THE RETROSPECTIVE RATING PLAN FOR WORKMEN'S COMPENSATION RISKS

BY

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Surprising as it may seem to many, the idea of applying the retrospective rating principle to workmen's compensation risks dates back to the early history of workmen's compensation insurance. In the initial stages of development of rating technique there was considerable argument as to whether experience rating should apply on a prospective or retrospective basis. Thus, we find that in 1916, twenty years prior to the adoption of the Retrospective Rating Plan for application to compensation risks in Massachusetts, this subject was receiving the attention of our Society.* Many of the points which have been argued pro and con during the recent past were brought to light in these earlier discussions. Whereas the idea of incorporating the retrospective rating feature in the Experience Rating Plan was abandoned in favor of prospective rating, it was early recognized that there was considerable merit in this approach to the problem of establishing a more equitable premium for the individual large risk, where the exposure is sufficient to permit the absorption to a large degree of chance deviations in the experience.

Certain observations which were made during those early discussions of experience rating in 1916 are of interest. In commenting upon the distinction between prospective and retrospective rating, Mr. Woodward stated, "The actual result to the policyholder is quite different under the two systems, since under the prospective system the percentage of credit or debit derived from past experience is applied to a future premium. Since the payroll of the employer may fluctuate materially from period to period, especially in the case of contracting risks, it is obviously impossible

* See *Proceedings*, Vol. II, page 347, "Should the Compensation Premium Reflect the Experience of the Individual Risk", by Winfield W. Greene, and page 356, "The Experience Rating of Workmen's Compensation Risks", by Joseph H. Woodward.
Also see Vol. III, pages 54-75—Discussions by Messrs. Downey, Fellows, Senior, Michelbacher, Mowbray, Fondiller, Greene and Woodward.

to obtain results under a prospective system which are free from discrimination." Also, he observed, "In choosing between a prospective and retrospective plan, the language of the policy contract should be given careful consideration, and if a retrospective plan is to be adopted, it should be made certain that the debits will be legally collectible. Since the premium has to be adjusted at the end of the policy term for payroll audit, the retrospective system has the advantage of bringing the adjustment for experience generally coincident in time with the adjustment for payroll audit".

In citing objections to the retrospective rating idea Mr. Greene stated, "The very fairness of the modified plan would make it most unpopular. The experience of most employers affected by the new plan will undoubtedly exhibit a material fluctuation in compensation cost from one insurance period to another. . . . As far as the employer is concerned, the real demand for experience rating up to this time has arisen from a desire to get insurance at better than average cost. It is true that the new plan will permit the employer with a consistently favorable experience to still realize his ambitions in this regard. The employer whose experience is unfavorable will, on the other hand, find the cost of his insurance increased; and in my opinion, he will complain to such good effect that the carriers and supervising authorities alike will be most happy to discontinue the experience plan altogether".

Mr. Downey made the following observations: "It appears very doubtful whether any form of experience rating will make insurance attractive to an employer whose exposure is broad enough to give a dependable pure premium. No carrier can hope to serve such an employer as cheaply as he can serve himself. He has no motive to insure unless it be against catastrophe and experience rating is surely not applicable to catastrophes". Also, he stated, "If, then, the policy contains a definite agreement for experience rating and if the experience adjustment is made a part of the final settlement after audit, there would seem to be no special difficulty about collecting such increases as may fall due. . . . It (retrospective rating) offers the best possible incentive to accident prevention, for it starts each policy year with a clean slate and makes that year's rate to depend upon the experience actually realized therein. . . . Furthermore, accident experience, whether as a whole or in any particular establishment, fluctuates with recurrent cycles of depression and prosperity. A cumulative prospective plan, accordingly, will yield premium decreases in a boom year following upon a period of depression and premium increases in a dull year following flush times—which is to say that such a plan will decrease premium income when losses are abnormally high and increase it when losses are abnormally low. A retrospective plan, on the contrary, will always reflect current experience, thereby introducing a much needed element of elasticity into premium income".

Mr. Fellows, under the caption "A Possible Alternative for Experience Rating", wrote the following: "As the handling of any commodity in wholesale quantities will permit of closer buying and selling, likewise we might advance the theory that some encouragement could be reasonably offered the large employer to insure by grading the expense loading of the rate in his case by the amount of payroll exposure or the total premium represented in his risk. It must be conceded that it costs no more to actually write a policy on a large risk than on a small one, likewise little, if any more, to keep the necessary office records of the risk (this would not apply so literally to claim, inspection or auditing expense). In some states commissions to brokers and agents are graded according to the size of the premium and it seems consistent that this item of saving in acquisition cost, as well as of the other detailed office administration expense, might reasonably be reflected in an individual rating".

Mr. Michelbacher stated, "Personally, I know of no experience rating plan which has attempted to apply this method (retrospective rating) to the rating of compensation risks. The reason for this is obvious. The general rule is that, to be effective, merit rates must be available to the agent when he solicits the business. This is particularly true of rates produced by the application of a plan which may either increase or decrease manual rates. . . . If the plan provides for credits only, there can be no argument against the retrospective method. But the fact that the manual contains average rates, which measure the cost of accidents for the average risk in the classification, renders it impossible at the present time to produce a workable plan based entirely upon credits".

The foregoing quotations have been selected in order to give a general idea of previous discussions of this subject. With these earlier discussions forming a background we will now proceed with the development of the Retrospective Rating Plan for Workmen's Compensation Risks as it is now constituted.

As employers have become more familiar with the details of workmen's compensation insurance, particularly as respects the technique of claim settlement and accident prevention, there has been an increasing demand on the part of the larger risks for a reduction in the cost of insurance. Many employers have become self-insurers simply because they felt the insurance premium was too high in relation to the sum of incurred losses plus the cost of claim settlement and accident prevention. In addition to those employers who have already become self-insurers there are numerous other potential self-insurers as is evidenced by the shifting of risks from one carrier to another in the hope of securing a lower insurance cost. Undoubtedly, the depression period of 1930-1932 and the more recent business recession have brought into sharper focus the cost of compensation insurance along with all other costs.

As a result of this demand for bringing the insurance premium closer to the actual costs of the policy period, considerable thought has recently been given to modifying the Experience Rating Plan to make it more responsive to the trend of risk experience. However, it was early recognized that no plan of prospective rating can produce rates which will exactly fit the experience of the period covered by the policy to which such rates apply. Prospective rating determines rates for a given policy period by using the average experience of one or more preceding policy years. Therefore, it is evident that the rates thus produced reflect average conditions which obtained in the past. It will be merely coincidence if the experience of the period to which such rates are to be applied conforms exactly to the average of the past experience period.

Retrospective rating, on the other hand, utilizes the experience of the policy period and adjusts the premium for that period to reflect such experience. In other words, retrospective rating determines the premium for the risk after the loss experience for the policy period has been developed.

The principle of retrospective rating is suited to a line of insurance such as workmen's compensation where accident frequency and accident severity may be measured within reasonable limits of expectancy, taking into consideration the industrial classification and the size of the individual risk. It is obvious that retrospective rating could be applied only to a limited extent in connection with a line of insurance where accident frequency and accident severity fluctuate greatly from one risk to another such as, for example, in the case of fire insurance. The size of the risk as measured in terms of units of exposure extended at average rates has an important bearing on this point.

There are various possible methods of applying the retrospective rating principle to the individual compensation risk. Stated generally, such variations depend upon the extent to which the actual incurred losses of the policy period are modified before inclusion in the rating formula and the manner in which the loading for expenses is applied. The plan which is described and discussed in this paper is the result of considerable study and experimentation to develop a method which would meet theoretical requirements and which would be regarded as practical by underwriters, producers and employers. The fundamental principle that the premium for the policy period should be proportionate to the incurred losses for such period was the foundation upon which the plan was constructed. Secondly, it was recognized that there should be some restriction placed upon the actual incurred losses in order to compensate for chance deviations in the risk experience. The third major consideration was that the provision for expenses should be incorporated in the plan on an equitable basis.

Outline of Plan

The Retrospective Rating Plan for Workmen's Compensation Risks was first approved for use in Massachusetts, effective May 1, 1936. At the present time (May 1, 1938) the Plan has become effective in twenty-five jurisdictions,* and consideration of the Plan by the supervising authorities is still pending in nine juris-

* Plan effective in Alabama, Connecticut, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Montana, Nebraska, New Mexico, New York, North Carolina, Oklahoma, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Alaska and District of Columbia.

dictions.† The Plan has been disapproved in seven states,—Colorado, Michigan, Minnesota, New Hampshire, Pennsylvania, Utah and Wisconsin.

The Plan issued by the National Council on Compensation Insurance applies in all jurisdictions with the exception of Massachusetts and New York—for which separate plans have been promulgated. As will be explained hereafter, the plans effective in Massachusetts and New York differ in certain details from the National Council Plan but the underlying principles and method of retrospective rating are in general accord with the National Council Plan. Furthermore, certain states subject to the National Council Plan require slight variations from the standard procedure which also will be explained later.

The Plan is relatively simple in principle and its method of application may be explained to an assured in an understandable manner. A brief outline of the essentials of the Plan will be given, followed by a more detailed explanation of the various elements involved.

1. The risk is initially written at the approved rates applicable in the jurisdiction in which its operations are located, the risk premium based upon such rates being referred to as the standard premium.
2. Subsequent to termination of the policy period, the risk premium is adjusted, within minimum and maximum limitations, by the retrospective rating formula on the basis of the earned standard premium and the actual incurred losses of the risk for the policy period.
3. The retrospective rating formula provides for the determination of two elements:
   (a) The basic premium which is expressed as a percentage of the standard premium and is designed to cover expenses that are independent of the risk loss experience and also includes an insurance charge covering the net cost due to introduction of the minimum and maximum premium limitations.
   (b) The losses incurred by the risk during the policy period plus the loading for claim expenses and taxes in connection therewith.

   The sum of these two elements is the adjusted retrospective premium subject to the specified minimum and maximum limitations.

† Consideration pending in Arizona, California, Georgia, Louisiana, Missouri, New Jersey, Texas, Virginia and Hawaii.

4. The basic premium, minimum premium and maximum premium for the risk are determined by reference to a table of rating values in which the percentages representing such values vary by size of risk.
5. The Plan is limited in application to risks which are expected to produce a standard premium of at least $5,000 during the policy period.
6. The application of the Plan is optional with the assured but must be elected at the inception of the policy period.
7. The Plan is superimposed upon the standard rating procedure and, regardless of whether the assured elects the retrospective rating basis of premium adjustment, the risk will continue to be subject to experience rating and/or schedule rating.
8. The Plan is applied on an interstate basis and the experience of the risk for all states subject to the Plan may be combined in determining the retrospective premium adjustment.
9. For a risk subject to retrospective rating commissions to producers are determined by application of the regular rates of commission to the minimum retrospective premium.
10. A preliminary determination of the retrospective premium is made not earlier than six months subsequent to the normal termination date of the policy period. Further premium adjustments are provided for at annual intervals subsequent to the preliminary determination, the third such premium adjustment being considered as final, unless exceptional treatment is indicated, in which case further adjustment may be permitted.
11. Special rules covering advance premium requirements, procedure in the event of cancelation, verification of risk data and risks involving multiple policies with varying expiration dates are included in the Plan.

Definition of Risk

The following definition of the term "Risk" is quoted from the Retrospective Rating Plan issued by the National Council on Compensation Insurance.

> The term "Risk" as used in this Plan shall mean and include the entire operations of any one assured which are covered by a single insurance carrier, subject to the following conditions:

(a) Although the Plan is applicable upon an interstate basis, it shall be optional with the assured, subject to acceptance by the Insurance Carrier, to elect or reject the Plan for any individual state, provided all of his operations (covered by one insurance policy) in such state are entirely included or excluded.

(b) For the purpose of this Plan, "Assured" shall mean
  (1) A single legal entity.
  (2) Two or more legal entities which are eligible for combination under the Rules of the Experience Rating Plan of the National Council on Compensation Insurance.

Further amplification of certain points in the above definition appears desirable. As respects the option which may be exercised by the assured to elect or reject the Plan for any individual state, it is to be understood that this applies only to states where the Plan is in effect on a basis which permits interstate combination of experience. The parenthetical clause "covered by one insurance policy" is intended to permit a further optional segregation within an individual state between operations which are to be subject to retrospective rating and those which are not. If an assured conducts two distinct enterprises insured under separate policies by the same carrier he may elect retrospective rating for one of such enterprises and not for the other. The qualifying clause "subject to acceptance by the insurance carrier" simply refers to the customary prerogative of the carrier to decline to underwrite the risk under any circumstances or any plan. This clause is not intended to give the carrier the right to refuse the benefit of the plan to a properly qualified risk which is acceptable to the carrier on the standard premium basis. In view of the apparent misunderstanding which seems to have arisen as to the intent of this clause, it could very well be eliminated from the above definition without in any way affecting the rights of the insurance carrier.

Treatment of Losses

As respects the treatment of losses, serious consideration was given to the question as to whether there should be a modification of the cost of individual claims, particularly as respects fatal claims and those involving permanent or long term disabilities. A possible modification would be to substitute an average claim value for the actual claim cost, following a procedure similar to that utilized in the Experience Rating Plan. In the determination of average rates by the prospective rating method, the use of average values may be logically explained to an assured, but it was felt that, under the retrospective rating method, there would be considerable difficulty in this respect. Presumably, an employer would not object to the use of an average value in substitution for the actual claim cost if the actual cost exceeded the average value, but the situation might be quite different if the reverse condition obtained.

Another method of modifying actual claim cost would be to impose a maximum monetary limit on the amount of each claim to be included in the rating formula. Under such a procedure it would be necessary to set up an insurance charge to cover the average amount of losses eliminated from the rating formula by virtue of such limitation. This charge would vary in amount, becoming greater as the individual loss limit was reduced. Furthermore, due to the variations in the schedules of compensation benefits in effect in the various states, it is apparent that the use of any fixed claim limit would call for varying insurance charges by state. Conversely, the establishment of a fixed insurance charge would call for varying claim limitations by state. Moreover, if the limitation on claim cost were fixed at such a point as to require a fairly substantial insurance charge, it is evident that the retrospective premium might not follow the indications of the actual risk experience closely enough to permit a satisfactory explanation to the assured in many instances.

Since the retrospective premium calculation is designed to reflect the actual cost of claims incurred during the policy period it was decided that there should be as little modification of actual incurred losses as possible. Accordingly, losses have been included in the retrospective rating formula on an aggregate basis, using the actual incurred cost of individual claims but with the aggregate amount subject to minimum and maximum limitations for the individual risk. Consequently, the retrospective premium produced by the rating formula will be subject to minimum and maximum premium limitations. The loss provision underlying the minimum retrospective premium serves as a limit on the extent to which unusually favorable risk experience will be reflected in the retrospective premium computation, and the loss provision underlying the maximum retrospective premium sets up a limit on the extent to which unfavorable risk experience will influence the result.

Insurance Charges

The establishment of such minimum and maximum loss limitations requires an insurance charge to reflect the net cost of losses which on the average are eliminated from the rating process. It is evident that the losses eliminated by the maximum loss limitation may be offset in varying degree by the reserve for losses provided by the minimum loss limitation, the net effect being dependent upon the points at which the minimum and maximum limits are established. For example, if the minimum loss limitation is pitched at such a low level that very few, if any, risks may be expected to produce a loss ratio below such minimum limitation, there would be no accumulation of reserves to offset the losses in excess of the maximum limitation. On the other hand, if the maximum limitation were placed at such a high level that there would be relatively few excess losses, the reserve produced by the minimum limitation might more than offset such excess losses.

The computation of the insurance charges has been based upon statistical data showing the ratio to total losses of losses in excess of specified loss ratios per risk. The experience of individual risks was compiled according to premium size groups for several of the more important compensation states. It was found that for similar size groups there was a remarkable consistency by state in the relation to total losses of losses in excess of the specified loss ratios. The method of computing the insurance charges is explained in detail in the attached Appendix.

Such insurance charges have been computed as percentages of the standard premium for the risk. Standard premium is defined as the premium produced by extending the units of exposure at the authorized rates established for the risk by the rating organization having jurisdiction. Such authorized rates are referred to as the standard rates for the risk and may be either manual rates, or manual rates adjusted by schedule or experience rating as provided for in the standard rating procedure.

There is a definite correlation between the size of the risk, as measured by the standard premium, and the amount of the insurance charge. As a general rule, it may be stated that, for any given maximum loss ratio limitation, the proportion of total losses in excess of such loss ratio will decrease as the size of the risk increases and, conversely, will increase as the size of the risk decreases. Also, for any given minimum loss ratio limitation, the proportion of total losses represented by the reserve for losses, as measured by the difference between such minimum loss ratio limitation and the average loss ratio for risks producing loss ratios below such limit, will decrease as the size of the risk increases and, conversely, will increase as the size of the risk decreases.

Since the insurance charge takes into consideration the combined effect of the minimum and maximum loss limitations, it is important that, for any given combination of minimum and maximum loss limitations, the proportion of losses represented by the reserve for losses provided by the minimum loss limitation increases or decreases in the same direction as the proportion of losses eliminated by the maximum loss limitation. For any given size of risk the insurance charge may be reduced by increasing the minimum premium, or the maximum premium, or both; and, conversely, it may be increased by the reverse process. It is possible to establish minimum and maximum premium limits for any size of risk and to compute the insurance charge corresponding to such limits. However, it is evident that as the risk becomes smaller in size it becomes increasingly difficult to hold the insurance charge to a reasonably low amount without increasing the minimum and maximum premium limitations beyond the point at which there would be any incentive for the risk to avail itself of the retrospective rating method of premium determination.

Plan Applies to Risks of $5,000 Premium and Over

As a result of such considerations it was determined that the plan should apply only to risks producing for the policy period at least a $5,000 standard premium. The determination as to whether the risk is of sufficient size to qualify for retrospective rating is made in advance at the outset of the policy period. Therefore, in connection with borderline cases the plan is made available provided that the standard premium to be developed by the risk is expected to be at least $5,000 and provided that the total audited standard premium of the risk, applicable to the latest year of the experience period, is at least $5,000 or the audited standard premium applicable to the first nine months of the current rating period is at least $4,000. However, it is further provided that if any risk, which does not meet the foregoing eligibility requirements, is expected to develop a standard premium of at least $5,000, a complete statement of facts supporting the request for approval of application of the Retrospective Rating Plan must be submitted to the rating organization having jurisdiction.

A risk which is written under the Plan for a given policy period will not be disqualified for such period if upon audit it produces an earned standard premium of less than $5,000. In such a case, the Plan provides that the rating values for a standard premium of $5,000 shall apply.

Range of Minimum and Maximum Premiums

Even for a $5,000 standard premium risk it was necessary to establish comparatively high minimum and maximum retrospective premiums in order to keep the insurance charge to a reasonably low amount. For this size risk the minimum retrospective premium was established at 75% of the standard premium and the maximum retrospective premium at 175%. Minimum premiums grade downward from 75% for a $5,000 risk to 50% for risks producing a standard premium of $75,000 or more. Maximum premiums grade downward from 175% for a $5,000 risk to 125% for risks producing a standard premium of $150,000 or more.

Provision for Expenses

The procedure followed in providing for expenses takes into consideration the manner in which such expenses are incurred. Certain expenses are logically assessed on the basis of the size of the risk as measured by the application of average rates to the units of payroll, whereas other expenses are more properly assessed in proportion to the actual incurred losses developed by the risk. Under the first classification come such expenses as

Home Office Administration, Inspection and Payroll Audit, whereas under the second should be included Claim Adjustment expense.

Acquisition cost is customarily assessed as a percentage of the insurance premium. Under the Retrospective Rating Plan the provision for acquisition cost was determined by applying the standard acquisition allowance to the minimum retrospective premium. This was considered justifiable on the grounds that the minimum premium, in effect, represents the real insurance premium for the risk. Retrospective premium charges above the minimum premium, up to the maximum premium, may be regarded as the employer's contribution for losses incurred in excess of the minimum loss provision. Justification for treating acquisition cost on this basis is further supported by analogy to the basis of acquisition allowance in connection with compensation policies written on an ex-medical basis and policies covering other lines of insurance written on a deductible loss basis. In each instance acquisition cost is not loaded on the losses which are assessed directly against the assured.

The loading for taxes follows the usual procedure of applying such loading to each element of the final risk premium.

Basic Premium

As a result of this approach to the problem of expense loading, those expense items which primarily are related to the size of the risk are included in the so-called basic premium which is expressed as a percentage of the standard premium. The insurance charge covering the net cost of losses eliminated on the average by the minimum and maximum limitations is also included in the basic premium.

Therefore, the basic premium includes the following items:

(a) Provision for general administration, inspection and payroll audit expenses.

(b) Provision for acquisition cost based upon the minimum premium.

(c) The insurance charge required by the net effect of the minimum and maximum premium limitations.

(d) A loading on the foregoing items to cover the payment of taxes.

As will be explained hereafter, it was necessary to set up uniform basic premium charges by size of risk for all states, although the various expense items included in the basic premium vary by state. Due to this requirement, there is a residual amount available in the basic premium in certain states which has been used for partial claim adjustment expenses. Furthermore, in order to produce uniform basic premium charges in all states there is also available a small balance for contingencies in most of the basic premium charges, particularly those established for risks in the lower premium brackets. The details underlying the computation of the basic premium charges are given in the attached Appendix.

The range of minimum and maximum premiums established for risks of various sizes requires insurance charges which, in combination with the expense items, determine basic premium charges which amount to 30% of standard premium for risks in the group from $5,000 to $25,000, and grade downward to 22.5% for risks producing a standard premium of $150,000 or more.

Loss Conversion Factors

Provision for claim adjustment expense is included in the loss conversion factor which applies as a multiplier to the incurred losses of the risk, and is based upon the provision for this item as specified in the expense loading underlying standard rates for the individual state. In certain cases, as previously explained, a portion of the claim expense has been included in the basic premium charge, thereby reducing the amount necessary for inclusion in the loss conversion factor. The insurance charge incorporated in the basic premium also includes a loading for claim adjustment expense on the losses covered by such insurance charge. In every case the combination of the amount included in the loss conversion factor plus the amount included in the basic premium is equivalent to the full provision for claim expense specified in the standard expense loading for the individual state. The loss conversion factor also includes the loading for taxes in accordance with the requirements of the individual state.

Insofar as consistent with the determination of other elements in the rating formula, the loss conversion factors have been computed so as to take into consideration the practical requirement that the rating formula shall reproduce the standard premium if the risk loss ratio is equal to the standard permissible loss ratio for the state. Since the basic premium charge is at its maximum value of 30% for risks in the premium group \$5,000 to \$25,000, the first approximation of the indicated loss conversion factor is computed by dividing the remaining 70% by the standard permissible loss ratio for the state. For example, if the state permissible loss ratio is 62.5%, the indicated loss conversion factor is .70 divided by .625, which equals 1.12. Since the basic premium charge grades downward from 30% for risks above \$25,000, it is evident that the loss conversion factor computed in this manner will produce a more favorable result premiumwise for risks above the \$25,000 point. The use of this first approximation of the loss conversion factor as the final factor is possible in a number of states due to the margin available in the basic premium charges to absorb a portion of the claim adjustment expense. In certain other states, however, it has been necessary to increase this first approximation of the loss conversion factor in order to meet the necessary expense loading requirements. The details explaining the calculation of the loss conversion factors are covered in the attached Appendix.

Due to variations by state in the provision for claim adjustment expense and tax requirements, as well as in the permissible loss ratio, the resultant loss conversion factors also vary by state. The range in these factors is from 1.09, computed for Pennsylvania, to 1.25 for Tennessee, with the factors for the other states falling between these two values.

Tables of Rating Values

The basic premium, minimum premium and maximum premium charges have been set up as percentages of standard premium in a table of rating values which shows the corresponding charges for given standard premium amounts. The values which apply in the majority of states are given in Table 1. This table has been modified for certain states as will be discussed hereafter. There are shown in Table 2 the loss conversion factors which apply in the various states where the plan is now in effect, as well as the corresponding factors for the remaining states where the plan has not yet been approved.

Optional Basis of Application

A distinctive feature of the Retrospective Rating Plan is the optional basis of application. At the inception of the policy period the assured is permitted to elect whether the premium for his risk shall be computed on the prospective basis at rates determined in advance and which are not subject to further adjustment, or whether the premium shall be subject to retrospective adjustment under the Plan. On the prospective basis, the losses incurred during the policy period will have no effect upon the premium for such period, whereas, on the retrospective basis, the losses incurred during the policy period are the governing factor in the premium computation.

The insurance carrier provides full coverage to the assured under either method of premium determination. However, the retrospective rating method determines the ultimate insurance cost on a basis which is closely analogous to the method followed in connection with forms of coverage where a portion of the losses are borne directly by the employer, such as in the case of ex-medical coverage and various forms of deductible and excess coverage. Such being the case, it is reasonable that the assured shall have the privilege of determining, at the outset of the policy period, which method of premium computation shall apply in his case, similar to the optional basis which applies in connection with such alternative forms of coverage.

The various elements included in the retrospective rating formula have been determined on a basis which will produce adequate and equitable premiums on the average and, in addition, will produce premiums for individual risks which more closely reflect the actual experience of the policy period. However, as is the case with any innovation, there will undoubtedly be certain employers who, for reasons such as unfamiliarity with the workings of the plan, innate conservatism, or satisfaction with existing insurance rating procedure, will prefer to elect a continuance of the application of prospective rates in computing the insurance premium. It is felt that it would be premature, at this stage of development, to advocate compulsory application of the retrospective rating principle to every risk of sufficient size to qualify for treatment under the Plan.

Retention of Experience and Schedule Rating

As pointed out by Mr. Michelbacher in the early discussions of retrospective rating, it is necessary to have rates available to the producer when he solicits the business. Such rates quoted at the outset of the policy period should represent the closest estimate of the expected cost of the insurance for the ensuing policy period. Prospective rates determined by the Experience Rating Plan or by the Schedule Rating Plan in conjunction with the Experience Rating Plan meet this requirement. Under the retrospective rating procedure the prospective rates serve to determine the average premium level for the risk from which the retrospective rating adjustment will be made.

It is evident that the basic, minimum and maximum retrospective premiums must be related to some such premium representing the average hazard of the risk. The standard premium could be determined on the basis of manual rates rather than experience or schedule adjusted rates but, since such adjusted rates represent a closer approximation to the expected insurance cost, the use of these is to be preferred. Furthermore, the statistics used in the determination of the insurance charges have been based upon loss ratio experience compiled on the basis of adjusted rates rather than on the basis of manual rates. Another important consideration is that the provision for expenses included in the basic premium is expressed as a percentage of the standard premium. In view of the optional basis of application of retrospective rating, it is logical that the expenses which are related to the size of the risk should be based upon the same premium which would apply if the risk were to be written under the prospective rating method.

Furthermore, due to the optional feature, there must be available at the outset of the policy period the prospective experience or schedule adjusted rates which will govern in the event the assured does not elect the retrospective rating method of premium computation. Therefore, even though retrospective rating is elected by the risk for a given policy period, the application of experience and schedule rating will also continue in effect for the purpose of determining prospective rates for application to future policy periods.

During the course of discussions relative to the Retrospective Rating Plan, question has been raised as to the reasonableness of superimposing the Plan upon experience adjusted rates. It has been contended that a risk producing unfavorable experience during a given year will not only be penalized for such experience under the Retrospective Rating Plan, but also, due to the inclusion of this experience in experience rating will again be penalized for the same losses. However, it is evident that if the risk continues to be subject to retrospective premium adjustment the occurrence of unfavorable experience will have but slight effect upon the retrospective premium for any policy year other than the one during which the loss was incurred. On the other hand, if the risk elects to discontinue the application of retrospective rating, it is logical that the prospective rates required for the renewal policy shall be based upon the average indications of the past experience. The logic of this is supported by analogy to the procedure followed in determining insurance rates for a risk which has previously been self-insured. In such a case, even though the previous losses have been paid in full by the risk, such losses are again taken into consideration in determining the proper average insurance rates to be charged for the future coverage. The risk is not paying twice for the same losses since there are actually two different periods of coverage involved.

Interstate Combination of Experience

The retrospective premium adjustment is computed on the basis of the combined experience for the risk as a whole, subject however to the provision that only such risk experience for a single policy period covered by the same carrier in states where the Plan is effective shall be so combined. The initial rates at which the risk is written in the individual states are established by recognized rating organizations in accordance with the standard rating procedure. The retrospective premium adjustment, therefore, is computed on the basis of the standard premium so determined and upon the losses incurred under the policy, or policies, to which the standard premium applies. The premium adjustment, as computed and promulgated by the rating organization having jurisdiction, will be applied as an average modification to the standard premium for each individual state. Through this process a uniform method of premium determination will prevail from the time the coverage is written to the final computation of the retrospective premium.

Such interstate combination of experience is another feature in which the retrospective rating procedure differs from the prospective rating method. In the case of retrospective rating, the risk experience covered by a single carrier is used and the retrospective premium adjustment is purely an accounting process based upon known facts. This is materially different from interstate rating under the Experience Rating Plan, where it was often necessary to combine the experience under policies with varying expiration dates issued by different carriers and, furthermore, the adjusted rates for the individual states might produce premiums which would be inequitable, not only as respects the individual insurance carriers but also for the risk as a whole. The combination of experience under the Retrospective Rating Plan enables the insurance carrier to compute the proper premium charge for the entire operations of the assured on a practical and equitable basis.

The interstate combination of experience in determining the adjusted premium for the risk is a distinct advantage of the Retrospective Rating Plan. This is consistent with customary underwriting practice since an insurance carrier takes into consideration the total experience of a risk irrespective of state lines in determining whether or not the risk is acceptable. It is recognized that the argument for interstate rating could be applied with equal logic as respects the determination of rates on a prospective basis but the rating difficulties referred to above have made such a procedure impractical.

The application of the Plan on an interstate basis explains the necessity for setting up, insofar as possible, uniform rating values for the various states. For this reason, the basic premium, minimum premium and maximum premium charges, expressed as percentages of standard premium, have been established at the same values for specified amounts of standard premium for all states with the exception of a slight variation in the basic premium charges established for New York which will be discussed hereafter. The establishment of these rating values on a uniform basis for all states permits application of such values to the standard premium of the risk, regardless of whether the standard premium is produced by the operations in a single state or in several states combined. The loss conversion factors vary by state but this does not introduce any practical difficulty since the losses are readily segregated by state and, after application of the respective state loss conversion factors, may be added together in producing the retrospective premium for the risk as a whole.

Rating Procedure

Expressed as a formula, the retrospective premium is determined as follows:

Basic Premium + Losses × Loss Conversion Factor = Retrospective Premium, subject to the Specified Minimum and Maximum Premiums.

The application of this formula in practice is accomplished in a relatively simple manner as respects the majority of risks which may be subject to the Plan. In connection with risks written on an ex-medical basis, the procedure is somewhat more complicated but not particularly difficult to understand.

It will be noted that the retrospective rating process does not determine adjusted rates since the retrospective premium may be computed directly by modifying the standard premium. It is apparent, however, that the same result could be obtained by applying the retrospective rating modification to the prospective rates initially applied in writing the policy or policies. Rates are but a means to the end of producing the risk premium and since the retrospective premium can be computed without the intermediate step of determining rates, this step is omitted. This comment is made in order to clarify the point that the Plan is properly designated as a rating plan.

The various steps in the rating procedure are summarized below in the order in which they are performed:

Risks Not Written on Ex-medical Basis

(1) The standard premium for the risk is determined on the basis of audited payrolls for the rating period extended at authorized standard rates.

(2) The basic premium, minimum premium and maximum premium are determined by reference to the table of rating values which shows the ratio of each such premium to the standard premium for the risk.

(3) The losses incurred by the risk during the rating period are determined. Actual incurred losses are used without limit and are shown separately for each state.

(4) The incurred losses are converted to a premium level by application of the appropriate loss conversion factors to the losses of each state.

(5) The converted losses are added to the basic premium.

(6) The sum thus produced is the retrospective premium subject to limitation by the minimum and maximum premiums previously determined.

Risks Written on Ex-medical Basis

(1) The standard premium for the risk is determined on the basis of ex-medical coverage and also for statutory medical coverage.

  (a) The ex-medical standard premium is determined on the basis of audited payrolls for the rating period extended at authorized ex-medical standard rates.

  (b) The statutory medical standard premium is determined by dividing the ex-medical standard premium by the complement of the ex-medical discount for the governing classification as determined at the inception of the policy period.

(2) The basic premium, minimum premium and maximum premium ratios are determined from the table of rating values upon the basis of the statutory medical standard premium.

(3) The basic premium is determined by application of the basic premium ratio to the statutory medical standard premium.

(4) The minimum and maximum premiums are determined by application of the minimum and maximum premium ratios respectively to the ex-medical standard premium.

(5) The losses incurred under ex-medical coverage during the rating period are determined. Actual incurred losses are used without limit and are shown separately for each state.

(6) The loss conversion factors for the respective states are adjusted to compensate for any deficiency in the expense loading resulting from application of the ex-medical discounts. Such adjusted loss conversion factors are obtained from the rating organization having jurisdiction. (The method of computation is outlined in detail in the attached Appendix.)
(7) The incurred losses are converted to a premium level by application of the adjusted loss conversion factors.
(8) The converted losses are added to the basic premium.
(9) The sum thus produced is the retrospective premium subject to limitation by the minimum and maximum premiums previously determined.

It should be understood that application of retrospective rating on an ex-medical basis is permitted only in states where risks may legally be written on an ex-medical basis. In the case of a risk involving operations in several states, the risk may be written on an ex-medical basis in certain states and on a statutory medical coverage basis in other states. In such a case the basic, minimum and maximum premiums are determined on the basis of the combined standard premiums for the risk as a whole, using the appropriate standard premium for the ex-medical portion of the risk in accordance with the procedure outlined above.

An example of the rating procedure is shown in Exhibit A.

Special Underwriting and Administrative Procedure

Rating Date

Since the Retrospective Rating Plan is designed for application to the experience of a risk for the normal twelve months policy period, it is necessary to provide for the establishment of a common experience period in the event the risk is covered by more than one policy with different expiration dates. In order to accomplish this it is provided that, if all the operations of the risk which are to be subject to the Plan are not included under a single policy, there shall be determined a rating date upon which the application of the Plan shall become effective. Such date shall be fixed by the rating organization having jurisdiction with due consideration to the effective dates of the several policies involved.

The Plan shall operate for the twelve months immediately following the rating date. All subject policies effective prior to the rating date shall be canceled as of such date and rewritten for the twelve month period. All subject policies effective subsequent to the rating date shall be written to expire concurrently with, or canceled as of the termination of, the retrospective rating endorsement.

Advance Premium Requirements

It was early recognized that the retrospective rating procedure must protect the interests of the insurance carrier by providing for the collection of premium in excess of the standard premium in the event the risk produces an unfavorable experience during the policy period. The retrospective premium endorsement specifies that additional premium shall be paid by the assured if the retrospective premium computation, made subsequent to the termination of the policy period, indicates the need of such additional premium. However, as a further safeguard it also provides for the payment of premium in addition to the standard premium during the term of the policy period. In the case of risks of unquestionable financial stability it can be argued that the collection of such additional premium during the policy period should not be required but, rather than leave this to the judgment of the carrier in individual cases, it was felt that a uniform procedure should apply to all risks subject to the Plan.

In setting up such advance premium requirements, however, it was also recognized that consideration should be given to the possibility that upon renewal under the Retrospective Rating Plan of a risk which had previously been subject to the Plan there might be a substantial amount of premium in excess of the standard premium which ultimately would be refunded in whole or in part to the assured. In such an event it would be difficult to justify an additional premium surcharge above the standard premium in connection with the renewal policy.

The advance premium requirements as recently amended for application in New York clearly indicate the intent of the rules which apply in other jurisdictions and are as follows:

> In addition to each payment of the deposit or audited standard premium, the assured shall pay to the insurance carrier a percentage of such standard premium which shall be

termed the retrospective premium surcharge. Such surcharge percentage shall be as follows:

(a) On a risk with a total estimated standard premium of $25,000 or less, one-half of the difference between the maximum retrospective premium percentage (as shown in column (3) of the table of rating values) and 100%.

(b) On a risk with a total estimated standard premium of more than $25,000 one-quarter of the difference between the maximum retrospective premium percentage (as shown in column (3) of the table of rating values) and 100%, unless the application of such percentage to the total estimated standard premium produces a retrospective premium surcharge of less than $5,000, in which case the surcharge percentage shall be that percentage of the total estimated standard premium which produces $5,000.

Upon the renewal under this Plan by the same insurance carrier of a policy subject to the Plan, if satisfactory evidence is provided by the insurance carrier that on the basis of actual incurred losses the retrospective premium surcharge received under the expiring policy is more than sufficient to cover the amount by which the indicated retrospective premium exceeds the standard premium, the Board may authorize the carrier to credit against the retrospective premium surcharge requirements of the renewal policy an amount not exceeding the unimpaired portion of the surcharge on the expiring policy. No such credit may be applied to any portion of the standard premium.

The Board shall have authority to ascertain if appropriate deposit premiums and surcharges have been billed to and paid by the assured.

Cancelation

It is also necessary to set up rules of procedure governing cancelation by the assured in order to prevent a possible adverse selection against the insurance carrier. For example, if an assured experienced heavy losses in the early part of the policy period and if the maximum retrospective premium were to be computed by application of the tabular maximum percentage indicated by the standard premium for such incomplete policy period, it might be to the advantage of the assured to cancel his policy and thereby reduce the premium in excess of the standard premium. Conversely, if the risk produced an unusually favorable experience during the early part of the policy period and if the minimum retrospective premium were to be computed by applying the tabular minimum percentage indicated by the standard premium for such incomplete policy period, the assured might consider it to his advantage to cancel his policy and thereby earn the indicated premium reduction.

In order to preclude such possibilities, the following procedure has been established to apply in the event of cancelation by the assured:

1. The basic premium shall be determined by applying the appropriate tabular percentage to the short rate earned standard premium.
2. The minimum retrospective premium shall be equal to the short rate earned standard premium.
3. The maximum retrospective premium shall be determined by applying the appropriate tabular percentage to the standard premium extended on a pro rata basis for the full twelve months of the rating period.
4. The retrospective premium for the risk shall then be computed on the basis of these basic, minimum and maximum premiums.

It will be seen that the effect of this special procedure is to set up a minimum premium which is the same as the premium which would have been paid by the assured if the risk had been written on the standard prospective rating basis. Also, the maximum premium is based upon the estimated standard premium for the full twelve month period. Consequently, there is no advantage to the assured to effect cancelation in mid-term on account of either favorable or unfavorable loss developments.

For similar reasons, it is necessary to protect the assured against possible cancelation by the insurance carrier. This has been accomplished by providing that, in the event of cancelation by the insurance carrier, the retrospective premium shall be determined on the basis of the rating values indicated by the earned pro rata standard premium for the period the policy is in force.

The cancelation procedure has been amplified to cover the situation where the cancelation, either by the assured or the carrier, involves only a portion of the risk but the underlying principles governing the canceled portion of the risk are in accord with the above outlined procedure.

Dates of Premium Computation

The retrospective premium is determined subsequent to termination of the policy period based upon the losses incurred by the risk during such period. It is necessary to permit sufficient time to elapse after termination of the policy period in order to provide for the complete inclusion of all losses and for estimating the incurred cost of claims which have not been finally settled. Also, there must be time allowed for complete reporting of audited payrolls and the determination of the standard premium based thereon. For these reasons, therefore, the first computation of the retrospective premium is not made until six months after termination of the twelve month policy period. As provided for in the published Plan, the determination of the retrospective premium is based upon losses valued as of a date not earlier than eighteen months, nor later than twenty months, subsequent to the effective date of application of the Plan to the risk. Further premium adjustments are provided for at two twelve month intervals thereafter. The third adjustment is considered to be final unless further adjustments are approved by the rating organization having jurisdiction. The provision for such further adjustments beyond the third adjustment is included for the purpose of covering exceptional cases where there may be outstanding claims of an indeterminate nature.

Reporting and Verification of Risk Data

It is intended that the retrospective premium computation shall be based upon the same experience which is reported by the carrier for standard rate making purposes. Such data submitted under the Unit Statistical Plan shall be subject to verification by the rating organization in the state where the operations are located provided that, in the case of interstate risks, copies of such data shall be furnished by the carrier to all organizations cooperating in the administration of the Plan for the individual risk. In connection with multiple policy risks involving policies written for a short term or canceled so as to terminate concurrently with the retrospective rating period, separate unit statistical data for such policies shall be furnished the rating organization having jurisdiction.

Any such data for states where there is no regulation of Workmen's Compensation rates by supervising authorities used in connection with a rating involving a state under the administrative jurisdiction of the National Council on Compensation Insurance shall be subject to the review and approval of the National Council which may verify by inspection, audit or otherwise the operations and experience rates of the risk.

Promulgation of Retrospective Premium

After the experience data have been received and verified by the rating organization having jurisdiction, the retrospective premium adjustment shall be promulgated to the insurance carrier by the rating organization having jurisdiction. Such promulgation shall be made from the first, second and third reportings of data, the third promulgation to be final unless further adjustments are approved by such rating organization.

State Exceptions

In certain states the Plan as outlined in the foregoing pages has been modified to meet special conditions. A brief resume of the more important of such exceptions is given below.

Kansas

In order to make the Plan available to risks with standard premium below $5,000 the eligibility requirements have been amended to permit application of the Plan to risks with standard premium of $1,000 or more and the table of rating values has been extended downward to a standard premium of $1,000. The additional rating values so included are given in the following tabulation.

Standard Premium	Percentages of Standard Premium: Basic Premium	Minimum Retrospective Premium	Maximum Retrospective Premium
	(1)	(2)	(3)
$1,000	30.0%	87.0%	195.0%
1,500	30.0	84.5	191.0
2,000	30.0	82.0	187.0
2,500	30.0	80.5	184.0
3,000	30.0	79.0	181.0
3,500	30.0	78.0	179.5
4,000	30.0	77.0	178.0
4,500	30.0	76.0	176.5

Maine

Due to the fact that compensation premiums for Maine operations are subject to a 10% discount applicable to such premium in excess of $2,000, it is necessary to specify that the standard premium for the risk shall be determined by the application of the standard rates to the payrolls for the risk before application of such 10% discount. Furthermore, in view of the graded rates of commission which apply in Maine, the provision for acquisition cost included in the basic premium for risks subject to retrospective rating is the same as that which applies to risks not subject to retrospective rating.

Maryland

In order to properly provide for the assessment covering the expenses of the Maryland Industrial Accident Commission, the $.06 loading included in the standard rates is deducted in determining the standard premium and, in lieu thereof, a flat charge of $.051 per $100 of payroll is added to the retrospective premium based upon such modified standard premium.*

Massachusetts

The Retrospective Rating Plan approved in Massachusetts provides for application on a per policy basis rather than upon a risk basis. This distinction, however, does not cause any difficulty in applying the Plan since interstate retrospective rating is not permitted under the Plan in effect at present in Massachusetts. Also, the standard premium subject to retrospective rating is computed by applying the standard rates to the payrolls of the risk but without applying the 11.4% discount which the Massachusetts manual specifies shall apply to the policy premium in excess of $5,000 for risks not written on a retrospective rating basis.

New York

Under the New York Compensation Act it is possible for the cost of individual serious claims to reach substantial amounts. Consequently, it was deemed advisable to place a limitation of $10,000 on the combined indemnity and medical cost of each indi-

* These loadings are subject to revision from time to time. Effective May 31, 1938, loadings revised to $.05 and $.041 respectively.

vidual claim before inclusion in the actual incurred losses of the risk. In connection with risks written on an ex-medical basis, a corresponding limitation of $8,000 is applied to the indemnity cost of each individual claim. The introduction of such limits requires an additional insurance charge in connection with risks in the higher premium brackets. For risks in the lower groups, the maximum retrospective premium limitation will in itself eliminate the effect of excess cost of individual claims. The additional insurance charges are reflected in slightly higher basic premium ratios for risks above $25,000 standard premium. The modified basic premium ratios for New York are shown below in comparison with the standard table values for a number of premium intervals.

	Basic Premium Percentages of Standard Premium	
Standard Premium	New York Table	Standard Table
	(1)	(2)
$ 30,000	29.7%	29.5%
35,000	29.4	29.0
40,000	29.1	28.5
50,000	28.3	27.5
60,000	27.5	26.5
75,000	26.0	25.0
100,000	25.5	24.0
125,000	24.5	23.0
150,000	24.0	22.5

For a New York risk with operations in other states subject to retrospective rating and where the standard premium based upon the combined interstate operations is in excess of $25,000, the basic premium is determined as follows:

(1) The standard premium based upon the combined interstate operations is used in entering the respective tables of rating values for the purpose of determining the basic premium ratios applicable to New York and to the other states respectively.

(2) The New York basic premium ratio is applied to the New York portion of the standard premium and the basic premium ratio for the other states is applied to the standard premium of such states.

(3) The two partial basic premiums determined under (2) above are added together to give the basic premium for the risk as a whole.

Special treatment is accorded New York risks involving an exposure to silicosis and other dust disease hazards for which a specific occupational disease rate is charged. The standard premium is determined on the basis of standard rates excluding the specific New York occupational disease rates. Losses due to silicosis or other dust diseases compensated under Article 4-A of the New York Compensation Act and arising under classifications for which a specific occupational disease rate is charged are excluded from the incurred losses of the risk. The retrospective premium is computed on the basis of such standard premium and incurred losses, and the total adjusted premium for the risk is determined as the sum of the retrospective premium and the specific occupational disease premium for the rating period.

Accounting and Statistical Requirements

Payment of Commissions

Under the Retrospective Rating Plan, commissions are paid at the regular rates of commission applied to the minimum retrospective premium. During the policy period the commissions are based on the estimated minimum premium as indicated by the advance estimated standard premium. At termination of the policy period the actual minimum premium based upon the audited standard premium is computed and commissions adjusted accordingly. In the case of a policy written on an interim audit basis the minimum premium percentage of standard premium as estimated at the beginning of the policy period is applied to the deposit standard premium and to each interim audit of standard premium and the commission is paid on the indicated minimum premium portions of such standard premiums. When the final periodic audit is made, the adjustment of the minimum premium for the entire policy period is taken into consideration and the commission is paid on the basis of such adjusted minimum premium.

For example, let us assume that at the inception of the policy period the estimated standard premium is $25,000, which would indicate a minimum premium percentage of 60%. If the policy were written on an annual basis the commission would be paid on the basis of the indicated minimum premium of $15,000. At final audit the risk is found to produce an earned standard premium of $30,000, for which the minimum premium is 59%, or $17,700. The producer in such a case is entitled to additional commission on the additional $2,700 of minimum premium.

If the policy in this example had been written on a monthly audit basis, commissions would have been paid on 60% of the deposit standard premium and on 60% of each interim audit standard premium, up to but not including the final interim audit. Let us assume that the sum of the deposit standard premium and the interim audit standard premiums, prior to the final interim audit, produced a standard premium of $29,000. Commissions would have been paid on 60% of this amount, or on $17,400. When the final interim audit is made the earned standard premium for the complete policy period is indicated to be $30,000, for which the minimum premium percentage is 59%, thereby indicating that commission should be paid on $17,700. In this case the producer is entitled to additional commission on the $300 indicated as the difference between the adjusted minimum premium for the risk and the estimated minimum premium on which commission had already been paid.

It will be noted that final computation and adjustment of the amount of commissions may be accomplished as soon as the audited standard premium for the risk has been determined without waiting for the computation of the adjusted retrospective premium.

Compilation of Experience on Standard Premium Basis

Internal company experience records and experience reported to rate making organizations should be compiled on a basis which will eliminate or at least segregate the effect of retrospective premium charges or credits. Accordingly, it is desirable in setting up Home Office statistical procedure to provide for the segregation of such charges and credits in order that the premiums may be corrected to a standard premium basis. This may be readily accomplished by designating such premium items under a special code.

In the reporting of unit statistical data and Schedule Z experience to the National Council on Compensation Insurance and to independent rating organizations, it is provided that the risk premium shall be shown on a standard premium basis. For each state involved in the retrospective rating of a risk, the carrier is required to file with the National Council or the rating organization having jurisdiction a unit statistical report showing the risk experience. Experience for risks written under the Retrospective Rating Plan shall be included in the Schedule Z experience in states where Schedule Z is still required regardless of the fact that a unit plan report is also required for these risks. In reporting such experience in Schedule Z, differences between the standard premium and the retrospective premium shall be reported under Classification Code No. 0045 with the proper designation as to whether such differences represent charges or credits.

In addition to the individual unit statistical reports, the carrier is also required to file with the National Council a summary for each risk written under the Retrospective Rating Plan, showing the states involved in the agreement, the serial card number of the unit report for each state involved, the total losses incurred for each state and the development of the retrospective premium. A special report form has been designed for this purpose and also provides for assignment of the retrospective premium to the individual states in proportion to the standard premium developed.

In reporting loss ratio data by state to the National Council it is required to show the entire premium for the state, including the premium for risks subject to retrospective rating, on two bases. One total includes the premium for risks subject to retrospective rating on a standard premium basis excluding any retrospective premium adjustments or surcharges. The second total includes the actual earned premium as produced by the application of the Retrospective Rating Plan to those risks which are so rated. Premiums for risks which are not subject to retrospective rating shall be included on the actual earned premium basis in both totals.*

The purpose of requiring the reporting of experience on a standard premium basis is to permit the determination of compensation manual rates in accordance with the established rate making

* As respects Maine and Massachusetts risks subject to premium discounts, premiums are included on standard basis (without discount) in first tabulation and on discounted basis in second.

procedure. By utilizing the standard premium basis of compilation in company offices there is eliminated from internal company records the distortion in loss ratio results which might obtain if the premiums were compiled without eliminating the effect of retrospective premium adjustments or surcharges.

Modification of Unearned Premium Reserves

As previously explained herein, the Plan requires an advance premium surcharge in addition to the standard premium during the policy period. Since in many cases this surcharge premium will be returned in whole or in part to the assured and, furthermore, in many cases there will be additional premium refunds representing retrospective rating credits, it appears desirable to modify the procedure followed in computing the unearned premium reserve for risks subject to retrospective rating. Although it is possible that all premium in excess of the minimum premium would be returned in every case, this is not very probable. It seems that a reasonable modification would be to provide that, in addition to the unearned premium reserve determined in the usual manner, there should be added to such reserve an amount equal to the sum of the earned portion, on the same basis, of the advance premium surcharges on risks retrospectively rated. It is evident that, since the customary unearned premium computation would apply to the total premium including such advance premium surcharges, the effect of this procedure is to consider the entire amount represented by such advance premium surcharges as unearned premium. This modification should be continued in effect up to the date on which the preliminary retrospective rating premium adjustment is made, since at such time the advance premium surcharge will either be eliminated entirely or such portion as is retained will represent an actual earned premium.

Modification of Dividend Basis of Participating Carriers

In certain states the premium basis on which dividends are paid by mutual companies has been modified to reflect the fact that the adjusted retrospective premium does not permit the same margin for dividends as contained in the risk premium developed by the standard rating procedure.

In Massachusetts the retrospective rating premium applicable to policies written by mutual companies is modified by the addition thereto of 10% of the amount by which the retrospective premium exceeds $5,000. For example, if the application of the Plan produced an adjusted retrospective premium of $25,000, this would be modified by the addition thereto of $2,000, producing a gross retrospective premium of $27,000. Dividends would then be payable on the basis of such adjusted gross retrospective premium.

In New York the modification applicable to risks written on a retrospective rating basis by mutual companies provides that the amounts of premium which shall determine rights and obligations with respect to contingent liability and dividends shall be computed as follows: From the total retrospective premium shall be deducted the difference between said total retrospective premium and the minimum retrospective premium less the amount included in such difference derived from the loss conversion factors. Expressed in other words, the premium upon which dividends are payable is equal to the sum of the minimum retrospective premium and the expense loading on losses underlying the retrospective premium in excess of such minimum premium. The effect of this modification is that the dividend rate expressed as a percentage of the total retrospective premium decreases as the retrospective premium increases above the minimum. On the basis of a dividend rate of 20%, it will be found that starting with a dividend of 20% payable if the risk earns the minimum retrospective premium the dividend rate decreases to approximately 10% if the risk earns the maximum retrospective premium.

There may be other states where similar modification in the dividend basis of mutual companies has been made effective but official recognition of such modification is not included in the published rules of the Retrospective Rating Plan applicable in such other states.

In this connection it is interesting to note the modifications which have been made by the New York State Fund in the rating values of the Plan applicable to New York. Such modifications have been made in recognition of the lower expenses under which the State Fund operates with particular reference to the fact that the State Fund does not pay commissions to agents or brokers.

The rating values have been modified as follows:

(1) The basic premiums have been reduced by 50% thereby producing a range of basic premiums which grade downward from 15% for a $5,000 risk to 12% for a $150,000 risk.

(2) The loss conversion factor has been reduced from 1.18 to 1.14.

(3) The minimum and maximum premiums have been reduced in varying amounts with the result that the minimum premiums grade downward from 59% for a $5,000 risk to 37% for a $150,000 risk and the maximum premiums grade downward from 156% for a $5,000 risk to 110% for a $150,000 risk.

Legal Aspects

It probably can be stated without much danger of contradiction that no proposal relative to the rating of compensation risks has aroused more controversy as to its legal implications than has the Retrospective Rating Plan. For various reasons, depending upon the specific provisions in the respective state compensation laws, it has been contended that the Plan is discriminatory and in violation of the legal rating requirements. The term "discrimination" is used in the sense of unfair discrimination and implies that one class of risks, namely, those subject to the Plan are receiving benefits denied to other risks which are not subject to the Plan. At one time or another practically every element in the Plan has been attacked as being of a discriminatory nature. The Plan has been criticised in this respect because it applies only to large risks, because its application is on an optional basis, because of the inclusion of losses on an actual basis subject to a maximum aggregate limitation, because of the method of providing for expenses, particularly acquisition expense, and because of its application on an interstate basis. Furthermore, it has been claimed that application of the Plan will tend to nullify the effectiveness of supervision by authorized rating organizations. Finally, as a general condemnation, it has been claimed that the Plan is contrary to public policy. The various objections to the Plan have been ably expressed in briefs filed by its opponents in practically every state where approval by supervisory authorities was a necessary prerequisite to application of the Plan in such state Arguments in support of the Plan and in answer to such objections have likewise been filed in the various states. Without attempting to review the arguments pro and con, in detail, which would enlarge the scope of this paper to a very considerable degree, it seems sufficient to remark that there seems to be a lack of unanimity among state supervisory authorities as to the seriousness of the objections to the Plan. As measured by the results to date, however, the weight of opinion appears to be in favor of approving the Plan.

The following quotation from the decision rendered by Superintendent Pink of New York in approving the principles underlying the Plan, in the opinion of the writer, may be taken as indicative of the attitude of supervisory authorities in other states which have approved the Plan:

> "When new insurance principles are proposed for the purpose of meeting the requirements of the insuring public the New York Insurance Department believes that they should receive the sanction of supervisory officials if they are not clearly against public policy and the law. New ideas should not be considered from a narrow, technical viewpoint but should be encouraged by a broad-gauged outlook on the part of public officials whose duty is to pass upon them."

This appears to be a reasonable approach to the question as to whether the Plan conforms to the legal requirements in the individual state. As time passes the actual use of the Plan in practice will clearly demonstrate whether in effect it unfairly discriminates between risks. In view of the purpose for which the Plan has been designed, namely, to meet more adequately the requirements of large compensation risks in an equitable and reasonable manner, it would seem desirable that the Plan be given a fair trial over a sufficient period to demonstrate the validity of the claims made by its proponents. If after such a period it is found that the Plan is objectionable, the supervisory authorities can either order its withdrawal or such modification as will remove the demonstrated objectionable features.

Influence of Plan in Reduction of Losses

The Retrospective Rating Plan focuses the attention of the employer upon the cost of compensation accidents. By so doing, the Plan should have a wholesome effect in promoting increased interest on the part of the employer in accident prevention and safety measures. The result should be an improvement in the loss experience of the risk which will not only reduce the cost of insurance but also be of direct benefit to the employees of the assured. Such problems as accident control and malingering must be met and solved if the employer is to derive the maximum benefit from this method of premium determination.

The insurance carrier likewise has an increased responsibility to the assured in connection with any risk written on this basis. In addition to promoting accident prevention, the insurance carrier must continue to settle all legitimate claims equitably in compliance with the provisions of the Compensation Act applicable thereto. Certainly, no insurance carrier worthy of the name will resort to sharp practices in claim settlement, or condone such expedients as discrimination by the employer against employees with dependents, for the purpose of reducing actual or potential claims. In other words, losses must be reduced through legitimate means of improving accident prevention and safety measures rather than by discriminating against certain employees or by sharp practices in claim settlement. If the insurance carrier fails in its responsibility to the employer and his employees, the Retrospective Rating Plan will soon fall into disrepute.

The Plan provides a means of measuring the effectiveness of accident prevention and control of claim costs during the policy period. Although the Plan has been in effect for a relatively short period, the experience of one large insurance carrier in connection with risks written on the retrospective basis has demonstrated the effectiveness of the Plan in this respect. Risks which previously had produced an unfavorable loss experience have been converted to a favorable loss ratio basis and risks with a favorable past experience record have shown a further improvement. In this connection the comments of Commissioner Mortensen of Wisconsin in an address delivered at the annual meeting of the National Association of Insurance Commissioners, June 22, 1937, are pertinent:

> "It is a commendable objective for the promoters of the Retrospective Rating Plan to inaugurate and introduce into the present rate-making structure an element which will tend to create an incentive for improvement in working conditions and curtail accidents among industrial workers. If it can

> successfully be demonstrated that the Plan will save lives and prevent injuries, many of the objections raised against it will pale into insignificance. Any project should be fostered which will produce such benefits to workmen and society in general."

It is confidently believed that, as time elapses and more experience becomes available, the Plan will adequately demonstrate its value as a positive factor in reducing the frequency and cost of occupational accidents.

Insurance Against Surcharges under the Retrospective Rating Plan

A concomitant development in connection with the introduction of the Retrospective Rating Plan is the practice of certain risks to procure insurance against the possibility of the retrospective rating procedure developing a surcharge in excess of the standard premium. This insurance is usually provided for by means of a premium reimbursement contract whereby the policyholder is reimbursed to the extent of the premium actually developed in excess of the standard premium. In certain cases the contract provides for reimbursement if the retrospective premium exceeds the standard premium less the insurance charge for such reimbursement coverage. At the present time most of such reimbursement contracts are written through Lloyds Underwriters although in recent months at least one domestic excess insurer has indicated its willingness to write such coverage.

In effect, insurance against surcharges is equivalent to a modification of the basic, minimum and maximum retrospective premiums applicable to the individual risk. For risks falling between the minimum and standard premiums, the total cost to the assured will be the retrospective premium plus the amount charged for such insurance against surcharges. The maximum cost to the assured will be either the standard premium plus the charge for such insurance, or the standard premium itself, depending on the scope of such reimbursement coverage. Such reduction in the effective range of the retrospective premium may have a tendency to restrict the effectiveness of retrospective rating as an incentive to accident prevention. However, due largely to the low premium charges for such surcharge premium reimbursement coverage, the advantage to the assured in eliminating the possibility of a substantial surcharge premium while at the same time increasing the basic and minimum premiums by a relatively small amount appears to outweigh other considerations.

It is evident that the proper insurance charges for eliminating the retrospective surcharge premium, either in whole or in part, should be based upon the statistical data underlying the insurance charges incorporated in the Retrospective Rating Plan as previously explained. By following such a procedure, the premium charges for such elimination or modification of the retrospective premium surcharge will, in all probability, be higher than those which have been quoted up to the present time. The New York Compensation Insurance Rating Board has recently directed its attention to the development of rates for such coverage proceeding on the basis that this coverage would be afforded by means of an endorsement supplementing the retrospective rating endorsement applicable to the individual risk. The rates as developed by the New York Rating Board are based upon the statistical data underlying the net insurance charges in the New York Retrospective Rating Plan plus a loading for acquisition, claim expense and taxes only. The rates so developed provide for full coverage against retrospective premium surcharges in excess of the standard premium. It is interesting to note that even on the basis of the low expense loading included in such rates these rates are at least 100% higher than the rates at which this type of coverage has been offered up to the present time. This disparity in rates may be explained as being due, either to a lack of knowledge as to the underlying statistical data on the part of those who have previously offered this coverage, or to their belief that the risks to whom such coverage may be afforded will produce results more favorable than the average.

If experience in the underwriting of risks on a retrospective rating basis indicates that there is a substantial demand for this type of coverage, it would seem desirable to establish a series of modifications of the rating values in the Plan itself. This could be accomplished by reducing the maximum premium limitations accompanied by appropriate increases either in the basic premiums, or in the minimum premiums, or in both such elements. It is felt, however, that until the Plan has been in actual operation for a somewhat longer period it would be desirable to avoid introducing further modifications.

Supplementary Rating Plan

As previously stated in this paper, there are various possible methods of applying the retrospective rating principle to the individual compensation risk, the variations being dependent upon the extent to which the actual incurred losses of the policy period are modified before inclusion in the rating formula and the manner in which the loading for expenses is applied. As an example of such a variation, the Supplementary Rating Plan proposed by the mutual companies may be cited.

This particular method has been suggested by the mutual companies as a means of eliminating certain features which they claim are objectionable in connection with the Retrospective Rating Plan described herein. A brief outline of the essential features of the Supplementary Rating Plan is as follows:

1. The reflection of loss experience of the risk is restricted to a portion of the losses only,—this portion being the so-called "normal" losses for the risk. The determination of such "normal" losses follows the definition incorporated in the Experience Rating Plan and includes losses up to a maximum limit per claim equal to fifty (50) weeks indemnity at the maximum rate of compensation payable in the individual state plus a limit of $100 medical. In the case of New York, the only state in which the Supplementary Rating Plan has actually been filed for approval, a further alternative is provided which permits, in connection with risks which develop a standard premium of $25,000 or more, the inclusion of actual losses up to a limit of $5,000 combined indemnity and medical on a single claim. Catastrophe losses arising out of an accident in which two or more employees are injured are to be included at not more than twice the maximum ratable loss limit per claim.
2. As in the case of the Retrospective Rating Plan, the Supplementary Rating Plan is superimposed upon the Experience Rating Plan, provides for determination of the standard premium by the application of standard rates to the audited payrolls of the risk, applies to risks producing standard premium of at least $5,000, and contemplates the adjustment of risk premium at six months and eighteen months subse-

quent to the normal termination of the policy period with the period for adjustment subject to further extension by agreement between the assured and the insurance carrier subject to approval of the supervisory rating organization. The plan is rather indefinite as to whether it is applicable on an interstate basis but, according to the procedure outlined for the determination of the final premium under the plan filed in New York it would appear that interstate rating is contemplated.

3. There are no specified minimum premium limits by size of risk but the maximum premium is fixed at 125% of the standard premium for all risks.

4. A portion of the standard premium, referred to as the "partial premium", is set aside to provide for the average losses in excess of the ratable loss limit per accident, plus a charge for limiting the final premium to the specified maximum of 125% of the standard premium, and plus a portion of the total expense loading contained in the standard premium.

   (a) The portion set aside to provide for losses in excess of the ratable losses, together with the approved expense loading on that portion of the premium, is equal to the ratio of excess adjusted losses to total adjusted losses for the risk. This excess ratio is determined by reference to the experience rating calculation underlying the experience adjusted rates for the risk. In the case of risks where the ratable losses are determined on the basis of the $5,000 limit per claim the risk excess ratio is adjusted to reflect the application of such limit rather than the "normal" loss limit per claim.

   (b) The charge for limitation of the premium to the specified maximum is based upon the standard premium and contains the standard expense loading percentage. In the case of New York, this charge is 2% of standard premium for risks where the ratable losses are the "normal" losses and 2.5% for risks where the ratable losses are subject to the $5,000 limit per claim.

   (c) The balance of the partial premium is equal to 20% of that portion of the standard premium necessary to provide for the expected ratable losses. The portion of the expenses represented by this 20% includes the approved loadings for home office administration, inspection and payroll audit and part of the claim adjustment expense, as respects ratable losses, all such items being loaded for acquisition and taxes. Due to the fact that the provision for these expense items varies by state, the breakdown of this 20% fixed expense item likewise will vary for each state. For example, in the case of Connecticut, the distribution would be as follows: administration, inspection and audit,—9.2%; claim adjustment,—6.8%; acquisition and taxes,—4.0%; whereas, in the case of New York, the distribution is: administration, inspection and audit,—11.3%; claim adjustment,—5.0%; acquisition and taxes,—3.7%.

The partial premium for the risk is determined by applying, to the standard premium, the partial premium ratio obtained from a table of such ratios based upon the risk excess ratio and the maximum ratable loss. In the event there are no losses, the partial premium becomes the minimum premium for the risk.

5. The ratable losses of the risk are converted to a premium basis by means of a loss conversion factor (for each state) which applies the balance of the expense loading not included in the fixed partial premium. The loss conversion factor varies by state due to differences in acquisition and tax requirements and in the proportion of the claim expense loading which has been included in the fixed partial premium. For example, in the case of Connecticut, the factor would be 1.28 whereas for New York it is 1.338.
6. The actual losses of the risk, within the ratable limit for each case, are determined and converted to a premium basis by the loss conversion factors.
7. The sum of such converted losses and the partial premium is the adjusted premium for the risk subject to the maximum premium of 125% of standard premium.

An advantage to the assured under the Supplementary Rating Plan is that individual serious claims will be limited by the ratable loss limit in the determination of the adjusted risk premium. However, it is evident that the lower the point at which this limit per claim is established the greater will be the fixed charge for such limitation. Furthermore, it is evident that if the fixed portion of the premium, which is not subject to adjustment regardless of the loss experience of the risk, is of substantial amount, the effective range of premium modifications under retrospective rating will be materially reduced. This factor has been recognized by permitting the use of a $5,000 limit per claim in connection with risks which produce a standard premium of $25,000 or more.

As previously explained, the Retrospective Rating Plan establishes a limitation on losses in the aggregate by means of the specified maximum premiums. In New York, where the possibility of a high cost claim is greater than in other states, the Retrospective Rating Plan establishes a further limit of $10,000 per claim. This method of loss limitation permits a greater degree of responsiveness to the actual experience of the individual risk than is permitted under the Supplementary Rating Plan. It is quite possible for a risk developing a favorable loss ratio experience in the aggregate to produce a penalty charge under the Supplementary Rating Plan and, conversely, a risk with an overall unfavorable loss ratio may produce a premium credit. Although such results may be explained theoretically to the assured, it is felt that from a practical standpoint any retrospective rating procedure should reflect as closely as possible the actual over-all experience of the risk. Furthermore, it is evident that the expense loading included under the Supplementary Rating Plan is greater than that under the Retrospective Rating Plan since the provision for acquisition cost is included on the basis of the total adjusted premium, whereas under the Retrospective Rating Plan the acquisition cost is based upon the minimum retrospective premium only. In recognition of this, the stock companies have filed with the New York Insurance Department an amendment to the Supplementary Rating Plan to provide for acquisition cost on the same basis as under the Retrospective Rating Plan.

Results under the Retrospective Rating Plan

Premature as it obviously is to analyze the results of actual application of the Retrospective Rating Plan, certain preliminary observations may prove of interest. The Plan has not been in effect long enough to permit the development of an adequate representative volume of experience on risks with completed policy periods. However, the experience to date of one large insurance carrier indicates that the results obtained under the Plan appear to be equitable and reasonable.

The following tabulation shows the results for every risk written by this carrier under the Plan and for which the policy period has been completed.

Risk Number	Standard Premium	Incurred Losses	Loss Ratio	Retrospective Premium	Premium Credit (−) or Charge (+)	
					Amount	Percent
1	$ 1,510*	$ 806	53.4%	$ 1,355	$− 155	−10.3%
2	3,914*	47	1.2	2,936	− 978	−25.0
3	4,863	2,030	41.7	3,733	− 1,130	−23.2
4	5,349	1,652	30.9	4,012	− 1,337	−25.0
5	5,567*	1,280	23.0	4,147	− 1,420	−25.5
6	6,182	1,415	22.9	4,574	− 1,608	−26.0
7	7,793	560	7.2	5,650	− 2,143	−27.5
8	7,840	1,923	24.5	5,684	− 2,156	−27.5
9	8,050	4,360	54.2	7,298	− 752	− 9.3
10	8,082	3,178	39.3	6,079	− 2,003	−24.8
11	8,386	979	11.7	6,038	− 2,348	−28.0
12	12,415	2,931	23.6	8,443	− 3,972	−32.0
13	13,912	7,363	52.9	12,641	− 1,271	− 9.1
14	14,689	10,944	74.5	16,992	+ 2,303	+15.7
15	17,567	5,613	32.0	11,725	− 5,842	−33.3
16	20,668	10,038	48.6	17,443	− 3,225	−15.6
17	40,303	16,884	41.9	30,903	− 9,400	−23.3
18	55,082	24,226	44.0	42,732	− 12,350	−22.4
19	66,232	23,197	35.0	43,201	− 23,031	−34.8
20	71,323	32,539	45.6	55,607	− 15,716	−22.0
21	81,660	23,496	28.8	46,579	− 35,081	−43.0
22	91,996	33,389	36.3	60,844	− 31,152	−33.9
Total	$553,383	$208,850	37.7%	$398,616	$−154,767	−28.0%

*Canceled risks.

It will be observed that of the twenty-two completed risks written on this basis, involving a total standard premium in excess of half a million dollars, there was but one debit rated risk, the standard premium for which was less than $15,000. Total premium credits amounted to $157,070 as compared with the single additional premium charge of $2,303. This group represented a fair cross-section of the larger risks, the premium distribution by industrial groups being as follows: Manufacturing—56.5%, Contracting—18.9% and All Other—24.6%.

It is interesting to note that for this group of risks the total of the individual minimum retrospective premiums amounted to $311,273 which is 56.2% of the total standard premium for the group. Applying the standard acquisition allowance of 17.5% to this average minimum premium ratio indicates that the average acquisition allowance in terms of standard premium amounted to 9.84%. If this were the only factor which had been taken into consideration the average premium reduction for the group would have amounted to approximately 7.9%. In other words, this experience indicates that less than one-third of the total premium reduction of 28% was accounted for by the fact that the acquisition allowance under the Retrospective Rating Plan is determined on the basis of the minimum retrospective premium.

This particular group of risks includes only those risks which were written during the first few months in which the Plan became operative in certain states. The total volume of compensation business written at the present time by this carrier under the Plan has increased considerably in recent months as the Plan has become available in additional states. It is estimated that, as respects the business of this carrier, approximately 50% of the premium volume for risks of sufficient size to qualify under the Plan in the states where the Plan is now in effect has been written on the retrospective basis.

As previously stated, the Retrospective Rating Plan is now in effect in twenty-five jurisdictions. The total compensation written premiums of all carriers for these jurisdictions amounted to 53.8% of the countrywide written premiums for calendar year 1936 (excluding monopolistic state funds). It is estimated that approximately 30% of the premium volume in these jurisdictions represents the proportion for risks producing an annual standard premium of $5,000 or more. Consequently, it is estimated that the Plan at the present time may be applied to risks representing approximately 16% of the total countrywide compensation premium volume of all carriers.

A further observation, based upon the experience of the insurance carrier referred to above, indicates that approximately 75% of the number and premium volume of risks with an annual standard premium of $5,000 or more will produce premium credits under the Retrospective Rating Plan. This observation is based upon the actual past experience records of risks in this group without taking into consideration possible further improvement in the loss ratio experience resulting from increased interest in accident prevention and control under the Retrospective Rating Plan. Furthermore, this estimate was based upon risk loss ratios which had been adjusted to the basis of a permissible loss ratio of 60% for the business as a whole.

The number of risks which have availed themselves of this new method of premium adjustment is increasing. It is interesting to note that risks which previously have been self-insured are included among this number. The optional basis of application has removed any pressure upon employers to become subject to the Plan but, undoubtedly, there will be many who will make such election when there become available the actual results produced for risks which have already been written on this basis.

Future Modifications of the Plan

As additional experience is developed under the actual application of the Plan, modifications in the retrospective rating procedure will undoubtedly be indicated. Without attempting to predict the extent of such modifications, it might be in order to comment briefly upon certain items which, in the opinion of the writer, should be given consideration.

The Plan has been criticised to some extent on the ground that the minimum and maximum premiums are too high, particularly for risks in the lower premium brackets. This criticism should be analyzed on the basis of more recent experience compiled for all risks with premium of $5,000 or more, and with due consideration of the results produced under the Plan. If the range of minimum and maximum premiums can be reduced on a sound actuarial basis, this should be done.

In this connection, consideration should also be given to the possibility of establishing a variation in the range of minimum and maximum premiums according to the type of risk. Such variations should be based upon statistical data compiled on the basis of broad industrial groups, such as Manufacturing, Contracting and All Other.

In order to meet the demand for coverage against retrospective premium surcharges, it would appear desirable to investigate the possibility of setting up a series of charges to cover specified modifications in the maximum premium. Such charges could be added to the basic premium only without modifying the minimum premium.

Since, under the Retrospective Rating Plan, the attention of the assured is focused not only on the cost of accidents but also on the underlying expense provisions in the retrospective premium, it is felt that a careful study should be made to determine whether certain expense items, such as home office administration, inspection and payroll audit, should be modified to reflect more closely the actual expense involved in connection with risks in the higher premium groups. This modification in the expense element has been recognized in Maine and Massachusetts and should be carefully investigated to determine the propriety of its application in other states.

The Retrospective Rating Plan constitutes a direct approach to the problem of meeting the requirements of the larger compensation risks. Whether it will fulfill the purpose for which it was designed will be determined by the results produced by its application in actual practice over a reasonable period. All constructive criticisms of the Plan should receive prompt and thorough consideration by the supervisory authorities in the various states, by rate making organizations and by company representatives, including producers, underwriters and actuaries. Objectionable features should be eliminated and such improvements as are indicated should be made.

The ultimate objective should be to produce as perfect a retrospective rating plan as possible, whereby the compensation premium for risks which qualify thereunder will be determined on a reasonable and equitable basis, both from the standpoint of the assured and the insurance carrier, and which also will create an additional and effective stimulus for accident prevention and control.

TABLE 1
RATING VALUES*

Standard Premium (See Footnote)	Percentages of Standard Premium (1) Basic Premium	(2) Minimum Retrospective Premium	(3) Maximum Retrospective Premium	Standard Premium (See Footnote)	Percentages of Standard Premium (1) Basic Premium	(2) Minimum Retrospective Premium	(3) Maximum Retrospective Premium
$ 5,000	30.0%	75.0%	175.0%	$ 32,500	29.3%	58.5%	138.5%
5,500	30.0	74.5	174.0	35,000	29.0	58.0	138.0
6,000	30.0	74.0	173.0	37,500	28.8	57.5	137.5
6,500	30.0	73.5	172.0	40,000	28.5	57.0	137.0
7,000	30.0	73.0	171.0	42,500	28.3	56.5	136.5
7,500	30.0	72.5	170.0	45,000	28.0	56.0	136.0
8,000	30.0	72.0	169.0	47,500	27.8	55.5	135.5
8,500	30.0	71.5	168.0	50,000	27.5	55.0	135.0
9,000	30.0	71.0	167.0	52,500	27.3	54.5	134.5
9,500	30.0	70.5	166.0	55,000	27.0	54.0	134.0
10,000	30.0	70.0	165.0	57,500	26.8	53.5	133.5
10,500	30.0	69.5	164.0	60,000	26.5	53.0	133.0
11,000	30.0	69.0	163.0	62,500	26.3	52.5	132.5
11,500	30.0	68.5	162.0	65,000	26.0	52.0	132.0
12,000	30.0	68.0	161.0	67,500	25.8	51.5	131.5
12,500	30.0	67.5	160.0	70,000	25.5	51.0	131.0
13,000	30.0	67.0	159.0	72,500	25.3	50.5	130.5
13,500	30.0	66.5	158.0	75,000	25.0	50.0	130.0
14,000	30.0	66.0	157.0	80,000	24.8	50.0	129.6
14,500	30.0	65.5	156.0	85,000	24.6	50.0	129.2
15,000	30.0	65.0	155.0	90,000	24.4	50.0	128.8
16,000	30.0	64.5	153.0	95,000	24.2	50.0	128.4
17,000	30.0	64.0	151.0	100,000	24.0	50.0	128.0
18,000	30.0	63.5	149.0	105,000	23.8	50.0	127.6
19,000	30.0	63.0	147.0	110,000	23.6	50.0	127.2
20,000	30.0	62.5	145.0	115,000	23.4	50.0	126.8
21,000	30.0	62.0	144.0	120,000	23.2	50.0	126.4
22,000	30.0	61.5	143.0	125,000	23.0	50.0	126.0
23,000	30.0	61.0	142.0	130,000	22.9	50.0	125.8
24,000	30.0	60.5	141.0	135,000	22.8	50.0	125.6
25,000	30.0	60.0	140.0	140,000	22.7	50.0	125.4
27,500	29.8	59.5	139.5	145,000	22.6	50.0	125.2
30,000	29.5	59.0	139.0	150,000 & Over	22.5	50.0	125.0

NOTE: * See modifications applicable in Kansas and New York.

If the earned standard premium for the Policy lies between any two of the figures in the Standard Premium column, the percentages shall apply on the basis of the next lower standard premium in the table, provided, however, that if the earned standard premium of the Policy is less than $5,000, the percentages for a standard premium of $5,000 shall apply.

TABLE 2

LOSS CONVERSION FACTORS

(a) *States in which Plan is in effect:*

State	Factor	State	Factor
Alabama	1.21	Massachusetts	1.15
Alaska	1.18	Montana	1.12
Connecticut	1.12	Nebraska	1.12
District of Columbia	1.11	New Mexico	1.12
Florida	1.20	New York	1.18
Idaho	1.14	North Carolina	1.18
Illinois	1.12	Oklahoma	1.12
Indiana	1.12	Rhode Island	1.12
Iowa	1.13	South Carolina	1.24
Kansas	1.19	South Dakota	1.19
Kentucky	1.12	Tennessee	1.25
Maine	1.10	Vermont	1.12
Maryland	1.12		

(b) *States in which Plan has not yet been approved*

(*For reference purposes only*):

State	Factor	State	Factor
Arizona	1.18	Missouri	1.18
California	1.19	New Hampshire	1.18
Colorado	1.16	New Jersey	1.16
Delaware	1.12	Pennsylvania	1.09
Georgia	1.22	Texas	1.23
Hawaii	1.13	Utah	1.18
Louisiana	1.13	Virginia	1.19
Michigan	1.18	Wisconsin	1.13
Minnesota	1.16		

EXHIBIT A

Example of Calculation of Retrospective Premium

(1)	Standard Premium (Based on Audited Payrolls): Illinois $10,000 Indiana 12,500 Iowa 2,500	$25,000
(2)	Basic Premium Ratio (Col. 1, Table of Rating Values)	.300
(3)	Basic Premium ((1) × (2))	7,500
(4)	Minimum Premium Ratio (Col. 2, Table of Rating Values)	.600
(5)	Minimum Premium ((1) × (4))	15,000
(6)	Maximum Premium Ratio (Col. 3, Table of Rating Values)	1.400
(7)	Maximum Premium ((1) × (6))	35,000

State	(8) Actual Incurred Losses	(9) State Loss Factor	(10) Converted Losses (8) × (9)
Illinois	$ 5,000	1.12	$ 5,600
Indiana	4,000	1.12	4,480
Iowa	1,000	1.13	1,130
Total	$10,000		$11,210

(11)	Indicated Retrospective Premium = (3) + Total of Col. (10)	18,710
(12)	Earned Retrospective Premium for Risk:	
	(a) Equals (11), if (11) is between (5) and (7)	18,710
	(b) Equals (5), if (11) is less than (5).	———(Minimum)
	(c) Equals (7), if (11) is greater than (7).	———(Maximum)
(13)	Ratio: Earned Retro. Prem. to Standard Prem. ((12) ÷ (1))	.7484
(14)	Earned Retrospective Premium by State ((1) × (13))	

Illinois $10,000 × .7484 = $7,484
Indiana 12,500 × .7484 = 9,355
Iowa 2,500 × .7484 = 1,871

Appendix

An outline of the fundamentals underlying the computation of various elements in the Retrospective Rating Plan is presented in this Appendix. For more detailed information reference should be made to various memoranda issued by the National Council on Compensation Insurance and the National Bureau of Casualty and Surety Underwriters.

It will be apparent from the following explanation that there is an interdependent relationship existing between the various rating values of the Plan. The insurance charge incorporated in the basic premium depends upon the specific minimum and maximum loss limitations applicable to each given premium size. The minimum and maximum loss limitations are determined as the result of dividing the difference between the basic premium ratio and the minimum or maximum premium ratio by the state loss conversion factor. Consequently, a variation in any one of these elements will have an effect upon the insurance charge. Furthermore, it will be noted that the state loss conversion factor is dependent not only upon the standard loadings for claim adjustment expense and taxes, but also upon the amount included in the basic premium for expense items.

Insurance Charges

The insurance charge incorporated in the basic premium reflects the net cost of losses which, on the average, are eliminated from the retrospective rating process. The losses eliminated by the maximum loss limitation are offset by the reserve for losses provided by the minimum loss limitation, the net effect being dependent upon the points at which the minimum and maximum limits are established. In order to determine such insurance charges, therefore, it was first necessary to compile the experience of individual risks to show the ratio to total losses of losses in excess of specified loss ratios per risk. Such experience compilations were made for various premium size groups for several states following in general the method used by Mr. Dorweiler in a previous compilation along these lines.* Since we are primarily interested with the indications of such experience on risks of

* See *Proceedings*, Volume XX, pages 1-26, "Policy Limits in Casualty Insurance", by Paul Dorweiler.

$5,000 premium size and over, it is evident that the volume of available experience is limited for most states. However, the New York experience, compiled for policy years 1932 and 1933 combined, was considered of sufficient volume to furnish reliable indications for most premium size groups. This experience was compared with similar data compiled for Massachusetts, policy years 1930-1933 combined. Also, comparisons were made with a similar tabulation made by Mr. Dorweiler based on the experience of a large insurance carrier for several states and policy years combined and with tabulations made by another large insurance carrier for New Jersey and Pennsylvania, policy years 1930-1932 combined. It was found that the indicated ratios of excess losses to total losses were remarkably consistent for corresponding premium size groups. The results of these tabulations for New York and Massachusetts are shown in Tables A-1 and A-2 appended hereto.

On the basis of the New York indications a table of excess pure premium ratios for application in all states was constructed by the National Bureau of Casualty and Surety Underwriters, the values therein being graduated by calculating the differences between the successive values of the table (both between successive loss ratios for the same premium size and between successive premium sizes for the same loss ratio), and then graduating these differences. The table was then extended to higher premium sizes by extending the differencing process with due regard to the necessary minimum values of the excess pure premium ratios. For example, the excess pure premium ratio for a 45% loss ratio cannot be less than 25% for, otherwise, the average loss ratio on risks having a loss ratio of 45% or less would be in excess of 45%, an obvious impossibility. This table of excess pure premium ratios is shown as Table A-3.

Also, on the basis of the graduated table of excess pure premium ratios, a chart was prepared, graphically presenting by a series of distinct curves, for selected premium sizes, the variation in the excess pure premium ratios corresponding to the variation in the risk loss ratio limitation above which the excess losses are measured. The excess pure premium ratios read from this chart, which is also appended hereto, are used in the calculation of the insurance charges for all states.

For the purpose of illustrating the variation in the net insurance charges (excluding expense loading) for various combinations of minimum and maximum loss limitations, Tables A-4 and A-5 have been prepared showing such results for risks with standard premium of $5,000, $25,000 and $100,000 respectively. The results shown in Table A-5 demonstrate that for a given size risk the net insurance charge increases as the minimum or maximum loss limitation is lowered and, conversely, decreases as the minimum or maximum loss limitation is raised. Furthermore, as a general rule, the net insurance charge for a given combination of minimum and maximum loss limitations decreases as the premium size increases.

It is to be understood that Tables A-4 and A-5 are presented for illustrative purposes only, since the insurance charges calculated for incorporation in the basic premiums for each state are based upon the specific minimum and maximum loss limitations indicated for the various premium sizes for such state and, furthermore, include the same loading for expenses, excluding taxes, as applies to losses included in the retrospective rating premium calculation.

Table A-6 has been prepared to show the calculation of the insurance charges for Connecticut and Tennessee. A brief explanation of the computation of the insurance charge for a Connecticut risk with standard premium of $25,000 follows:

1. The underlying maximum and minimum loss limitations are first determined. The maximum loss limitation, shown in Column (2) of Table A-6, expressed as a ratio to standard premium, is derived by dividing the difference between the basic premium ratio of 30% and the maximum premium ratio of 140% by the loss conversion factor of 1.12. This is found to be equal to $\frac{1.40 - .30}{1.12} = .982$. Similarly, the minimum loss limitation shown in Column (5) is determined from the minimum premium ratio and is equal to $\frac{.60 - .30}{1.12} = .268$.

2. Reference to the chart of excess pure premium ratios shows that for a $25,000 risk the excess pure premium ratio corresponding to a 98.2% loss ratio limitation is .108, shown in Column (3). Expressed in terms of the risk premium this becomes equal to $.108 \times .60 = .065$, shown in Column (4).

3. Similarly, for a 26.8% loss ratio limitation the excess pure premium ratio is .588, shown in Column (6). Therefore, the ratio to total losses of losses falling below the 26.8% loss ratio limitation equals 1.000 − .588 = .412, shown in Column (7). Related to premium, the losses falling below the minimum loss ratio limitation will, therefore, be equal to .412 × .60 = .247, shown in Column (8). The indicated reserve for losses due to the specified minimum loss limitation is equal to .268 − .247 = .021 of the risk premium and is shown in Column (9).
4. The net insurance charge in this case is .044 of the risk premium, being the difference between the charge of .065 for losses in excess of the maximum loss limitation and .021, the reserve for losses due to the minimum loss limitation.
5. The final step in the calculation is to apply to the net insurance charge the loss conversion factor exclusive of the tax loading. The loading for taxes is excluded in the calculation of the insurance charge since taxes are provided for on the basis of the total basic premium of which the insurance charge forms a part. In the case of Connecticut, where the loss conversion factor is 1.12 and the tax loading is 2.5%, the factor applicable to the net insurance charge is equal to 1.12 × .975 = 1.092. Applying this factor to the net insurance charge of .044 produces the insurance charge of .048, shown in Column (11).

In the case of New York it was necessary to allow for the additional insurance charges required by the limit of $10,000 per claim. Accordingly, the following increments were added to the excess pure premium ratios corresponding to the maximum aggregate loss limitations at the various premium sizes:

Standard Premium	Excess Pure Premium Ratio Increment
$ 5,000	.000
10,000	.004
15,000	.005
20,000	.006
25,000	.007
50,000	.015
75,000	.017
100,000	.019
150,000	.020

These increments were determined on the basis of the New York experience by size of risk, by comparing the excess pure premium ratios producd by losses modified by the $10,000 limit per claim with the corresponding excess pure premium ratios determined on the basis of unmodified losses. As respects the smaller risks, it is evident that the $10,000 claim limit will have no effect since the maximum aggregate loss limit per risk will become effective before the $10,000 claim limit is reached. As the risk increases in size, however, the $10,000 claim limit has an increasing effect until ultimately it will require an additional charge equal to the full value of the ratio of losses in excess of such limit to total losses, as indicated by the total experience of all risks compiled by size of claim.

Minimum and Maximum Premiums

In formulating the retrospective rating procedure, due consideration was given to its practical aspects as well as to the underlying theory. Since the Plan was designed for application to the entire experience of a risk on an interstate basis, it was deemed advisable to establish a uniform range of minimum and maximum premiums for the various premium sizes for all states in order to facilitate the interstate rating procedure. The selection of the particular range of minimum and maximum premium ratios incorporated in the Plan was made after careful study of the insurance charges indicated by various combinations of minimum and maximum loss limitations and with due regard for the desirability of producing a logical graduation of such values for various premium sizes.

Basic Premiums

As previously outlined, the basic premium which is expressed as a percentage of the standard premium includes the following items:

(a) Provision for general administration, inspection and payroll audit expenses.
(b) Provision for acquisition cost based upon the minimum premium.
(c) The insurance charge required by the net effect of the minimum and maximum premium limitations.
(d) A loading on the foregoing items to cover the payment of taxes.

The basic premium charges vary by size of risk due primarily to the variation in the provision for acquisition cost and in the insurance charge. However, it was considered desirable to maintain a uniform range of basic premium charges for all states for the same reason given for establishing a uniform range of minimum and maximum premiums. The provision for general administration, inspection and payroll audit expenses is based upon the standard loadings included in the rates for the individual state. There is no graduation of such expenses based upon the premium size with the exception of two states, Maine and Massachusetts, where such graduation is incorporated in the rating procedure applicable to the operations of all risks in the state, whether written on a retrospective basis or otherwise. The provision for acquisition cost is determined by applying the standard acquisition allowance to the minimum retrospective premium. The insurance charge is determined as previously explained. The loading for taxes is determined by applying the standard state tax loading to the total basic premium.

In maintaining a uniform range of basic premiums for all states, it was found that in certain cases there was an additional amount available in the basic premium which could be assigned to cover a part of the claim adjustment expense. In other cases, however, it was found that this margin was not available, but, on the contrary, the basic premium charges, particularly for the higher premium sizes, were not quite sufficient to cover the full expenses of general administration, inspection and payroll audit. Accordingly, the loss conversion factor was modified either downward to reflect the fact that part of the claim adjustment expense had been included in the basic premium, or upward to provide for the additional amount necessary for other company expenses. Furthermore, it developed that by maintaining a uniform range of basic premium charges in all states, there were available varying residual amounts for contingencies, such amounts being greater percentage-wise for the smaller premium sizes and decreasing to approach zero for the largest premium size.

Loss Conversion Factors

The determination of the component parts of the basic premium charges for each state is closely related to the calculation of the state loss conversion factor, as will be evident from the foregoing explanation. The underlying principle is that the provision for expenses included in the basic premium and in the loss conversion factor shall be equivalent to the total standard expense loading for the state, after making due allowance for the modification in the provision for acquisition cost being based upon the minimum retrospective premium.

In determining the loss conversion factor for each state a preliminary calculation was made on the basis that for a risk with standard premium of $25,000 or less the retrospective premium will equal the standard premium when the risk loss ratio is equal to the standard permissible loss ratio for the state. Since the basic premium ratio for a risk with standard premium of $25,000 or less is 30%, it is seen that the preliminary loss conversion factor is derived by dividing 70% by the state permissible loss ratio. This first approximation was then tested in conjunction with the established range of basic, minimum and maximum premium ratios taking into consideration the excess or redundancy in the preliminary loss conversion factor as respects the provision for claim adjustment expense when compared with the standard provision for such expense. If it were found that the loss conversion factor was not sufficient to cover the full provision for claim adjustment expense and if such deficiency could not be absorbed in the basic premium, the loss conversion factor was increased in the amount necessary to bring about the proper balance. Likewise, if the basic premium were insufficient to cover the full provision for general administration, inspection and payroll audit, the preliminary loss conversion factor was increased to take care of such deficiency.

Table A-7 presents an analysis of the basic premium charges and the loss conversion factor for Connecticut where the basic premium charges were sufficient to permit the inclusion of an additional amount covering partial claim expense. It will be noted that the loss conversion factor for this state has been correspondingly reduced from the amount which would have been necessary if the full claim adjustment expense had been included therein.

Table A-8 presents a similar analysis for Tennessee, where the basic premium charges were not sufficient to cover the full provision for general administration, inspection and audit expenses. It will be noted that in this case the loss conversion factor has been increased above the amount which would have been necessary if such deficiency in the provision for these expense items had not been included therein.

In the case of risks involving ex-medical coverage, it is necessary to adjust the loss conversion factor applicable to losses on the ex-medical basis in order to provide an adequate expense loading. Such adjustment is made in the loss conversion factor for each state in which coverage on an ex-medical basis is subject to the Plan and takes into consideration the ex-medical ratio applicable to the risk in connection with such coverage in each state. For example, if a risk is written on an ex-medical basis in several states, the ex-medical ratio applicable to the coverage in each state is used in adjusting the loss conversion factor to be applied to the ex-medical losses in each of such states.

The computation of the adjusted loss conversion factor is illustrated by the following example for a Connecticut risk with an ex-medical ratio of 20%:

(1)	Loss conversion factor (statutory medical basis)	1.12
(2)	Tax provision	.025
(3)	Loss conversion factor unloaded for taxes (1) × (1.000 − (2))	1.092
(4)	Provision in loss conversion factor for company expenses (3) − 1.000	.092
(5)	Ex-medical ratio for governing classification	.200
(6)	Expected loss ratio for full coverage	.625
(7)	Ratio: Full coverage losses ÷ ex-medical losses (6) ÷ ((6) − (5))	1.471
(8)	Company expense provision adjusted for ex-medical coverage (4) × (7)	.135
(9)	Loss conversion factor (ex-medical basis) $\frac{1.000 + (8)}{1.000 - (2)}$	1.16

It will be seen that the purpose of adjusting the loss conversion factor is to provide therein the same loading for company expenses as contained in the standard loss conversion factor applicable to losses on a full coverage basis. This is accomplished by first determining the provision for company expenses in the standard loss conversion factor, and then proportionately increasing this ratio to reflect the fact that the revised loss conversion factor will apply to the losses incurred under ex-medical coverage instead of to full coverage losses. In this calculation it is assumed that the ex-medical ratio for the governing classification represents the ratio of the medical losses which will be eliminated to the full coverage standard premium. After making this adjustment in the company expense provision, the result is added to unity and the total is loaded for taxes in order to produce the revised loss conversion factor to apply to the coverage in the state written on an ex-medical basis.

TABLE A-1

NEW YORK—POLICY YEARS 1932 AND 1933 COMBINED

Premium Size		No. of Risks in Group	Selected Loss Ratios Per Risk												
Actual Group	Adjusted Average*		.20	.30	.40	.50	.60	.70	.80	.90	1.00	1.10	1.20	1.30	1.40
			Excess Pure Premium Ratios												
$4,000– 4,999	$3,921	548	.711	.604	.517	.444	.382	.333	.292	.257	.226	.202	.181	.163	.147
5,000– 5,999	4,556	357	.701	.586	.494	.420	.362	.314	.274	.237	.204	.177	.154	.136	.119
6,000– 6,999	5,573	246	.696	.578	.480	.395	.325	.267	.219	.183	.153	.128	.107	.089	.074
7,000– 7,999	6,585	182	.702	.586	.489	.416	.356	.308	.266	.228	.197	.166	.140	.117	.099
8,000– 8,999	7,236	154	.693	.570	.469	.388	.319	.262	.216	.180	.148	.121	.099	.084	.071
9,000– 9,999	7,377	133	.688	.560	.451	.370	.310	.265	.228	.195	.167	.142	.124	.109	.097
10,000– 14,999	10,947	288	.682	.548	.439	.352	.281	.221	.176	.143	.119	.098	.080	.067	.055
15,000– 19,999	13,889	119	.678	.540	.417	.315	.239	.185	.145	.112	.088	.068	.052	.039	.026
20,000– 24,999	21,313	74	.674	.531	.407	.306	.232	.173	.129	.096	.068	.049	.038	.029	.021
25,000– 29,999	24,901	47	.675	.528	.398	.293	.211	.151	.113	.083	.061	.046	.035	.025	.017
30,000– 39,999	31,671	52	.672	.525	.391	.281	.190	.118	.073	.046	.030	.018	.009	.002	.000
40,000– 49,999	33,341	33	.666	.513	.391	.290	.210	.142	.087	.051	.028	.020	.015	.011	.006
50,000– 74,999	47,774	32	.672	.518	.397	.307	.228	.167	.123	.088	.062	.041	.020	.004	.000
75,000– 99,999	73,279	15	.666	.498	.345	.203	.103	.060	.030	.011	.001	.000	.000	.000	.000
100,000–149,999	100,463	4	.666	.498	.331	.164	.058	.001	.000	.000	.000	.000	.000	.000	.000
150,000 & over	174,843	3	.666	.498	.331	.164	.033	.000	.000	.000	.000	.000	.000	.000	.000

*Experience of each premium group was adjusted to basis of permissible loss ratio of 59.8%.

TABLE A-2

MASSACHUSETTS—POLICY YEARS 1930, 1931, 1932 AND 1933 COMBINED

Premium Size		No. of Risks in Group	Selected Loss Ratios Per Risk												
Actual Group	Adjusted Average*		.20	.30	.40	.50	.60	.70	.80	.90	1.00	1.10	1.20	1.30	1.40
			Excess Pure Premium Ratios												
$5,000– 9,999	$7,560	734	.688	.558	.455	.372	.304	.250	.204	.167	.138	.116	.098	.085	.073
10,000–24,999	14,528	330	.668	.526	.409	.306	.222	.160	.118	.087	.062	.044	.031	.021	.014
25,000–49,999	32,358	75	.668	.526	.409	.320	.233	.177	.128	.088	.058	.038	.023	.013	.007
50,000–99,999	67,293	28	.664	.503	.357	.221	.131	.080	.050	.031	.019	.010	.005	.001	.000
100,000 & over	119,830	7	.664	.492	.329	.179	.091	.040	.017	.002	.000	.000	.000	.000	.000

*Experience of each premium group was adjusted to basis of permissible loss ratio of 60%.

TABLE A-3

Workmen's Compensation—Excess Pure Premium Ratios

Ratios to total losses of losses in excess of any selected loss ratio per risk
Graduated Values for Application in all States

Premium Size	Selected Loss Ratios Per Risk												
	.20	.30	.40	.50	.60	.70	.80	.90	1.00	1.10	1.20	1.30	1.40
	Excess Pure Premium Ratios												
$500	.835	.775	.730	.691	.658	.630	.602	.583	.561	.542	.523	.505	.490
1,000	.810	.746	.697	.650	.612	.580	.550	.529	.505	.484	.465	.445	.427
1,500	.784	.721	.667	.616	.572	.535	.502	.477	.450	.427	.405	.382	.360
2,000	.775	.700	.640	.586	.539	.499	.463	.430	.400	.378	.345	.319	.295
3,000	.755	.667	.595	.535	.483	.441	.403	.367	.332	.300	.269	.240	.210
4,000	.732	.640	.559	.494	.439	.394	.355	.323	.289	.257	.227	.198	.170
5,000	.720	.620	.530	.459	.401	.353	.314	.283	.250	.218	.190	.160	.135
7,500	.695	.582	.489	.410	.345	.295	.254	.224	.196	.170	.146	.125	.106
10,000	.685	.573	.470	.383	.314	.259	.215	.185	.160	.138	.118	.100	.085
15,000	.684	.564	.455	.363	.287	.230	.186	.156	.132	.110	.095	.079	.065
20,000	.683	.560	.447	.352	.272	.215	.171	.141	.118	.098	.083	.070	.057
25,000	.678	.556	.441	.342	.259	.201	.157	.127	.105	.086	.070	.056	.045
50,000	.673	.538	.412	.304	.210	.146	.104	.076	.055	.039	.026	.015	.005
75,000	.670	.523	.392	.284	.183	.118	.076	.050	.032	.016	.004	.000	.000
100,000	.668	.513	.378	.260	.161	.096	.054	.028	.013	.005	.000	.000	.000
150,000	.666	.505	.368	.247	.151	.087	.046	.023	.009	.002	.000	.000	.000
200,000	.665	.499	.360	.237	.143	.079	.040	.019	.006	.000	.000	.000	.000

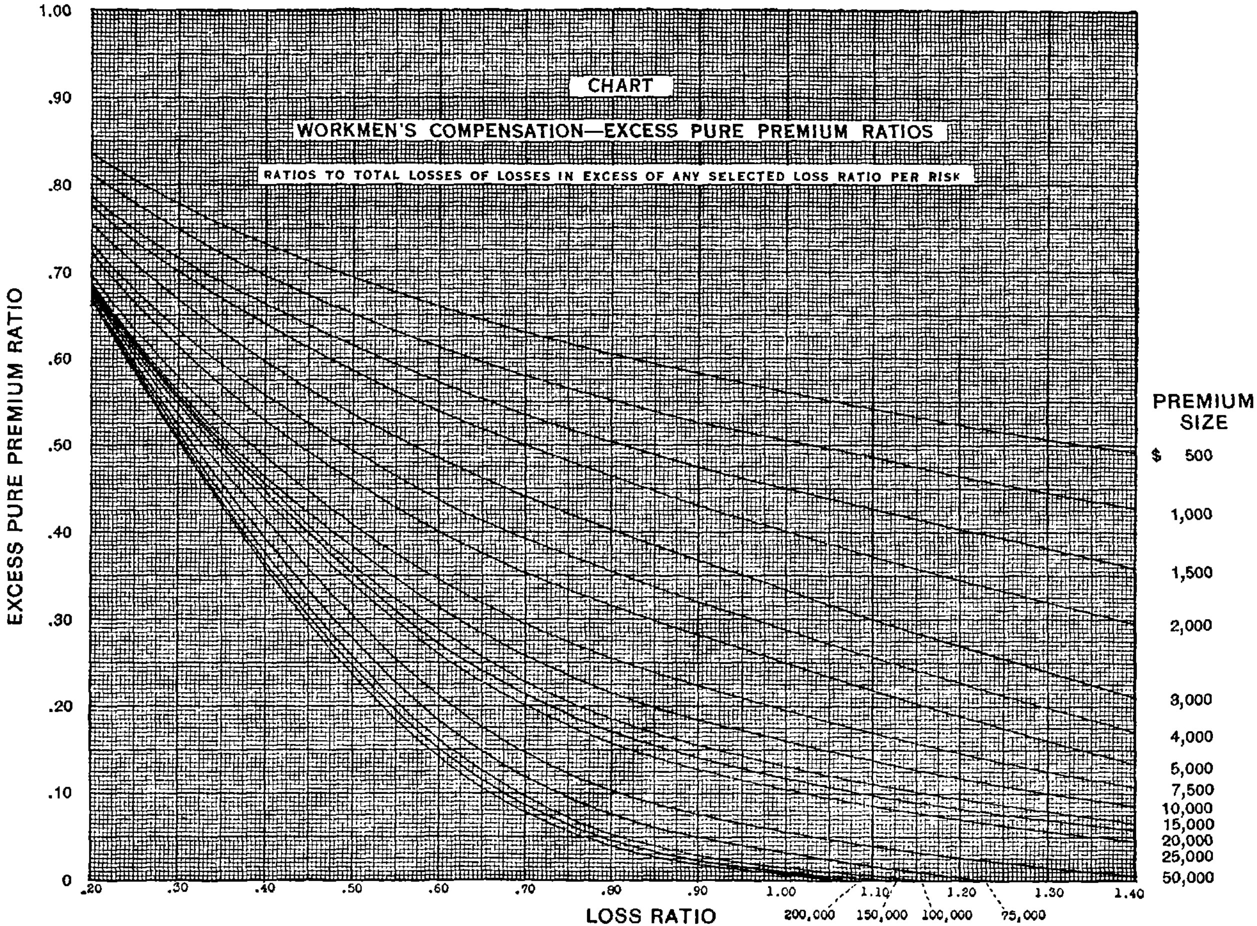
CHART
WORKMEN'S COMPENSATION—EXCESS PURE PREMIUM RATIOS
RATIOS TO TOTAL LOSSES OF LOSSES IN EXCESS OF ANY SELECTED LOSS RATIO PER RISK
EXCESS PURE PREMIUM RATIO
1.00
.90
.80
.70
.60
.50
.40
.30
.20
.10
0
LOSS RATIO
.20
.30
.40
.50
.60
.70
.80
.90
1.00
1.10
1.20
1.30
1.40
PREMIUM SIZE
$ 500
1,000
1,500
2,000
3,000
4,000
5,000
7,500
10,000
15,000
20,000
25,000
50,000
200,000
150,000
100,000
75,000

TABLE A-4

Examples of Method of Calculation of:
(a) Charges for Losses in Excess of Maximum Loss Limitation, and
(b) Off-setting Reserves for Losses due to Minimum Loss Limitation.

Maximum Loss Limitation (Ratio to Std. Prem.)	Excess Pure Prem. Ratio (From Chart)	Charge for Losses in Excess of Max. Loss Limitation* (Ratio to Std. Prem.) (2)×.60	Minimum Loss Limitation (Ratio to Std. Prem.)	Excess Pure Prem. Ratio (From Chart)	Ratio of Losses below Min. Loss Limitation to: Total Losses 1.000−(5)	Ratio of Losses below Min. Loss Limitation to: Standard Premium (6)×.60	Reserve for Losses due to Minimum Loss Limitation* (Ratio to Std. Prem.) (4)−(7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) $5,000 Standard Premium							
1.300	.160	.096	.400	.530	.470	.282	.118
1.250	.175	.105	.375	.550	.450	.270	.105
1.200	.190	.114	.350	.570	.430	.258	.092
1.150	.204	.122	.325	.592	.408	.245	.080
1.100	.218	.131	.300	.613	.387	.232	.068
1.050	.233	.140	.275	.636	.364	.218	.057
1.000	.248	.149	.250	.662	.338	.203	.047
.950	.265	.159	.225	.690	.310	.186	.039
.900	.282	.169	.200	.720	.280	.168	.032
.850	.298	.179	.175	.751	.249	.149	.026
(b) $25,000 Standard Premium							
1.300	.056	.034	.400	.437	.563	.338	.062
1.250	.064	.038	.375	.464	.536	.322	.053
1.200	.071	.043	.350	.492	.508	.305	.045
1.150	.078	.047	.325	.518	.482	.289	.036
1.100	.086	.052	.300	.547	.453	.272	.028
1.050	.095	.057	.275	.578	.422	.253	.022
1.000	.104	.062	.250	.610	.390	.234	.016
.950	.116	.070	.225	.643	.357	.214	.011
.900	.127	.076	.200	.678	.322	.193	.007
.850	.141	.085	.175	.718	.282	.169	.006

*The values shown are net, exclusive of the loading for Claim Adjustment expense.

TABLE A-4—(Continued)

Examples of Method of Calculation of:
(a) Charges for Losses in Excess of Maximum Loss Limitation, and
(b) Off-setting Reserves for Losses due to Minimum Loss Limitation

Maximum Loss Limitation (Ratio to Std. Prem.)	Excess Pure Prem. Ratio (From Chart)	Charge for Losses in Excess of Max. Loss Limitation* (Ratio to Std. Prem.) (2)×.60	Minimum Loss Limitation (Ratio to Std. Prem.)	Excess Pure Prem. Ratio (From Chart)	Ratio of Losses below Min. Loss Limitation to: Total Losses 1.000−(5)	Ratio of Losses below Min. Loss Limitation to: Standard Premium (6)×.60	Reserve for Losses due to Minimum Loss Limitation* (Ratio to Std. Prem.) (4)−(7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(c) $100,000 Standard Premium							
1.300	.000	.000	.400	.377	.623	.374	.026
1.250	.000	.000	.375	.411	.589	.353	.022
1.200	.000	.000	.350	.445	.555	.333	.017
1.150	.001	.001	.325	.479	.521	.313	.012
1.100	.005	.003	.300	.514	.486	.292	.008
1.050	.009	.005	.275	.552	.448	.269	.006
1.000	.015	.009	.250	.589	.411	.247	.003
.950	.020	.012	.225	.628	.372	.223	.002
.900	.028	.017	.200	.668	.332	.199	.001
.850	.039	.023	.175	.708	.292	.175	.000

*The values shown are net, exclusive of the loading for Claim Adjustment expense.

TABLE A-5
Examples of Net Insurance Charges Calculated for Various Combinations of Minimum and Maximum Loss Limitations

Specified Combination		Net Insurance Charge*		
		(Ratio to Standard Premium) Basis: Table A-4, Col. (3) minus Col. (8) For Standard Premium of:		
Minimum Loss Limitation (Ratio to Std. Prem.)	Maximum Loss Limitation (Ratio to Std. Prem.)	$5,000	$25,000	$100,000
(1)	(2)	(3)	(4)	(5)
.400	1.300	−.022	−.028	−.026
.400	1.250	−.013	−.024	−.026
.375	1.300	−.009	−.019	−.022
.375	1.250	.000	−.015	−.022
.375	1.200	.009	−.010	−.022
.350	1.250	.013	−.007	−.017
.350	1.200	.022	−.002	−.017
.350	1.150	.030	.002	−.016
.325	1.200	.034	.007	−.012
.325	1.150	.042	.011	−.011
.325	1.100	.051	.016	−.009
.300	1.150	.054	.019	−.007
.300	1.100	.063	.024	−.005
.300	1.050	.072	.029	−.003
.275	1.100	.074	.030	−.003
.275	1.050	.083	.035	−.001
.275	1.000	.092	.040	.003
.250	1.050	.093	.041	.002
.250	1.000	.102	.046	.006
.250	.950	.112	.054	.009
.225	1.000	.110	.051	.007
.225	.950	.120	.059	.010
.225	.900	.130	.065	.015
.200	.950	.127	.063	.011
.200	.900	.137	.069	.016
.200	.850	.147	.078	.022
.175	.900	.143	.070	.017
.175	.850	.153	.079	.023

*Exclusive of loading for Claim Adjustment expense.

Calculation of Insurance Charges

Standard Premium	Maximum Loss Limitation (Ratio to Std. Prem.)	Excess Pure Prem. Ratio (From Chart)	Charge for Losses in Excess of Max. Loss Limitation (Ratio to Std. Prem.) (3)×.60	Minimum Loss Limitation (Ratio to Std. Prem.)	Excess Pure Prem. Ratio (From Chart)	Ratio of Losses below Min. Loss Limitation to: Total Losses 1.000−(6)	Ratio of Losses below Min. Loss Limitation to: Standard Premium (7)×.60	Reserve for Losses due to Min. Loss Limitation (Ratio to Std. Prem.) (5)−(8)	Loss Conversion Factor (Ex. Taxes)	Insurance Charge [(4)−(9)] ×(10)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
CONNECTICUT										
									(1.12 × .975)	
$ 5,000	1.295	.162	.097	.402	.527	.473	.284	.118	1.092	−.023
10,000	1.205	.116	.070	.357	.503	.497	.298	.059	1.092	.012
15,000	1.116	.108	.065	.312	.547	.453	.272	.040	1.092	.027
20,000	1.027	.112	.067	.290	.567	.433	.260	.030	1.092	.040
25,000	.982	.108	.065	.268	.588	.412	.247	.021	1.092	.048
50,000	.960	.063	.038	.246	.606	.394	.236	.010	1.092	.030
75,000	.937	.043	.026	.223	.635	.365	.219	.004	1.092	.024
100,000	.929	.024	.014	.232	.618	.382	.229	.003	1.092	.012
150,000	.915	.021	.013	.246	.594	.406	.244	.002	1.092	.012
TENNESSEE										
									(1.25 × .945)	
$ 5,000	1.160	.200	.120	.360	.562	.438	.263	.097	1.181	.027
10,000	1.080	.142	.085	.320	.541	.459	.275	.045	1.181	.047
15,000	1.000	.131	.079	.280	.583	.417	.250	.030	1.181	.058
20,000	.920	.136	.082	.260	.603	.397	.238	.022	1.181	.071
25,000	.880	.133	.080	.240	.623	.377	.226	.014	1.181	.077
50,000	.860	.086	.052	.220	.642	.358	.215	.005	1.181	.055
75,000	.840	.064	.038	.200	.670	.330	.198	.002	1.181	.043
100,000	.832	.044	.026	.208	.655	.345	.207	.001	1.181	.030
150,000	.820	.040	.024	.220	.633	.367	.220	.000	1.181	.028

TABLE A-7

Workmen's Compensation Retrospective Rating Plan
CONNECTICUT

(a) Rating Formula: Basic Premium + 1.12 × Losses = Retrospective Premium (Subject to specified Minimum and Maximum Premiums)
(b) Total Acquisition Cost allowance is 17.5% of Minimum Premium
(c) Taxes to be paid on final Retrospective Premium

Standard Premium	Min. Prem.	Max. Prem.	Distribution of Basic Premium (All ratios are in terms of Standard Premium) Acq. (2)×.175	Taxes (10)×.025	Partial Claim Adj. Expense	H.O. Admin., Insp. & P.A.	Ins. Charge	Balance for Contingencies	Basic Premium Sum of (4) to (9) inclusive
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$ 5,000	.750	1.750	.131	.008	.026	.092	−.023	.066	.300
10,000	.700	1.650	.123	.008	.026	.092	.012	.039	.300
15,000	.650	1.550	.114	.008	.026	.092	.027	.033	.300
20,000	.625	1.450	.109	.008	.026	.092	.040	.025	.300
25,000	.600	1.400	.105	.008	.026	.092	.048	.021	.300
50,000	.550	1.350	.096	.007	.026	.092	.030	.024	.275
75,000	.500	1.300	.088	.006	.026	.092	.024	.014	.250
100,000	.500	1.280	.088	.006	.026	.092	.012	.016	.240
150,000	.500	1.250	.088	.006	.026	.092	.012	.001	.225

Distribution of Premium Dollar—Standard Rate Basis

Item	Provision
Losses	.625
H.O. Admin.	.058
Inspection	.026
Payroll Audit	.008
Claim Adj.	.083
Acquisition	.175
Taxes	.025
Total Expenses	.375
Total Losses & Expenses	1.000

Derivation of Loss Conversion Factor of 1.12

(a) Standard Provision for H.O. Admin., Insp., & P.A.	.092
(b) Available in Basic Prem. for Company Expenses	.118
(c) Redundancy available for partial Claim Adj. Expense (b) − (a)	.026
(d) Standard Provision for Claim Adj.	.083
(e) Difference (d) − (c)	.057
(f) Standard Provision for Losses	.625
(g) Ratio (e) ÷ (f)	.091
(h) Standard Provision for Taxes	.025
(i) Loss Conversion Factor $\frac{1.000+(g)}{1.000-(h)} = \frac{1.091}{.975} =$	1.12

TABLE A-8

Workmen's Compensation Retrospective Rating Plan

TENNESSEE

(a) Rating Formula: Basic Premium + 1.25 × Losses = Retrospective Premium
(Subject to specified Minimum and Maximum Premiums)
(b) Total Acquisition Cost allowance is 17.5% of Minimum Premium
(c) Taxes to be paid on final Retrospective Premium

			Distribution of Basic Premium (All ratios are in terms of Standard Premium)						
Standard Premium	Min. Prem.	Max. Prem.	Acq. (2)×.175	Taxes (10)×.055	Partial Claim Adj. Expense	H.O. Admin., Insp. & P.A.	Ins. Charge	Balance for Contingencies	Basic Premium Sum of (4) to (9) inclusive
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$ 5,000	.750	1.750	.131	.017	—	.097	.027	.028	.300
10,000	.700	1.650	.123	.017	—	.097	.047	.016	.300
15,000	.650	1.550	.114	.017	—	.097	.058	.014	.300
20,000	.625	1.450	.109	.017	—	.097	.071	.006	.300
25,000	.600	1.400	.105	.017	—	.097	.077	.004	.300
50,000	.550	1.350	.096	.015	—	.097	.055	.012	.275
75,000	.500	1.300	.088	.014	—	.097	.043	.008	.250
100,000	.500	1.280	.088	.013	—	.097	.030	.012	.240
150,000	.500	1.250	.088	.012	—	.097	.028	.000	.225

Distribution of Premium Dollar—Standard Rate Basis	
Item	Provision
Losses	.570
H.O. Admin.	.075
Inspection	.025
Payroll Audit	.020
Claim Adj.	.080
Acquisition	.175
Taxes	.055
Total Expenses	.430
Total Losses & Expenses	1.000

Derivation of Loss Conversion Factor of 1.25	
(a) Standard Provision for H.O. Admin., Insp., & P.A.	.120
(b) Available in Basic Prem. for Company Expenses	.097
(c) Deficiency in provision in Basic Prem. for Company Expenses (a) − (b)	.023
(d) Standard Provision for Claim Adj.	.080
(e) Sum (c) + (d)	.103
(f) Standard Provision for Losses	.570
(g) Ratio (e) ÷ (f)	.181
(h) Standard Provision for Taxes	.055
(i) Loss Conversion Factor $\frac{1.000+(g)}{1.000-(h)}=\frac{1.181}{.945}=$	1.25