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Medical Aggregate Stop Loss Claim Frequencies

By David Olsho and Mark McAllister

When I first got involved in medical stop loss in the mid-1980s, there was an expectation that there would not be any medical aggregate stop loss claims and aggregate claims were, in fact, rare. In recent years, aggregate claims have become much more frequent. Almost all of the Merrill Lynch / Howard Johnson & Company (ML/HJ) clients have reported increased claim frequencies.

I believe there are two reasons for this increased frequency: selling aggregate stop loss to smaller groups and selling aggregate stop loss at lower margins.

Both of these are related to the increased number of stop loss providers (managing general underwriters, insurers and reinsurers), all of whom want to increase (or at least maintain) premium volume. While premium volume is more directly related to specific stop loss (typically 90% of total stop loss

premium), aggregate stop loss is usually sold in conjunction with specific. The aggregate attachment point (AAP, equal to expected claims plus margin) is often an important factor in the sale of the entire stop loss package.

To show the effect on claim frequency of these two assumed causes, I examined the results of the Monte Carlo simulation used to produce the premiums in the ML/HJ aggregate manuals. The simulation is based on our standard medical claim cost distributions (one adult, one child), and the number of dependents (spouses and children) per life (employee). We assumed each group had appropriate specific coverage, based on the ML/HJ guidelines. We simulated claims for 31 different group sizes, ranging from 25 lives to 10,000 lives, 35,000 times for each group size, and counted the number of times the simulated claims exceeded the expected claims, at margins ranging from 0% to 50%.

Table 1 illustrates the results of the simulation for nine group sizes. It clearly shows the increasing frequency as both group size and margin decrease. At the industry standard 25% margin, our simulation did not produce any claims for group sizes above 2,000 lives. Not until we reduce the group size to 300 lives, do we get a claim frequency of greater than 1%. At a group size of 75, the expected frequency is almost 10%, and at 25 lives, the frequency is almost 20%.

When the margin is decreased from 25% to 20% (a decrease in the AAP of 4%), claim frequency increases over 10 times at the higher groups sizes (at 1,000 lives or more), and reaches a 1% frequency at 700 lives (more than 4 times the frequency at a 25% margin). At 25 lives, the frequency increases to almost one in four, or 25% greater than at a 25% margin.

Chart 1 shows frequency by group size at both a 20% and 25% margin.

TABLE 1

Merrill Lynch/Howard Johnson & Company Expected Aggregate Claim Frequencies

Group Size	Margin										
	0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
25	49,757	42,737	35,963	29,866	24,494	19,903	15,874	12,503	9,840	7,629	5,583
50	48,577	40,234	32,400	25,397	19,434	14,363	10,383	7,266	4,929	3,234	2,003
100	49,300	38,331	27,460	18,160	11,137	6,329	3,469	1,831	934	409	160
250	48,143	32,289	18,654	9,171	3,714	1,209	334	91	29	3	-
500	45,214	26,980	13,454	5,691	1,917	474	100	17	-	-	-
1,000	48,546	23,589	8,583	2,354	469	34	-	-	-	-	-
2,500	49,289	13,854	1,954	197	3	-	-	-	-	-	-
5,000	50,017	7,451	357	-	-	-	-	-	-	-	-
10,000	51,900	2,103	3	-	-	-	-	-	-	-	-

Note: Frequencies are per 100,000 groups using ML/HJ demographic assumptions and selected Specific Deductibles.

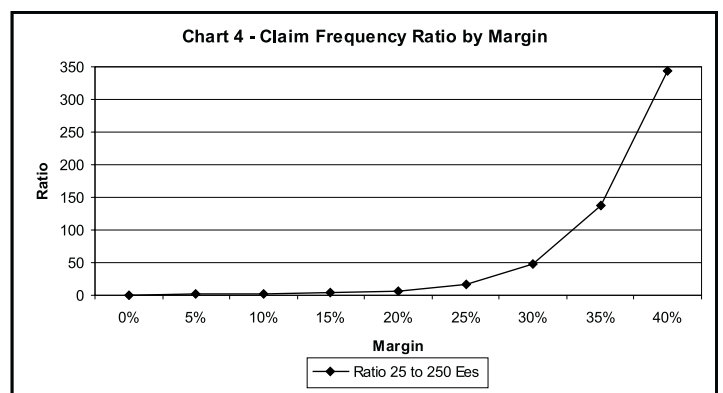
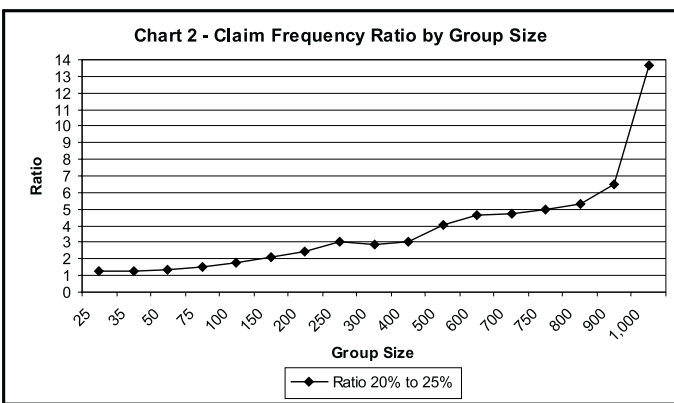
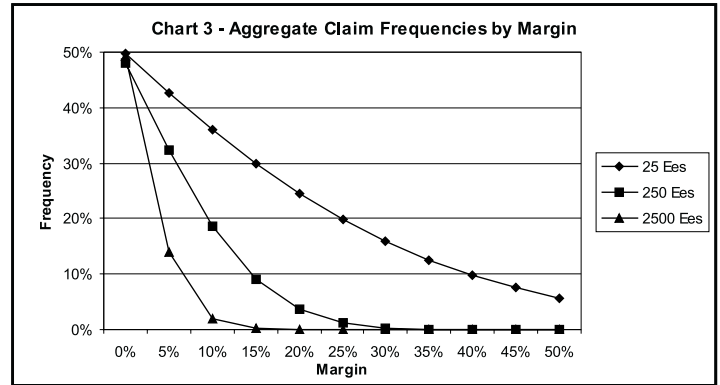
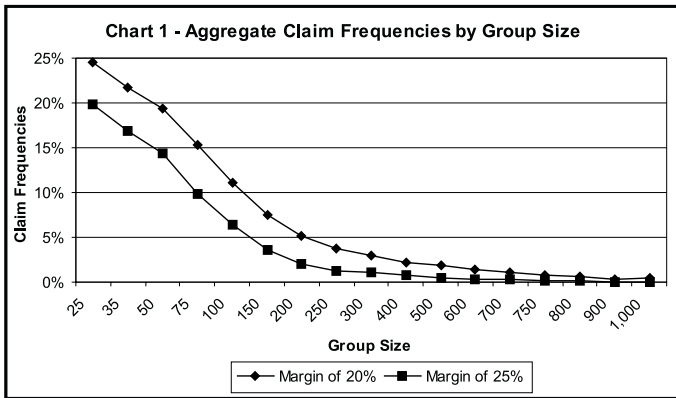


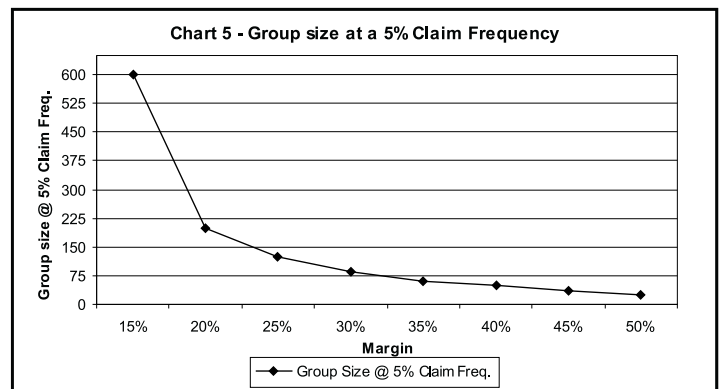
Chart 2 shows the relative frequency at those two margins.

Chart 3 shows frequency by margin at group sizes of 25, 250 and 2,500. Chart 4 shows the relative frequency of the 25 life group to the 250 life group.

Finally, Chart 5 shows the approximate group size that would produce a 5% claim frequency at various margins.

The results of the Monte Carlo simulation show that medical aggregate stop loss claim frequencies would be expected to increase, as group size decreases and as margin decreases. While this is not an unexpected result, the extent to which frequency increases may be. Frequency is 40 times higher for a 50 life group at a 20% margin than it is for a 500 life group at a 25% margin.

With aggregate claims expected to be frequent, the aggregate premium calculation becomes as important as the aggregate attachment point calculation.



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