ACCIDENT LIMITATIONS FOR RETROSPECTIVE RATING

FRANK HARWAYNE

DISCUSSION BY DAVID R. BRADLEY

As Frank Harwayne aptly stated, there have been forces at work in compensation insurance which forced a review of the dollar distribution of losses by size of claim as used to calculate excess loss premium factors for the retrospective rating plan. It should be understandable that inflation alone would not cause the tables developed by Mr. Dunbar Uhthoff to become inaccurate. Mr. Uhthoff carefully shielded his work from this effect by combining state data only after converting them to ratios about the state mean, thereby eliminating dollar amounts. As long as inflation does not cause a change in the shape of the curve describing the distribution by size around the average claim amount, the Uhthoff tables are usable. Even when inflation affects some elements of claim cost (such as medical costs) differently than others (such as wages), basically the overall impact of such a situation is not significant unless the differences in inflation rates affecting the components are both large and of a long-term nature. A simple example of this is the fact that generally changes in hospital and medical fee schedules do not generally cause changes in ELPF's.

However, a revision does become necessary when a change in the *shape* of the size of loss distribution curve occurs. It is logical to expect this phenomenon now because of basic changes that 1) have occurred in the workers' compensation system, and 2) have been incurred by the workers' compensation system. Perhaps the most significant externality is a change in the market for compensation insurance, with concomitant shifts in the distribution of workers and hence payrolls by industry-type. For example, the aerospace industry was virtually nonexistent when Mr. Uhthoff developed his tables. An important internal change is the major aggregate growth in benefits payable under the compensation laws as a result of the recommendations of the National Commission on State Workers' Compensation Laws. While a typical law amendment will cause a change in indicated excess loss premium factors (by raising maximum wage values for benefit computation, etc.), a typical law amendment will generally not cause a major change in claim distribution about the mean. However, when state compensation laws are significantly revised so as to provide livable benefit

levels rather than supplementary dollars to claimants, and when, more significantly, workers' compensation laws are revised to allow escalated benefits (benefits that provide the individual claimant with a lifetime increasing annuity), then clearly the distribution of claim sizes will widen. The curve will not merely shift upward but change shape as well under these stimuli. This should not be construed to imply that the industry should feel that significant benefit increases are bad. It does imply that large benefit changes introduce distortions and therefore uncertainty into our loss prediction systems, and one of the areas in which this uncertainty is manifest is our excess loss experience.

Frank Harwayne made two major changes of method from Dunbar Uhthoff's work and they are both improvements. Firstly, Mr. Harwayne fitted his excess loss experience at specific intervals to a curve by the simultaneous application of the methods of collocation and least squares regression. Mr. Uhthoff apparently used linear interpolation to arrive at excess loss values at uneven percentages of the mean. Secondly, Mr. Harwayne plans to use, when it becomes available, fourth and ultimately fifth report unit card data to develop average claim sizes by state by injury type, and to develop the claim size distribution curve. This, as Mr. Harwayne indicates, is an important change made necessary by our seemingly increasing inability to set adequate initial reserves. Development factors in 1950, when Uhthoff did his work, were generally below unity. Development factors today average close to 1.2 for first to ultimate countrywide. Moreover, development factors in some states, mainly those that have experienced major benefit level changes, are running well above 1.3. One must believe that most of the inaccuracy of reserves rests in the setting of large reserves, and this implies that excess loss development is considerably greater.

An additional change in method was caused by data limitations. Mr. Harwayne was forced to use the excess loss experience for limited death benefits as an estimate of excess loss experience in states with unlimited benefits due to insufficient statistics on unlimited death benefit losses. Hopefully, we will be able to improve upon this in the future.

Mr. Harwayne's work represents an important improvement in our measurement of excess losses, and his paper is a valuable, concise, and well-written description of his efforts. However, no compensation actuary should consider the job done. Fifth to ultimate loss development countrywide currently averages 2%, and exceeds 10% in some individual states. The significance of this as it relates to excess losses can be determined by reviewing excess loss development in two states from which the data is

available. The New York Compensation Rating Board and the Workers' Compensation Rating and Inspection Bureau of Massachusetts provide their actuarial committees with actual excess loss experience. A recent example of normal and excess (over $50,000) unit statistical plan loss development shows the following:

Development (Latest Three-Year Average)

	New York		Massachusetts	
	On Total Losses	On Excess Losses	On Total Losses	On Excess Losses
1st to 2nd	1.1582	1.6024	1.094	1.5679
2nd to 3rd	1.0835	1.5833	1.048	1.5292
3rd to 4th	1.0506	1.2857	1.029	1.4455
4th to 5th	1.0318	1.2697	1.027	1.1990

Since total loss development from fifth report to "ultimate," based on financial data, is 7.1% for New York and 3.7% in Massachusetts, it seems likely that excess loss development beyond fifth report at least exceeds excess loss development from fourth to fifth reports. Additional support can be derived from converting loss development percentages to dollars. This is more easily achieved using New York data. A comparison of total loss development to excess loss development produces the following:

Development	On Total Losses	On Losses in Excess of $10,000	On Losses in Excess of $25,000
1st to 2nd	$65,145,866	$67,172,648	$29,960,364
2nd to 3rd	38,660,197	54,302,896	31,265,506
3rd to 4th	24,107,566	28,964,362	17,745,885
4th to 5th	10,069,909	23,950,635	14,375,681

(These figures represent total dollars for the three most recent available policy years.)

It seems apparent that, in later reports, virtually all loss development occurs in the adjustment of large claims. This may imply a means of estimating excess loss development beyond the final unit card submission.

To my mind, Frank Harwayne's paper signals not the end but the beginning of the industry's effort to reanalyze its excess loss experience. This is an effort which will ultimately improve not only our retrospective rating plan, but our pro rata resinsurance charges as well.