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Claim Reserve Model

HOW ACTUARIES RELY UPON THE CLAIM DATA THEY RECEIVE

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The last two newsletters included articles on claim reserves, specifically in regard to retrospective testing. In this context, it may be worthwhile to consider how actuaries rely upon the claim data they receive for calculating LTCI claim reserves.

CONTINUANCE TABLES

Sometimes actuaries can develop continuance tables with precision, using historical experience. Yet despite the quality of the tables, they may not apply them to consistent data.

Actuaries generally apply the continuance tables to claims that are known to be open at the valuation date. A relatively simple, fictitious, non-LTC illustration provides an example: Suppose that anyone who goes on claim may receive a total of $100. Sixty percent of claimants will receive $50 immediately and would receive the remaining $50 after surviving a year. The other 40 percent of claimants will receive $30 immediately and would receive the remaining $70 after surviving a year. Yet only 25 percent of both groups are expected to survive six months, and only 10 percent are expected to survive a year. Then, suppose that on January 1, 500 people enter claim status—exactly 300 from the first group and 200 from the second. The payment to them totals $21,000 (300 x $50 + 200 x $30). The expected second payment, based on our knowledge on January 1, is $2,900 (300 x .10 x $50 + 200 x .10 x $70). The expected amount to be paid on January 1 of the following year does not change on midnight, June 30 if 125 people have survived (with 75 from one group and 50 from the other). But actuaries try to take advantage of additional information. If the number of survivors through six months is actually 80 from the first group and 45 from the second, the expected payment on January 1 will be revised. Instead of $2,900, the expected payout is only $2,860 (80 x .10/.25 x $50 + 45 x .10/.25 x $70).

Now let's turn to an example for long-term care. Let's say that the continuance pattern anticipates 50 percent reaching the fifth month, and that of those who reach the fourth month, 92 percent reach the fifth month of disability. Assume 100 claimants began disability on January 1, and that 54 persisted through April 30. It is known that services were still rendered on May 31 for 50 of these 54. Fifty is precisely the number that was expected as of January 1 for May 31.

Now, instead of all last service dates being on May 31, assume that they are evenly distributed through the month of May. The number of open claims is now 52 instead of 50, so we assume that two more will close by May 31, by applying a formula that recognizes the probability that claims would have closed between the latest service date and May 31. Such formulas often reduce the reserves by approximately 4 percent on all 52 open claims, to estimate the full value of the reserves for the two extra claims.

Yet the many variables associated with claims administration usually cause distortions. Information about dates of loss (incurred dates), dates of service and paid dates is known accurately when the actuaries derive the continuance tables, but not when they apply those continuance tables. Actuaries usually use historical experience that is reasonably final when developing the tables, but they apply them to ongoing claims where the dates are not as well-identified for setting reserves. Benefit administrators are not usually able to accurately identify all of the information for an open claim file. For example, a care provider may have submitted the expenses for services that he already performed from May19 to May 25, yet the latest payment was only for services through May 18. The administrator may not have paid the benefits for one week because he did not receive all of the information that was needed to verify payment. If this is the case, someone in the company may already know that services were provided. However the actuaries did not know this, as the May 25 date was not recorded in the system that generates the file that they use in the reserve calculation. In this case the reserve is reduced to accommodate the probability of claim termination from May 18 to

May 31, when in fact it is more accurate to reflect only the probability from May 25 to May 31. If this happens for a significant number of claims, the reserve calculation may be understated.

Sometimes administrators try to help by attempting to be as up-to-date as possible with the claim status. They may unintentionally create a stronger bias, as the information may be easier to update on certain classes of people. For example, it may be easier to close a claim for death or recovery than to update a surviving claimant's actual service dates and expenses. If the concluded claims are more up-to-date than the surviving claims, too many people contributing to shorter claims are removed from the population and the otherwise good continuance probabilities become biased toward understating the reserve.

Another example of a bias-generating practice is when administrators close claims upon hearing that a claim has terminated (either by death or recovery), without waiting for the last set of expenses to be submitted. Such claims may not make it to the open claim file, thus creating a twofold bias: first, a reserve may not be set up for their final payment; and second, these claims represent the claimants that are about to terminate, again causing the otherwise good continuance curve to be biased toward an understatement. If they had been on the open file, they would have generated reserves that were much higher than what was actually needed for them individually. This is appropriate because the others that actually made it to the open claim list are more apt to have reserves that are understated. With all claims remaining open, the average would be right. However in this case, the open claim list artificially removes the short claims and the overall reserve is understated.

When the benefit administrators have a practice of closing out claims early, it is important to make adjustments to the claim reserves for the closed claims. It is also important to make adjustments to the reserves of the remaining claims in order to address the bias in the continuance pattern that is created by the process.

To avoid a bias from administration processes, the actuaries may theoretically keep every claim open that has ever been open. In this case they need to set the last service date to the date of loss (incurred date), and then identify the expected remaining payout as of the valuation date. This should work if the continuance tables accurately reflect the claim population. To be clear, the reserve needs to be adjusted for interest from the incurred date to the valuation date. It also needs to have the anticipated claims from the true last service date to the valuation date added. If the average lag from the true last service date to valuation date is not long, the dollar value can be approximated reasonably by multiplying the number of days lagged by the average dollars paid per day in a recent period. A small adjustment may be appropriate to recognize that some of the claims would not have lasted through the entire lag period.

Many actuaries and company executives may find this approach unacceptable because they will not think they are using all of the available information, yet the method may be a way to test the reasonableness of the disabled lives reserve that is derived using the normal method.

PAID AMOUNTS

Identifying the continuance tables is only one component in the calculation of the known disabled lives reserve. Unless the benefit is an indemnity, the actuaries also need to estimate how much will be paid on each claimant. The variables that determine the paid amount are numerous and, while this list is probably not exhaustive, paid amounts will likely vary according to: diagnosis; time since the onset of disability; size of the daily maximum; whether inflation is included; whether the claimant has incentive to

CONTINUED ON **PAGE 10**

preserve some of his lifetime maximum for the future; sex; type of care provider; region; age; whether a spouse is alive and is healthy; and the reason the claim qualified for benefits.

The actuaries depend upon accurate reporting of the listed items. Some of the listed items are identified in the in-force policyholder file, yet others change through the course of time. From the list above, the items that may change are the type of provider, the region and whether the spouse is healthy. Accuracy in recording of these items in the claim file may have a material impact on the size of the reserve.

INCURRED BUT NOT REPORTED (IBNR) RESERVES

Just as claim reserves for known claims depend on how the information is reported, so IBNR estimates may depend on how claims are counted and reported. For background, some actuaries include pending claims (open claims without any payments) in the IBNR while others apply continuance tables to the pending claims along with a probability that they will be eligible claims. The latter develop a pure IBNR.

Some actuaries identify IBNR counts using completion factors. If they are seeking a pure IBNR, they derive the IBNR counts from claim triangles using counts by incurred dates and report dates. If they are including pending claims in IBNR, they derive them from claim triangles using counts by incurred dates and first payment dates. In either case, consistency of counting claims is important. If the administrators alter their procedure for entering a claim on the system, or if they alter the rules for closing pending claims, the counts in the triangles can be inconsistent and the completion counts can be distorted.

The nature of the exposure should help to identify the expected claim incidence as a reasonableness test for the calculated IBNR. If the exposure has reached a steady state, the new claim counts (including IBNR) ought to remain fairly level relative to the exposure. If the exposure has an increasing percentage of new business, the new claim counts will normally be declining relative to the exposure, and if the exposure has a declining percentage of new business, the new claim counts will normally be increasing relative to the exposure. This concept can be fine-tuned by segmenting the exposure and the new claim counts by factors such as, but not limited to, policy duration, age and sex.

Seasonality may also be a factor in completing claim counts, so the actuaries need to account for it in calculating the IBNR count.

Usually, more judgment is needed to estimate IBNR than to derive reserves for known claims. The estimate of the IBNR reserve usually depends upon recent developments in the exposed population. Therefore, the range of values will likely be relatively wide compared to the reserve on known claims. Yet the relatively large range for IBNR will usually be relatively small for the entire reserve. Assume the IBNR ranges from 9 percent to 11 percent of the total claim reserve. The 20 percent range on an expected IBNR of 10 percent is only a 2 percent range on the total claim reserve. ■