SMALL RISKS VERSUS LARGE RISKS IN WORKMEN'S COMPENSATION INSURANCE

BY

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INTRODUCTION

In the last decade a new element was introduced into the Workmen's Compensation rating structure and the Manual of rates for a large majority of states shows for each classification so-called "loss and expense constants." For a long time the carriers realized that a small risk presents aspects as regards the cost of insurance differing from those characterizing a risk of a substantial size. The fundamental reason for this condition may be readily recognized if one considers that the small risk does not have the same incentive to provide for efficient and extensive accident prevention work, first, because such work requires an expenditure of money and second, because it does not reduce the cost of insurance. Furthermore, it must be borne in mind that many small employers do not keep accurate and adequate payroll records and, in certain industries, are tempted to conceal and do conceal considerable portions of the payrolls actually expended. The auditor of the insurance carrier is faced very frequently with the almost impossible task of segregating the payrolls by classifications. Even though the assured keeps an honest and complete record on a basis which may well serve the purposes of the assured it often does not lend itself to the determination of correct payroll distribution by classifications. The problem of premium collection is also very acute in case of a small risk where frequent changes of the insurable interests, disappearance of the assured, reluctance to pay additional premium upon audit and other similar conditions, make it well nigh impossible to collect the full premiums due. On the other hand, the expenses of handling the records of the books of the company and of preparing reports to various boards, bureaus and supervisory authorities are percentage-wise considerably higher for those risks than for risks with substantial premium volume.

A special "Conference Committee" appointed by the Superintendent of Insurance of New York, studied this problem during 1926 and 1927 and evolved a method of correcting the situation. The work of the Committee, the experience data it had at its dis-

posal and the results of its deliberations are adequately and concisely described in a paper by Charles J. Haugh entitled "Recent Developments with respect to the Distribution of Workmen's Compensation Insurance Costs."[1] As a result of the work of the "Conference Committee" loss and expense constants were adopted in New York State effective May 1, 1928 and were introduced shortly thereafter in Massachusetts,[2] New Jersey[3] and more recently in a number of other states under National Council supervision.[4] Since the data used by the "Conference Committee" were obtained from rather crude tabulations submitted by individual carriers, the minority report of the "Conference Committee" recommended and the New York Insurance Department approved the so-called "Unit System of reporting." Under this system the experience on each and every policy beginning with policy year 1928 was to be reported to the Rating Board, checked as to underwriting and statistical accuracy and then used for experience rating of individual risks, for a tabulation of experience for ratemaking purposes (Classification Experience) and for a check-up on the "size of risk" situation.[5]

In the present paper it is the design of the author to give a resume of the "size of risk" experience for a number of years during which the Unit Plan was in operation and also to demonstrate the methods used in the calculation of the constants. The paper deals, in the main, with the experience of New York State, supplemented by the available experience of other states, in particular, by that of Massachusetts and North Carolina. Since in other states the Unit Plan has been introduced only very recently the experience of such states will not be available for some time to come. The method of calculation described in this paper is adaptable for any state and should prove, therefore, of interest to the student of insurance. It is interwoven with the ratemaking procedure so closely that its knowledge is absolutely essential to

(1) *Proceedings,* Volume XIV, page 262.
(2) Effective December 31, 1928.
(3) Expense Constant effective July 1, 1929; Loss Constant June 30, 1935.
(4) Coincident with the 1934 revision of rates.
(5) In this connection see paper by Charles M. Graham entitled "New York Unit Statistical Plan," *Proceedings,* Volume XVII, page 190, and the paper by Mark Kormes entitled "A Method of Assembling and Analyzing the Data Reported under the Unit Statistical Plan," *Proceedings,* Volume XVIII, page 99.

the actuary and underwriter for a complete understanding of the makeup of a rate for Workmen's Compensation insurance.

I — Experience by Size of Risk

The New York experience which is available at the present time comprises policy years 1928 to 1933 inclusive. Policy Year 1933 represents the first reporting of unit data or a development of six months after the expiration of the policies; and since the reports of all policies are submitted between eighteen and twenty months after the inception date, the development period in connection with short term policies is considerably longer. Similarly, the experience for policy year 1932 is valued thirty months, that of policy year 1931 forty-two months and the data for all other policy years fifty-four months after the inception of the policies issued during the given policy year. The data presented in this paper for policy year 1928 are limited to the period from May to December during which the constants were effective.

The variation of conditions in the several industries was recognized from the beginning by the adoption of different constants for Manufacturing, Contracting and All Other industries. In order, therefore, to study the results of the application of the constants the exhibits appended to this paper present the experience separated into these three industry groups.

Policy Year 1933 is further subdivided to show separate experience for the group of classifications which are subject to the U. S. Longshoremen's and Harborworkers' Act. This group, which will be henceforth referred to as the "Federal" group, is treated as a separate unit in the ratemaking procedure and, beginning with March 1, 1935, risks in this group have been assigned a loss and expense constant different from those applicable to other groups.

In Exhibit I the experience of the six policy years is summarized in six significant premium size groups. While a much finer subdivision (twenty-eight premium size groups) is actually available, the variations found in such a subdivision do not alter the situation materially and are also subject to casual fluctuations.

The experience for the Federal industry group is given only for policy year 1933 since it is not readily available for other policy years. It is, however, included in the All Other group for the policy years prior to 1933. A review of the exhibit indicates that

for the Manufacturing industry the constants, while adequate for the first year, became more and more markedly inadequate for the subsequent years. This will explain the revision of the manufacturing constant from $23 to $32 on July 1, 1934 and to $42 on July 1, 1936. In the Contracting industry the inadequacy appears to exist only for the first four years, after which period of time the conditions apparently improved. In accordance therewith, the constant for the contracting industry was increased from $43 to $63 on July 1, 1934, and then decreased to $41 on July 1, 1936. In the All Other industry the inadequacy of the constant is indicated all along the line and thus it was increased from $7 to $13 on July 1, 1934 and to $18 on July 1, 1936. The reversal of the trend in the Contracting industry may be ascribed to the fact that carriers became very careful in underwriting contracting risks during the period of depression, insisting on adequate payroll records and making more careful payroll audits, as well as to the fact that the manual rates for this group of classifications were materially increased.

How much greater the disparity between the small and large risk would have been but for the introduction of constants may be seen from Exhibit II in which the loss ratios were calculated on premiums exclusive of constants. This exhibit in conjunction with Exhibit I serves to illustrate to what extent the constants have corrected the small risk problem.

Exhibit III serves to illustrate that subsequent developments in losses changed the situation but slightly. With the exception of policy year 1928 the subsequent reports bring the loss ratios on the two groups closer but still disclose a substantial difference. The exhibit is based on premiums inclusive of constants. It is quite obvious, therefore, that if the constant were excluded the differences would be much more marked.

Exhibit IV shows the experience on short term policies for policy years 1931, 1932 and 1933. This exhibit has been prepared in order to demonstrate the fundamental cause of the disparity in loss ratios between large and small risks. This exhibit shows that a substantial number of risks is being cancelled for various reasons, the most important reasons being nonpayment of premium or very bad experience. The exhibit demonstrates that this group of risks, which unfortunately float from carrier to carrier,

has a great influence on the unsatisfactory small risk situation, and, if anything, indicates the necessity for a very careful underwriting of risks cancelled previously by another carrier. Inasmuch as the Board furnishes the carriers at a nominal cost with the past experience on any given risk, there is no reason whatsoever why underwriters should not avail themselves of such experience when writing a new small risk where there seems to be some evidence that the risk has changed carriers frequently in the past.

The medical loss ratio is also substantially better on risks of large size as shown below:

Industry Group	Premium Size Group	Policy Year		
		1931	1932	1933
Manufacturing	$ 0 - $399*	27.9	29.5	24.2
	400 & Over	19.1	18.4	18.3
	Total	21.6	21.7	19.9
Contracting	$ 0 - $399*	19.5	17.2	17.7
	400 & Over	18.3	18.6	18.9
	Total	18.6	18.1	18.4
All Other (Excl. P. C.) ...	$ 0 - $399*	21.5	21.4	22.1
	400 & Over	17.2	16.6	17.6
	Total	18.9	18.4	19.4
All Other (Incl. P. C.)	$ 0 - $399*	21.5	21.2	22.0
	400 & Over	17.1	16.6	17.6
	Total	18.9	18.4	19.4

* Including all minimum premium risks.

This may be ascribed in part to more efficient medical aid rendered in large plants, especially in those which have first aid stations or plant hospitals, and in part to the fact that a number of large risks are written on an ex-medical basis. In summarizing, it will be interesting to note that the average constants collected do not correspond to the constants established for the given industry group.

Pol. Yr.	Average Collected Constant		
	Mfg.	Contr.	All Other
1928	$20.0	$33.7	$6.6
1929	20.6	33.2	6.5
1930	20.3	32.3	6.3
1931	19.0	29.1	7.0
1932	23.0	41.7	7.8
1933	23.0	41.8	7.7

The figures for policy years 1928, 1929, 1930 and 1931 should be increased somewhat because in punching the experience for these policy years short term and full term policies were both counted as one risk. Policy years 1932 and 1933 reflect a more accurate average since in those years short term policies were punched as fractions of risks corresponding to the term of coverage. If we remember that during the period the manufacturing constant was $23, the contracting constant was $43 and the all other constant was $7, we find that while the manufacturing constant was collected in full the contracting constant was collected in part only and in the All Other group a higher constant was collected than that provided. The explanation of this situation lies in the fact that the Classification and Rating Committee assigned to certain classifications other constants than those normally assignable to the industry group to which such classifications belonged. Furthermore, the Manual rule provided that on every policy the highest loss and expense constant applicable to any classification should be charged. This very often resulted in the application of a contracting constant of $43 on a policy where the governing classification was that of an All Other industry merely because there were several hundred dollars of payroll for incidental contracting operations. This situation was corrected by the New York Classification and Rating Committee effective July 1, 1936 by ruling that all classifications assignable to any given industry should carry a uniform constant and by amending the Manual rule so as to require the assignment of the constant in accordance with the governing classification. These amendments to the Manual bring the practical application of the constants in conformity with the manner in which the experience enters the calculation of such constants.

In Exhibit V we find a condensed summary of Massachusetts experience for the latest five policy years available. It will be noted that the experience in this State is subdivided into more industry groups, the additional subdivision arising out of a separation of the All Other industry group into the Commercial and Clerical Group, Care and Custody Group, and remaining schedules. The applicable loss constant for the Manufacturing industry was $18 prior to June 1, 1931 and $17 thereafter. The Contracting industry constants for the corresponding periods were $12 and

$11 respectively. There was no constant applicable to the Commercial and Clerical group. The Care and Custody group had constants of $5.00 and $4.00 and the All Other loss constants were $15 and $14 respectively. The experience indicates that the Commercial and Clerical group would have benefited by the use of a constant and that the reduction of the constant in the other groups was not warranted. This conclusion is based on the consideration of the total experience over the period.

In Exhibit VI we have a brief summary of the North Carolina experience for policy years 1929 to 1934.[6] The North Carolina experience is on a different basis than the experience of New York and Massachusetts for the reason that the constants were not introduced there until the latter part of 1934 and, therefore, are not reflected in the loss ratios which are indicative of the disparity between small and large risks. With the exception of policy year 1929 in the Contracting and policy year 1932 in the All Other industries, the experience of all years indicates the need for a substantial loss constant. The average indications of the six years combined for the Manufacturing industry produce a required constant of approximately $32, for the Contracting industry a constant of $10 while the All Other industry seems to require a constant of $21. Of course, individual years or a combination of a smaller number of years will produce considerable variations which must be ascribed to the small volume of experience in that State.

It is still a question open for discussion as to whether or not loss constants are the only and final solution of the situation. There are many who believe that with a more efficient payroll audit and more careful underwriting the small risk problem could be corrected without any use of constants. In the last few years the New York Compensation Insurance Rating Board has inaugurated test audits and is expanding its activities at the present time into the field of small risks. This is done because of a particular request of the Insurance Department to determine the propriety of audits on small risks. In addition thereto, the Board is conducting test inspections to determine the propriety of classifications in the field of small risks. Of course, it will take a number

(6) The experience for policy years 1934 comprises only the first seven months.

of years before a number of test audits and test inspections are made sufficient to permit the drawing of definite conclusions. In the meantime more experience will be accumulated by size of risk and it will be perhaps necessary to reexamine the subject. The author hopes that he will have the privilege and opportunity to present another paper on this subject in the future.

II — Method of Calculation of Loss Constants

Having thus surveyed the available experience let us turn to the method used in the determination of loss constants. As mentioned above, the constants were revised for the first time coincident with the general rate revision effective July 1, 1934. Inasmuch as the ratemaking procedure for New York requires the use of one policy year for the determination of rate level and of two policy years for the determination of industry group differentials, it was felt that for the determination of constants an experience period of three years would provide sufficient stability. The experience of policy years 1929, 1930 and 1931 was available at that time, but in view of the fact that the experience of policy year 1929 did not readily permit segregation of indemnity and medical losses and also because it was felt that policy year 1929 belonged to an entirely different business cycle, it was decided to use the experience of policy years 1930 and 1931, discounting the indications of these policy years 20%. The method developed during that revision was to be applied each year to the experience of the latest three policy years. Coincident with the July 1, 1934 revision of rates the qualifications for experience rating were revised to require an average annual premium of at least $500, and inasmuch as constants were deemed assignable to risks below the minimum qualifications for rating the Manual rule was changed to require constants on risks producing premiums of less than $500. In 1935 a number of legislative amendments occupied the attention of the Actuarial Committee to such an extent that it was decided to continue the then existing constants for another year and merely to recalculate the off-setting adjustments so as to balance the collectible rate level resulting from the revision effective July 1, 1935. It was, therefore, in the 1936 revision of rates that the method has been used for the first time to the full extent.

The latest experience then available was the third report of policy year 1931, second report of policy year 1932 and the first report of policy year 1933. The first element to be determined was the amount of premium necessary to equalize the loss ratio for the group of small risks (to which the constants apply) and the loss ratio for the group of large risks. In order to reflect future conditions this calculation must be performed on the basis of the proposed rates which will become effective after the revision. Since the computation had to be done separately for each industry and premium size group, it involved a considerable amount of labor and care and for this reason it may not be amiss to go into the details of the process necessary to bring about the required results.

In order to obtain the premiums at proposed rates it was necessary to tabulate the experience of the period by classification within each industry group and separately for each premium size group, namely, for risks under $500 and risks over $500. It was further necessary to segregate minimum premium risks in order to adjust for the effect of the application of minimum premiums.[7] Per capita risks, which are not subject to constants, had to be eliminated from the "All Other" industry group. In order to realize the large amount of work involved it must be remembered that the coding of industrial schedules and groups throws all classifications of any given risk into the industrial group of the governing classification[8] and that, therefore, each industry group and premium size group will contain practically all of the classifications. Upon completing the tabulation of the experience by classifications for each of the industrial and premium size groups described above the payrolls were extended by "full" proposed rates. By "full" rates we mean the adopted pure premiums on rate level loaded by the full expense loading factor of 1.667 corresponding to the full allowed expense ratio of 40%. The results of these calculations are summarized in column (1)

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[7] The payrolls on the minimum premium group of risks were extended class by class by the manual rates effective during the particular policy year and the resulting "manual" premiums were compared with the premiums actually collected exclusive of constants. In this manner a factor was determined to adjust the premiums obtained by extending the same payrolls by the proposed manual rates for the effect of the application of minimum premiums. Similar adjustment factors had to be calculated for "*a*" rated classifications.

[8] In this connection see paper by Mark Kormes loc. cit.

of Exhibit VII. In view of the fact that the loss experience does not contain medical losses on ex-medical policies it was necessary to make an adjustment by calculating the medical loss ratio on full coverage policies and by applying this loss ratio to the total premium to produce full medical losses. This adjustment, of course, implies the assumption that the medical losses on ex-medical policies would be on the whole the same as on full-coverage policies. In order to obtain the premium at "full" proposed rates on full-coverage policies it was necessary to repeat the procedure described above on the experience of ex-medical policies and to deduct the result from the premium for all risks. The premiums at "full" proposed rates for full-coverage policies are shown in column (2) and the medical loss ratio in column (6) of Exhibit VII. The indemnity and total loss ratios are not needed for the calculation of constants and they are shown in the exhibit merely for the sake of completeness as they illustrate the existence of substantial differentials between small and large risks. In column (8) are shown the total losses incurred adjusted to include medical losses on ex-medical policies.

Inasmuch as the proposed rates are presumed to be adequate, that is, are supposed to bring about a loss ratio of 60% it is necessary to adjust the actual losses of each industry group so that they produce a 60% loss ratio for such group. Therefore, adjustment factors were calculated by dividing 60% of the total premiums at "full" proposed rates by the total incurred losses shown in column (8). The adjusted losses shown in column (9) serve then to calculate the deficiency or excess in the premium for the two premium size groups as indicated in column (10), which, for example, shows that the group of risks under $500 in the Manufacturing industry lacks $4,109,115 of premium to produce a 60% loss ratio and consequently the premium on the groups of risks over $500 is excessive to the same extent. In the last column of the exhibit there is shown the number of risks for each of the industry and premium size groups. For policy years 1932 and 1933 it was merely necessary to tabulate the risk cards but for policy year 1931 a separate tabulation of full term and short term policies had to be prepared. The number of short term policies was then adjusted by taking the ratio of collected constants for the short term to full constants (obtained by multiply-

ing the number of short term policies by the full constant) and then by applying this ratio to the number of short term policies. The resulting number of short term risks was then combined with the number of full term policies.[9]

In connection with this first step of our calculation it should be observed that it involves a number of assumptions some of which were previously mentioned. One assumption tacitly implied should be given some consideration, with regard to the fact that the distribution of risks does not necessarily remain the same after considerable changes of rate level, since a number of risks which fell into the "under $500" group during the experience will develop premium in excess of $500 on basis of the new Manual rates. It was felt, however, that there would be other risks in the group over $500 which will produce premiums less than this amount and that any adjustment for this situation would involve many more assumptions. Therefore, on the whole, it seemed better to leave the distribution unchanged.

Having thus calculated the amount of premium necessary to produce the required balance between small and large risks, one might think that all that remains to be done is to divide such amount by the number of risks and to obtain the necessary constants. If this were done we would still have to contend with the excess of premium on risks over $500. In order to overcome this difficulty it is apparent that the rates must be reduced somewhat; but since change in rates has an effect on the results of the experience rating plan which in turn affects the premiums for the group of risks over $500, it is evident that a number of adjustments are necessary, both in the rates and in the amounts needed for constants in order to arrive at a balanced result. Before going into the actual details of these adjustments, let us first develop a few theoretical formulæ which will prove extremely helpful.

The experience modification M is given by the formula:

$$M = 1 - z\left(1 - \frac{A}{E}\right) \qquad \text{I.}$$

where z = average credibility
A = Adjusted Actual Losses
E = Expected Losses

(9) On short term policies where constants were not applicable because of large premium, the adjustment factor was arbitrarily taken as one half (.5).

In this expression the second term represents the off-balance of the experience rating plan [10] which we shall denote by b:

$$b = z\left(1 - \frac{A}{E}\right) \qquad \text{II.}$$

If the plan is therefore changed by the introduction of factor $1 + F$ (where F may be positive or negative) applicable to the adjusted losses we have

$$b_1 = z\left(1 - \frac{A\,(1+F)}{E}\right)$$

$$= z\left(1 - \frac{A}{E} - \frac{AF}{E}\right)$$

hence $$b_1 = b - \frac{AF}{E}\,z$$

But from II we find that

$$z\,\frac{A}{E} = z - b \qquad \text{III.}$$

and therefore we have

$$b_1 = b - (z - b)\,F \qquad (1)$$

On the other hand an introduction of a factor of $1 + f$ in the rates will affect the expected losses:

$$b_2 = z\left(1 - \frac{A}{E\,(1+f)}\right)$$

We have then $$b_2 - b = z - \frac{Az}{E\,(1+f)} - z + \frac{Az}{E}$$

$$= \frac{-Az + Az + Azf}{E\,(1+f)}$$

$$= \frac{Azf}{E\,(1+f)}$$

By use of III $$b_2 - b = \frac{(z-b)\,f}{1+f}$$

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[10] The rating plan produces a substantial off-balance. In this connection see paper by Mark Kormes "Experience Rating Plan as Applied to Workmen's Compensation Risks," *Proceedings*, Vol. XXI, p. 81 and Vol. XXII, page 81.

Therefore $$b_2 = b + \frac{zf - bf}{1+f}$$

$$= \frac{b + bf + zf - bf}{1+f}$$

Hence finally $$b_2 = \frac{b + zf}{1+f} \qquad (2)$$

The introduction of an adjustment off-setting the excess premium on risks over \$500 will affect the off-balance in accordance with formula (2). If we denote such an adjustment by $1 - r$, the premium over \$500 by P_2, the excess by E and remember that the application of this adjustment and the resulting off-balance should result in the premium less the excess we have:

$$P_2 (1 - r) \left(1 - \frac{b - rz}{1 - r}\right) = P_2 - E$$

or $$1 - r - b + rz = 1 - \frac{E}{P_2}$$

for the sake of convenience let us put

$$1 - \frac{E}{P_2} = e$$

we have then

$$-r (1 - z) + 1 - b = e$$

or $$r (1 - z) = 1 - b - e$$

and $$r = \frac{1 - b - e}{1 - z}$$

Therefore $$1 - r = 1 - \frac{1 - b - e}{1 - z} \qquad (3)$$

Formula (3) gives us the required tool for obtaining off-setting adjustments in rates, which, together with the off-balance of the rating plan, will produce for risks over \$500 premiums free from excess. On the other hand, the application of this adjustment to the rates will reduce the premium for risks under \$500. Let us denote such premiums by P_1, the number of risks in this group by N_1 and the loss constant by C, we have then for the calculation of constants

$$P_1 (1 - r) + N_1 \cdot C = P_1 + E$$

or $$-P_1 r + N_1 \cdot C = E$$

and finally $$C = \frac{P_1 r + E}{N_1} \qquad (4)$$

Nothing has been said until now about the expense constant. The expense constant of $5 recommended by the minority report of the "Conference Committee"[11] and approved by the Superintendent of Insurance to become effective in 1928 has not been revised since. After the loss constants are calculated in accordance with formula (4) the loss portion or 60% of the constants is loaded for expenses exclusive of H. O. Administration and Payroll Audit. Since the allowance in rates for these items is 9.5% we have an expense loading of 30.5%. The expense constant is then added as a flat amount of $5. It will be seen from the actual calculations that this flat addition of the expense constant produces some additional premium and, therefore, it becomes again necessary to reduce the rates. Since the additional premium accrues out of an increment of the allowance for expenses the reduction in the rates is accomplished by decreasing the expense loading.

Let us turn now to the details of the calculations. The first step involves the determination of the existing off-balance and the average credibility of risks subject to experience rating. Inasmuch as the Board prepares a punch card for every experience rate promulgated containing, among other information, the amount of Adjusted and Expected Losses underlying the promulgated modification, it was an easy task to tabulate these cards by industry group. This was done for the period July 1, 1935 to June 30, 1936 in order to reflect the experience modification applicable to the period of the rate level effective prior to the proposed revision. The results were as follows:

Industry Group	(1) Expected Losses	(2) Adjusted Losses	(3) Experience Modification (2) ÷ (1)	(4) Off-Balance 1. − (3)
Mfg.	15,791,876	14,491,712	.9177	.0823
Contr.	8,152,393	7,162,577	.8786	.1214
Federal	1,604,671	1,484,597	.9252	.0748
All Other	17,523,676	15,709,812	.8965	.1035

The same punch cards were used to calculate the average credibility for each industry group. Exhibit VIII which shows

(11) See paper by Charles J. Haugh, loc. cit.

the details of calculation for the Manufacturing industry will serve as a sufficient illustration of the method used to calculate the average credibility. The calculations performed for each industry produced the following results:

Industry Group	Average Credibility
Mfg.	.438
Contr.	.509
Federal	.570
All Other	.502

Inasmuch as the off-balance shown above was based on rates containing off-setting factors calculated for the previous rate revision, it is necessary to find out what off-balance would have been realized without those off-setting factors. Furthermore, it was decided to apply a correction factor of 1.05 in the experience rating plan for under-development of losses and for excess off-balance applicable to actual losses in the Federal industry group. (This factor was introduced for the other industries in the revision of rates and constants effective July 1, 1934.) This requires a further correction in the off-balance before we can proceed with the calculation of the new off-setting adjustments. It is obvious that the first correction will be accomplished by means of formula (2) and the second by formula (1). We have then:

Ind. Group	(1) 1935-6 Off-Balance (b)	(2) Aver. Credibility	(3) Off-Set. Adjustments in 7/1/35 Rates	(4) $f=\frac{1}{(3)}-1.$	(5) Removal of (3) from 1* $\frac{(1)+(2)\ (4)}{1.+(4)}$	(6) ** $(s-b)\ .05$ $[(2)-(5)]\times.05$	(7) Off-Balance After Removal of Col. (3) and Introduction of a Factor of 1.05 in the Federal Group (5) − (6)
Mfg.	.0823	.438	.9670	+.0341	.0940	—	.0940
Contr.	.1214	.509	1.0263	−.0256	.1112	—	.1112
Federal	.0748	.570	.9750	+.0256	.0872	.0241	.0631
All Other	.1035	.502	.9987	+.0013	.1041	—	.1041

*By use of formula (2).
**Application of formula (1) to the Federal Group only.

The corrected off-balance in column (7) or b_1 permits us to determine the new off-setting adjustments by the application of formula (3):

Industry Group	(1) Full Premium at Proposed Rates For Risks Over $500 (Exhibit VII)	(2) Excess (Exhibit VII)	(3) $1-e$ (2) ÷ (1)	(4) b_1	(5) z	(6) Off-Set. Adjustment $1-r=\frac{(3)-(4)}{1.-(5)}$	(7) $-z.r$ (5) × (6) − 1.	(8) Final Off-Balance (4)+(7) (6)	(9) Final Modification 1.−(8)
Mfg.....	36,260,760	4,109,115	.11332	.0940	.438	.9656	−.0151	.0817	.9183
Contr....	24,027,745	2,344,575	.09758	.1112	.509	1.0277	+.0141	.1219	.8781
Federal..	4,727,138	144,501	.03057	.0631	.570	1.0757	+.0431	.0987	.9013
All Other	46,147,449	5.036,887	.10915	.1041	.502	.9899	−.0051	.1000	.9000

While column (6) gives us the desired off-setting adjustment columns (8) and (9) have been calculated in order to permit us to make a test of the results of the calculation of constants, off-setting adjustments and expense loadings. We can now proceed with the calculation of constants:

Industry Group	(10) Premiums For Risks Under $500 (Exhibit VII)	(11) Col. (10) with Off-Setting Adjustment (10) × (6)	(12) Amount Needed For Constants (2)+[(10)−(11)]	(13) Number of Risks Under $500 (Exhibit VII)	(14) Indicated Loss Constants (12) ÷ (13)	(15) Portion of Constant For Losses (14) × .6
Mfg.....	15,343,612	14,815,792	4,636,935	109,116	42.50	25.50
Contr.....	10,506,120	10,797,140	2,053,555	48,815	42.07	25.24
Federal.....	191,519	206,017	130,003	1,105	117.65	70.59
All Other.....	33,788,443	33,447,180	5,378,150	367,901	14.62	8.77
Total.....	59,829,694	59,266,129	12,198,643	526,937	23.15	13.89

Industry Group	(16) Col. (15) Loaded For Expenses Excl. H.O. Adm. and Payroll Audit (15) ÷ .695	(17) Ultimate Loss Const. Col. (16) Rounded	(18) Expense Constant	(19) Additional Amount Due to Expense Constant [(17)+(18)]−(14)	(20) Additional Premium Due to Expense Constant (13) × (19)
Mfg.....	36.69	$37.	$5.	−$ .50	− 54,558
Contr.....	36.32	36.	5.	− 1.07	− 52,232
Federal.....	101.57	102.	5.	− 10.65	− 11,768
All Other.....	12.62	13.	5.	+ 3.38	+1,243,505
Total.....	19.99	—	—	—	+1,124,947

We have arrived at the final step of our calculations, namely, the determination of the expense loading. While the results in column (20) indicate that only the All Other industry is affected to any considerable extent, it was decided to calculate the reduction in the expense loading for the business as a whole as follows:

1.	The full premiums for all risks (Total of columns (1) and (10))	$170,992,786
2.	Expected Losses for all risks (.6 × 170,992,786)	102,595,672
3.	Premiums for all risks reduced by additional premium due to Expense Constants ($170,992,786 — 1,124,947)	169,867,839
4.	Expected loss ratio 2 ÷ 3	60.40
5.	Expected loss ratio rounded	60.5
6.	Corresponding loading factor $\left(\frac{1}{.605}\right)$	1.653

In order to determine whether the above adjustments in rates and in constants will produce the required result a test was performed by calculating the ultimate collectible premium and the resulting loss ratios for the various size and industrial groups. This was done in the following manner:

Industry Group	(21) Final Premium For Risks under $500 (10)×.9916*	(22) Premium Due To Loss and Expense Const. (13)×[(17)+(18)]	(23) Tot. Premium For Risks Under $500 (21)+(22)	(24) Off-Sets× Modif. × Reduction in Loading for Exp. (6)×(9)×.9916*	(25) Final Prem. For Risks Over $500 (1)×(24)	(26) Total Final Premium For All Risks (23)+(25)
Mfg.	14,691,339	4,582,872	19,274,211	.87926	31,882,636	51,156,847
Contr.	10,706,444	2,001,415	12,707,859	.89484	21,500,987	34,208,846
Federal	204,286	118,235	322,521	.96138	4,544,576	4,867,097
All Other	33,166,224	6,622,218	39,788,442	.88343	40,768,041	80,556,483
Total	58,768,293	13,324,740	72,093,033	—	98,696,240	170,789,273

*Ratio of the loading factor of 1.653 to the full loading of 1.667.

Industry Group	Losses Incurred (Exhibit VII) (27) For Risks Under $500	(28) For Risks Over $500	(29) For All Risks	Loss Ratios (Test) (30) Under $500 (27) ÷ (23)	(31) Over $500 (28) ÷ (25)	(32) All Risks (29) ÷ (26)
Mfg.	11,671,636	19,290,987	30,962,623	60.6	60.5	60.5
Contr.	7,710,417	13,009,902	20,720,319	60.7	60.5	60.6
Federal	201,612	2,749,582	2,951,194	62.5	60.5	60.6
All Other	23,295,198	24,666,337	47,961,535	58.5	60.5	59.5
Total	42,878,863	59,716,808	102,595,671	59.5	60.5	60.1

It may be seen from columns 30, 31 and 32 in the above table that the various calculations produced satisfactory results. The variations by industry group were expected because of the manner of adjusting the excess in premium due to expense constant. If the adjustment were made by industry group these variations would disappear but then it would be necessary to have different expected loss ratios for each industry group in the rating plan which did not appear advisable especially in view of the very small departures.

Upon reviewing the above calculations the Actuarial Committee adopted all of the indications except that the constant of $107 for the Federal industry did not appear warranted because of the small number of risks. For this reason it was decided to continue the existing loss and expense constant of $50 and to use unity for the off-setting adjustment in this industry group.

EXHIBIT I
SHEET 1

NEW YORK WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK

POLICY YEARS 1928, 1929, 1930, 1931, 1932 AND 1933
(Based on First Report under the Unit Statistical Plan)

MANUFACTURING

Premium Size Group	NUMBER OF RISKS						PREMIUM VOLUME† (In thousands)					
	1928‡	1929	1930	1931	1932	1933	1928‡	1929	1930	1931	1932	1933
Minimum	3,432	6,312	7,548	8,854	6,620	6,094	158	290	333	409	370	339
$ 0-$ 99	16,676	26,737	25,313	24,963	15,924	14,951	839	1,345	1,268	1,167	1,020	1,005
100- 399	9,424	14,672	14,127	13,596	11,251	13,009	1,844	2,840	2,737	2,578	2,329	2,677
400- 999	2,880	4,363	4,129	3,695	2,799	3,167	1,763	2,661	2,508	2,232	1,820	2,032
1,000-4,999	2,052	2,898	2,555	2,169	1,736	2,041	4,262	5,976	5,180	4,348	3,585	4,208
5,000 & Over	441	603	470	364	303	398	4,805	7,456	5,341	4,122	3,368	4,442
Total	34,905	55,585	54,142	53,641	38,633	39,660	13,671	20,568	17,367	14,856	12,492	14,703
$ 0-$ 399*	29,513	47,705	46,988	47,413	33,795	34,054	2,832	4,468	4,338	4,153	3,719	4,021
400 & Over*	5,392	7,880	7,154	6,228	4,838	5,606	10,839	16,100	13,029	10,703	8,773	10,682
Premium Size Group	PREMIUM DUE TO CONSTANTS						LOSS RATIOS BASED ON PREMIUMS INCLUSIVE OF CONSTANTS					
Minimum	65,478	127,389	150,375	174,964	153,477	141,058	44.6	43.0	39.3	42.1	42.5	40.5
$ 0-$ 99	314,471	522,237	479,443	424,847	358,651	339,788	63.4	66.2	78.6	96.3	93.0	76.4
100- 399	212,515	334,707	321,855	299,887	264,192	302,492	63.1	70.0	71.6	69.8	77.0	61.5
400- 999	4,381	5,145	4,759	4,010	438	254	67.6	64.8	65.5	65.2	63.1	57.5
1,000-4,999	122	89	23	46	17	—	64.3	62.5	59.4	55.8	51.7	54.6
5,000 & Over	—	—	—	—	—	—	63.0	64.1	56.7	52.4	49.4	48.5
Total	596,967	989,567	956,455	903,754	776,775	783,592	63.8	64.4	62.4	61.6	60.5	55.6
$ 0-$ 399*	591,875	983,988	951,673	899,698	776,320	783,338	62.0	67.1	71.2	74.5	78.0	65.5
400 & Over*	5,092	5,579	4,782	4,056	455	254	64.3	63.6	59.4	56.5	53.2	52.6

†Including Constants
‡May to December only, since constants were inaugurated May 1, 1928.
*Includes minimum premium risks.

NEW YORK WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK

POLICY YEARS 1928, 1929, 1930, 1931, 1932 AND 1933

(Based on First Report under the Unit Statistical Plan)

CONTRACTING

Premium Size Group	NUMBER OF RISKS						PREMIUM VOLUME† (In thousands)					
	1928‡	1929	1930	1931	1932	1933	1928‡	1929	1930	1931	1932	1933
Minimum	5,468	9,494	11,216	12,333	6,454	5,006	510	856	947	1,085	817	650
$ 0-$ 99	5,659	8,008	7,450	7,414	2,148	1,721	312	431	385	323	241	197
100- 399	10,010	13,692	11,477	9,389	5,915	5,993	1,922	2,645	2,219	1,826	1,325	1,341
400- 999	2,473	3,397	2,831	2,360	1,198	1,224	1,468	2,021	1,675	1,360	805	798
1,000-4,999	1,469	2,027	1,613	1,334	708	724	3,106	4,266	3,452	2,750	1,575	1,550
5,000 & Over	286	506	426	303	149	106	3,524	7,191	6,005	4,438	2,029	1,048
Total	25,365	37,124	35,013	33,133	16,572	14,774	10,842	17,410	14,683	11,782	6,792	5,584
$ 0-$ 399*	21,120	31,172	30,143	29,136	14,517	12,720	2,733	3,920	3,551	3,234	2,383	2,188
400 & Over*	4,245	5,952	4,870	3,997	2,055	2,054	8,109	13,490	11,132	8,548	4,409	3,396

Premium Size Group	PREMIUM DUE TO CONSTANTS						LOSS RATIOS BASED ON PREMIUMS INCLUSIVE OF CONSTANTS					
Minimum	191,671	318,726	367,597	383,001	280,200	219,614	53.7	61.4	52.1	55.8	38.9	42.9
$ 0-$ 99	124,687	169,749	149,920	112,494	81,798	66,724	55.2	70.2	85.6	95.6	90.0	64.1
100- 399	395,582	546,302	454,898	353,226	243,839	245,612	74.8	74.4	84.9	95.3	75.4	66.4
400- 999	9,762	10,976	8,601	6,387	562	171	63.3	76.4	82.1	76.7	78.2	72.4
1,000-4,999	437	91	119	215	188	—	64.9	70.0	77.2	74.6	73.9	68.7
5,000 & Over	—	—	—	—	—	—	66.6	66.9	71.3	63.6	63.1	60.5
Total	722,139	1,045,844	981,135	855,323	606,587	532,121	66.2	69.7	75.1	72.7	67.8	64.0
$ 0-$ 399*	711,940	1,034,339	972,415	848,721	605,837	531,950	68.8	71.0	76.3	82.1	64.4	59.2
400 & Over*	10,199	11,505	8,720	6,602	750	171	65.3	69.3	74.8	69.2	69.7	67.1

†Including Constants
‡May to December only, since constants were inaugurated May 1, 1928.
*Includes minimum premium risks.

NEW YORK WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK
POLICY YEARS 1928, 1929, 1930, 1931, 1932 AND 1933
(Based on First Report under the Unit Statistical Plan)

ALL OTHER (Excl. P. C.)

Premium Size Group	NUMBER OF RISKS						PREMIUM VOLUME† (In thousands)					
	1928‡	1929	1930	1931	1932	1933	1928‡	1929	1930	1931	1932	1933
Minimum				51,288	44,176	41,935				1,979	1,868	1,730
$ 0-$ 99				71,620	53,760	54,122				2,925	2,698	2,820
100- 399	Not Tabulated			25,168	21,385	22,466	Not Tabulated			4,648	4,141	4,401
400- 999				5,093	4,113	4,423				3,042	2,573	2,785
1,000-4,999	(See Sheet 4)			2,385	2,082	2,204	(See Sheet 4)			4,595	4,157	4,411
5,000 & Over				443	415	389				6,864	6,792	5,898
Total				155,997	125,931	125,539				24,053	22,229	22,045
$ 0-$ 399*				148,076	119,321	118,523				9,552	8,707	8,950
400 & Over*				7,921	6,610	7,016				14,501	13,522	13,095

Premium Size Group	PREMIUM DUE TO CONSTANTS						LOSS RATIOS BASED ON PREMIUMS INCLUSIVE OF CONSTANTS					
Minimum				361,796	327,924	309,502				40.1	39.6	44.2
$ 0-$ 99				440,306	396,346	394,956				79.3	74.9	78.0
100- 399	Not Tabulated			227,607	204,791	206,036	Not Tabulated			62.7	61.2	62.5
400- 999				2,507	349	152				59.5	54.1	60.0
1,000-4,999	(See Sheet 4)			35	24	14	(See Sheet 4)			53.4	50.6	54.0
5,000 & Over				—	7	—				53.1	50.4	49.4
Total				1,032,251	929,441	910,660				58.0	54.9	57.5
$ 0-$ 399*				1,029,709	929,061	910,494				63.1	60.8	63.9
400 & Over*				2,542	380	166				54.6	51.2	53.2

†Including Constants
‡May to December only, since constants were inaugurated May 1, 1928.
*Includes minimum premium risks.

NEW YORK WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK

POLICY YEARS 1928, 1929, 1930, 1931, 1932 AND 1933

(Based on First Report under the Unit Statistical Plan)

ALL OTHER (Incl. P. C.)

Premium Size Group	NUMBER OF RISKS						PREMIUM VOLUME† (In thousands)					
	1928‡	1929	1930	1931	1932	1933	1928‡	1929	1930	1931	1932	1933
Minimum	27,140	48,793	53,693	55,435	54,174	42,632	860	1,518	1,681	1,979	1,979	1,748
$ 0-$ 99	54,174	84,630	86,405	66,929	67,726	76,662	2,085	3,231	3,421	2,883	3,091	3,410
100- 399	16,305	24,839	25,704	23,377	21,860	23,306	3,089	4,697	4,822	4,345	4,220	4,544
400- 999	3,467	5,372	5,243	4,732	4,210	4,505	2,094	3,228	3,157	2,841	2,631	2,832
1,000-4,999	1,620	2,574	2,514	2,182	2,091	2,215	3,183	5,108	4,898	4,219	4,171	4,425
5,000 & Over	251	460	446	404	416	388	3,469	7,009	6,966	6,386	6,793	5,898
Total	102,957	166,668	174,005	153,059	150,477	149,708	14,780	24,791	24,945	22,653	22,885	22,857
$ 0-$ 399*	97,610	158,243	165,802	145,741	143,759	142,599	6,027	9,436	9,925	9,206	9,290	9,702
400 & Over*	5,347	8,425	8,203	7,318	6,718	7,109	8,753	15,355	15,020	13,447	13,595	13,155

Premium Size Group	PREMIUMS DUE TO CONSTANTS						LOSS RATIOS BASED ON PREMIUMS INCLUSIVE OF CONSTANTS					
Minimum	173,670	300,940	316,028	343,171	327,978	309,512	43.6	41.1	46.7	40.8	40.4	44.5
$ 0-$ 99	324,941	492,697	484,328	389,635	396,459	395,048	65.0	80.9	76.7	79.0	73.9	76.1
100- 399	150,090	234,625	239,874	218,427	204,823	206,072	60.2	67.7	65.9	63.9	61.4	63.1
400- 999	2,357	2,335	2,175	2,448	349	152	57.9	67.2	61.2	59.2	55.5	59.9
1,000-4,999	56	95	14	28	24	14	52.8	59.2	57.3	53.1	50.4	54.2
5,000 & Over	14	10	—	—	7	—	56.4	60.6	61.7	53.1	50.4	49.4
Total	651,128	1,030,702	1,042,419	953,709	929,640	910,798	57.1	64.0	62.6	58.3	55.3	57.9
$ 0-$ 399*	648,694	1,028,212	1,040,230	951,233	929,260	910,632	59.4	67.8	66.4	64.0	61.1	64.3
400 & Over*	2,434	2,490	2,189	2,476	380	166	55.5	61.6	60.2	54.4	51.4	53.3

†Including Constants.
‡May to December only, since constants were inaugurated May 1, 1928.
*Includes minimum premium risks.

EXHIBIT I
SHEET 5

NEW YORK WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK

POLICY YEAR 1933

(Based on First Report under the Unit Statistical Plan)

FEDERAL

Premium Size Group	Number of Risks	Premium Volume Including Loss and Expense Constants	Premium due to Constants	Loss Ratios Based on Premiums	
				Inclusive of Const.	Exclusive of Const.
Minimum	68.4	6,392	1,455	26.5	34.3
$ 0-$ 99	97.6	6,989	1,010	38.4	44.9
100- 399	146.7	35,439	2,883	73.9	80.4
400- 999	76.8	52,212	—	56.6	56.6
1,000- 4,999	75.3	186,595	—	61.0	61.0
5,000 & Over	47.4	945,492	—	48.7	48.7
TOTAL	512.2	1,233,119	5,348	51.4	51.7
$ 0-$ 399	312.7	48,820	5,348	62.6	70.3
400 & Over	199.5	1,184,299	—	51.0	51.0

EXHIBIT II
(1 SHEET)

NEW YORK WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK
POLICY YEARS 1928, 1929, 1930, 1931, 1932 AND 1933
(Based on First Report under the Unit Statistical Plan)

LOSS RATIOS
(Based on Premiums Excl. of Constants)

Premium Size Group	1928‡	1929	1930	1931	1932	1933	1928‡	1929	1930	1931	1932	1933
	MANUFACTURING						CONTRACTING					
Minimum	76.3	76.8	71.6	73.5	72.7	69.5	86.0	97.9	85.2	86.3	59.2	64.8
$ 0-$ 99	101.4	108.2	126.4	151.5	143.4	115.4	92.0	115.9	140.3	146.6	136.3	97.0
100- 399	71.3	79.4	81.1	79.1	86.8	69.4	94.1	93.8	106.8	118.1	92.5	81.2
400- 999	67.8	64.9	65.6	65.3	63.1	57.5	63.7	76.8	82.6	77.1	78.3	72.5
1,000- 4,999	64.3	62.5	59.4	55.9	51.7	54.6	65.0	70.0	77.2	74.6	73.9	68.7
5,000 & Over	63.0	64.1	56.7	52.4	49.4	48.5	66.6	66.9	71.3	63.6	63.1	60.5
Total	66.7	67.6	66.0	65.5	64.6	58.7	70.9	74.1	80.5	78.4	74.5	70.7
$ 0-$ 399*	78.4	86.1	91.2	95.2	98.5	78.8	93.0	96.5	105.0	111.2	86.4	78.2
400 & Over*	64.3	63.6	59.5	56.5	53.2	52.6	65.4	69.4	74.8	69.3	69.7	67.1
Premium Size Group	ALL OTHER (Excl. Per Capita Risks)						ALL OTHER (Incl. Per Capita Risks)					
Minimum				49.0	48.0	53.8	54.6	51.2	57.6	49.3	48.4	54.0
$ 0-$ 99				93.4	87.7	90.8	77.0	95.5	89.3	91.0	84.7	86.0
100- 399				66.0	64.4	65.6	63.2	71.2	69.4	67.1	64.5	66.1
400- 999	Not Tabulated			59.6	54.1	60.0	57.9	67.2	61.3	59.2	55.5	59.9
1,000- 4,999				53.4	50.6	54.1	52.8	59.2	57.3	53.1	50.4	54.2
5,000 & Over				53.1	50.4	49.4	56.4	60.6	61.7	53.1	50.4	49.4
Total				60.5	57.3	60.0	59.7	66.7	65.4	60.9	57.7	60.4
$ 0-$ 399*				70.7	68.0	71.1	66.6	76.1	74.1	71.3	67.9	70.9
400 & Over*				54.6	51.2	53.2	55.5	61.6	60.2	54.4	51.4	53.3

*Including Minimum Premium Risks.
‡May to December only, since constants were inaugurated May 1, 1928.

EXHIBIT III
(1 SHEET)

NEW YORK WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK

LOSS RATIO* DEVELOPMENT FROM FIRST TO SUCCESSIVE REPORTS

(Based on Policy Years 1928 to 1932 Inclusive)

Industry and Prem. Size Groups	1928‡				1929				1930				1931			1932	
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	1st	2nd
Manufacturing																	
Under $400†	62.0	63.1	64.7	65.3	67.1	66.9	67.3	68.0	71.2	74.0	75.3	76.9	74.5	75.1	77.1	78.0	79.2
$400 & Over†	64.3	65.6	66.1	66.6	63.6	64.7	64.4	65.4	59.4	60.3	61.5	61.8	56.5	57.6	58.5	53.2	53.5
Total	63.8	65.0	65.8	66.4	64.4	65.2	65.1	66.0	62.4	63.7	64.9	65.6	61.6	62.5	63.7	60.5	61.1
Contracting																	
Under $400†	68.8	71.8	73.0	75.4	71.0	72.5	76.5	76.8	76.3	81.4	82.6	84.9	82.1	88.2	94.9	64.4	65.9
$400 & Over	65.3	66.7	69.2	70.1	69.3	70.6	72.3	73.6	74.8	76.7	78.3	79.9	69.2	71.8	74.4	69.7	71.6
Total	66.2	68.0	70.2	71.4	69.7	71.0	73.2	74.3	75.1	77.8	79.3	81.1	72.7	76.3	80.0	67.8	69.6
All Other (Incl. P. C.)																	
Under $400†	59.4	60.0	61.3	60.8	67.8	68.2	69.0	69.1	66.4	67.9	68.9	69.4	64.0	66.4	67.5	61.1	61.7
$400 & Over†	55.5	57.6	58.9	59.2	61.6	61.6	63.0	63.5	60.2	60.2	60.2	61.2	54.4	55.7	56.8	51.4	51.4
Total	57.1	58.6	59.9	59.9	64.0	64.1	65.3	65.6	62.6	63.3	63.7	64.4	58.3	60.0	61.1	55.3	55.5

*Based on Premiums Inclusive of Constants.
†Including Minimum Premium risks.
‡May to December only, since constants were inaugurated May 1, 1928.

NEW YORK WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK
EXPERIENCE ON SHORT TERM POLICIES—POLICY YEARS 1931, 1932 AND 1933
(Based on First Report Under the Unit Statistical Plan)

MANUFACTURING

Premium Size Group	Number of Risks‡			Premium Including Constants (in thousands)			Loss Ratios Including Constants			Loss Ratios Excluding Constants		
	1931	1932	1933	1931	1932	1933	1931	1932	1933	1931	1932	1933
Minimum	2,083	840	617	50	55	40	71.5	44.4	67.4	113.7	69.9	106.9
$ 0-$ 99	9,577	3,736	3,005	268	286	261	158.2	163.7	114.1	218.7	226.5	151.6
100- 399	1,744	901	926	309	304	296	124.9	130.4	108.3	133.0	139.1	115.5
400- 999	348	183	170	200	180	168	92.8	107.5	83.3	92.9	107.6	83.4
1,000- 4,999	143	77	85	273	232	237	67.1	60.7	62.1	67.1	60.7	62.1
5,000 & Over	13	8	17	90	203	239	54.6	59.5	61.4	54.6	59.5	61.4
Total	13,908	5,745	4,820	1,190	1,260	1,241	106.2	106.6	87.0	117.2	117.7	94.4
$ 0-$ 399*	13,404	5,477	4,548	627	645	597	134.8	137.8	108.1	164.0	168.8	129.2
400 & Over*	504	268	272	563	615	644	74.3	74.0	67.4	74.3	74.0	67.4
	CONTRACTING											
Minimum	4,688	1,074	773	211	178	135	73.6	36.9	64.6	106.4	52.8	92.6
$ 0-$ 99	6,083	1,195	887	222	169	133	112.4	112.1	74.0	157.8	157.2	102.4
100- 399	1,817	623	565	312	230	202	177.9	131.0	102.8	199.6	146.4	114.4
400- 999	394	135	114	224	157	123	117.2	125.7	110.4	117.4	125.9	110.4
1,000- 4,999	264	97	79	530	310	252	101.3	81.9	82.7	101.3	81.9	82.7
5,000 & Over	39	16	11	482	318	113	71.9	67.3	52.1	71.9	67.3	52.1
Total	13,285	3,140	2,429	1,981	1,362	958	106.3	89.7	83.1	115.8	98.9	92.6
$ 0-$ 399*	12,588	2,892	2,225	744	578	470	128.8	96.4	83.8	164.9	123.4	105.8
400 & Over*	697	248	204	1,237	784	488	92.7	84.7	82.6	92.7	84.8	82.5

*Including all minimum premium risks.

‡Prior to 1932 each short term policy was punched as one risk. In 1932 and thereafter short term policies were punched as fractions of risks corresponding to the period of coverage. This explains the sudden drop in the number of risks.

EXHIBIT IV
SHEET 2

NEW YORK WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK

EXPERIENCE ON SHORT TERM POLICIES—POLICY YEARS 1931, 1932 AND 1933

(Based on First Report Under the Unit Statistical Plan)

ALL OTHER (Excluding Per Capita)

Premium Size Group	Number of Risks‡			Premium Including Constants (in thousands)			Loss Ratios Including Constants			Loss Ratios Excluding Constants		
	1931	1932	1933	1931	1932	1933	1931	1932	1933	1931	1932	1933
Minimum	5,634	2,902	2,530	119	147	131	54.5	59.9	64.4	64.7	71.3	77.1
$ 0-$ 99	19,180	8,589	8,496	433	532	538	150.5	124.9	143.3	170.6	141.5	161.2
100- 399	2,235	1,343	1,302	376	400	425	126.5	113.1	100.9	129.7	116.0	103.1
400- 999	426	204	244	244	209	255	111.4	79.0	62.4	111.5	79.0	62.4
1,000- 4,999	221	110	130	402	353	430	71.4	71.4	67.0	71.4	71.4	67.0
5,000 & Over	39	15	25	477	308	355	67.9	67.5	51.2	67.9	67.5	51.2
Total	27,735	13,163	12,727	2,051	1,949	2,134	101.2	93.9	89.6	105.2	98.8	93.6
$ 0-$ 399*	27,049	12,834	12,328	928	1,079	1,093	128.5	111.7	117.3	140.4	122.6	128.0
400 & Over*	686	329	399	1,123	870	1,041	78.6	71.8	60.5	78.5	71.8	60.5

*Including all minimum premium risks.

‡Prior to 1932 each short term policy was punched as one risk. In 1932 and thereafter short term policies were punched as fractions of risks corresponding to the period of coverage. This explains the sudden drop in the number of risks.

MASSACHUSETTS WORKMEN'S COMPENSATION EXPERIENCE BY SIZE OF RISK

BASED ON UNIT REPORTS FOR POLICY YEARS 1929 TO 1933 INCLUSIVE*

Industry Group	Premium Size Group	Number of Risks					Loss Ratios (Based on Premiums Incl. Loss Constant)				
		1929	1930	1931	1932	1933	1929	1930	1931	1932	1933
Manufacturing	Minimum	809	785	739	649	469	40.5	69.0	35.7	48.1	28.9
	$ 0-$199	4,635	4,539	4,428	3,757	3,273	76.3	70.1	65.7	71.0	45.4
	200 & Over	4,316	4,048	3,525	3,132	3,370	68.6	72.6	63.7	57.4	51.9
	Total	9,760	9,372	8,693	7,538	7,112	68.9	72.5	63.7	58.3	51.5
Contracting	Minimum	1,851	1,961	2,103	1,566	1,131	70.4	62.0	55.6	51.3	24.9
	$ 0-$199	4,299	3,886	3,410	2,377	1,932	89.4	92.5	106.1	93.5	70.6
	200 & Over	2,234	1,804	1,420	963	1,058	82.9	95.3	104.1	77.9	60.9
	Total	8,384	7,651	6,933	4,906	4,121	83.2	92.9	100.6	78.0	59.5
Commercial and Clerical‡	Minimum	3,221	3,311	2,867	2,277	1,891	66.9	51.7	55.0	44.9	34.6
	$ 0-$199	8,469	8,649	8,971	8,320	8,159	75.3	81.5	74.4	66.1	56.9
	200 & Over	1,960	1,831	1,656	1,578	1,789	73.3	68.2	69.1	59.1	50.4
	Total	13,650	13,791	13,494	12,175	11,839	73.6	71.2	70.1	60.4	51.5
Care & Custody	Minimum	1,853	1,943	1,801	1,601	1,492	52.4	24.3	34.1	25.0	28.6
	$ 0-$199	3,043	3,149	3,227	2,943	2,886	60.0	77.5	65.6	63.2	62.3
	200 & Over	540	506	503	491	556	55.8	65.1	67.0	55.8	52.9
	Total	5,436	5,598	5,531	5,035	4,934	56.9	65.2	63.0	55.2	53.8
All Other	Minimum	570	592	551	489	387	45.4	71.7	27.0	19.3	80.0
	$ 0-$199	1,665	1,721	1,689	1,437	1,298	69.2	68.9	60.4	55.8	46.9
	200 & Over	1,312	1,300	1,216	1,124	1,146	62.4	66.4	67.1	52.3	48.6
	Total	3,547	3,613	3,456	3,050	2,831	62.7	66.7	65.7	51.9	49.0

*First report of policy year 1933, second report of policy year 1932, third report of policy year 1931 and fourth report of policy years 1930 and 1929.
‡Loss constants not applicable to this group—hence loss ratios are on basis of full premiums.