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The Art and Science Of Pricing Small Group Medical Coverage

Two General Approaches To Pricing

by William R. Lane

On the surface, it might appear that there are as many ways to price medical insurance as there are carriers that underwrite it. In reality, most carriers use one of two main approaches in pricing group medical insurance. These two approaches can go by many names (or no name at all). I refer to them as the "Forecast" approach and the "Rebuilding" approach.

At its core, the Forecast approach works by taking historical earned premium and historical incurred claims and projecting them into the rating period. The projected loss ratio is compared to the desired loss ratio and the rate action is the increase in current premium needed to make the loss ratios identical. I refer to this approach as Forecasting because it typically explicitly develops an expected loss ratio for the future rating period in the absence of a rate action.

In its most simple form, the approach simply compares the current loss ratio to the desired loss ratio and combines the needed corrective action with trend.

In other cases, some carriers will develop per member per month (PMPM) incurred claims and PMPM earned premiums by dividing incurred claims and earned premium by a total member month count. They then compare the PMPM claims to the PMPM premium. Mathematically, when you divide the PMPM claims by the PMPM premium, you cancel out the member month count. Hence, this approach is still what I refer to as the Forecast approach.

At its core, the Rebuilding approach works by splitting the historical incurred claims into various components usually based on the type of service, supply or additional benefit, and then dividing these amounts by the number of member months which were included in the historical period. These PMPM amounts are adjusted for trend and sometimes other factors. The trended amounts then become the basis for the next time period's pricing. I refer to this approach as Rebuilding because it typically produces the new rates by "rebuilding" the base rates by type or benefit.

Typically in a rebuilding approach, the cost for each service, supply or benefit is at 100 percent coverage without reduction for copays or other cost sharing. This is different from the typical Forecast approach that usually looks at actual incurred claims after cost sharing and compares it to earned premium that has been adjusted for the plan of benefits.

The key difference between the two approaches is that the Forecast approach incorporates the various risk factors by using actual premium that should already have these factors built into it. The Rebuilding approach must acquire the rating factors separately because they are not inherent in a normal member month count.

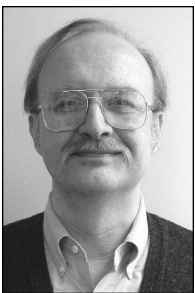
Neither approach is universally better than the other.

The Forecast Approach

The Forecast approach often uses only financial statement data or the equivalent. Since this information is required for other purposes and is heavily audited, the data for pricing is relatively easy to acquire and accurate. The calculations are relatively easy as well since the approach often uses a large block of business as a whole. It is also easy to explain. For example, a typical explanation might be that the loss ratio for the last year came in two points higher than expected, so the rate action is trend plus two points.

One common reason for using the Forecast approach is that the data to perform a Rebuilding approach is simply not available or is not deemed to be sufficiently accurate.

The Forecast approach has a number of drawbacks as well. It assumes that various rating factors such as age gender slopes are correct. It also assumes that if the age gender of the underlying block is changing, then these factors, as used in setting actual premiums, will compensate in an appropriate manner. Since not all rating factors can be used to the extent of their actual values, this is not a correct assumption. It is often, but not always, "close enough."



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To illustrate what can occur, consider that smaller groups, particularly one employee groups and two employee groups, tend to have significantly higher morbidity than larger groups even after health status is considered. If the carrier has no size factor or a size factor that is restricted by law to less than the real change in risk, then the carrier is at risk for a change in the average size of its groups. If the average group gets smaller in the future, then rates will be inadequate and vice versa.

Another key difficulty in the Forecast approach is taking prior rate actions and benefit changes into consideration. Ideally, you would want the earned premium to be based on the same rate basis throughout the experience period. In reality, this is often not the case. One relatively simple approach is to split the experience into each renewal month. Generally speaking, this keeps the same base rates for all cases and allows for easier consideration of prior rate actions.

If plan factors are considered to be reasonable and do not need significant change, there might not be any reason to adjust for plan changes. If they are known to be inconsistent, then adjusting for them becomes a challenge. This is quite important because, in the real world, underpriced benefits will grow as a percentage of the total block and vice versa.

Other factors that can change for the whole block include anti-selection (either a stagnant block that is increasingly anti-select or an increasingly select block with growing new sales), the discount for negotiated networks, plan factors (which change with inflation) and shifts within area if the area factors do not compensate. Since most states do not allow the full range of risk factors or the full annual change in risk factors, the average risk factor allowed by law may not match the average risk factor of the block. This also needs an adjustment.

Yet another drawback to the Forecast method is that trend will need to be leveraged by the deductible levels of the various benefit designs. This is particularly important in pricing the drug card benefit where fixed dollar copays can be a sizeable percentage of the average cost per prescription.

The Forecast approach generally requires that special studies need to be made to determine if the underlying rating factors are appropriate or need to be changed. A review of general factor appropri-

ateness can be built into the rating approach, but it isn't easy to do. One "special study" that is almost always required is a continuation table where claimants are sorted by the size of their annual cost (before deductibles and coinsurance). Others include splitting the benefits by type of service. Special studies also have the drawback that they frequently take place during times of lower activity and the data being used is not the same data that was used in re-rating the entire block. It is more recent if nothing else. This can lead to mismatches.

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The Rebuilding Approach

The Rebuilding approach requires significantly more data. Not only do you need claims and member month counts, but you also need rating factors at the group, subscriber or member level. Member months are generally not audited like financial data, particularly outside of the HMO environment. In addition, rating factors can be difficult to obtain. For example, a computer system might contain the zip code of the member, but if the group is priced according to the zip code of the group itself, then the appropriate area factor for each member must be found in a group level data record. Values that are paid by the carrier or collected by the carrier tend to be heavily audited. Factors that are entered into a system, but not used in any payment, tend to have more uncorrected data entry errors.

Another issue with rating factors is that they need to be as of the date the rates were developed. Thus, unless all cases are re-rated as of issue and changed to the demographics and other rating factors as of that date, the computer system ideally would capture the rating factors (and the data item that correlated to them) when the rates are run for the final time. Some factors such as group size can change rapidly, and the changes are not always random. For example, it is not unusual for groups to be larger when rates are initially requested and then they "shrink" at issue or soon thereafter. Thus,

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the group size factor used for rating the actual case might be set at a level appropriate only for a larger group. Hence, you can't accurately recreate actual premium levels using the current size of these groups.

One method for testing the validity of member month counts and rating factors is the process of recalculating what the actual premium should be for a block of business. Typically, the estimated total premium and the actual earned premium will vary by more than an immaterial amount. There are many reasons why this is so, but essentially they all go back to missing data or inaccurate data. In some cases, however, the difference remains a reasonably constant percentage difference. If this is the case, you might be willing to simply assume this factor will remain constant in the future rather than go to the effort of correcting all rating factors.

There are several advantages to the Rebuilding approach. It tends to better fit the HMO benefit structure where benefits are paid at 100 percent less a copay. Splitting the claims into these benefit amounts and knowing the number of claimants allows for an easy calculation of plan factors. Negotiated network reimbursements tend to be easier to apply with the Rebuilding approach. Having the data by benefit generally allows for an easier time in modeling the impact of changes in a negotiated arrangement.

Historically, HMOs have viewed both their premium and their claims on a PMPM basis. Often, senior management does not adjust these amounts for significant rating factor changes. Thus, senior management might believe that premium is satisfactory simply because the PMPM premium has reached a specified target. If you are using the Rebuilding approach and have the rating factors available, you may be able to spot that the age gender factor has increased due to a lower percentage of children. In reality, the HMO might not be achieving the premium results that it originally budgeted. Simply because it does tend to "fit" an HMO mentality, most HMOs use some form of the Rebuilding approach.

Generally, there is no need to be concerned with prior rate actions when using the Rebuilding approach except when attempting to recreate historical premium.

If you have captured all of the rating factors by member, then performing special studies to review the rating factors is much easier. It is also more

likely to be more accurate since the data for the factor study is identical to the data used in re-rating the entire block.

The Rebuilding approach also has significant drawbacks. The most serious is usually the accuracy of the rating data. It is often inaccurate to a degree and the inaccuracy is not necessarily self-correcting. For example, suppose the computer system with member data shows whether the "subscriber" has employee only coverage, employee plus spouse coverage, employee plus children coverage or full family coverage. Now, also suppose that the carrier allows dependents to have coverage without a member under specific situations. Unless the member record clearly shows that no employee is covered under these "subscribers," the assumed exposures will include employees that do not exist. This will lead to a lower than actual historical PMPM claim value. The following year, the calculation will continue to be lower than actual.

Such problems with data occur in almost all systems and are intensified by the number of separate computer systems that carriers use. Data may be accurate for one system, but not another.

Another drawback to the Rebuilding approach may be that it is more difficult to explain. Trended claims divided by adjusted exposures are not what a typical marketing officer thinks about.

Yet another drawback to the rebuilding approach is that by building up a number of pricing pieces from scratch, it becomes more difficult to apply reasonableness tests. The hospital cost may have risen significantly, but the physician costs appear to be reduced. Should the physician costs be used as is or should you assume they actually increased as well? If the local hospitals have started including radiology, pathology, anesthesiology and emergency physician costs in their charges, the combination might be correct. When everything is "thrown together" under a typical Forecast approach, the increase in the total is more likely to be what you expect. The finer you split the benefits under a Rebuilding approach, the more difficult it is to apply reasonableness tests.

The most serious drawback to the Rebuilding approach is the data accuracy issue. The Forecast method uses premiums and claims that can usually be compared to readily available financial statement values. There are no comparable figures against which the Rebuilding approach values can be compared. Unless the rating values can be used

to recalculate historical premium, there is no simple method of assuring their overall accuracy.

The Best Approach

What then is the “best practice”? Assuming resources can be made available on a cost-effective basis, the best approach is to do both. If the same assumptions are applied to both methods, they should result in the same answer. If they do not, something is wrong and it is worthwhile to find out the differences. If nothing else, using the detailed data from the Rebuilding process to calculate historical earned premium and then comparing this figure to actual earned premium provides an extremely valuable cross check.

In the real world of scarce resources, a number of considerations need to be made in selecting a rating approach. Computer resources are a critical consideration. The sheer volume of data required by a Rebuilding approach is a significant drawback unless the systems already exist.

The size of the block is also a consideration. Basically speaking, the smaller the block, the less credible the experience. Hence, for a smaller block, a Forecast method (which lumps all experience together) tends to be better simply because the values produced by a Rebuilding approach are not credible.

If you are starting a new block of business, you have no historical experience and will need to base your rates off of whatever information seems most appropriate (probably information purchased from a consultant).

In either approach there are issues that should be considered. For example, extremely large claims will distort the results. If you know the number and size of the large claims in a block, the Forecast approach tends to be easier to adjust for an abnormally high or low number of large claims. If you have frequent changes in negotiated network arrangements, the Rebuilding approach tends to make it easier to implement these changes in pricing. Bonus payments to provider groups tend to be handled easier with the Forecasting approach since they are thrown in with all other claims. Distributing bonus payments, after the fact, tends to complicate the Rebuilding approach.

Whichever approach is used, a valuable cross check is to use the re-rating information to forecast the expected experience of the new and renewal block in the following time period. This should then be compared with the actual experience on an ongoing basis. Any significant differences are a just cause for further research and possibly future refinements in the rating process. ❏

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