PROCEEDINGS

MAY 22, 23, 24, 25, 1966

EFFECT OF LOSS RESERVE MARGINS IN CALENDAR YEAR RESULTS

RAFAL J. BALCAREK

Introduction

As almost everyone knows all estimates have some margin of error and as loss reserves consist of estimates they are likely to contain some inaccuracies. Inaccuracies in loss reserves will, of course, have an effect on calendar year results, especially in lines of insurance such as auto bodily injury, general bodily injury and workmen's compensation, where loss reserves are very large when related to annual earned premiums.

It is also fairly obvious that calendar year results appear to be taken very seriously by most of the people connected with the insurance business. In fact, they are becoming more important as the narrow profit margins make it necessary to watch closely the trends so that a swift action can be taken if a deterioration sets in. There is a large number of insurance publications that summarize calendar year results by company, by line, and by state. These results are studied very closely and from them, no doubt, important conclusions are drawn. A nagging question is how valid are these conclusions if the calendar year results on which they are based contain major distortions due to factors which have little to do with the current underwriting experience.

Although it is generally recognized that, theoretically at least, the effect of loss reserve margins could be very large, there is a lack of published studies on the subject. A possible reason may be the non-availability of relevant figures relating to the industry's reserves. Some companies may have figures relating to their own performance. However, they treat such figures as confidential and would not think of having them published.

A contributing factor is that a study of reserves is not in itself the most rewarding subject. Generally, it takes years before various estimates and conclusions can be satisfactorily substantiated to the practical people

running the insurance companies. By that time the conclusions may have lost most of their original urgency. One can indulge here in a bit of whimsical fantasy and imagine an actuary approaching the harassed chief executive in the big private office in 1966 to give him the startling news that as a result of reserve margin changes the 1957 automobile loss ratio for the company was understated by 5.4 points. More often than not, the chief executive may be busy trying to figure out ways to explain gently to his board of directors the company's latest loss ratios, and one could only speculate on his reaction to this timely bit of information.

There is in existence a tacitly accepted theory that the influence of reserve margins on calendar year results is unimportant as long as a given company maintains a consistent reserve policy. A company with a conservative policy incorporates large reserve margins in new claims which act as a penalty on the current calendar year results. However, if such a policy is pursued consistently year after year the company will enjoy a considerable amount of favorable development on old cases which will practically offset the penalty on new cases. After all, what goes in must come out. A similar reasoning can be pursued in regard to a company with a less than conservative reserve policy. Hence considerable penalties or benefits to calendar year results can only arise if a company changes its reserve policy from conservative to less conservative or vice versa.

There is such an amount of logic in this argument that one is more than ready to accept its validity. On the other hand, a theory should fit the facts if it is to have practical value. While analyzing reserves for one of his former employers, the writer determined that year after year there were substantial distortions in calendar year results due to changes in reserve margins. At the same time the claim people vigorously denied and even resented any imputation that they kept changing their reserve policy. Before questioning their veracity or competence one should first determine what was the industry's performance in regard to reserve margins. This paper presents an attempt to throw some light on the subject.

Basis of this Study

The amount of benefit or penalty to the calendar year results due to loss reserve margins will be determined by two things:

(1) Adequacy of reserves on losses incurred during the current year.

(2) Development of prior years' losses during the current year.

It occurred to the writer that by the use of the published figures in Schedule P—Part 5 of the annual statement one could obtain an estimate of such a benefit or penalty for the Schedule P lines of coverage. We can, for example, check the original amount of auto bodily injury losses incurred during 1959 and see what they were four years later. This gives us an indication of the reserve margin included in 1959 losses. At the same time we can compare the incurred losses for the available prior years at 12-31-58 and 12-31-59, which would give us the development during 1959 of losses incurred during the preceding 4½ years. A combination of these two results would give us an indication of the penalty or benefit incurred as a result of changes in reserve margins during a particular calendar year.

At this point, it may be useful to calculate the effect of reserve margin changes on 1959 auto bodily injury calendar year results for one (Company I) of ten companies studied in this report. According to Schedule P, Part 5 of the 1959 annual statement, the incurred auto bodily injury losses at December 31, 1958 for accident years 1958 and prior amounted to $64,209,448 (sum of the amounts in the last but one column). At December 31, 1959 the incurred losses for the same accident years amounted to $63,100,892. This means that during the calendar year of 1959 the losses for prior years showed a favorable development of $1,108,556 which, related to the calendar year earned premium of $21,871,159, benefited the loss ratio by 5.1 points.

The incurred loss at December 31, 1959 for accident year 1959 amounted to $13,304,524. Consulting the 1963 annual statement we see that these losses at December 31, 1963 amounted to only $11,694,360, a decrease of $1,610,164. This means that the auto bodily injury incurred losses for the accident year 1959 were originally overstated by $1,610,164 which resulted in a penalty of 7.4 points to 1959 calendar year loss ratio.

Thus the total effect of reserve margin change on 1959 auto bodily injury calendar year results for Company I was an estimated penalty of 2.3 points (i.e. 7.4—5.1). The reported calendar year loss ratio was 55.2% and the loss ratio adjusted for the penalty is 52.9%.

No representation is being made that the obtained estimate is 100% accurate. After all, there may be additional developments beyond the fifth year. However, it is suggested that the five-year period is sufficiently long to account for the bulk of the reserve developments; consequently, the indications obtained should correspond quite closely to the unavailable "final" benefits or penalties.

EXHIBIT 1

CALENDAR YEAR EFFECT OF LOSS RESERVE MARGIN CHANGES DURING 1953-1960
% OF EARNED PREMIUM

Company	Auto Bodily Injury		General Bodily Injury		Workmen's Compensation	
	Average	Range	Average	Range	Average	Range
A	2.0	5.6	3.3	7.8	2.8	9.0
B	7.3	28.4	7.3	31.8	5.2	17.3
C	4.3	13.3	4.2	17.8	2.4	8.9
D	1.9	8.1	2.3	10.2	3.4	13.1
E	2.0	9.1	6.1	19.4	3.2	11.1
F	3.5	10.7	4.1	13.6	2.3	9.0
G	3.5	11.2	3.0	9.1	3.0	10.8
H	3.1	9.3	3.4	9.4	4.4	17.6
I	2.7	12.9	3.0	10.1	2.5	8.4
J	2.9	13.4	3.9	11.5	1.2	3.7
Average	3.3	12.2	4.1	14.1	3.0	10.9

The figures used in this report relate to reserve margins for auto bodily injury, general bodily injury and workmen's compensation of ten large stock writers during calendar years 1953—1960. In 1960 their earned premiums amounted to $445,000,000 for auto bodily injury, $210,000,000 for general bodily injury, and $300,000,000 for workmen's compensation. The actual indications have been related to earned premium and the results are summarized in Exhibit 1 and Exhibit 2.

Main Findings

Over the complete period of eight years the net penalty due to changes in safety margins expressed as a percentage of earned premium amounted to 0.4% for auto bodily injury, 0.5% for general bodily injury and —0.5 for workmen's compensation. This demonstrates that our theory that the reserve margins have an insignificant effect on calendar year results is basically correct if one takes a sufficiently long period of time. However, if one confines himself to the more usual period of time like one calendar year the impact of reserve margins becomes more pronounced. Exhibit 1 shows the ranges in which the loss ratio effect of reserve margin fluctuates from year to year for each of the ten companies. In addition, the average annual effect of loss reserve fluctuations is also presented.

The figures in Exhibit 1 indicate that while the effect of reserve margins differs to quite an extent among the various companies, there is no single case where the effect is so small that it could be ignored. The ranges appear to be frequently in excess of ten points, which means that when comparing two calendar year loss ratios for the same company it would not be unusual to have changes in reserve margins account for more than ten points of the difference between these loss ratios. In case of genuine bad luck the range could amount to about half of the permissible loss ratio.

The shifts in reserve margins can also affect the inter-company comparisons. Exhibit 2 shows the extent of this effect by computing the range between the individual companies for each of the calendar years under review.

It appears from the figures in Exhibit 2 that a comparison of calendar year loss ratios of various companies has some serious defects. Even a difference as large as ten points may be nothing more than an erratic result of shifts in reserve margins.

A question could be asked whether these changes in reserve margins in each of the three lines do not offset each other; that is, a company may

EXHIBIT 2

CALENDAR YEAR EFFECT OF LOSS RESERVE MARGIN CHANGES OF
INDIVIDUAL COMPANIES – % OF EARNED PREMIUM

Calendar Year	Auto Bodily Injury			General Bodily Injury			Workmen's Compensation		
	Low	High	Total Range	Low	High	Total Range	Low	High	Total Range
1953	−0.7	7.3	8.0	−2.4	10.6	13.0	−0.6	10.8	11.4
1954	−4.7	6.1	10.8	−1.0	8.9	9.9	−6.1	4.9	11.0
1955	−11.1	1.5	12.6	−7.7	13.1	20.8	−5.8	4.6	10.4
1956	−12.7	1.9	14.6	−21.2	1.1	22.3	−6.8	−0.1	6.7
1957	−3.2	15.7	18.9	−3.7	8.7	12.5	−5.9	5.8	11.7
1958	−0.6	8.2	8.8	−6.4	8.7	15.1	−2.9	3.8	6.7
1959	−3.5	2.6	6.1	−6.5	5.2	11.7	−6.9	1.4	7.8
1960	−5.5	1.1	6.6	−9.1	5.2	14.3	−7.2	1.5	8.7

havc a shift towards lower reserve margins in auto bodily injury while at the same time the reserve margins for general bodily injury and workmen's compensation may go up by an equivalent amount.

A calculation of correlation coefficients between the loss ratio effects in the three lines gave the following results:

$$\sigma_x = 4.37 \qquad \text{cov}_{xy} = 12.82 \qquad \gamma_{xy} = +\, 0.57$$

$$\sigma_y = 5.14 \qquad \text{cov}_{xz} = 10.33 \qquad \gamma_{xz} = +\, 0.62$$

$$\sigma_z = 3.80 \qquad \text{cov}_{yz} = \;\; 9.50 \qquad \gamma_{yz} = +\, 0.49$$

where

x = Loss ratio effect in auto bodily injury

y = Loss ratio effect in general bodily injury

z = Loss ratio effect in workmen's compensation

n = 80

All three correlation coefficients are highly significant. They indicate that if a company has a shift towards lower reserve margins in auto bodily injury the chances are that general bodily injury and workmen's compensation reserves will follow a similar pattern.

This result is not altogether unexpected as the claim examiners for all the three lines usually work closely together in the same department and are subject to the same influences and controls.

A close inspection of the three lines shows that there are some years when practically all of the companies reduced their reserve margins while there are other years when the reverse was true and nearly everybody was raising the margins. There is no doubt that these indications raise some disturbing implications as rate-makers use both loss development factors and calendar year results in their various rate making formulas; consequently the swings in reserve margins could find their way into the manual rate changes. One could put forward an argument that our results were obtained by the use of a very small sample and the annual changes in the average loss ratio effect for the ten companies combined are nothing more than the usual sampling errors. This hypothesis can be checked by the use of the analysis of variance, treating each calendar year as a sample and testing for significance of its average loss ratio effect. The calculations are as follows:

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square
Auto Bodily Injury			
Between calendar years	7	588.34	84.05
Error	72	937.50	13.02
Total	79	1,525.84	
General Bodily Injury			
Between calendar years	7	570.92	81.56
Error	72	1,552.54	21.56
Total	79	2,123.46	
Workmen's Compensation			
Between calendar years	7	411.42	58.77
Error	72	790.95	10.99
Total	79	1,202.37	

The values of F for the three lines amount to 6.46, 3.78 and 5.35 respectively. All of them are highly significant. Therefore, it appears unlikely that the annual changes in the average loss ratio effect for the ten companies combined are a result of sampling errors.

A question remains whether insurance companies use their reserve margins to stabilize their results. The writer realizes that many people regard with horror the idea that one should adjust reserve margins according to the size of the loss ratio. Yet emotions are a poor basis for making sound business judgments. Looking at the matter from a logical point of view, there does not seem to be anything objectionable in increasing reserve safety margins during years of good underwriting results. Conversely, there should be no objections to reductions of these margins in time of poor experience in order to soften its impact, as long as the loss reserves are fully adequate and the company has a sufficient amount of surplus for the type and amount of business it conducts. This certainly makes more sense than the action of the majority of companies which penalized their auto bodily injury experience by increasing their reserve margins during their worst year. Action of such a nature may be interpreted as a suicidal tendency which definitely is not a sound business practice.

A comparison of standard deviations for the actual and adjusted loss

ratios for each company may give some idea as to the relation between the loss reserve margins and the fluctuations in calendar year experience. If in the case of an individual company the actual loss ratios have a higher standard deviation than the adjusted loss ratios, this would indicate that reserve margin changes aggravated the fluctuations; on the other hand if the adjusted results have a higher deviation the reverse would be true. The relevant figures are shown in Exhibit 3.

The figures indicate that each of the lines had a different experience. In auto bodily injury six companies show a larger standard deviation for reported results, while four show a larger standard deviation for adjusted results. For general bodily injury eight companies have larger standard deviations for reported results. In the case of workmen's compensation, the result is reverse, as eight companies have a smaller standard deviation on reported results.

Conclusions

The main conclusion is that loss reserve margins for the major casualty lines are basically unstable and exert an appreciable influence on calendar year results. In the comparison of the experience of an individual company for one year with that of prior years, or with the experience of other companies, the changes in reserve margins may, on occasion, be the most important single factor responsible for the observed differences.

There is evidence that in the case of an individual company loss reserve margins for the three lines of business have a tendency to move in the same direction at the same time. In addition there is also evidence that the companies tend to go together in raising or lowering their loss reserve margins.

The companies do not appear to enjoy a great measure of success in controlling their loss reserve margins to their best advantage. This is one of the most pressing problems because in times of poor underwriting experience companies cannot afford erratic changes in loss reserve margins to contribute to their adverse results and thus compound their difficulties.

EXHIBIT 3

STANDARD DEVIATIONS

Company	Reported Loss Ratios			Adjusted Loss Ratios		
	Auto B.I.	General B.I.	Workmen's Compensation	Auto B.I.	General B.I.	Workmen's Compensation
A	5.34	2.32	3.71	6.95	2.49	5.00
B	12.78	7.79	3.84	9.86	5.80	5.34
C	8.65	4.89	3.53	6.79	3.24	4.39
D	3.37	4.91	3.10	5.07	3.40	4.66
E	4.80	7.81	6.06	4.91	4.20	6.77
F	7.26	4.96	3.37	6.78	2.97	4.25
G	6.32	3.28	1.97	8.04	3.80	3.90
H	6.32	6.21	4.98	6.30	1.75	3.84
I	8.65	6.28	5.48	7.23	4.92	3.81
J	6.12	4.89	3.53	4.83	2.69	3.73

RESERVE ADEQUACY CHANGES EXPRESSED AS % OF EARNED PREMIUM   TABLE IA

COMPANY	LOSS RATIO EFFECT OF ADEQUACY MARGIN IN CURRENT YEAR RESERVE								LOSS RATIO EFFECT OF DEVELOPMENT OF PRIOR YEARS' RESERVE DURING								COMBINED LOSS RATIO EFFECT OF CHANGES IN RES. MARGINS DURING							
	1953	1954	1955	1956	1957	1958	1959	1960	1953	1954	1955	1956	1957	1958	1959	1960	1953	1954	1955	1956	1957	1958	1959	1960
A	+2.3	+4.0	+2.0	+0.9	+1.4	+1.5	+2.3	+1.5	+2.3	-0.2	-1.7	-1.9	+0.3	-1.0	+0.3	-0.4	+4.6	+3.8	+0.3	-1.0	+1.7	+0.5	+2.6	+1.1
B	+9.9	+7.7	-5.2	-10.8	+1.3	+7.2	+1.8	-0.6	-4.8	-11.2	-5.9	-1.9	+14.4	-5.8	-5.3	-4.9	+5.1	-3.5	-11.1	-12.7	+15.7	+1.4	-3.5	-5.5
C	-2.3	-4.2	-9.1	-12.8	-2.6	-1.7	+1.9	-2.8	+3.7	+0.4	+4.2	+5.5	+8.6	+6.1	-0.6	-2.7	+1.4	-3.8	-4.3	-7.3	+6.0	+4.4	+1.3	-5.5
D	+7.2	+10.1	+7.9	+8.8	+5.9	+5.8	+4.5	+3.9	-0.2	-7.1	-8.7	-6.9	-7.0	-6.4	-4.5	-3.1	+7.0	+3.0	-0.8	+1.9	-1.1	-0.6	+0.0	+0.8
E	+1.2	+4.5	+2.5	+2.2	+1.9	+4.6	+5.1	+2.7	-1.9	+1.6	-2.1	-3.3	-5.0	-2.4	-4.9	-5.3	-0.7	+6.1	+0.4	-1.1	-3.0	+2.2	+0.2	-2.6
F	+2.8	+6.7	-0.2	-4.4	+2.0	+4.2	+1.6	-1.8	-1.2	-3.7	-5.3	-1.1	+3.2	-2.1	-2.0	-3.1	+1.6	+3.0	-5.5	-5.5	+5.2	+2.1	-0.4	-4.9
G	+3.7	+3.8	+1.6	-1.9	-5.5	-1.6	+0.8	-1.7	+3.6	-1.3	-4.7	-1.2	+2.3	+6.0	-0.4	-2.2	+7.3	+2.5	-3.1	-3.1	-3.2	+4.4	+0.4	-3.9
H	-1.8	+1.9	+2.0	-2.8	-0.1	+4.6	+3.8	+1.3	+5.4	+2.5	-0.5	-0.6	+2.6	+1.3	-5.1	-3.4	+3.6	+4.4	+1.5	-3.4	+2.5	+5.9	-1.3	-2.1
I	+6.6	+4.3	+1.7	+0.7	-0.1	+5.3	+7.4	+8.6	-6.4	-9.0	-4.5	-2.8	-0.8	+2.9	-5.1	-9.1	+0.2	-4.7	-2.8	-2.1	-0.9	+8.2	+2.3	-0.5
J	+4.1	+3.6	-0.3	-4.8	+2.6	+1.5	+0.4	-0.3	-1.4	-4.9	-1.4	-0.9	+5.1	-1.4	-2.2	-1.9	+2.7	-1.4	-1.7	-5.7	+7.7	+0.1	-1.8	-2.2
AVERAGE	+3.4	+4.2	+0.3	-2.5	+0.7	+3.1	+3.0	+1.1	-0.1	-3.3	-3.0	-1.5	+2.4	-0.3	-3.0	-3.6	+3.3	+0.9	-2.7	-4.0	+3.1	+2.8	0.0	-2.5

LOSS RESERVE MARGINS

GENERAL BODILY INJURY — TABLE 1B

RESERVE ADEQUACY CHANGES EXPRESSED AS % OF EARNED PREMIUM

COMPANY	LOSS RATIO EFFECT OF ADEQUACY MARGIN IN CURRENT YR. RESERVE								LOSS RATIO EFFECT OF DEVELOPMENT OF PRIOR YEARS' RESERVE DURING								COMBINED LOSS RATIO EFFECT OF CHANGES IN RESERVE MARGINS DURING							
	1953	1954	1955	1956	1957	1958	1959	1960	1953	1954	1955	1956	1957	1958	1959	1960	1953	1954	1955	1956	1957	1958	1959	1960
A	+2.6	+6.7	+8.8	+6.5	+3.6	+2.7	+6.7	+7.2	-0.6	-0.6	-2.9	-8.2	-5.2	-3.4	-3.7	-2.0	+2.0	+6.1	+5.9	-1.7	-1.6	-0.7	+3.0	+5.2
B	+16.7	+19.3	+14.0	-4.4	-2.5	+7.4	+0.1	+0.0	-6.1	-16.1	-12.2	-16.8	-0.6	+1.3	-6.6	-3.2	+10.6	+3.2	+1.8	-21.2	-3.1	+8.7	-6.5	-3.2
C	+0.1	-0.7	-4.1	-5.0	+3.7	+1.6	-0.7	-5.5	-2.5	-0.1	-0.5	+2.5	+5.0	-0.7	-3.5	-3.6	-2.4	-0.8	-4.7	-2.5	+8.7	+0.9	-4.2	-9.1
D	+7.9	+8.4	+9.0	+8.5	+9.9	+5.6	+5.5	+5.6	-4.1	-6.5	-6.4	-7.4	-8.7	-12.0	-6.5	-5.5	+3.8	+1.9	+2.6	+1.1	+1.2	-6.4	-1.0	+0.1
E	+0.4	+7.7	+13.5	+7.0	+7.6	+12.8	+7.0	+5.3	+5.7	+1.2	-0.4	-13.3	-10.6	-8.5	-12.2	-7.4	+6.1	+8.9	+13.1	-6.3	-3.0	+4.3	-5.2	-2.1
F	+0.7	+4.1	-0.9	-3.4	+2.2	-1.1	+4.3	-2.4	-0.4	-2.2	-6.8	+0.5	+3.7	-2.7	+0.2	-3.0	+0.3	+1.9	-7.7	-2.9	+5.9	-3.8	+4.5	-5.4
G	+4.5	+10.7	+7.1	+3.0	+3.8	+1.0	+4.6	+10.7	+1.2	-5.2	-7.7	-6.4	-3.8	+0.8	-7.2	-6.2	+5.7	+5.5	-0.6	-3.4	+0.0	+1.8	-2.6	+4.2
H	+0.1	+2.9	+3.7	+1.5	+3.5	+5.0	+2.2	-2.3	+4.9	-0.3	-0.6	-3.7	-0.4	-2.0	-6.1	-2.1	+5.0	+2.6	+3.1	-2.2	+3.1	+3.0	-3.9	-4.4
I	+8.5	+6.8	+7.1	+5.4	+4.7	+7.2	+10.1	+9.6	-6.6	-6.1	-6.0	-9.5	-8.5	-1.2	-4.9	-8.5	+1.9	+0.7	+1.1	-4.1	-3.8	+6.0	+5.2	+1.1
J	+2.7	+2.5	+1.8	-2.4	+0.8	+3.6	-2.2	-4.8	-0.2	-3.5	-3.4	-3.3	+4.5	-0.7	-4.6	-1.1	+2.5	-1.0	-1.6	-5.7	+5.3	+2.9	-6.2	-5.9
AVERAGE	+4.4	+6.8	+6.0	+1.7	+3.7	+4.6	+3.8	+2.3	-0.9	-3.9	-4.7	-6.6	-2.4	-2.9	-5.5	-4.3	+3.5	+2.9	+1.3	-4.9	+1.3	+1.7	-1.7	-2.0

WORKMEN'S COMPENSATION — TABLE I C

RESERVE ADEQUACY CHANGES EXPRESSED AS % OF EARNED PREMIUM

COMPANY	LOSS RATIO EFFECT OF ADEQUACY MARGIN IN CURRENT YEAR RESERVE								LOSS RATIO EFFECT OF DEVELOPMENT OF PRIOR YEARS' RESERVE DURING								COMBINED LOSS RATIO EFFECT OF CHANGES IN RES. MARGINS DURING							
	1953	1954	1955	1956	1957	1958	1959	1960	1953	1954	1955	1956	1957	1958	1959	1960	1953	1954	1955	1956	1957	1958	1959	1960
A	+3.3	+5.2	+1.5	+0.7	+0.8	-1.3	-3.2	-2.4	+1.4	-2.1	-5.8	-1.9	-1.4	-1.6	-0.7	+3.9	+4.7	+3.1	-4.3	-1.2	-0.6	-2.9	-3.9	+1.5
B	+16.7	+15.2	+7.4	+0.4	+6.3	+6.4	+1.9	-0.7	-6.2	-16.2	-12.8	-6.3	-0.7	-6.5	-8.3	-6.1	+10.5	-1.0	-5.4	-5.9	+5.6	-0.1	-6.4	-6.8
C	+4.5	+1.7	-0.8	-4.2	-1.6	-2.9	+0.6	-7.0	-2.8	-3.9	-2.9	+1.0	+1.6	+3.9	-1.0	-0.2	+1.7	-2.2	-3.7	-3.2	-0.0	+1.0	-0.4	-7.2
D	+11.3	+13.5	+10.8	+9.4	+6.5	+6.6	+5.0	+1.7	-1.9	-9.2	-12.6	-10.2	-10.2	-8.4	-7.6	-4.1	+9.4	+4.3	-1.8	-0.8	-3.7	-1.8	-2.6	-2.4
E	+9.3	+10.0	+9.0	+1.6	+8.7	+9.6	+8.9	+4.9	-6.9	-8.7	-6.0	-6.9	-2.9	-11.4	-10.4	-9.6	+2.4	+1.3	+3.0	-5.3	+5.8	-1.8	-1.5	-4.7
F	+2.2	+5.0	-2.9	-4.1	+3.8	+0.4	+0.9	-1.4	-2.8	-4.3	-2.9	+1.4	-0.6	-2.1	-1.3	-1.7	-0.6	+0.7	-5.8	-2.7	+3.2	-1.7	-0.4	-3.1
G	+8.3	+13.6	+11.4	+9.0	+3.4	+5.0	+4.9	+3.1	-5.5	-8.7	-13.3	-12.2	-9.3	-5.7	-8.0	-4.9	+2.8	+4.9	-1.9	-3.2	-5.9	-0.7	-3.1	-1.8
H	+6.6	+5.2	+9.6	+1.6	-0.1	+3.9	+3.7	+2.2	+4.2	-7.2	-5.0	-8.4	-4.4	-0.1	-2.3	-3.7	+10.8	-2.0	+4.6	-6.8	-4.5	+3.8	+1.4	-1.5
I	+6.9	+6.0	+10.5	+8.9	+8.3	+10.2	+9.1	+4.7	-7.1	-12.1	-9.6	-10.7	-7.8	-8.9	-10.9	-11.8	-0.2	-6.1	+0.9	-1.8	+0.5	+1.3	-1.8	-7.1
J	+5.7	+5.7	+3.1	+2.1	+4.5	+3.0	+0.7	-0.8	-5.6	-5.9	-5.1	-2.2	-3.2	-5.4	-3.1	+0.1	+0.1	-0.2	-2.0	-0.1	+1.3	-2.4	-2.4	-0.7
AVERAGE	+7.5	+8.1	+6.0	+2.5	+4.1	+4.1	+3.3	+0.4	-3.3	-7.8	-7.6	-5.6	-3.9	-4.6	-5.4	-3.8	+4.2	+0.3	-1.6	-3.1	+0.2	-0.5	-2.1	-3.4

AUTO BODILY INJURY– CALENDAR YEAR LOSS RATIOS   TABLE 2A

COMPANY	REPORTED LOSS RATIOS								LOSS RATIOS ADJUSTED FOR CHANGES IN RESERVE MARGINS							
	1953	1954	1955	1956	1957	1958	1959	1960	1953	1954	1955	1956	1957	1958	1959	1960
A	52.8	53.9	59.2	63.9	69.6	64.0	64.4	59.5	48.2	50.1	58.9	64.9	67.9	63.5	61.8	58.4
B	55.9	58.9	63.3	66.5	99.6	77.2	71.0	70.6	50.8	62.4	74.4	79.2	83.9	75.8	74.5	76.1
C	54.6	55.0	59.9	65.9	81.3	69.8	65.0	55.1	53.2	58.8	64.2	73.2	75.3	65.4	63.7	60.6
D	59.7	56.7	61.7	67.1	67.1	62.1	61.9	59.2	52.7	53.7	62.5	65.2	68.2	62.7	61.9	58.4
E	51.2	60.7	61.4	63.9	63.9	65.6	60.4	53.5	51.9	54.6	61.0	65.0	66.9	63.4	60.2	56.1
F	50.8	54.8	54.4	60.3	74.6	64.9	66.7	59.1	49.2	51.8	59.9	65.8	69.4	62.8	67.1	64.0
G	59.6	56.8	61.5	69.1	75.2	71.8	66.3	58.5	52.3	54.3	64.6	72.2	78.4	67.4	65.9	62.4
H	57.4	61.2	63.5	65.3	76.8	74.1	65.2	60.1	53.8	56.8	62.0	68.7	74.3	68.2	66.5	62.2
I	40.5	38.6	49.0	57.4	62.8	62.9	55.2	54.3	40.3	43.3	51.8	59.5	63.7	54.7	52.9	54.8
J	55.5	55.1	60.2	61.8	75.6	63.5	59.2	57.7	52.8	56.5	61.9	67.5	67.9	63.4	61.0	59.9
AVERAGE	53.8	55.2	59.4	64.1	74.7	67.6	63.5	58.8	50.5	54.2	62.1	68.1	71.6	64.7	63.6	61.3

GENERAL BODILY INJURY - CALENDAR YEAR LOSS RATIOS

TABLE 2 B

COMPANY	REPORTED LOSS RATIOS								LOSS RATIOS ADJUSTED FOR CHANGES IN RESERVE MARGINS							
	1953	1954	1955	1956	1957	1958	1959	1960	1953	1954	1955	1956	1957	1958	1959	1960
A	41.0	42.6	43.8	38.1	39.4	44.6	44.2	45.0	39.0	36.5	37.9	39.8	41.0	45.3	41.2	39.8
B	57.8	48.2	44.8	37.5	52.5	65.4	51.0	51.8	47.2	45.0	43.0	58.7	55.6	56.7	57.5	55.0
C	39.1	41.7	37.5	46.2	53.0	47.0	46.3	39.7	41.5	42.5	42.2	48.7	44.3	46.1	50.5	48.8
D	49.6	50.8	49.1	50.4	44.2	38.8	41.7	38.4	45.8	48.9	46.5	49.3	43.0	45.2	42.7	38.3
E	54.6	54.8	59.2	43.5	49.6	47.0	36.5	37.1	48.5	45.9	46.1	49.8	52.6	42.7	41.7	39.2
F	38.9	41.2	35.3	42.2	48.9	44.4	48.5	35.2	38.6	39.3	43.0	45.1	43.0	48.2	44.0	40.6
G	49.4	44.6	43.5	41.9	44.3	47.1	42.2	37.9	43.7	39.1	44.1	45.3	44.3	45.3	44.8	33.7
H	51.4	49.9	47.1	45.3	49.2	47.0	39.7	37.8	46.4	47.3	44.0	47.5	46.1	44.0	43.6	42.2
I	31.2	31.6	36.9	36.2	36.8	49.0	48.1	40.5	29.3	30.9	35.8	40.3	40.6	43.0	42.9	39.4
J	39.5	38.2	41.5	35.1	51.1	45.8	37.7	38.0	37.0	39.2	43.1	40.8	45.8	42.9	43.9	43.9
AVERAGE	45.2	44.4	43.9	41.6	46.9	47.6	43.6	40.1	41.7	41.5	42.6	46.5	45.6	45.9	45.3	42.1

WORKMEN'S COMPENSATION - CALENDAR YEAR LOSS RATIOS   TABLE 2C

COMPANY	REPORTED LOSS RATIOS								LOSS RATIOS ADJUSTED FOR CHANGES IN RESERVE MARGINS							
	1953	1954	1955	1956	1957	1958	1959	1960	1953	1954	1955	1956	1957	1958	1959	1960
A	65.0	56.5	59.9	65.3	62.4	63.3	67.3	68.7	60.3	53.4	64.2	66.5	63.0	66.2	71.2	67.2
B	66.0	55.0	56.6	63.4	66.3	62.7	61.6	63.6	55.5	56.0	62.0	69.3	60.7	62.8	68.0	70.4
C	55.5	56.1	57.9	62.0	64.7	62.7	65.6	61.4	53.8	58.3	61.6	65.2	64.7	61.7	66.0	68.6
D	65.7	58.9	56.2	62.5	61.7	62.0	66.4	61.8	56.3	54.6	58.0	63.3	65.4	63.8	59.0	64.2
E	58.3	49.3	53.4	54.2	65.4	60.1	69.2	58.5	55.9	48.0	50.4	59.5	59.6	61.9	70.7	63.2
F	59.0	58.7	64.8	65.7	68.4	79.8	63.1	65.0	59.6	58.0	70.6	68.4	65.2	61.5	63.5	68.1
G	63.8	58.1	61.2	60.2	60.3	61.1	59.9	64.9	61.0	53.2	63.1	63.4	66.2	61.8	63.0	66.7
H	66.2	53.2	64.1	55.8	57.2	63.6	68.3	62.7	55.4	55.2	79.5	72.6	61.7	59.8	66.9	64.2
I	59.1	48.5	66.4	64.6	59.0	64.5	63.2	56.3	59.3	54.6	65.5	66.4	58.5	63.2	65.0	63.4
J	58.8	57.9	64.2	66.4	67.0	60.9	66.7	65.8	58.7	58.1	66.2	66.5	65.7	63.3	69.1	66.5
AVERAGE	61.8	55.2	60.5	62.0	63.3	62.1	65.1	62.9	57.6	54.9	62.1	65.1	63.1	62.6	67.2	66.3