to ultimate incurred can be developed for any evaluation time "t". Since he has supplemented this section with further notes, comment on this section will be made separately.

In conclusion, Mr. Harwayne puts forth a suggestion for a rate level adjustment factor to be based on the latest Policy Year Paid/Written Loss Ratio, to be used in conjunction with Calendar/Accident Year ratemaking data. The exact form of the factor is quite similar to the Compensation factor, except that it includes a neutral zone of plus or minus .025. If actually put into practice, the use of the latest incomplete policy year could take any one of several forms. Initially it might be given only a moderate weight in the overall rate level, until such time as its reliability has been demonstrated in actual usage.

Certain practical but not insurmountable difficulties would present themselves in a procedure of this type. As Mr. Harwayne points out, the data as now reported in New York is for all types of automobile, with no breakdown by private passenger, commercial, etc. At present there is no requirement for this type of data in many other states. However, once the concept had been adopted in principle, the details of how to get the data could undoubtedly be worked out.

For universal use, as always, there would be the problem of credibility in the smaller states, especially in a procedure requiring that a small amount of paid losses be "inflated" by the use of factors such as a divisor of .0699. It might be that such factors would have to be based in large part on countrywide data. Even in the larger states, it is probable that, initially, less than 50% weight would be given to a factor of this type in the overall rate level.

Mr. Harwayne has put forth a fresh approach towards solving a problem of the first magnitude, with interesting statistical data to demonstrate the validity of his arguments. The Society is indebted to Mr. Harwayne for this paper, and the subject deserves not only further discussion, but active study and analysis of similar type data wherever available.

AUTHOR'S REVIEW OF DISCUSSION

In his discussion of my paper Mr. Cahill begins by relegating the theoretical aspects to others, and directs his attention solely to the practical aspects. He sees "little merit in embarking on the use of complicated formulae in ratemaking to ascertain what is disclosed by other available statistics that are both relevant and up-to-date".

The author investigated the time situation as respects the availability of summaries within the New York State Insurance Department. It was found that the experience covering transactions during 1957 had been summarized by June 1958. It was also found that the National and Mutual Bureaus had submitted their statistical data on October 27, 1958, and had furnished the summaries used for filing on the same day. In addition, transactions during the year 1958 were summarized by the New York Insurance Department in final form by

June 1959. To date (October 1959) no summaries of classified rate-making data have been submitted to the New York Insurance Department.

What is the significance of this? Mr. Carlson put his finger on it at the last meeting of our Society when, in conducting the seminar on the use of small scale computers, he pointed out that for the most recent automobile liability rate revision the time saving could be translated into a monetary saving exceeding $1 million dollars per week and almost $5 million dollars per month. Based upon this example, the four to five month lag between the time that Supplemental Insurance Expense Exhibit data is available and the summarization of classified statistical experience represents a cost of approximately $20 million dollars. Elements of such magnitude are worthy of practical consideration.

In response to Mr. Cahill's specific criticisms:

1. The paper notes reservations arising out of the fact that all types of autos are included. It was suggested that the matter might be covered by a simultaneous rate revision for private passenger, commercial and all other cars; or private passenger might be considered alone if agreement could be reached on this point. It should be observed that the private passenger experience far over-shadows the experience for all other types of automobiles. Mr. Hope in his criticism says on the matter of breakdown by type of data, "once the concept had been adopted in principle, the details of how to get the data could undoubtedly be worked out".
2. As a possible criticism the paper noted that the data included all sizes of limits on a very large volume of business in New York State. Rather than being a criticism, there may be an advantage to be gained by affording recognition through the rating process, to elements which are seldom given experience recognition.
3. Although not specifically mentioned in the paper, the same advantage might apply to medical payments coverage, etc.
4. The paper deals solely with auto liability (bodily injury). The lack of similar information for property damage in New York State and for both coverages in other states was assumed to be self-evident to insurance actuaries, statisticians and accountants. If insurance executives become aware that the companies could benefit to the extent of $20 million in New York State and more than that countrywide, it seems highly speculative to conclude as Mr. Cahill does that "insurance companies would properly object were these supplemental reports imposed by states generally because it truly would be for no useful purpose."

There is no doubt, of course, that accident year data by class and territory detail are vastly superior to calendar year experience in the

liability field; however, such superiority must be weighed against the time element and the millions of dollars which could be lost by a time-lag in utilizing up-to-date insurance data.

Mr. Cahill's main criticism concerns loss development. The downward development of losses is not contested; however, he says that the downward development of losses is offset by the upward movement of allocated claims expense. His proof consists of:

1. asserting that companies cannot and do not follow uniform accounting instructions that expenses be segregated from losses and
2. compiling Schedule P figures for allocated claims expense and *unallocated* claims expense combined.

If his criticism of uniform accounting instructions is valid, question is raised as to why the insurance industry does not press for amendment which would allow the inclusion of allocated claims expenses with losses. Unless there is specific proof to the contrary one should assume that companies are following instructions in filling out the Insurance Expense Exhibit.

On the second item above, Schedule P figures are net figures in comparison with the New York Supplement which is on a direct basis. More importantly, however, Mr. Cahill fails to demonstrate that allocated loss adjustment expense development offsets pure loss development. It is quite likely that the partial development offset which he does show is due principally to the development of *unallocated* loss adjustment expense (which is 60% of total loss adjustment expense) and which in ratemaking already includes developments during the calendar year. Unfortunately the figures which he uses are expressed in terms of incurred losses rather than outstanding losses. His figures have been translated below to show the amount of development of loss expenses as a percentage of the pure loss development:

Automobile Liability Insurance
Development of Losses & Loss Expenses from 36 mos.

Source: Annual Statements, Schedule P comprising over 90% of National Bureau Member Companies' Volume

		Development Amount (In Thousands)		*Development of Loss & Total Loss Expense as Ratio to Development of Pure Loss*
Policy Year	*Development Period*	*Pure Loss*	*Total Loss Expense*	
1950	36-72	—$7,924	$3,038	61.7%
1951	36-72	—10,148	3,787	62.7%
1952	36-72	—11,048	6,138	44.4%
1953	36-60	— 9,983	6,554	34.3%
1954	36-48	— 5,527	6,022	9.0%

If the development of total loss expense stems from unallocated claims expense it is already included in the ratemaking process; *if* the development of total loss expense stems from allocated claims expense, the figures from Mr. Cahill's summary still leave as much as 62.7% of the amount of pure loss development from 36 to 72 months to be considered.

Mr. Cahill's contention that there is comparatively little development from 36 months on is not entirely borne out by the foregoing or by the actual development factors indicated in rate filings. In fact the ratemaking process currently includes such factors because of the supporting information disclosed by the Supplemental Insurance Expense Exhibit some years ago.

On Mr. Cahill's polemic discussion, the auto rate case has been forcefully and ably considered by the courts in New York State. It would be well for our members to read the judicial decision in this case.

The comments by Mr. Roberts are opinions which are worth consideration. It is possible, however, that the errors produced in estimating unpaid costs via judgment applied to individual case reserves exceed those produced by estimating unpaid costs via observation of the development of paid costs. Some of the companies which have been most successful in the auto liability field place great emphasis on the evolution of paid losses as a basis for estimating outstanding losses.

The technical defects pointed out by Mr. Roberts, while of negligible magnitude, are appreciated. The author noted that a discontinuity occurs in Equation IV but chose not to clutter up the main point by using a more complicated periodic function. I believe that whatever impairment there might be in the subsequent calculations is of relatively minor importance.

Mr. Hope in his review recognizes the need to bridge the time gap between the cut-off date of the basic ratemaking data and the effective date of rate revision.

In time we expect that more policy year paid losses as of 12 months or 24 months will become available to test the validity of utilizing paid losses as a measure of ultimate incurred losses.

One of the reasons for utilizing a neutral zone of plus or minus 2.5% is related to the problem of credibility, particularly in the smaller states which Mr. Hope notes as a problem.

Running through each of the criticisms, the most important things to note are:

1. that the insurance industry looks for improvement.
2. that the members of our society recognize that mathematics still plays a significant part in the development of actuarial analysis.

As between the various comments made it is refreshing to realize that Hope is with us.