AN ACTUARIAL ANALYSIS OF A PROSPECTIVE EXPERIENCE RATING APPROACH FOR GROUP HOSPITAL-SURGICAL-MEDICAL COVERAGE

BY

GEORGE E. McLEAN

Volume XLVIII, Page 155

DISCUSSION BY ROGER A. JOHNSON

Mr. McLean's comprehensive paper entitled "An Actuarial Analysis of a Prospective Experience Rating Approach for Group Hospital-Surgical-Medical Coverage" outlines briefly the history of experience rating of these coverages, and follows with a rather complete description of the experience rating plan now in effect in his Blue Cross Plan.

As a fairly recent convert to Blue Cross, I am not in a position to criticize either his history or his rating plan. The Plan which I represent adopted, effective August 1, 1960, a merit rating program which is substantially different from Mr. McLean's plan. Such differences, however, reflect variations in philosophy and local conditions, and one cannot say that either program is right and the other wrong.

Without going into a complete description of our program, which I may do at some later date, let me point out some major differences:

1. Some traditional elements of "community" rating have been maintained, such as the group conversion subsidy, and groups are encouraged to cover their retirees in affiliated retiree groups by spreading the additional cost of such groups over all.
2. A one-year experience period is used, credibility limiting fluctuations in either direction.
3. Credibility is determined by premium volume. In spite of Mr. McLean's objections, this has the great advantage of simplicity.
4. In addition to individual ratings for groups having 5% or higher credibility, the program provides for merit rating of smaller groups (less than 30) in the aggregate, and for the rating of non-group business in the aggregate, both using the merit rating formula with full credibility.

It is to be hoped that Mr. McLean's paper will encourage others in this field, both from Blue Cross and "commercial" organizations, to make further contributions to the rather meagre coverage of this area in our Proceedings.

AUTHOR'S REVIEW OF DISCUSSION and ADDITIONAL NOTES

GEORGE E. McLEAN

In his discussion Mr. Johnson made the statement that the Experience Rating Program described is that which is now in effect in the Massachusetts

Blue Cross-Blue Shield. While this is substantially true, the fact is some of the ideas at the time the paper was conceived had not been put into effective operation and have been modified upon implementation.

There has been a change in the basic permissible loss ratio and there has been a slight alteration in the approach to converting losses to current level. These amendments and changes I shall discuss briefly after I address myself to the four points raised by Mr. Johnson dealing with differences between the Philadelphia and Massachusetts approaches.

1. In setting the permissible loss ratio for experience rating of group business, 1% of premium is earmarked for group conversion subsidy. In this respect our approach is philosophically and actually not different from Philadelphia's. We do not, however, at the moment provide any sort of credit for groups to encourage them to include their retirees. In my opinion this is a very intelligent approach on the part of the Philadelphia Plan and one which the whole industry might consider seriously. If more companies could be encouraged to provide for their retirees through the mechanism of group coverage it would certainly mitigate the problem of covering the aged to a degree.

2. The question of allowing additional credibility based upon accumulation of experience over an extended period of time is one which may be legitimately argued on various lines. We are about to test our own experience over a period of two or three years to determine which method would have yielded more accurate results in the light of subsequent development. Merely from observation, the system of using two years' experience versus one tends to damp the natural sinusoidal pattern of renewal rates of relatively large groups.

3. I would agree with Mr. Johnson entirely that premium volume as a measure of credibility does have the advantage of greater simplicity. In some Blue Cross-Blue Shield Plans, and possibly in some commercial carriers which make limited offerings in this field, the variety of coverages available is sharply restricted. In these plans or companies premium volume may well be an accurate gauge of credibility since it will reflect, primarily, size of risk and utilization rates. In a Plan such as Massachusetts, however, which has seven standard offerings ranging from $12 room and board indemnity contracts to full semi-private coverage, plus more than one hundred special types of contracts in force including some with room allowances as low as $7 a day, there is a considerable variation in basic rate resulting from coverage provided. For this reason premium volume tends to break down as a true measure of credibility.

4. We rate our non-group business as a category of risk in much the same way as Philadelphia. Every year the experience of this entire category is studied in depth and new manual rates promulgated. If there is an indicated change of 5% or more from present manual rates a change is instituted.

   We experimented, at one time, with the business of rating non-credible groups as a class but we experienced a great difficulty in administration. At that time this category was assessed a blanket 10% surcharge; the remainder of the group business was experience rated from the manual rate without blanket adjustment. The situation which produced the difficulty involved the borderline groups; that is, those which were nearly credible for rating purposes. For example, in a given locale we had two groups different in size by only about five contracts, one of which fell just below the dividing line and received a 10% surcharge; the other was rated on its own experience which, though poor, did not produce any surcharge over the manual rate because of the application of a low credibility. The particular group which suffered the 10% increase happened to have very good experience and we were hard pressed to explain to them why there was such a sharp deviation in our treatment of groups so similar in size.

We have now reached the conclusion that the best method of operation for our area is to examine the experience of all groups holding similar coverages, determine proper manual rate levels, and allow deviations from this standard based upon experience and credibility. Since our experience rating program is nearly in balance we realize approximately the income contemplated in the new manual rates; moreover, our treatment of groups is equitable and readily salable to our accounts because there is no point in the range of risk size at which we introduce a totally new concept of rating.

ADDITIONAL NOTES

In the original presentation of this paper the minimum retention, as a percentage of premium, was 8% and produced a 92% permissible loss ratio. Because we have been permitted to reduce our rate of accrual to statutory reserve, the new minimum retention has been reduced to 6% yielding a 94% permissible loss ratio.

With regard to the development of statewide group trend factors, for use in converting losses to anticipated levels, those currently in use are 1.08 for Blue Cross and 1.04 for Blue Shield. These factors were determined in essentially the same way as those shown in Exhibits VII and VIII of the paper but reflect more recent experience. The annual increase in cost for Blue Cross and Blue Shield combined will vary between 6.0% and 6.5% depending upon the coverages held. The use of a composite factor is more nearly in line with the commercial practice, I believe, and it would appear from this that a 6% per year increase factor might be an accurate reflection of the situation, at least as it exists in Massachusetts today.

The application of these statewide trend factors to all groups, regardless of size, produced what in our opinion were some legitimate complaints. It was argued that some consideration, at least, should be given to the trend in loss cost exhibited by the particular group where there were a large number of contracts involved. As a consequence we have modified our approach to experience rating by introducing the "group's own trend factor" which is melded with the "statewide trend factor." The sample application of group trend factor will illustrate the effect of the group's own experience in determining trend factors.

An individual group's own trend factor is developed by:

1—Determining the ratio of actual losses to premiums at present standard rates for each of the two experience years.

2—Dividing the second year ratio by the first to determine the group's own trend.

Weight of Group Trend Factor—Because the statewide trend is based on four years' experience, while the group's trend is based on only two years' experience, only half weight is given to the group trend. Also, recognizing that a group's credibility is a measure of the reliability of its loss experience, we further modify the group's trend by its credibility.

Composite Trend—the mathematics of modifying a group's trend by half its credibility and then combining with the statewide trend to produce a composite trend is illustrated in the Blue Cross sample—footnote to item 3A.

Maximum and Minimum Annual Trend—Because we feel that we cannot recognize a downward group trend, the minimum group trend factor is 1.00. To compensate, we limit upward group trend to the statewide factor so that the maximum upward group trend factor is 1.08 for Blue Cross and 1.04 for Blue Shield.

As a result of these maximum and minimum limitations:
The range of annual composite Blue Cross trend factors is from 1.04 to 1.08.
The range of annual composite Blue Shield trend factors is from 1.02 to 1.04.

Composite Compounded Trend—The composite annual trend factor (in this case 1.07) is then cubed and squared as shown in the footnote to item 3A.

When first experience year losses (in this case 1959 losses) are multiplied by the cubed factor (1.23) we arrive at what these losses would cost if they occurred three years later (in 1962). When second experience year losses (in this case, 1960 losses) are multiplied by the squared factor (1.14) we arrive at what they would cost if they occurred two years later (in 1962):

	Actual Losses	Composite Compounded Trend Factor	Losses At Anticipated Level
1st Exper. Yr. 1959	$31,200	1.23	$38,376
2nd Exper. Yr. 1960	$34,000	1.14	$38,760
			$77,136

Loss Ratio For Rating—Now actual premium has been adjusted to premium at present standard rates for the memberships and benefits in effect during each of the experience years. Also, losses have been adjusted to the level anticipated in the forthcoming year. Using these figures we determine what the group's loss ratio presumably will be if standard rates are paid:

	Losses At Anticipated Level	Premium At Present Standard Rates	Loss Ratio for Rating
2 Yrs. Combined	$77,136	$69,000	1.12

Surcharge or Discount—

$$\frac{\text{Loss Ratio-Permissible Loss Ratio}}{\text{Permissible Loss Ratio}} \times \text{Credibility} = \text{Rating (rounded to nearest 5\%)}$$

In this example, the formula is:

$$\frac{1.12-.94}{.94} \times .90 = +.1724, \text{ rounded to nearest } 5\% = 15\% \text{ surcharge}$$

Statewide Trend Method—Item 3B illustrates the effect of using the statewide trend factor without consideration of the group's own trend. Since we are taking ratings to the nearest 5% the difference in method produces a difference of 5% in the indicated renewal rating.

In conclusion I would say that the changes described have put us in an even more competitive position by sharpening our experience rating technique. Our present methods, however, even now are undergoing examination with a view to possible further refinements.

MASSACHUSETTS HOSPITAL SERVICE, INC.

Sample Application of Group Trend Factor

1. Actual Experience:

Year	Premium	Loss	Loss Ratio
1	$38,000	$31,200	.82
2	$45,000	$34,000	.76

2. Computation of Group Trend Factor:

Year	Standard Premium	Actual Loss	Loss Ratio
1	$34,000	$31,200	.92
2	$35,000	$34,000	.97

Group Trend Factor = .97 ÷ .92 = 1.05

3. Standard Experience:

A. Group Trend Method

Year	Standard Premium	Standard Loss	Loss Ratio	Loss Trend Factor[1]	Credibility
1	$34,000	$38,376	1.13	1.23	
2	$35,000	$38,760	1.11	1.14	
	$69,000	$77,136	1.12		90%

Rating + 15%

B. Statewide Trend Method

Year	Standard Premium	Standard Loss	Loss Ratio	Loss Trend Factor	Credibility
1	$34,000	$39,312	1.16	1.26	
2	$35,000	$39,780	1.14	1.17	
	$69,000	$79,092	1.15		90%

Rating + 20%

[1] Loss Trend Factors used in the Group Trend Method are

Year 1: 1.07 × 1.07 × 1.07 = 1.23
Year 2: 1.07 × 1.07 = 1.14

where 1.07 is the composite Trend determined from the formula
(½ Group Cred) (Group Trend Factor)+(1 − ½ Group Cred) (Statewide Trend Factor)
which in this example is (.45) (1.05) + (.55) (1.08) = 1.07.

Note: If Group Trend Factor is greater than 1.08 use 1.08 for Group Trend Factor.
If Group Trend Factor is less than 1.00 use 1.00 for Group Trend Factor.