a choice of a vastly reduced "minimum" submission and the option of the full data submissions for those companies already providing such data. Please consider jumping on the bandwagon this year if you haven't contributed in the past.

HEALTH PRACTICE NOTES REQUEST FORM

The Health Practice Notes for the Appointed Actuary were sent to all members of the Life Financial Reporting Section in January 1994.

If you are not in the Life Financial Reporting Section, but would like a copy of the Health Practice Notes, please send this form to Christine Cassidy at the American Academy of Actuaries, 1720 I Street, NW, 7th Floor, Washington D.C. 20006.

Name: _____

Company: _____

Address: _____

_____

Phone: _____