



# Long-Term Care News

The Newsletter of the Long-Term Care Insurance Section

Published by the Society of Actuaries

## Long-Term Care Insurance Coverage: Educating Clients and Evaluating Its Merits as an Investment

### An Actuary's Solution to the Consumer's Dilemma

by William A. Dreher

#### Introduction

Assessing the economic value of long-term care (LTC) coverage is an intriguing actuarial exercise. In my experience as an advisor to prospective purchasers of LTC coverage, it is also the missing element in most long-term care sales presentations.

A good LTC sales presentation will demonstrate the reality of long-term care as an end of life issue for most families, describe policy provisions and their practical significance and stress the psychological value of creating a financial firewall as a buffer against the huge cost of an extended nursing facility confinement.

Important as these are, without an understanding of the economic value of LTC insurance many natural LTC buyers—people who have significant assets to protect, have incomes sufficient to pay the premiums without strain and are old enough to have parents and neighbors currently in need for care—will turn away from the transaction. Their concerns about the tradeoff between premiums that will be paid early and for a long time and policy benefits that will be paid at the end of life and perhaps never make them hesitate and, frequently, turn away.

The long-term care economic analysis model described in this article has been effective in addressing this issue and convincing clients that LTC coverage is a sound investment decision. It has also proven to be a powerful educational resource in explaining LTC policy provisions and their practical significance. (I should also note that the model is an objective tool, not a promotional device that always delivers a “buy now” recommendation. For instance, for some age groups, for people with limited budgets or very high net worth and for individuals unable to buy tax-advantaged coverage, the answer may be to postpone the purchase or to self-insure the risk.)

The model relies on conventional actuarial techniques for assessing the financial implications of the LTC investment decision, but with a twist.

Investment strategists evaluate the prospects of different assets classes or individual securities by comparing the potential gain from the investment with the potential for loss, using statistical characteristics such as the volatility of returns as a proxy for the relative riskiness of the proposed investment. The phrase “risk vs. reward” expresses the process employed by investment strategists. A more appropriate characterization of the premise underlying our long-term care model might be “risk transfer and its rewards.”

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475 N. Martingale Road, Suite 600  
Schaumburg, Ill 60173-2226  
Phone: 847-706-3500  
Fax: 847-706-3599  
Web: [www.soa.org](http://www.soa.org)

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Bruce A. Stahl, Newsletter Editor  
Penn Treaty Network America  
146 Lakeview Drive • Suite 203  
Gibbsboro, N.J. 08026  
PHONE: 856-566-1002  
FAX: 856-566-5165  
E-MAIL: [bstahl@penn treaty.com](mailto:bstahl@penn treaty.com)

Brad S. Linder, Co-editor  
GenRe | Life Health  
695 East Main Street • P.O. Box 300  
Stamford, Conn. 06904-0300  
Phone: (203) 352-3129  
Fax: (203) 328-5886  
E-mail: [blinder@genre.com](mailto:blinder@genre.com)

Mary Pienkowski, Graphic Designer  
PHONE: 847-706-3548  
FAX: 847-706-3599

Clay Baznik, Director of Publications  
E-MAIL: [cbaznik@soa.org](mailto:cbaznik@soa.org)

Lois Chinnock, Sections Manager  
E-MAIL: [lchinnock@soa.org](mailto:lchinnock@soa.org)

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# A Word From the Editor

by Bruce Stahl

Often, when our children learn about the Pilgrims' first Thanksgiving, they are told that they thanked the Native Americans. According to some historical accounts, the feast included 90 American Indians and food was plentiful. Of course the Pilgrims were thankful for the American Indian tribes, but a number of historical documents identify that the Pilgrims actually intended to have the feast to give thanks to their Maker, Provider and Savior, who saw fit to sustain them through difficult and challenging times.

The feast symbolizes the importance of being thankful. With that in mind, I'd like to take the time here to applaud the efforts of the many people who are instrumental in the production of our newsletter, *Long-Term Care News*.

Of course, the readers of a newsletter are thankful to those who contribute articles to communicate ideas and teach concepts that are expected to be helpful to the entire industry. Yet there are others whom we need to remember to thank as well. Most importantly, we thank a number of associates for excellent ideas and necessary proofreading skills that are required in the newsletter production process. In addition, there are so many people to thank at the Society of Actuaries' offices who actually lay out the newsletter and oversee the publishing and distribution activities.

Once in a while we receive an article that we cannot publish right away. We do regret that, for one reason or another, we forego publishing it immediately. The authors of these articles deserve our thanks as well, as they represent the volunteer spirit that funds the improvement of our profession through the sharing of ideas.

The articles that we chose to include in this edition of the newsletter provide thoughtful ways to convince a prospective applicant that he or she ought to purchase a LTCI policy, to assist management in its selection of assets to support LTCI reserves and in developing LTCI ancillary riders to other insurance products. We thank William Dreher, Amy Pahl and Carl Friedrich for their contributions to this issue. ✱



Editor  
Bruce Stahl

# Chairperson's Corner

by Vincent L. Bodnar

I am honored to serve as chairperson of the LTCI Section for the upcoming year. I would like to welcome all new members of the LTCI Section who are reading this newsletter for the first time. I would also like to congratulate our newly elected section council members—Dan Cathcart, Tim Hale, Dawn Helwig and Ty Wooldridge

**INTERCOMPANY LTCI CONFERENCE.** The Fourth Annual Intercompany LTCI Conference was a great success. It attracted a record 725 attendees; most were non-actuaries. The upcoming Fifth Annual Intercompany LTCI Conference will be at the Rosen Centre in Orlando, Florida from January 23-26, 2005. This year we expect to attract over 800 attendees and close to 50 exhibitors. Like last year's conference, it will feature eight educational tracks with in-depth focus on actuarial, claims, compliance, group, management, marketing, operations and underwriting topics. If you have not received an invitation by mail already, you can register for the conference online at [www.soa.org](http://www.soa.org). I hope to see you there!

**TRACK INITIATIVES.** Over the last year, the LTCI Section began to organize itself and activities around the same disciplinary tracks featured at the Intercompany LTCI Conference. We recruited chairpersons to lead each of these tracks. Each chairperson is working to recruit volunteers to help them in setting track-specific goals to develop and provide benefits for its track members. Among other goals, each track hopes to provide discipline-specific Web site content, networking tools and research tools to members. Some are initiating intercompany research studies. Jim Glickman will spearhead the track organizational efforts during the upcoming year.

**AN INDUSTRY AT THE CROSSROADS.** As many of you know, the LTCI industry is experiencing some serious growth issues. I have heard from many of you about them over the last few years. At a time when the target customer base is growing and becoming more aware of the LTC



risk, new business volumes have stagnated and even declined. Many carriers have exited the market in the last few years due to risk and capital concerns. Independent agents are frustrated by what they perceive to be a lack of carrier commitment to the industry and policyholders. Surveys show that baby boomers often question the value proposition of LTC insurance, even as they put their own parents and grandparents into nursing homes.

**A CALL FOR INNOVATION.** I have great confidence in the ability of those in our industry to develop solutions and to get past the industry's growth issues. At some point—and I think the time is now—we have to ask ourselves if the product, as it exists and is structured today, must fundamentally change. There may be other hard questions to ask and answer as well. I call on section members from all disciplines to think about this over the next year. I would like to see us take serious thought leadership in this area. Instead of merely worrying and complaining, let's do something proactive. As your chairperson, I promise to help facilitate this process in whatever way I can. Please look to hear more from me on this soon. \*



Vince Bodnar, ASA, MAAA, is a consulting actuary at Milliman, Inc. in Wayne, Pa. He can be reached at [vince.bodnar@milliman.com](mailto:vince.bodnar@milliman.com)

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**Assessing the economic value of long-term care (LTC) coverage is an intriguing actuarial exercise.**

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**Inputs to the LTC Risk and Rewards Model**

The model has five categories of input assumptions: personal, economic and financial, LTC policy design, claim scenario, and when applicable, health savings account (HSA) design.

The demographic and actuarial assumptions for a couple or an individual include date of birth, life expectancy and location. For couples, the joint life expectancy is included.

The model's economic and financial assumptions are income tax rate (personal or corporate), pre-tax investment return, effective investment tax rate, CPI growth rate, the current top skilled nursing facility (SNF) daily rate in the prospect's location and its projected growth rate. The buyer type and the cutoff age for tax-qualified plan deductions are also included, as is the current table of tax-qualified plan deductions for partners, sole proprietors and Sub-S corporations.

The policy design assumptions reflect the key features of an LTC policy and the annual premium for each individual. A plan feature recently added is waiver type, including joint waiver, survivorship and J&S waiver.

The claim scenario variables are length of claim, probability of claim, type of care (home or SNF) and home care expense as a percentage of SNF expenses.

The health savings account assumptions are medical plan deductible, either family or individual, marital status, HSA interest rate, Medicare tax rate and catch-up contributions.

Figure 1 on page 5 illustrates the input variables and codes for a representative long-term care buyer.

Mr. Smith is a partner of a New York law firm. The LTC policy design he and his wife selected was influenced by the rates currently charged by a well-regarded skilled nursing facility in the nearby area and by their conclusion that co-insuring about 15 percent of the expense was practical for them. So, a \$300 daily benefit with compound inflation was selected. From their experience in caring for Mrs. Smith's mother, who suffered from Alzheimer's disease and required custodial care for several years, they chose a lifetime benefit. Mr. Smith was particularly interested in having a survivorship waiver. Assuming the actuarial tables are correct, he is likely to be the first to

die and he values the assurance that her policy will be fully paid-up in that event.

**Cash Flow Projections and Summary Display**

From these input assumptions the spreadsheet projects the current annual LTC premium for each individual, the tax savings and the net LTC premium. The gross premium for each individual is projected with and without the impact of the applicable premium waiver option.

Using a hypothetical claim scenario for each spouse, the spreadsheet displays the annual cash flows for the possible LTC expense (assuming a 100 percent likelihood that the defined claim scenario actually occurs and that no LTC policy exists), the projected LTC expense (based on the assumed probability that the claim scenario occurs), the unrecovered LTC cost (i.e., the expenses incurred during the elimination period plus the expenses in excess of the claim reimbursements during the policy's benefit period plus any expenses occurring after the expiry of policy benefits) and the expense reimbursements from the LTC policy. The combined cash flows for both policies are calculated for four quantities: the possible (100 percent likely) LTC expense, the projected LTC expense, the unrecovered LTC expense and the expense reimbursements from the policy.

For each of these cash flow columns the spreadsheet shows the total cash flow, its net present value, the internal rate of return on the cash flows and the cumulative impact on the couple's estate. This last total assumes a full marital transfer on the first death and uses the couple's joint life expectancy to make its measurements.

**A Specimen of the Summary Display and its Interpretation**

An example of these summary items is presented in Figure 2 on page 6 based on the assumption set defined in Figure 1.

The claim scenario in this illustration reflects two possible outcomes: Mr. Smith will have a claim of less severity than national average statistics would indicate and receives care in a home setting; the wife has a severe and extended disability lasting five years that requires care in a skilled nursing facility, an outcome typical of cognitive dysfunctional illnesses. The likelihood of his claim was set at 40 percent; her long claim was assumed to have a 15 percent probability.

**Figure 1—Input Assumptions: Long-Term Care Insurance—Economic Analysis**

<b>Personal Data:</b>				<b>Claim Scenario:</b>		
Name	Jim Smith	Fran Smith	Joint	Length of Disability (months)	12	60
Year of Birth	1948	1948		Claim Duration (months)	9	57
Month of Birth	3	11		Probability of Claim	40%	15%
Life Expectancy (Years)	27	31	36	Cost % for HHC	80%	N.A.
Location	Westchester, NY			Care Location	Home	SNF
<b>Economic and Financial Assumptions:</b>				<b>HSA Assumptions:</b>		
Personal Tax Rate	45%			Medical Plan Deductible	\$5,100	
Pretax Investment Return	6.25%	6.25%		Deductible Type (Single/Family)	F	
Investment Tax Rate	28.00%	28.00%		Marital Status (Single/Married)	M	
Consumer Price Index	3.00%	3.00%		HSA Interest Rate	4.00%	
SNF Daily Rate Now @ Location	\$350	\$350		Medicare Tax Rate	1.35%	
SNF Inflation Rate	5.00%	5.00%		Catchup Contribution (Yes/No)	Y	
Buyer Type	C		C	<b>Buyer Type</b>		
Cutoff Age for Tax Deductions	65		65	Corporate	C	
				Partner or Proprietor	P	
				Individual or Family	I	
				<b>LTC Benefit Inflation</b>		
				Compound	C	
				Simple	S	
				Guaranteed Purchase Option	GPO	
				None	N	
				<b>Waiver Type</b>		
				Individual	I	
				Joint Only	J	
				Survivorship Only	S	
				Joint & Survivor	J&S	
<b>LTC Policy Design:</b>				===== Sub S/Partner Deductions =====		
Start Date	9/1/04	9/1/04		<u>Lowest</u>	<u>Max. Yr. 2004</u>	
Policy Issue Year	2004	2004		<u>Age</u>	<u>Premium</u>	
Daily Benefit	\$300	\$300		20	260	
Benefit Inflation Rate	5.00%	5.00%		41	490	
GPO Increase %	C	C		51	980	
Home Health Care %	100%	100%		61	2,600	
Benefit Period (years)	Life	Life		70	3,250	
Elimination Period (months)	3	3				
Waiver Type	S	S				
0 = Premiums paid until Eligible	0	0				
LTC Annual Premium:	\$3,924	\$3,733				

continued on page 6

**The HSA provisions of DIMA are a great tax benefit for highly paid executives, successful professionals and business owners.**

In this example, the net present value cost of Mr. Smith's policy is \$21,218. His premium cost is recovered, but the internal rate of return on the LTC investment is only 1 percent. For his wife, the LTC purchase has a positive net present value of \$36,372, representing a 7.6 percent net rate of return on her LTC premiums. For the couple, the return on their combined investment is 5.7 percent, somewhat exceeding the 4.5 percent assumed return on their other investments.

The full impact of this claim scenario is indicated by the column titled "Possible Cost." A credible risk of spending \$2.9 million on long-term care and diluting one's estate by over \$4.1 million now becomes a powerful incentive to purchase LTC policies.

Our model readily permits testing of alternative claim scenarios, including the possibility that no claim occurs. Visiting other hypotheses (living longer, buying through a corporate plan vs. buying with after-tax dollars, choosing a plan with greater or lesser benefits, demonstrating the effect of a survivorship waiver or changing the investment return and tax assumptions) adds other dimensions of analytical significance for potential buyers of LTC coverage and their advisors.

**Communicating the Model's Major Messages**

The potential for drowning a client in numbers is a serious downside constraint on the utility of our economic model. In an effort to reduce the MEGO threat we have used charts in many interviews. Chart 1 on page 7 shows the net cash flow for premiums to Mr. & Mrs. Smith and compares the prospective growth of daily rates for care in a skilled nursing facility with the projected daily benefit of the LTC policies.

Chart 1 illuminates several important issues:

- The net cost of coverage for a partner or S Corporation owner decreases each year as the schedule of tax deductions for tax-qualified plans increases.
- The cost of coverage will increase significantly when Mr. Smith retires at age 65.
- His premiums will stop when he goes on claim in policy year 27.
- Mrs. Smith's premiums end when she goes on claim the next year. (Note: with the Survivorship Waiver feature, her premiums would stop upon the husband's death even if she never went on claim.)

**Figure 2**

<b>A. Summary</b>	<b>Possible Cost</b>		<b>== Based on Claim Assumptions ==</b>	
	<b>Without LTC Insurance</b>	<b>With LTC Insurance</b>	<b>Without LTC Insurance</b>	<b>LTC Cost Recovery</b>
<b>Jim Smith</b>				
<b>IRR%=</b>				1.0%
<b>Impact on Estate</b>	(564,333)	(329,223)	(225,733)	(103,490)
<b>NPV</b>	(115,704)	(67,500)	(46,282)	(21,218)
<b>Total Cash</b>	(363,390)	(132,746)	(145,356)	12,610
<b>Fran Smith</b>				
<b>IRR%=</b>				7.6%
<b>Impact on Estate</b>	(3,560,996)	(356,748)	(534,149)	177,401
<b>NPV</b>	(730,105)	(73,143)	(109,516)	36,372
<b>Total Cash</b>	(2,509,947)	(159,642)	(376,492)	216,850
<b>Combined</b>				
<b>IRR%=</b>				5.3%
<b>Impact on Estate</b>	(4,125,329)	(685,972)	(759,883)	\$73,911
<b>NPV</b>	(845,809)	(140,644)	(155,797)	\$15,154
<b>Total Cash</b>	(2,873,337)	(292,388)	(521,848)	\$229,460

- Compound inflation of the policy’s daily benefit will keep pace with the skilled nursing daily rate in their home area and maintain a fairly constant “coinsurance ratio.” (Note: The negative impact of buying a policy with no inflation adjustment of the daily benefit is particularly vivid with this type of chart.)

Two other charts present the annual cash flows implied by the assumed long-term care scenario, comparing self-insurance of the risk with the mitigating effect of LTC coverage.

Chart 2 shows the pattern of net premiums and the Smiths’ out-of-pocket costs for care during the elimination period plus the share of expenses not reimbursed by the LTC policies. The annual costs that a self-insured couple can anticipate under the defined claim scenarios are dramatically evident.

Chart 3 supplements the cash flows in Chart 2—which reflect the assumed 45 percent and 15 percent probabilities of claim—with the full expense of self-insuring the long-term care risk and actually suffering the two claims assumed in this scenario. The possible cost of self-insurance is over \$800,000 in year 27, followed by four years with annual expenses of around \$500,000. This “reality check” delivers a powerful message.

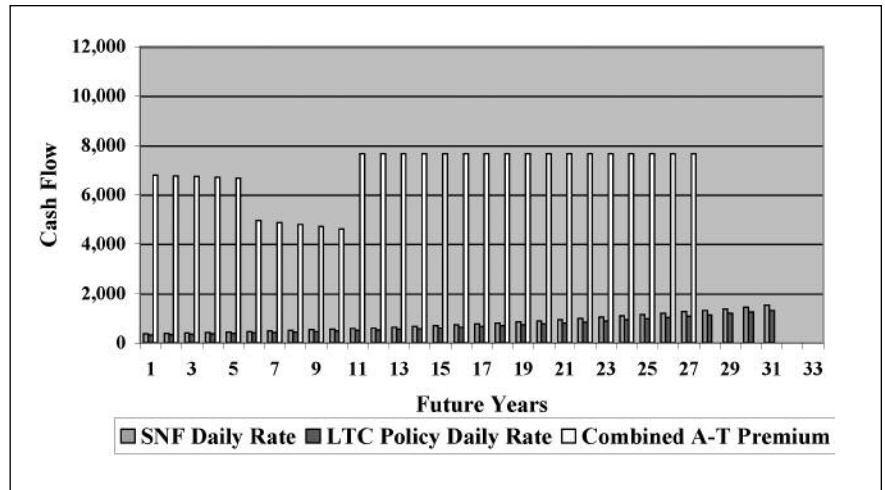
**Another Approach to Presenting the Projected Outcomes**

Combining the severity of a claim with the probability of its occurrence is a complex idea and some clients have found our model’s messages hard to understand. This difficulty led us to another presentation technique. We were encouraged to take this direction for two other reasons:

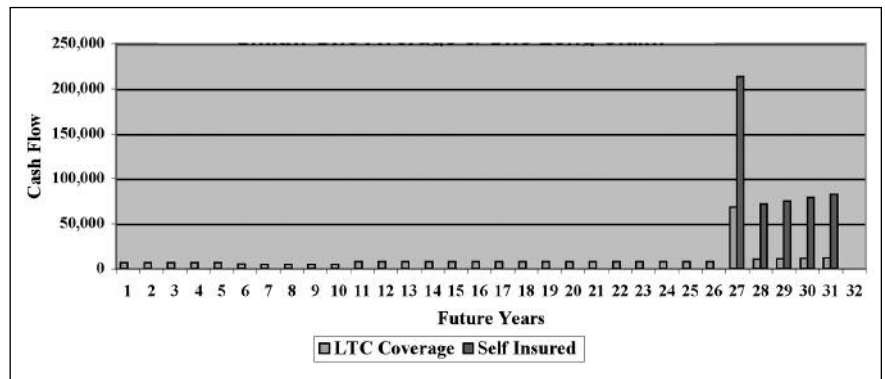
- To highlight the high probability that every couple will experience at least one LTC event.
- To confront directly the possibility that premiums will be paid and the couple will have the good fortune to never have a claim.

We settled upon a two-part presentation. First, using a pie chart to show a matrix of possible claim experiences—no claims; only the husband has a claim; only the wife has a claim; both have

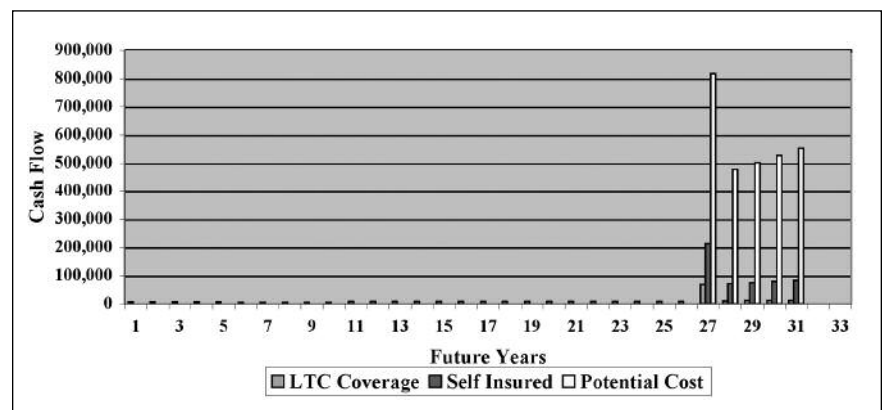
**Chart 1—Premium & Coinsurance Analysis  
SNF Daily Rate vs. LTC Policy Daily Benefit  
Combined After-Tax Premium for Mr. & Mrs. Smith**



**Chart 2—Economic Analysis  
Comparison of LTC Policy vs. Self-Insured Smith:  
One Average & One Long Claim**

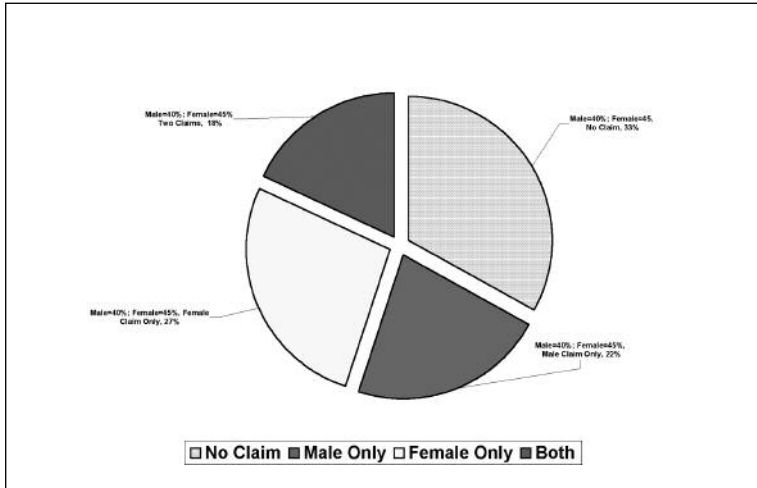


**Chart 3—Economic Analysis  
Comparison of LTC Policy vs. Partially Self-Insured Smith:  
One Average & One Long Claim**



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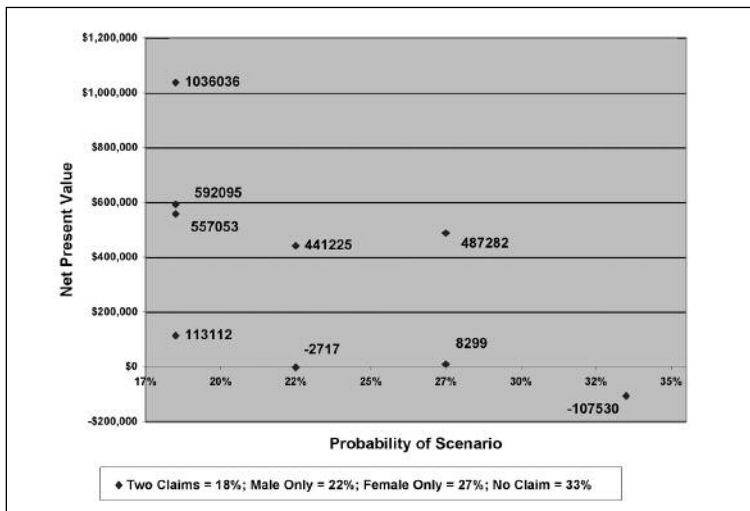
**Chart 4—LTC Claim Probabilities**



claims. Chart 4 illustrates this communication tool, working with the dual assumptions that the husband has a 40 percent chance on incurring a claim and the wife’s claim probability is 45 percent. The likelihood of no claims is 33 percent, but the 49 percent chance of one claim and the 18 percent chance of two claims forces a thoughtful person to recognize that the risk is real.

But, how long and costly might those claims be? No one knows, but a range of possible outcomes can be identified. We addressed the question by measuring the cost of a short claim, arbitrarily selecting a 14-month duration, and the cost of a 60-month claim based on the Smiths’ data set. (See Figure 1.) Chart 5 summarizes the net present value of the LTC purchase under each of the nine possible outcomes.

**Chart 5—Risk Transfer & Its Reward Under Various Claim Scenarios Net Present Values @ 4.50%**



One message to be taken from Chart 5 is that there is a 33 percent probability that the Smiths will not have a claim, but will pay premiums with a present value of \$107,000. However, if Mr. Smith is the only one with a claim and the duration of the claim is short, the combined cost of the transaction is essentially a wash or, put more positively, the risk of a worse outcome has been avoided at no cost to their assets and their estate. Similarly, if Mrs. Smith is the only claimant and the claim is limited, the LTC coverage has a small net positive present value, another inducement to transferring the large claim risk to the insurer. When both have a short duration claim, the \$113,000 net present value makes the transaction well worthwhile. When faced with the cost of even one large claim, dollar amounts in the \$400,000 to \$1,000,000 range quickly bring a client’s attention into sharp focus.

**Chart 6—Risk Transfer & Its Reward Under Various Claim Scenarios Net Cash Flow**

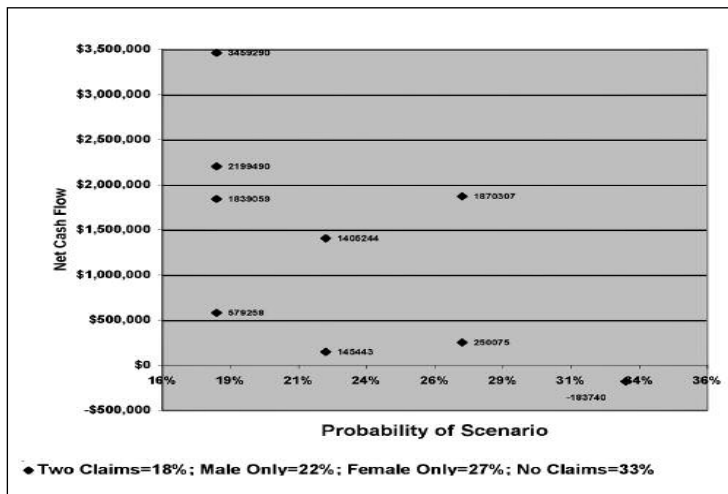


Chart 6 presents a similar display of net cash flows from the nine hypothetical outcomes, showing similar rewards from the risk transfer. The Smiths may be fortunate enough to avoid the need for long-term care and, if so, will have invested \$183,000 in their LTC policies without a cost recovery. This is a good news story. If they do need long-term care, the cost impact of care will be mitigated, possibly by as much as \$3.5 million.

Chart 7 on page 9 looks at the consequences from the perspective of their heirs. To what extent will their estate be protected as a result of the LTC investment? With no claims, it may be diminished by \$525,000. With a single short duration claim, the impact is neutral. All of the other outcomes benefit their heirs by amounts ranging from \$500,000 to \$5,000,000.



### Leveraging the Economics of LTC with a Health Savings Account

The Smiths have decided to couple their LTC purchase with a health savings account, intending to build the Health Savings Account with pre-tax dollars while Mr. Smith is working and use it after he retires at age 65 to pay their long-term care insurance premiums. They can afford to self insure the first \$5,100 of annual medical expenses and have therefore dropped out of his firm's medical plan and purchased high deductible medical coverage to provide for any catastrophic medical needs.

The Medicare Prescription Drug, Improvement and Modernization Act of 2003 (nicknamed DIMA) includes an incentive for qualified individuals to accumulate pretax dollars in an HSA for later use to pay a wide range of medical expenses. The medical expenses qualified for payment from an HSA include the out-of-pocket cost of long-term care and any premiums paid for LTC insurance coverage.

The HSA provisions of DIMA are a great tax benefit for highly paid executives, successful professionals and business owners. Who else can afford to divert \$5,000 a year from current consumption? Who else will consider a high deductible in his or her medical plan a prudent risk? These are the same people who are the "natural buyers" of long-term care insurance coverage and the Smiths have recognized this opportunity.

**Chart 7—Risk Transfer & its Reward Under Various Claim Scenarios Impact on Estate**

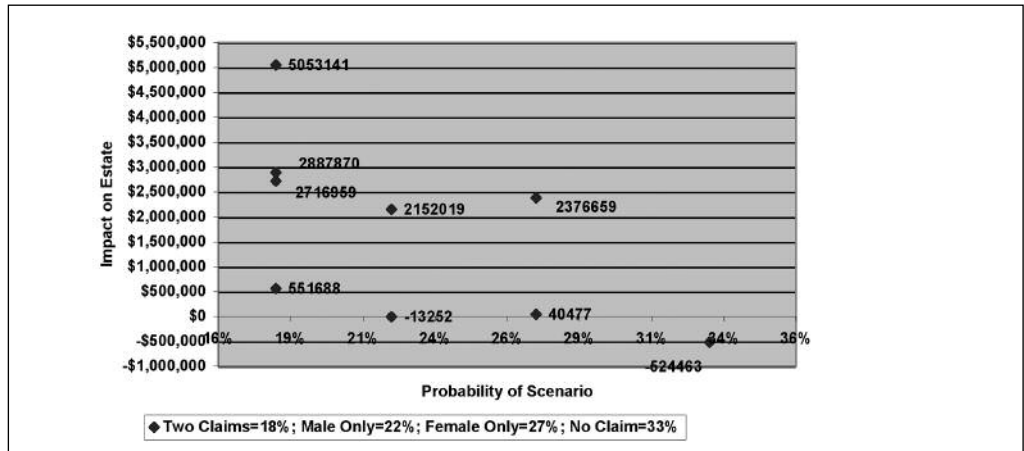


Figure 3 summarizes the projected outcome of an HSA/LTC combination. (It is based on the assumption set defined in Figure 1.) The projected net present value of their LTC policies is \$15,154. When coupled with the health savings account it increases to \$32,738. From a cash-on-cash perspective, the HSA adds \$48,508, a 21 percent improvement.

Figure 4 focuses on the impact of the HSA on their LTC premiums. The present value of the HSA transaction, \$17,584, offsets 16.2 percent of the present value of their projected LTC premiums. This improved outcome can be enough of an advantage to convince a hesitant LTC prospect to be a buyer.

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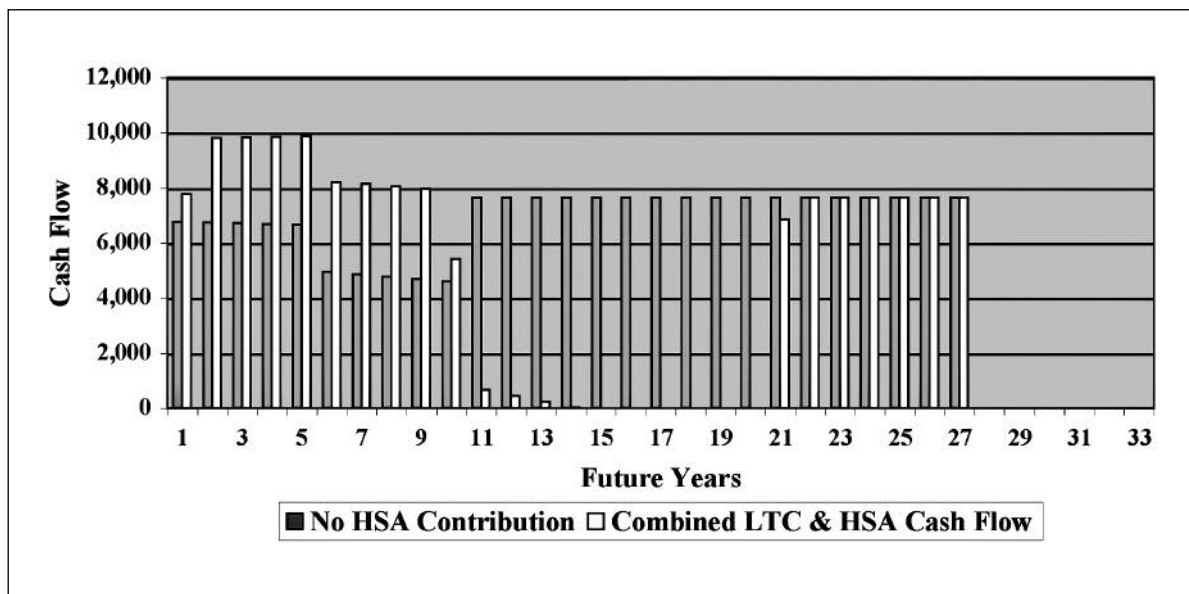
**Figure 3**

B. HSA Impact Program IRR%=	LTC Cost Recovery 5.3%	Stand Alone HSA 10.7%	HSA + LTC Combined	HSA Impact, as %
Impact on Estate NPV	\$73,911	\$85,766	\$159,677	116.0%
Total Cash	\$15,154	\$17,584	\$32,738	116.0%
	\$229,460	\$48,508	\$277,968	21.1%

**Figure 4**

C. HSA Impact on LTC Premiums IRR%=	LTC Premiums	Stand Alone HSA 10.7%	HSA Impact, as %	HSA + LTC Combined
NPV	(\$108,779)	\$17,584	-16.2%	(\$91,195)

**Chart 8—Cash Flow Impact of Health Savings Account Comparison With and Without Health Savings Account**



William A. Dreher, FSA, MAAA, is managing director at Compensation Strategies, Inc., New York. He can be reached at [wdreher@comp-strat.com](mailto:wdreher@comp-strat.com).

Following Mr. Smith’s retirement, the couple can look forward to a 12-year LTC premium holiday, as Chart 8 demonstrates. (This is not quite accurate. DIMA limits on the deductibility of LTC premiums will require very minor cash out of pocket payments in the first three years of retirement.) This comparison of the total cash flow for a coordinated HSA-LTC financing program with the premiums for LTC coverage without the HSA component encourages a final observation: the increased cash cost prior to age 65 would be too heavy a burden for all but people in the Smith’s income bracket.

**A Final Word ...**

Charts and graphs on their own won’t make an LTC sale, but careful modeling and projection of the possible outcomes from a well-designed LTC policy will lead to better informed clients and sounder financial planning by thoughtful business executives and successful professionals. ✱

# Asset Adequacy Analysis for the Long-Term Care Product: A Case Study

by Amy Pahl

As the appointed actuary for a small insurance company with long-term care (LTC) insurance, I've recently dealt first-hand with the issues surrounding investing appropriately for LTC liabilities. In 2003, like many small companies, this company (let's call it Small LTC Inc.) was subject to asset adequacy testing under the NAIC Model Actuarial Opinion and Memorandum Regulation for the first time. In this article, I will discuss the noteworthy issues encountered relative to Small LTC's asset-liability matching results and how they responded.

By way of background, Small LTC Inc., has approximately \$22 million of net in-force premium and \$24 million in reserves, of which approximately half is for their LTC insurance. Small LTC Inc.'s LTC block is small, by industry standards, but nonetheless growing, with almost \$5 million in collected premiums for 2003. The vast majority of their in-force business was priced in the late 1990s and issued in the last three years. Small LTC Inc. is a multi-line company with life insurance, group life waiver of premium and group accident and health comprising the remainder of their business.



## Asset Adequacy Testing

The LTC liabilities were tested using cash-flow testing (CFT) based on the New York seven interest rate scenarios, Small LTC Inc.'s actual invested assets and a 12/31/03 starting yield curve. Given that Small LTC Inc. has historically invested conservatively, and given the current low interest rate environment, it is no surprise that the market value of projected assets and liabilities were not well-matched. In fact, the LTC liability duration is so long that a perfect match, even for a large insurer with a highly sophisticated hedging strategy, is virtually impossible to achieve.

We found that the initial test results demonstrated material surplus deficits as early as the tenth projection year in down interest rate scenarios. The company needed to take a serious look at what was driving these results and determine what action could be taken to improve the situation.

The drivers of the poor asset-liability match and surplus deficit were quickly identified. Just over 70 percent of the company's non-cash invested assets were in U.S. government bonds, most with a maturity of five to 10 years. The average book yield on the starting bond portfolio was 5.12 percent, far short of the 7 percent investment earnings rate assumed in the product pricing. In addition, the company had no hedge against the situation worsening if rates were to go lower.

## Company Response

Although management of Small LTC Inc. had suspected that there would be problems with "passing" the CFT exercise, seeing the results solidified the issue and moved them to action. Within two days of providing our preliminary test results, I was in a meeting with the company president and those responsible for making investment decisions. They were very receptive to making changes to the investment strategy to better match the asset and liability cash flows for LTC, while also maintaining a level of conservatism required by the company board of

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Amy Pahl, FSA, MAAA, is a consulting actuary in the Minneapolis office of Milliman USA. She may be reached at [amy.pahl@milliman.com](mailto:amy.pahl@milliman.com).

directors. As a result of our discussion, the company made the following changes to their investment strategy going forward:

- They established a new investment account specifically for LTC and transferred into it select higher-yielding assets from the existing portfolio. The assets chosen were commercial mortgage-backed and asset-backed securities with an average yield of 6.15 percent, far higher than the bond portfolio average of 5.12 percent which had been used to back the LTC liabilities in the preliminary test runs.

- They revised the target duration for assets backing LTC from the five- to 10-year range to 20 years.

- They permitted investment in mortgage and government-backed fixed income securities with a 100 to 150 basis point spread over the 10-year Treasury rate.

With these changes reflected in the reinvestment strategy of our CFT analysis (and a certification from the company in hand that these changes would be implemented early in 2004), surplus deficits were, in aggregate, avoided. ✱

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# Designing and Pricing LTCI Combination Products

by Carl L. Friedrich

The insurance industry is increasingly offering combination long-term care insurance (LTCI) products that offer various advantages over stand-alone LTCI designs, and that may allow the industry to access a broader range of the population. An April 2004 Milliman Research Report authored by Carl Friedrich summarizes the key considerations in designing such products, various forms that may be utilized and a range of issues that must be addressed to assure the ability to successfully construct, price and market this business. What follows is a section from that report.

## Pricing, Reserving and Company Taxation Considerations

Pricing of LTCI riders requires a range of assumptions including persistency, interest rates, mortality, morbidity incidence and severity, expenses, capital requirements and taxes. De minimus benefits are often crudely sized, and if below a certain threshold, a modest charge or no charge is utilized. These should be examined by age, as seemingly modest benefits can be expensive at older ages. More comprehensive benefits require more scrutiny.

Sensitivity testing for changes in incidence, severity, interest rates and persistency should be performed. Stochastic pricing has been utilized by at least one Milliman client on an LTCI rider, modeling across various scenarios with different incidence levels, severity levels, selection of benefit utilization levels (some clients choose not to trigger these benefits even though they qualify) and age mix. They then determined a charge structure that was intended to cover the costs in a targeted percentile.

Note that to understand the true cost of accelerated benefit, one needs to identify mortality rates separately for those insureds who have triggered LTCI benefits versus the mortality for those in the residual pool. It is also common to assume less anti-selection at the time of sale for clients purchasing LTCI acceleration features versus those purchasing stand-alone LTCI coverage. This appears to be borne out by early experiences of those in the combination LTCI market.

There are a number of issues and considerations in the pricing of LTCI accelerated death benefit riders to universal life plans:



**UNDERSTANDING THE BENEFIT STRUCTURE:** Are LTCI acceleration payments based on the original specified amount, or the death benefit at the time of acceleration? If other riders are offered, such as inflation protection or an extension of benefits, is the basis the same? If payments are based on the current death benefit, this can become an implicit future purchase option for insurance benefits, since even if increases in the death benefit cause increases in the long-term care insurance acceleration charges, no reserve has been built up for the additional benefit, and it is unlikely that the long-term care insurance charges by age match the steepness of the expected payments. In addition, a decision must be made as to the pattern of cost of insurance charges. These may be level issue age charges (like traditional long-term care insurance), or attained age charges in some form (either separate charges or a load on underlying life cost of insurance charges). For benefits that will be considered pure long-term care insurance, level premiums will likely be required, at least for attained ages 65 and over.

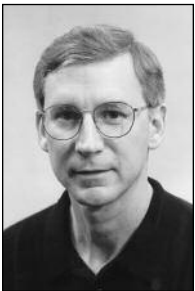
**MORTALITY:** For the most part, aggregate assumed mortality for a policy without an acceleration provision already includes deaths among insureds who have entered a nursing home.

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Carl A. Friedrich, FSA, MAAA, is a consulting actuary at Milliman, Inc. in Illinois. He can be reached at [carl.friedrich@milliman.com](mailto:carl.friedrich@milliman.com).

However, the assumed difference in mortality rates between nondisabled insureds and disabled insureds that make up this aggregate amount is a key driver of the ultimate value of the acceleration. The assumption is that mortality is high among people who utilize acceleration benefits and it will lead to a low modeled cost for accelerating death benefits. In addition, modeling complications arise from the fact that not all acceleration claims will end in death, meaning a subset of these insureds with reduced death benefits go back into the “healthy” population, affecting future expected death benefit payments. Finally, this effect also means that a traditional claim cost modeling approach that may be used for long-term care insurance policies cannot easily be used to accurately reflect the net effect of death benefit acceleration. In order to capture the mortality difference, a first-principles approach of assumed incidence and termination rates must be used.

**GUARANTEED MINIMUM BENEFITS:** If a combination policy offers any kind of guaranteed minimum death benefit regardless of long-term care utilization—for example, guaranteeing a death benefit of 20 percent of the initial amount even if the entire original death benefit has been accelerated for long-term care payments—even more detailed modeling is required, as the cohort of insureds who enter the corridor of being affected by the guaranteed minimum death benefit must in that case be tracked.

**ADDITIONAL RESERVES:** The pricing actuary must know how these benefits should be reserved. For pure acceleration benefits, the tendency is not to hold explicit additional active life reserves, since in most cases no additional level charge involving pre-funding is being made for this benefit. An independent extension of benefits rider, however, generally demands a level charge structure and separate long-term care insurance reserves using LTCI minimum standards. There may also be an optional rider that applies inflation protection benefits to the acceleration payments. If so, the pricing model must be able to handle these multiple reserve bases within a single policy.

**CLAIM RESERVES:** Once an insured is receiving acceleration benefits, a disabled life reserve should be held, calculated in a manner typical for long-term care insurance claims. However, offsetting this reserve is the expected value of the reduction of future death benefits due to the

anticipated acceleration payments. As noted earlier, the assumed mortality difference between healthy and disabled insureds will be a key driver of the assumed offset. It can be difficult to accurately model this expected effect on claim reserves of the value of future death benefit offsets from claim payments.

**COMPANY TAXATION ISSUES:** How will accelerated benefit LTCI rider reserves be treated in terms of qualifying for life insurance reserves used in insurance company tax laws (i.e., Section 807(c))? To the extent that a typical increasing charge structure exists, reserves would generally be small in amount, perhaps equaling one-half month’s worth of charges, and would be treated as Section 807(c)(2) unearned premiums. No official guidance has been issued on this topic.

In the case of “independent” LTCI riders, with a level premium structure, there would be a reserve of some significance. Assuming that this reserve is computed based on interest, morbidity and mortality rates, it would be a life insurance reserve under Section 807(c)(1) as well as Section 816(b). The IRS so held in a 1989 published revenue ruling, and said that it would treat company-constructed tables as the “recognized” tables referred to in Section 816(b). HIPAA amended Section 807(d) to allow such reserves to be computed using a one-year preliminary term method.

It would appear that acceleration benefit charges assessed against the cash value of a UL contract would not attract a premium tax or the federal DAC tax. The gross contract premiums, when received, are subject to life insurance premium taxes and to the 7.7 percent DAC. If separately identified premiums are collected for an LTCI rider, they could be subjected to different premium tax treatment, but this is not clear. It would appear that the DAC tax treatment would be the same whether the premium was separately identified or not.

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Your help and participation are needed and welcomed. All articles will include a byline to give you full credit for your effort. *Long-Term Care News* is pleased to publish articles in a second language if a translation is provided by the author. If you would like to submit an article, please call Bruce Stahl, editor, at 856-566-1002.

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In order to efficiently handle articles, please use the following format when submitting articles:

Please e-mail your articles as attachments in either MS Word (.doc) or Simple Text (.txt) files. We are able to convert most PC-compatible software packages. Headlines are typed upper and lower case. Please use a 10-point Times New Roman font for the body text. Carriage returns are put in only at the end of paragraphs. The right-hand margin is not justified.

If you have questions, or if you must submit in another manner, please call Joe Adduci, 847-706-3548, at the Society of Actuaries.

Please send a copy of the article to the following:

Brad S. Linder, ASA, MAAA, FLMI, ACS, ARA  
Co-editor  
GenRe | Life Health  
695 East Main Street • P.O. Box 300  
Stamford, Conn. 06904-0300  
PHONE: 203-352-3129  
FAX: 203-328-5886  
E-MAIL: [blinder@genre.com](mailto:blinder@genre.com)



Co-editor  
Brad Linder



Editor  
Bruce Stahl

Bruce Stahl, ASA, MAAA  
Newsletter Editor  
Penn Treaty Network America  
146 Lakeview Drive • Suite 203  
Gibbsboro, N.J. 08026  
PHONE: 856-566-1002  
FAX: 856-566-5165  
E-MAIL: [bstahl@penn treaty.com](mailto:bstahl@penn treaty.com)

# Breakfast in New York!

Long-Term Care Insurance Section members enjoying the section breakfast at the SOA Annual Meeting in New York.



Phil Barackman (LTCI Annual Program Committee representative) and Deborah Grant



Steve Konnath and Mark Newton (session coordinator for the breakfast)



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475 N. Martingale Road, Suite 600  
Schaumburg, Ill 60173-2226