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# *Don't Forget the Data*

***By Robert Bachler***

Frequently, we actuaries tend to fall in love with our models, causing us to ignore data that could lead to results with less uncertainty if it were properly accessed and summarized. Using my own story as an example, I'll show how my company fell into this trap in determining reserves for unpaid medical claims. I'll also discuss how we are now using more data, more detail, and new models with a different perspective to determine reserves with greater certainty.

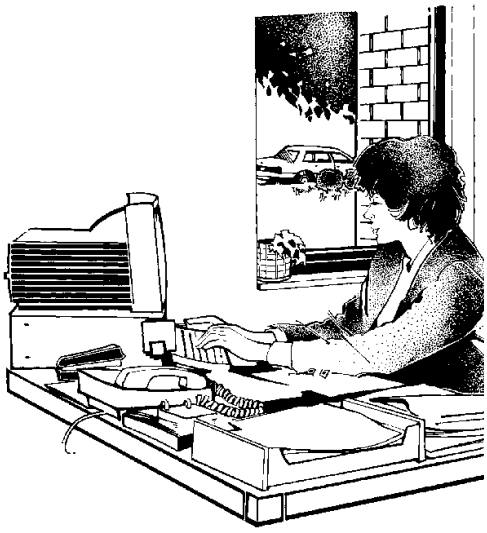
For several years, we calculated our unpaid claims reserves based solely on lag triangles. The reserve was split into two parts:

- **Incurred Prior, Paid After**—This amount represents claims with incurred dates prior to the valuation date, with paid dates between the day after the valuation date and the calculation date (inclusive). It is known with certainty.
- **Incurred, but Unpaid**—This was calculated based on estimation of completion factors (percent of ultimate paid to date) using past data. Completion factors were estimated for each incurred month and applied to claims paid to date to determine ultimate claims. As a check of "reasonableness," estimated ultimate claims were compared to exposures and premium. If the results seemed unreasonable, the estimates were changed. This amount is almost completely estimated (known with almost no certainty).

This methodology had two major problems. The first was the "reasonableness" check. Given the subjective nature, there was a fine line between actuarial judgment and reserving at a level that was desirable from an accounting or similar standpoint. Despite our best efforts, it is likely that this line was crossed on occasion, though subconsciously. The second problem was the tendency to ignore available data. When our model was first implemented, it was the best methodology available. Because claims were generally entered and adjudicated manually or semi-manually (on-line, but with significant human intervention at the point of entry), unpaid claims consisted almost entirely of stacks of paper claims and unreported claims. However, with the increase in EDI (electronically submitted) claims and truly automated adjudication, more claims systems have claims pending in the system, waiting for some form of mild intervention to allow for final adjudication. Many properties of these claims can be quantified. We know the total submitted charges. With the submitted charges, we know or can estimate with great accuracy the covered charges, contract discounts, and insured cost-sharing. Based on historical data, we know the likelihood of the claim being denied, given the reason for pending. In retrospect, it was very naïve to ignore all of this data. We missed subtle shifts in processing patterns and as a result. our unpaid claims reserves were not as accurate as they could have been.

To minimize these problems, we altered our reserve methodology. The "Incurred Prior, Paid After" claims are still calculated as above. However, the "Incurred but Unpaid" claims, previously lacking any certainty, can be split into the following:

- **Pended Claims** — Claims pended in the adjudication system. Based on our system configuration, the ultimate paid amounts are calculated as follows (different system configurations would require different breakdowns):
  - ◊ Claims are divided into groups based on reason for pend.



  - ◊ Likelihood of outright denial is determined for each pend group.
  - ◊ Final paid amounts can be calculated or estimated directly (as described above) or paid amounts as a percentage of submitted charges can be estimated based on past data.
  - ◊ The ultimate paid amount is (1 - the likelihood of denial) X (final paid as a percent of submitted).

  Any uncertainty regarding number and size of submitted claims is eliminated from these claims. The only uncertainty remaining is related to final adjudication/paid amounts. Our experience has shown that, with one month's runout (e.g., the year-end reserves are calculated using claims paid through the end of January), these claims make up 60-70% of the "Incurred but Unpaid" claims.
- **Submitted but Unprocessed Claims**— If there are very few paper claims waiting to be entered, these claims can be counted, and the total submitted amount can even be calculated. An estimate of final paid as a percentage of submitted charges can be used to estimate the final payment amount. Although the final payment for these claims is less certain than

with the pended claims, there is still less uncertainty than with the "Incurred but Unpaid" of the previous model. With one month's runout, these claims have made up about 10% of "Incurred but Unpaid."

- **Incurred but Not Reported** — These are the claims that have yet to be received from the service provider. These claims need to be estimated based entirely on historical data showing submission patterns. This data has uncertainty similar to that of "Incurred but Unpaid," which would have a traditional lag triangle. Because we are now looking at the lag in reporting, not payment, we changed our models accordingly and estimated counts of claims which were IBNR. To estimate the dollar value of these claims, we used the same method as described above with the submitted but unprocessed claims.

With this new methodology, we have been able to reduce the uncertainty on 80% of previously uncertain claim amounts. This has allowed us to reduce the subjectivity of our reserve estimates while increasing the accuracy.

Not all claims processing systems will provide data to allow breakdowns exactly like those described above. However, hopefully this discussion has illustrated the potential of using available data for us as actuaries to become better practitioners of our craft.

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# *Disability in the New Millennium - A UK Perspective*

***By Sue Elliott***

In the United Kingdom in recent years, a great deal of attention has been given to all health care products. As the "cradle to grave" welfare state has slowly begun to disappear; people are realizing that they will need to provide for themselves. As an industry, we need to be in a position to supply products that suit the needs of the consumer and are flexible enough to cope with their changing needs. The government has the right idea, focusing on "ability" and what people can do, not what they cannot do. As an industry, we should follow suit.

## The Last Decade

During the '90s, key health care products have had mixed fortunes.

Critical illness insurance has been available in the UK since 1986 and has enjoyed exceptional sales in the last decade, as can be seen from the chart below.

| Year | New Policies |
|---|---|
| 1992 | 177,3356 |
| 1993 | 230,800 |
| 1994 | 251,407 |
| 1995 | 302,245 |
| 1996 | 470,468 |
| 1997 | 626,584 |
| 1998 | 694,263 |

Income protection, on the other hand, has often been referred to as "the Cinderella product that has never made it to the ball." It has suffered several false dawns, as providers failed to maximize its potential in lukewarm responses to various government initiatives. Independent Financial Advisors (IFAs) complained that the product was too complicated and too expensive. Rates rose due to the poor experience that came about because of less than optimal risk management.

As can be seen from the following chart, income protection sales have been relatively flat, although there has been a small increase since 1996.

| Year | New Policies |
|---|---|
| 1992 | 153,000 |
| 1993 | 152,177 |
| 1994 | 116,405 |
| 1995 | 117,212 |
| 1996 | 127,514 |
| 1997 | 143,553 |
| 1998 | 156,424 |

As in the United States, the leading causes of income protection claims are now stress-related illnesses, which because of their duration are very costly. The key question is: how do we provide some sort of protection and at the same time, minimize our exposure to such risks?

Long-term care insurance (LTCI) has been available in the UK since the early '90s. It is still undersold, mainly due to a lack of awareness of the need and to confusion about what the product is intended to cover. Efforts have also been made in the UK to link LTCI with pensions, as both are providing funding for the retirement years. A Royal Commission to investigate the funding of long-term care in the UK was initiated in December 1997 and reported back on March 1, 1999. Many recommendations were made, but as yet none have been implemented.

| Year | In-force Policies |
|---|---|
| 1995 | 15,598 |
| 1996 | 16,637 |
| 1997 | 22,924 |
| 1998 | 29,257 |

The above table shows very low penetration of LTCI in the UK, but similar growth patterns have been observed in other markets.

The reform of the welfare state and

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