

## REVIEWS

### CASUALTY ACTUARIAL SOCIETY

The 1957 Volume of the Proceedings of the Casualty Actuarial Society includes a number of interesting actuarial studies. The following is a brief resumé of these studies.

*Automobile Bodily Injury Liability Rate-Making on a Prospective Basis* by J. EDWARD FAUST, Jr.

The purpose of the study reported in this paper was to find a means for forecasting the pure premium for Automobile Bodily Injury Insurance one year in advance.

With such a statistic it would then be possible to compute rates which would be adequate for the period of time they are to be in effect or at least to serve as a gauge to evaluate the adequacy of a proposed schedule of rates.

It was found that it was better to forecast the average paid claim cost and average paid claim frequency separately and to use the product of these two quantities as the forecast of the average paid pure premium rather than to directly forecast the paid pure premium.

By using data from previous years it was found that there was an extremely high correlation between the Consumer Price Index, published by the Bureau of Labor Statistics in Washington, D.C. for the current year and the average paid claim cost for the next succeeding calendar year.

It was found that the paid claim frequency changed very little from year to year and that a simple straight line function could be used to forecast this quantity under the assumption of a small constant increase each year.

*Principles and Practices in Connection with Classification Rating. Systems for Liability Insurance as Applied to Private Passenger Automobiles* by JOSEPH M. MUIR.

This extensive review of the classification systems for liability insurance on private passenger automobiles covers past, present and possible future methods of classification. The view is expressed that rising loss costs will promote greater selectivity and a more equitable distribution of insurance cost. Theoretically, no class of business is undesirable if it develops an adequate premium return.

Classification of this business has progressed through a number of stages. Initially, physical characteristics of the vehicle were used. These gave way to elements involving use, number of operators, accident and conviction records of operators, occupation of the insured, mileage, age of operator, rate discounts for safe driving, penalties for accident records, marital status of the insured, family responsibility and sex. Some of these rating characteristics in one or more forms are used currently by all segments of the automobile insurance industry. The relationship among the classifications is determined by differentials, and rate territory differences are recognised by a distinction between urban and rural areas.

The administrative problems of merit and demerit rating are reviewed as are incentives to improve driver education and the use of mechanical safety devices.

On the question of insuring the driver rather than the automobile, the extensive legal and rating difficulties are thought to outweigh any possible advantages.

The overall test for the soundness of a classification rating system is that the rates be reasonable, adequate and not unfairly discriminatory. Classification refinement must stand the test of universal use and public acceptance.

*Graduation of Excess Ratio Distributions by the Method of Moments*  
by LEWIS H. ROBERTS.

Retrospective rating, in which premiums are based partly on limited actual losses, depends upon a table showing charges for the expected values of losses in excess of specified loss ratios.

Since the loss ratios of small risks are subject to much wider fluctuation than those of large risks, a table of such charges is a function of both the loss ratio and the size of risk, a measure of size being total expected losses. The wide range of sizes of risk prevents accumulation of sufficient experience to determine the proper charge for any particular size and specified loss ratio without an efficient procedure for graduating the indications of available experience for risks of various recorded sizes.

The method of moments provides a means of effecting such graduation with a minimum number of statistical constants (parameters) to be determined from the experience. In this paper formulas are given for calculating the first four moments for the probability distribution of loss ratios for risks of particular sizes. Additional formulae provide a method of graduating the moments to cover all sizes of risk. Lastly, a procedure is given for converting the graduated moments into a table of charges.

*Revision of Rates Applicable to a Class of Property Fire Insurance*  
by C. OTIS SHAVER.

The statistical records maintained in respect to fire insurance in the United States are considerably more extensive than those maintained in other countries and this paper provides a valuable detailed step by step description of the method by which these data are used to revise fire insurance rates.

Starting from premium and loss data developed by occupancy class, construction—protection classification and term of policy, earned premiums and incurred losses are developed for each of the five most recent calendar years. These earned premiums are then adjusted to current rate levels. Using appropriate allowances for expenses and profits, an indicated rate change is developed for each classification and the actual application of the revision explained.

#### SOCIETY OF ACTUARIES

The 1957 Volume of the Transactions of the Society of Actuaries includes a paper, "Reserves for Individual Hospital and Surgical Expense Insurance"