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# Conducting a Long-Term Care Experience Study

## Tips and Pitfalls

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As with other types of insurance, long-term care (LTC) insurance relies on experience studies for determining premium rates and managing in-force business. Comparisons of actual and expected experience are central to developing an accurate model of future costs.

We have worked on many LTC experience studies these past several years and have compiled a list of some issues to consider when reviewing experience and setting projection assumptions for the future. This article focuses on possible trouble areas where some additional thought may be necessary. This list is by no means complete, and each item is discussed in relative brevity. Below, we discuss two general categories: policy termination assumptions and morbidity assumptions.

### TERMINATION STUDY

A policy termination study, which includes both voluntary policy lapsation and mortality, is more straightforward than a morbidity study, but it is no less important. The long-term nature of LTC business and increasing claim costs by age mean that a small variation in policy terminations can significantly impact a company's projections.

**1. Total terminations versus lapse and mortality separately.** Most LTC projection models have separate assumptions for mortality and voluntary lapse, but oftentimes LTC policy terminations are not accurately coded in the actual data. Most LTC policies do not include a death benefit, so there is no incentive for survivors to notify the insurance company when the insured dies. In many cases, a death is recorded as a lapse, because all the insurance company knows with certainty is that it is no longer paying premiums.

Policy termination reasons are not always available, and those that are available are not always reliable. In that case, a policy termination study that separates mortality and voluntary lapse will not lead to accurate assumptions for the future. Here are a few options to deal with termination data that may not be accurately coded:

- *Government data.* Deceased Social Security numbers can be purchased from the government. The company's data can be compared to the deceased Social Security numbers and updated with the more reliable mortality data. However, effective Nov. 1, 2011, the Social Security Administration made changes to remove certain records from this database and limit the sources available for adding new records in the future.
- *Same-company life insurance.* Life insurance carriers obviously do receive notification of policyholder deaths. If an LTC company is also a life insurance carrier, it can cross-check its data with its life insurance experience to make its LTC termination codes more accurate for those insureds who have both LTC and life insurance policies.
- *Implied voluntary lapse.* You can work around the problem by conducting a policy termination study based on total policy terminations. In this case, you choose a reasonably representative mortality assumption and use it to develop the number of assumed deaths in the data. You then impute the voluntary lapse rates from the actual policy terminations and the assumed number of deaths.

**2. Calculating partial exposure.** Policy termination studies generally aim at producing a rate calculated by the number of terminations divided by the exposure. Exposure can be policy months, policy years, or whichever basis the company chooses. Partial exposures occur when an insured purchases, dies, or lapses partway through an exposure period. How these partial exposures are counted is important to the policy termination study.

It may seem logical to count partial exposures by decimal fractions, but a common industry standard is to give a termination the value of a full exposure regardless of when the termination occurs.

To understand why this makes sense, consider a case in which three policyholders die halfway through the year. Three terminations would be recorded, but



using decimal fractions only yields 1.5 exposures. Dividing the number of terminations by the exposure yields a termination rate of 200 percent (which obviously does not make sense). However, counting a whole year of exposure for these three terminations yields a termination rate of 100 percent, which is correct in this case.

**3. Benefit exhaustions.** Benefit exhaustions occur when a policy terminates because all of its LTC benefits have been used. It is important to develop policy termination assumptions on the same basis that they will be used in the projection model. If you do not handle benefit exhaustions elsewhere in the projection model, you can include them in the voluntary lapse assumption, and therefore you should also include them in the voluntary lapse experience. In that case, policy terminations may increase after 20 or 30 years, not necessarily because of increased lapses or mortality, but because insureds are running out of benefits.

**4. Shock lapse.** Rate increases may cause shock lapses that appear as spikes in the policy termination rate. You should generally treat shock lapse as a one-time event that is not expected to continue (unless future rate increases are anticipated). As such, you need to remove this impact from the termination study. Here are a couple of common ways of addressing shock lapses:

- *Isolate it.* If it is a closed block of business and in its ultimate period, you may be able to

### Impact of Applying Non-Claimant Morbidity Assumption to All Lives Exposure Base

Attained Age	Probability of Being on Claim	Percentage Error in Applying Claim Costs to All Lives
65	0.007	1%
75	0.030	3%
85	0.167	20%

estimate the impact of shock lapse by comparing the lapses in the year of a rate increase to the ultimate lapse rate in the surrounding years. Then you could back out the assumed impact of shock lapses from the observed lapse rate. This is also useful if the company plans to implement additional rate increases and is interested in the impact of such a rate increase on the business.

- *Remove it.* Sometimes it is not possible or practical to back out the assumed impact of shock lapses from the termination study. In this case, it may be most prudent to simply remove the year(s) of rate increase implementation from the termination study experience period.

### MORBIDITY STUDY

There are as many ways to conduct an LTC claim morbidity study as there are companies to conduct them. The study must be conducted in a way that is consistent with the assumptions that are input into the company's projection system. You may look at claim incidence and claim termination separately, or you may only be concerned with the total claim cost. While each block of business is unique, there are a number of common issues worth considering.

**1. Claim incurral definition.** What is a claim? While a seemingly harmless question on the surface, this can pose quite a problem if the data warehouse, the morbidity study and the projection system are not on the same page. For example:

- *Elimination period.* Does a claim begin when the policyholder first starts receiving care, or after the policyholder satisfies the elimination period? If the data warehouse (i.e., actual claims) counts a claim as soon as care is received, but the projection system (i.e.,

**Rate increases may cause shock lapses that appear as spikes in the policy termination rate.**

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If care path transitions are not addressed, the actual-to-expected ratios in a morbidity study may be misleading.

expected claims) counts a claim only if the elimination period is satisfied, the claim incidence actual-to-expected ratio may be artificially skewed in the morbidity study.

- *One claim versus two claims.* When does a gap between claim payments cease to be a gap and instead split the payments into two distinct claim incurrals? One common practice is to consider any gap in benefits longer than six months as a new claim. This, however, varies from company to company.

**2. Transitions.** Transitions between sites of care are common and can have a significant impact on claim costs. Home care is generally less expensive than care at a facility, so if a claim starts in a home care setting and then later transfers to a nursing home, the composite claim cost is generally higher than if the insured stayed in the home for the entire length of the claim.

In 2009 the Society of Actuaries (SOA) published a study titled “Transfer Rates Between Long Term Care Claim Settings,” which indicated that 20 percent of all initial home care claims and 8.6 percent of all initial facility claims transferred at some point during the claim. This can significantly impact the expected cost of a claim, especially when the facility and home care benefits are significantly different on a policy. For example, consider a comprehensive LTC policy that covers home care claims at 50 percent of the facility daily benefit amount. If this policy goes on claim in a home care setting, the expected claim cost will be calculated assuming that 50 percent of the daily benefit is paid out each day. But according to the 2009 SOA study, 20 percent of the time this claimant will transfer to a facility and begin receiving claim payments that may be double what they were in the home care setting. If care path transitions are not addressed, the actual-to-expected ratios in a morbidity study may be misleading. In the above example, the actual home care claim costs may be much higher than expected, but only because some claims flagged as home care are actually incurring facility benefits. Building transition logic into the expected model can be time consuming, but it may yield more accurate models.

**3. Exposure basis.** Does the morbidity assumption apply to an all-policyholder, non-claimant, or

non-institutionalized claimant exposure basis? Any assumption must be developed so that it is consistent with the approach used in the projection system (or vice versa). The exposure basis can have a significant impact on the expected claims when a large portion of the population may already be on claim. The table on page 21 provides a hypothetical example demonstrating the size of the error that can result by applying a non-claimant claim cost to all lives.

**4. Incurred but not reported claims.** When comparing actual claims to expected claims, you may need to make an adjustment to account for incurred but not reported (IBNR) claims. For example, if the experience period of the study is from 2000 through 2011, the most recent calendar year of actual experience may be artificially low because some claims have been incurred but not yet reported to the company. This will make the actual-to-expected ratio artificially low as well.

There are a couple of ways to address IBNR claims in a morbidity study:

- *Gross up actual for IBNR claims.* When using recent actual data in an actual-to-expected study, it’s necessary to make an adjustment for IBNR claims. One way of doing this is to gross up actual claims data by some percentage (representing IBNR claims) so that the actual basis matches up with the expected basis. Be aware, however, that some companies include margin in their IBNR claims as an extra cushion in their reserves. Consider whether or not this margin should be reflected in the actual-to-expected study.
- *Use only complete years.* Rather than gross up the actual experience to account for IBNR claims, it may be easier and more accurate to adjust the experience period so that all experience years are fully complete. That is, the experience period includes only years where no IBNR claims remain. This has the advantage of avoiding estimating the impact of IBNR claims and may produce a purer actual-to-expected result, but it has the disadvantage of using an older experience period.

**5. Disabled life reserves.** Disabled life reserves (DLR) are estimates of future payments to people

who are already known to be on claim. DLR calculations are not discussed here, but they are a function of the amount of time the claimant is expected to be on claim in the future. A claim termination assumption is necessary to produce a DLR. This can become circular if one of the goals of the morbidity study is to determine claim termination rates. If this is the case, a claim termination study should be completed prior to reviewing actual and expected claim costs.

**6. Waiver of premium.** Most LTC policies contain a provision that waives premium while the insured is on claim. In a company's experience and projections, waived premiums can be addressed by removing the waived premiums from the premium experience, or by counting the amount of waived premium as a claim. Either approach is generally acceptable.

In an actual-to-expected morbidity study, the actual and expected basis must be consistent. That is, if the actual incurred claims include waived premiums, the expected incurred claims must also include an estimate for waived premiums.

**7. Adverse selection and benefit reductions from rate increases.** A rate increase may prompt some policyholders to lapse or reduce benefits rather than pay a higher premium. Theoretically, these will be healthier policyholders, so the total risk pool becomes less healthy after a rate increase (i.e., adverse selection). This may lead to an increase in claims after the rate increase is implemented. Adverse selection from a rate increase is often difficult to quantify and may take many years to identify and measure, but you should keep it in mind when reviewing actual experience.

Benefit reductions as a result of a rate increase can also cause an issue with actual-to-expected morbidity studies. Oftentimes, when policyholders choose to reduce benefits on their policies, the data warehouse does not "remember" the policy benefits prior to the benefit reduction. The new benefits override the original benefits. This can cause some skewed actual-to-expected results because the actual historical experience represents the higher benefit level, but the expected basis represents the current (reduced) benefit level.

One way to remedy this issue is to link each policy to a prior valuation date and pull in the earlier policy benefits as the "original" benefit level. This way, the expected basis can reflect either the original or current (reduced) benefit level depending on the timing of the rate increase implementation. However, this approach can become time-consuming and unwieldy if the block has had multiple rate increases.

**8. Pricing versus sales mix.** Pricing LTC policies requires assumptions about the type of business that will be sold, such as gender, marital status and benefit period. When reviewing an experience study, it is prudent to review the distribution of policies actually sold versus the distributions assumed to be sold (and potentially underlying the claim cost assumption).

Consider this simple, hypothetical example: A company prices an LTC policy and assumes that 60 percent of the policies will be sold to married individuals. Further, the company assumes that married individuals have 80 percent of the claims of single individuals. This company develops an expected claim cost basis that reflects these assumptions. What happens if the company actually sells only 40 percent of its policies to married individuals? Assuming the company is spot-on with all of its other assumptions, it will find that actual experience starts running about 5 percent worse than originally expected. This difference occurs not because morbidity is worse than originally expected, but entirely because fewer married policies were sold than originally anticipated.

## CONCLUSION

As indicated early in this article, this list is by no means complete and will vary from company to company. Each company, and each actuary, has to decide which issues are material, which issues need to be addressed, and which issues can be ignored completely. A thorough understanding of the company data and the expected basis are essential in making these decisions. The purpose and audience are also essential in determining the depth of the experience study. The more in-depth the study, and the more high-profile the purpose, the more thought must be given to each of the above items—and perhaps many more! ■

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