

DISCUSSION BY PHILIPP K. STERN

A study suggested by the theme of this paper should be of substantial interest beyond the circle of a few experts in the relatively narrow field of ratemaking. The private passenger experience compilations of the National Association of Independent Insurers, which the author undertakes to interpret, comprise about one half of the total private passenger volume in this country, and in many states they account for most of the private passenger business. While Bureau members and subscribers obtain from their rating organization compilations of experience that can readily be used to test the adequacy of Bureau rates, the NAII consolidations are primarily a historical record that may, at best, be interpreted in a qualitative way, and then only with broad assumptions. Mr. Gill has undertaken a substantial amount of work to prove that such experience can be interpreted in a quantitative way, starting with the assumption that a statewide distribution by class can be substituted for the conventional territory distribution. If Mr. Gill has called attention to a method that gives access to a wealth of private passenger experience, he will have performed a valuable service not only for the small companies that report to the NAII, at which the author primarily directs his paper, but also for all those concerned with rate levels and the wide spectrum of automobile liability insurance experience.

Bearing in mind the stated purpose of the paper, "to explore the possibility of developing a method of testing private passenger liability territorial rate levels by substituting the statewide distribution of classification data for the actual distribution by rating territory," one searches the paper for a direct comparison of the results obtained under either method. All other things being equal (expected loss ratios, losses, and the various adjustments introduced to compute loss ratios) the comparison would have been greatly simplified if premiums at manual rates calculated by the two methods had been shown. Instead, Mr. Gill relies more on the practical results of some of the alternatives he uses in his calculations. There is merit to this approach since, after all, private passenger rates are generally rounded to the nearest dollar and, what might appear too great a departure in terms of premiums at manual rates used in rate-making might be counteracted by the fortuitous effect of successive arithmetic calculations and rounding.

Mr. Gill uses two different methods to prove his point: One for states for which the filing of experience is required in detail by class and territory by all statistical agents, including the NAII; and a different method

in several other states for which he quotes some results of his calculations, states in which the NAII experience is filed in class detail on a statewide basis only.

In the calculation of Louisiana rates, using classification distribution by territory and statewide classification distribution, results are obtained that differ by only three tenths of one percentage point in the statewide rate level.

Since the author is also concerned with territory rate levels, it would have been desirable to see the effect by territory. Mr. Gill was good enough to furnish this reviewer the premiums at manual rates he had obtained from which we find the following ratios by territory:

Louisiana – Accident Year 1959			
<u>Based on NAII Classification Distribution</u>			
(1) Territory	(2) <u>By Territory</u>	(3) <u>Statewide</u>	(4) <u>(3) ÷ (2)</u>
01	860,424	846,654	.984
02	598,786	586,489	.979
03	347,054	344,615	.993
04	130,120	127,870	.983
05	281,489	273,539	.972
06	161,200	163,916	1.017
07	142,160	141,734	.997
08	1,549,512	1,570,050	1.013
Entire State	4,070,745	4,054,867	.996

It can be concluded that, all other things being equal, territory rate level changes using the statewide distribution would vary by small amounts from those developed by the conventional method, although it should be noted that the departures from 1.000 are larger than a casual reader may suspect from the statewide effect given by Mr. Gill.

The paper proceeds to test the Louisiana results by presenting territory loss ratios based on 1961 Louisiana losses by territory and premiums at manual rates reflecting the two methods of calculation. If Mr. Gill had used the two sets of premiums at manual rates varying from each other only by virtue of method of calculation (statewide vs. territory classification distribution), the loss ratios would have varied by the factors shown above. Instead, Mr. Gill used two different sets of rates, one set obtained

earlier by the use of territory distributions and the other set of rates obtained from the statewide distribution; he applied these rates to the classification distribution by territory. Thus, the results in the table of territory loss ratios are obscured, by the influence of rounding and by the fact that the premiums ultimately were calculated from the territory-class distribution.

By this method the author obtained identical loss ratios in six territories for bodily injury, and in seven territories for property damage out of the eight territories in the state, for the two methods of computation. Obviously, he must have obtained two sets of rates that were similar to the same extent. With somewhat less luck in rounding, the results could have erred considerably, since a one dollar difference in relatively low rates could have affected the territory loss ratio by as much as 5 per cent. The ratemaking practitioner should feel more comfortable knowing the real differences produced by the two methods of premium calculation.

For the other states in this group which Mr. Gill tested, only statewide correlation coefficients are shown in the paper. These factors do not allow a closer scrutiny of the results by territory. In order to complement Mr. Gill's data, this reviewer has calculated bodily injury premiums at manual rates for the state of New Jersey, using the NAII 1961 experience.

A comparison by territory of the premiums at manual rates obtained from the actual territory distribution and the statewide distribution produced ratios ranging from 1.022 to .961. The range for property damage is probably larger, gauged by the statewide correlation factor of .9693 obtained by Mr. Gill in his calculation.

It is apparent from the data shown by Mr. Gill and the few additions we have included that the method of calculating premiums at manual rates from a statewide distribution produces results close enough for the purpose of an estimate, as opposed to ratemaking, for the four states, where this test was made.

Three of these states have the type of rate regulation under which uniform rates apply for all companies, with a uniform classification system. The fourth, New Jersey, although not a uniform rate state, requires the recording and reporting of experience on a uniform classification basis. A close study would be required to determine whether there is in fact greater uniformity in classifications in New Jersey than there is in other non-uniform rate states.

This reviewer wonders whether the greater diversity in classifications and

rates in the other states, or the predominance of different types of companies, has a bearing on the relationship of distribution of business by class and territory. If we were sure that this is not the case, we could agree with Mr. Gill that his method of calculating premiums at manual rates is a reasonable basis for the use of NAII data for an approximation for testing of rates.

There is another limiting factor that should be noted. The statewide distribution gives results very close to that obtained by use of territory distribution by class, in the aggregate for a territory, only because of mutually off-setting influences in the relationship of class distribution and classification differentials. For example, in one of the New Jersey territories, we found the actual number of cars for class 1A, Multicar, as 632, while the application of the statewide distribution to the total number of cars in the territory produces 1259 cars for this class. Similarly, we find actual 1531 class 1C cars against 2001 1C cars obtained from the statewide distribution. Thus, the statewide distribution overstates by almost 100% a class written at a differential of .80, and by about 33% a class written at a differential of 1.15. The two over-statements of exposures are partly compensated by virtue of the differentials. Similar differences obtain for other classes, with the final result that in this territory the premium at manual rates obtained under the two methods are almost identical. Any substantial change in the differentials might work in the opposite direction.

When it comes to testing the validity of using a statewide distribution in lieu of the territory distribution for the states for which Mr. Gill did not have available a territory distribution, he was obviously faced with a difficult task. He modified his Louisiana test, but instead of comparing results obtained from rates based on the same body of experience he compared his rates with National Bureau rates. He then applied these two sets of rates to the NAII experience for a year that had not entered into the calculation of either set of rates, and, as a tertium quid, related the respective loss ratios to the expected loss ratio. Since his rates based on one or two prior years were keyed to the same expected loss ratio, all he proves is that the NAII experience had changed relatively little in the following year. The National Bureau rates have no relationship to the NAII experience. While this type of comparison may be useful for other purposes, it has no bearing on the objective of the paper. If the NAII experience had worsened for 1961, Mr. Gill might have come to the conclusion that the National Bureau rates fit the NAII experience better, which would be just as erroneous. As noted above, however, we appre-

ciate Mr. Gill's predicament, since he had no tool available to test his method for states other than those where a territory distribution is available.

In the area of loss development and trend factors, Mr. Gill had a similar problem. Lacking data reflecting the characteristics of NAII experience, he apparently used Bureau factors. Assuming that such factors are available in the ranks outside the Bureau companies, there is a question of whether they are appropriate for NAII data. The influence of these factors on rate level is considerable.

Mr. Gill did not suggest that his method is suitable for ratemaking or rate review, and rightly so. Although it does not produce as close an approximation by territory as the data presented in the paper for the states of Louisiana, New Jersey, North Carolina and Virginia seem to indicate, the suggested method might be useable to establish guideposts that, along with other considerations that motivate independent companies' pricing, could be used for the testing of rates. Since the price differential between the rates of the Bureau and Non-Bureau companies is generally predicated upon loss as well as expense experience, there is more latitude in the degree of required loss level approximation for Mr. Gill's "testing of rates" than is required in ratemaking.

DISCUSSION BY DAVID A. TAPLEY

In the words of the author, the purpose of this paper is to explore the possibility of developing a method of testing private passenger liability territorial rate levels by substituting the statewide distribution of classification data for the actual distribution by rating territory. Also, in his introductory remarks, Mr. Gill gives emphasis to the potential value of such a method to small independent companies and company actuaries as the basis for estimating the adequacy of their rate levels.

In the judgment of this reviewer, Mr. Gill's paper will indeed be of interest to a very large audience. Under current practices, a huge proportion of the total experience of all insured automobiles is accumulated under the statistical plans of the official statistical agents. However, there is a considerable variation from one state to another in the percentage of total business written by members of the Mutual Bureau, members of the National Bureau, members of other local State Bureaus and by independent companies. It seems reasonable to believe that this, or any other, method that will enhance the evaluation of rate levels by territory based on the experience of all companies will find favor in every quarter of our industry.