

August 18, 1995

Mr. Paul C. Whitacre, Jr.
Director, Actuarial Section
Ohio Bureau of Workers' Compensation
30 W. Spring St.
Columbus, Ohio 43215

Re: **"High Level" Summary of Analysis of Experience Rating Plan and Group Rating Loss Development**

Dear Paul:

We have completed the major portion of our analysis concerning the experience rating plan. This letter provides a "high level" summary of the background leading up to our analysis and the major conclusions of our analysis.

We will be providing a complete report that contains the detail and support for the conclusions stated in this summary. Attached to this letter is an Executive Summary providing excerpts from our complete report.

- The first section of the Executive Summary shows the results of superimposing the current NCCI plan on BWC's risks.
- The second section discusses the results of updating the current credibility table and retaining all other characteristics of the current plan.
- The third section illustrates differences in the loss experience of group and non-group rated employers.

HISTORICAL BACKGROUND

In 1993, BWC asked that we review the experience for group rated employers to measure the equity in the group rating program. In that analysis, we found that the resulting loss ratios for the 1991 policy year were significantly higher for group rated employers than for non-group. It was determined at that time

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to re-evaluate the losses a year later after more experience became available and the participation in the groups had reached higher levels.

In 1994, we confirmed that the inequities still existed, but that the differences had become somewhat less for the 1992 policy year. We also looked at the non-group employers and noticed that large credit rated risks showed higher loss ratios than large debit rated risks. Since group rating is composed of predominantly large credit rated risks (where risk is defined as the group representing the experience of many employers), it was felt that a problem in the entire experience rating plan was reflected more dramatically in the group experience.

As a result of this 1994 study, we were asked to analyze the effects of experience rating for both group and non-group employers and to research the possible advantages of using NCCI's experience rating procedures. The study, completed in early 1995 using loss experience evaluated as of 3/31/94, indicated significant improvement in the predictability of loss ratios for non-group employers as well as a reduction the difference in loss ratios between the group and non-group segments as a result of using NCCI's approach. We also pointed out in our report that another option would be to use the current Ohio plan and update the credibility table to approximate the NCCI credibilities.

At the conclusion of our last study, it appeared that the desired course of action was to revise the current credibility table over a two to three year period. At this point in time, a 10 point reduction in credibilities per year would allow the plan to achieve the current indicated 70% to 75% maximum in three years. This revision takes into account marketing considerations, especially with respect to the changes experienced by individual employers.

MAJOR CONCLUSIONS

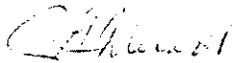
The major conclusions derived from the current analysis are:

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- That the use of either the updated Ohio plan (with major revisions to the credibility table) or the NCCI plan would increase the actuarial equity of the experience rating program as compared to the current Ohio plan.
- The NCCI plan performs somewhat better for the largest risks, and the revised Ohio plan performs better for the medium size risks.
- In our 1994 report, we had indicated that maximum credibilities of approximately 70% to 80% were required to restore equity in the loss ratios between group-rated and non-group rated employers. In this analysis, we have updated the maximum credibility estimates, and have analyzed the loss ratio differences. The results are approximately the same, namely that the maximum credibility should be approximately 70% to 75%.
- Our review of the experience for groups by year of formation indicates that the older groups had lower loss ratios than those that were newly formed.

The attached report provides the detail that supports the conclusions outlined in this letter. Please let us know if we can be of further assistance.

Sincerely,



James G. Inkrott, FCAS, MAAA, CPCU, CLU
Principal



Jeffery J. Scott, FCAS, MAAA
Consultant

JGI/JJS/jem

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EXECUTIVE SUMMARY

William M. Mercer, Inc. has analyzed the current experience rating plan of BWC for policy years 1991 through 1993. In this analysis we have:

- Updated our study dated January 30, 1995 that considered the use of the current NCCI experience rating plan in Ohio.
- Considered the results of retaining the current Ohio experience rating plan characteristics and updating the current credibility table.
- Quantified the impact of each plan on individual employers.
- Updated (using new data evaluated at 3/31/95) our August 1994 study that developed some conclusions concerning group and non-group risks.

Update of NCCI Plan

We have analyzed rating years 1991 through 1993 by superimposing the current NCCI plan on the risk structure as it existed in each rating year. This update considers resulting losses evaluated at 3/31/95, which represents an additional 12 months of development. We have also increased the primary loss limit from \$5,000 per claim to \$10,000 to increase the accuracy of the NCCI methodology. Our current analysis also evaluates the effect of varying the other parameters of the formula used in calculating the experience modification factor.

The following table presents the test statistics for each policy year resulting from the NCCI plan and the current Ohio plan. A lower test statistic indicates a lower variance in loss ratios between risks of differing modification factors.

| Size Group | Rating Year 1991 | | Rating Year 1992 | | Rating Year 1993 | |
|------------|------------------|--------|------------------|--------|------------------|--------|
| | Current | NCCI | Current | NCCI | Current | NCCI |
| 1 | 1.5881 | 0.0193 | 1.2858 | 0.1127 | 4.4526 | 0.1099 |
| 2 | 0.2125 | 0.0394 | 1.4125 | 0.0677 | 1.5555 | 0.0996 |
| 3 | 0.0211 | 0.0657 | 0.3633 | 0.0959 | 0.2445 | 0.1465 |
| 4 | 0.0835 | 0.0879 | 0.0476 | 0.0518 | 0.0344 | 0.1906 |
| 5 | 0.2681 | 0.1524 | 0.2678 | 0.1107 | 0.2740 | 0.1676 |

* Size Group 1 represents individual risks with largest premium, NCCI shown is Method 2. Additional detail regarding actual sizes by rating year are shown in Exhibit 7.

As can be seen in the table, the current plan has higher test statistics in almost all of the size groups. The largest risks (size group 1) exhibited the most improvement under the NCCI plan. For the smaller risks (size group 4), both plans provide essentially the same amount of equity.

The impact on individual risks has the potential to be quite substantial. The full report presents statistics showing the number of risks experiencing premium changes due to the use of the NCCI experience rating plan.

The advantages of adopting the NCCI plan are that the actuarial equity between risks would be improved, for both size and rating status (credit or penalty). The NCCI experience rating formula places a higher credibility on the primary portion of losses (first \$10,000 per claim).

Some disadvantages are that the formula is more complicated than the current one, which will require educational support for the new system. There will also be a few risks that experience large increases in premium (which will be true of any plan that restores the actuarial equity between risks).

Revision of Current Credibility Table

As an alternative to the NCCI plan, we have performed an analysis on the use of the current plan with a revised credibility table. We have analyzed the experience rating plan using credibilities reduced by 30% and 10%. These reductions were selected as a result of our August 1994 study, which indicated a reduction in credibilities of approximately 30%, and the suggestion that it be phased in over a short time period (we have used 10% per year for three years). The current NCCI experience rating plan also has a maximum credibility in the 60% - 70% range.

The resulting test statistics for the updated credibility table and the NCCI plan are shown below. As can be seen using 70% as the maximum credibility, the test statistics are close to the NCCI plan, but not quite as low for the largest risk groups. The smaller risks also favor the NCCI plan. However, risk sizes 2 and 3 are better served by the 70% maximum credibility revision.

| Size | Rating Yr 1991 | | Rating Year 1992 | | Rating Year 1993 | |
|------|----------------|--------|------------------|--------|------------------|--------|
| | 70% Max | NCCI | 70% Max | NCCI | 70% Max | NCCI |
| 1 | 0.0889 | 0.0193 | 0.1951 | 0.1127 | 0.2403 | 0.1099 |
| 2 | 0.0099 | 0.0394 | 0.0211 | 0.0677 | 0.0053 | 0.0996 |
| 3 | 0.0538 | 0.0657 | 0.0199 | 0.0959 | 0.1112 | 0.1465 |
| 4 | 0.2052 | 0.0879 | 0.0783 | 0.0518 | 0.1399 | 0.1906 |
| 5 | 0.2998 | 0.1524 | 0.3026 | 0.1107 | 0.3207 | 0.1676 |

Implementing the 70% maximum credibility adjustment would result in premium changes similar to the adoption of the NCCI plan.

The advantages to using this approach are that the changes (update to the credibility table) are straightforward and easily explainable. There is no change to the existing experience rating formula and the plan provides considerable improvement over the existing plan.

The disadvantage is that it does not produce as favorable results as the NCCI plan for the largest and smallest risk groups. It also represents a difference between Ohio and NCCI at a time when the legislature and employer community are striving for consistency with NCCI. Additionally, it produces large premium changes for some risks.

Differences in Group and Non-Group Rated Risks Pertaining to Conclusions in August 1994 Report

The conclusions drawn from our August 1994 study led to the analysis of the experience rating plan. With the additional year of data, we can provide an update on some of the items contained in that report.

One of the major conclusions in our 1994 report was that the loss ratios for group rated employers were higher than those for non-group rated employers. The additional 12 months of development has not altered this conclusion. Comparisons of the group and non-group loss experience is shown in Exhibit 8 of the full report and the relative loss ratios are shown below.

Relative Loss Ratios for Group and Non-Group Employers

| | Rating Year | | |
|-------------------------------|-------------|-------------|-------------|
| | <u>1991</u> | <u>1992</u> | <u>1993</u> |
| <u>Using Losses @ 3/31/95</u> | | | |
| Group | 1.40 | 1.28 | 1.30 |
| Non-Group | 0.99 | 0.96 | 0.93 |
| <u>Using Losses @ 3/31/94</u> | | | |
| Group | 1.48 | 1.32 | |
| Non-Group | 0.98 | 0.96 | |

As indicated in the chart above, the relative loss ratios for group rated employers have decreased somewhat between 3/31/94 and 3/31/95, indicating relatively better loss development for group rated employers during this period. Exhibit 8 of the full report provides details of these developments, separately for payments, reserves, and total losses. It is notable, too, that the average claim costs continue to be lower for group rated employers.

To further analyze differences in claim developments for group employers, it was suggested that we determine closing rates for group and non-group employers. To calculate closing rates, we defined an "open" claim as a claim with a compensation payment (other than permanent total, death, permanent partial or percent permanent partial) in the previous two quarters. The percentages of "open" claims as of 3/31/95 were as follows:

Percentages of Lost Time Claims Open as of 3/31/95

| | <u>Rating Yr 1991</u> | <u>Rating Yr 1992</u> |
|-----------|-----------------------|-----------------------|
| Group | 2.7% | 4.6% |
| Non-Group | 3.7% | 5.1% |

We also reviewed another component of the loss experience for group rated employers, namely, the difference in loss experience as a group matures. Exhibit 9 of the full report displays the relative loss ratios and indicated maximum credibilities for rating year 1993, separately by the year of formation. The relative loss ratios appear to decrease as a group "matures". The exhibit also calculates indicated maximum credibilities for group-rated employers using a much simplified (and less accurate) method of determining maximum credibilities than was used to study the experience rating plan credibilities. The method, which was also used in a prior study of group experience, is based on the indicated required reduction in credits for group employers. The indicated

maximum credibilities are 77%, 74%, and 68% for groups formed in 1991, 1992, and 1993, respectively.

Exhibit 5 shows the results of large group and non-group loss ratios, as a result of using different credibility tables for each rating year. Using the 70% credibility table adjustment, the group loss ratios are still higher for 2 of the 3 rating years.

CAVEATS AND LIMITATIONS

1. The study conclusions are developed in the text and exhibits which together comprise the report.
2. The report was prepared for the sole use of the Ohio Bureau of Workers' Compensation. The report may be distributed only in its entirety.
3. The data for this study was provided by BWC. In the study we relied on the accuracy and completeness of this data without independent audit. If the data is inaccurate or incomplete, our findings and conclusions may need to be revised.
4. In addition to the assumptions stated in the report, numerous other assumptions underlie the calculations and results presented herein.
5. The study conclusions were based on analysis of available data and on the estimation of many contingent events.
6. Numbers in the exhibits are generally shown to more significant digits than their accuracy suggests. This has been done to simplify review of the calculations.
7. Due to the uncertainties inherent in the estimation of future costs, it cannot be guaranteed that the future premium distribution set forth in the report will not prove to be inadequate or excessive, and actual costs may vary significantly from our estimates.
8. Unanticipated changes in factors such as judicial decisions, legislative actions, claims consciousness, claim management, claim settlement practices, and economic conditions may significantly alter the conclusions.

**Ohio Bureau of Workers' Compensation
Summary of Balanced Loss Ratios
Using Current BWC Credibility Table**

Rating Year 1991

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|----------|----------|----------|----------|-------|--------------------------|
| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | | |
| 1 | 67% | 74% | 75% | 110% | 161% | 87% | 0.239 |
| 2 | 78% | 86% | 90% | 104% | 112% | 89% | |
| 3 | 82% | 76% | 86% | 85% | 84% | 82% | |
| 4 | 92% | 74% | 79% | 74% | 68% | 79% | |
| 5 | 102% | 85% | 68% | 72% | 62% | 79% | |

Rating Year 1992

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|----------|----------|----------|----------|-------|--------------------------|
| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | | |
| 1 | 64% | 84% | 92% | 110% | 126% | 90% | 0.315 |
| 2 | 66% | 82% | 82% | 105% | 167% | 85% | |
| 3 | 67% | 66% | 75% | 84% | 100% | 74% | |
| 4 | 74% | 66% | 69% | 68% | 80% | 71% | |
| 5 | 78% | 66% | 55% | 54% | 47% | 62% | |

Rating Year 1993

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|----------|----------|----------|----------|-------|--------------------------|
| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | | |
| 1 | 53% | 75% | 81% | 92% | 128% | 77% | 0.384 |
| 2 | 56% | 69% | 59% | 86% | 151% | 70% | |
| 3 | 48% | 61% | 67% | 70% | 70% | 60% | |
| 4 | 56% | 51% | 59% | 52% | 50% | 54% | |
| 5 | 60% | 53% | 43% | 47% | 37% | 50% | |

* Risk size grouping 1 is the largest manual premium size group and risk size grouping 5 is the smallest manual premium size group.

** 1 is the largest modification factor range and 5 is the smallest modification factor range

**Ohio Bureau of Workers' Compensation
Summary of Balanced Loss Ratios
Using Proposed 70% Credibility Table**

Rating Year 1991

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|----------|----------|----------|----------|-------|--------------------------|
| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | | |
| 1 | 75% | 73% | 68% | 86% | 87% | 78% | 0.131 |
| 2 | 91% | 89% | 90% | 88% | 83% | 88% | |
| 3 | 93% | 82% | 84% | 79% | 76% | 84% | |
| 4 | 102% | 77% | 81% | 70% | 62% | 81% | |
| 5 | 102% | 88% | 74% | 72% | 62% | 81% | |

Rating Year 1992

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|----------|----------|----------|----------|-------|--------------------------|
| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | | |
| 1 | 63% | 73% | 74% | 79% | 62% | 71% | 0.130 |
| 2 | 77% | 84% | 72% | 80% | 84% | 79% | |
| 3 | 80% | 73% | 77% | 82% | 77% | 78% | |
| 4 | 87% | 72% | 73% | 73% | 67% | 76% | |
| 5 | 83% | 71% | 58% | 57% | 48% | 65% | |

Rating Year 1993

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|----------|----------|----------|----------|-------|--------------------------|
| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | | |
| 1 | 52% | 66% | 64% | 63% | 65% | 62% | 0.138 |
| 2 | 66% | 63% | 60% | 63% | 64% | 63% | |
| 3 | 60% | 69% | 71% | 71% | 56% | 65% | |
| 4 | 68% | 57% | 61% | 58% | 45% | 60% | |
| 5 | 64% | 60% | 46% | 49% | 39% | 53% | |

* Risk size grouping 1 is the largest manual premium size group and risk size grouping 5 is the smallest manual premium size group.
 ** 1 is the largest modification factor range and 5 is the smallest modification factor range

**Ohio Bureau of Workers' Compensation
Summary of Balanced Loss Ratios
Using Proposed 90% Credibility Table**

Rating Year 1991

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|-----|-----|------|------|-------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | | |
| 1 | 69% | 74% | 72% | 100% | 126% | 84% | 0.169 |
| 2 | 82% | 87% | 89% | 98% | 99% | 89% | |
| 3 | 85% | 79% | 87% | 82% | 81% | 83% | |
| 4 | 95% | 77% | 82% | 72% | 65% | 80% | |
| 5 | 99% | 85% | 70% | 70% | 64% | 80% | |

Rating Year 1992

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|-----|-----|-----|------|-------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | | |
| 1 | 61% | 81% | 85% | 97% | 93% | 82% | 0.208 |
| 2 | 70% | 83% | 78% | 96% | 123% | 83% | |
| 3 | 71% | 68% | 74% | 84% | 91% | 75% | |
| 4 | 78% | 69% | 71% | 67% | 77% | 73% | |
| 5 | 79% | 69% | 59% | 49% | 48% | 63% | |

Rating Year 1993

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|-----|-----|-----|------|-------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | | |
| 1 | 53% | 72% | 74% | 79% | 96% | 71% | 0.231 |
| 2 | 59% | 63% | 64% | 76% | 101% | 67% | |
| 3 | 52% | 65% | 68% | 70% | 64% | 62% | |
| 4 | 61% | 52% | 59% | 54% | 47% | 56% | |
| 5 | 61% | 56% | 47% | 46% | 39% | 51% | |

* Risk size grouping 1 is the largest manual premium size group and risk size grouping 5 is the smallest manual premium size group.
 ** 1 is the largest modification factor range and 5 is the smallest modification factor range

**Ohio Bureau of Workers' Compensation
Summary of Balanced Loss Ratios
Using NCCI Methodology**

Rating Year 1991

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|-----|-----|-----|-----|-------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | | |
| 1 | 79% | 72% | 68% | 74% | 74% | 74% | 0.109 |
| 2 | 91% | 89% | 85% | 89% | 75% | 87% | |
| 3 | 87% | 86% | 88% | 84% | 71% | 84% | |
| 4 | 94% | 82% | 80% | 69% | 72% | 82% | |
| 5 | 89% | 92% | 89% | 68% | 67% | 83% | |

Rating Year 1992

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|-----|-----|-----|-----|-------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | | |
| 1 | 62% | 70% | 68% | 73% | 62% | 67% | 0.123 |
| 2 | 81% | 79% | 69% | 80% | 63% | 75% | |
| 3 | 82% | 72% | 82% | 89% | 68% | 79% | |
| 4 | 84% | 72% | 76% | 80% | 67% | 77% | |
| 5 | 75% | 71% | 63% | 58% | 54% | 66% | |

Rating Year 1993

| Risk Size Grouping | Modification Factor Range ** | | | | | Total | Coefficient of Variation |
|--------------------|------------------------------|-----|-----|-----|-----|-------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | | |
| 1 | 52% | 60% | 60% | 58% | 60% | 58% | 0.156 |
| 2 | 67% | 66% | 61% | 50% | 50% | 60% | |
| 3 | 68% | 68% | 71% | 75% | 52% | 67% | |
| 4 | 71% | 53% | 68% | 60% | 41% | 61% | |
| 5 | 60% | 60% | 58% | 49% | 39% | 55% | |

* Risk size grouping 1 is the largest manual premium size group and risk size grouping 5 is the smallest manual premium size group.

** 1 is the largest modification factor range and 5 is the smallest modification factor range

**Ohio Bureau of Workers' Compensation
Summary of Balanced Loss Ratios
Between Group and Non-Group Risks***

| | <u>Rating Year</u> | | |
|-------------------------------------|--------------------|-------------|-------------|
| | <u>1991</u> | <u>1992</u> | <u>1993</u> |
| <u>65% Credibility Table</u> | | | |
| Group | 0.829 | 0.710 | 0.608 |
| Non-Group | 0.829 | 0.752 | 0.597 |
| <u>70% Credibility Table</u> | | | |
| Group | 0.870 | 0.741 | 0.629 |
| Non-Group | 0.829 | 0.752 | 0.597 |
| <u>90% Credibility Table</u> | | | |
| Group | 0.897 | 0.761 | 0.634 |
| Non-Group | 0.827 | 0.740 | 0.583 |
| <u>NCCI Method 2</u> | | | |
| Group | 0.761 | 0.682 | 0.585 |
| Non-Group | 0.813 | 0.757 | 0.596 |

* Risk size groups are as follows:

- | | |
|------|--|
| 1991 | Manual Premiums Greater than \$140,000 |
| 1992 | Manual Premiums Greater than \$275,000 |
| 1993 | Manual Premiums Greater than \$320,000 |

Ohio Experience Rating
Current and Proposed Credibility Tables

| Credibility Group | Credibility Percent | Credibility Tables | | | | | |
|-------------------|---------------------|--------------------|---------------------|-----------------|---------------------|-----------------|---------------------|
| | | Current | | Proposed 90% | | Proposed 70% | |
| | | Expected Losses | Group Maximum Value | Expected Losses | Group Maximum Value | Expected Losses | Group Maximum Value |
| 1 | 0.05 | 8,000 | 12,500 | 8,000 | 12,500 | 8,000 | 12,500 |
| 2 | 0.10 | 15,000 | 12,500 | 15,000 | 15,000 | 15,000 | 15,000 |
| 3 | 0.15 | 27,000 | 25,000 | 27,000 | 45,000 | 27,000 | 45,000 |
| 4 | 0.20 | 45,000 | 37,500 | 45,000 | 56,300 | 45,000 | 56,300 |
| 5 | 0.25 | 62,500 | 55,000 | 77,000 | 77,000 | 128,000 | 128,000 |
| 6 | 0.30 | 90,000 | 75,000 | 111,000 | 92,500 | 184,000 | 153,300 |
| 7 | 0.35 | 122,500 | 87,500 | 151,000 | 107,900 | 250,000 | 178,600 |
| 8 | 0.40 | 160,000 | 100,000 | 198,000 | 123,800 | 327,000 | 204,400 |
| 9 | 0.45 | 202,500 | 112,500 | 250,000 | 138,900 | 413,000 | 229,400 |
| 10 | 0.50 | 250,000 | 125,000 | 309,000 | 154,500 | 510,000 | 255,000 |
| 11 | 0.55 | 302,500 | 137,500 | 373,000 | 169,500 | 617,000 | 280,500 |
| 12 | 0.60 | 360,000 | 150,000 | 444,000 | 185,000 | 735,000 | 306,300 |
| 13 | 0.65 | 422,500 | 162,500 | 522,000 | 200,800 | 862,000 | 331,500 |
| 14 | 0.70 | 490,000 | 175,000 | 605,000 | 216,100 | 1,000,000 | 357,100 |
| 15 | 0.75 | 562,500 | 187,500 | 694,000 | 231,300 | | |
| 16 | 0.80 | 640,000 | 200,000 | 790,000 | 246,900 | | |
| 17 | 0.85 | 722,500 | 212,500 | 892,000 | 262,400 | | |
| 18 | 0.90 | 810,000 | 225,000 | 1,000,000 | 277,800 | | |
| 19 | 0.95 | 902,500 | 237,500 | | | | |
| 20 | 1.00 | 1,000,000 | 250,000 | | | | |

**Ohio Bureau of Workers' Compensation
Rating Year 1993
Summary of Risk Size Groups**

| <u>Size Group</u> | <u>Manual Premium Size</u> | | <u>Number of Risks</u> | <u>Number of Employers</u> | <u>Actual Premium</u> |
|-------------------|----------------------------|----------|------------------------|----------------------------|-----------------------|
| 1 | | > 1.1 M | 187 | 20,930 | 270,667,503 |
| 2 | > 320K | < = 1.1M | 471 | 10,790 | 168,322,843 |
| 3 | > 110K | < = 320K | 1,496 | 2,723 | 283,054,676 |
| 4 | > 32K | < = 110K | 4,469 | 4,469 | 292,544,671 |
| 5 | | < = 32K | 31,428 | 31,428 | 282,093,477 |

* Group = Risk

August 18, 1995

Mr. Paul C. Whitacre, Jr.
Director, Actuarial Section
Ohio Bureau of Workers' Compensation
30 W. Spring St.
Columbus, Ohio 43215

Re: Impact of 90% Credibility Table Adjustment on Individual Employers

Dear Paul:

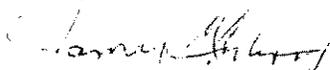
William M. Mercer has completed an analysis quantifying the impact on individual experience-rated employers with a proposed credibility reduction of 10%. We have used the 1993 rating year data to show the effects. We have shown percentage changes as well as actual dollar amount changes. These changes are calculated after an off-balance adjustment is made.

Exhibit 1 shows the number of employers by percentage premium change. Exhibit 2 shows examples of the largest premium increases and decreases. Exhibit 3 summarizes the employers with premium increases greater than 50%. As can be seen, the majority of the employers have increases less than \$1,000. In fact, of the 6,800 group-rated employers receiving premium increases of 50% or more, less than 700 realize premium increases of more than \$1,000. It is also important to remember the substantial premium decreases the group-rated employers realized when they initially qualified for group rating.

Exhibits 4 and 5 show similar statistics for risks with premium increases of 20% to 50% and premium decreases of more than 10%.

If you have any further questions, please feel free to contact us.

Sincerely,



James G. Inkrott, FCAS, MAAA, CPCU, CLU
Principal



Jeffery J. Scott, FCAS, MAAA
Consultant

Ohio Bureau of Workers' Compensation
 Change in 1993 Premium Using
 90% Credibility Table - Method 4

| % Change | Non-Group Employers | | | Group Employers | | | |
|----------|---------------------|-----------------|------------------------------|-------------------|-----------------|-------------------------------------|----------|
| | Count Employer | 1993 Premium | Avg Prem Chg per Employer | Count Employer | 1993 Premium | Average Prem Change per Employer | Group |
| > 160% | 2 | \$41,576 | \$20,788 | 832 | \$420,188 | \$505 | \$84,038 |
| 140% | 1 | 5,357 | 5,357 | - | - | - | - |
| 120% | 1 | 55,377 | 55,377 | 405 | 98,787 | 244 | 98,787 |
| 100% | 2 | 85,891 | 42,946 | 655 | 177,565 | 271 | 88,783 |
| 80% | 2 | 60,507 | 30,254 | 1,860 | 461,538 | 248 | 92,308 |
| 60% | 7 | 219,619 | 31,374 | 1,102 | 1,120,879 | 1,017 | 86,221 |
| 50% | 4 | 247,774 | 61,944 | 1,938 | 802,417 | 414 | 80,242 |
| 40% | 9 | 253,962 | 28,218 | 616 | 982,695 | 1,595 | 81,891 |
| 30% | 22 | 433,169 | 19,690 | 2,026 | 2,107,090 | 1,040 | 78,040 |
| 20% | 91 | 1,936,615 | 21,281 | 2,615 | 4,070,916 | 1,557 | 110,025 |
| 10% | 360 | 2,479,172 | 6,887 | 6,969 | 8,563,806 | 1,229 | 111,218 |
| 5% | 654 | 1,895,936 | 2,899 | 6,793 | 5,045,485 | 743 | 67,273 |
| 0% | 2,361 | 2,658,110 | 1,126 | 6,119 | 3,887,961 | 635 | 58,909 |
| -5% | 52,330 | (18,856,963) | (360) | 690 | (226,474) | (328) | (12,582) |
| -10% | 3,865 | (14,851,869) | (3,843) | 12 | (32,949) | (2,746) | (32,949) |
| -20% | 243 | (2,589,302) | (10,656) | - | - | - | - |
| -30% | 1 | (5,808) | (5,808) | - | - | - | - |
| Total | 59,955 | (\$25,930,877) | (\$433) | 32,632 | \$27,479,904 | \$842 | \$78,739 |

**Ohio Bureau of Workers' Compensation
Largest Premium Increases and Decreases for Non-Group and Group Risks
Using 90% Credibility Table - Method 4**

| <u>Example</u> | <u>Risk</u> | <u>Proposed</u> | | <u>1993</u> | <u>Percent</u> | <u>1993</u> | <u>Loss Ratio</u> | <u>Current TM</u> | <u>Proposed TM</u> |
|----------------|----------------|--------------------|----------------|-------------|----------------|-------------|-------------------|-------------------|--------------------|
| | | <u>Prem Change</u> | <u>Premium</u> | | | | | | |
| 1 | Non-Group 1 | (\$182,443) | \$3,045,566 | -6.0% | \$634,200 | 20.8% | 1.650 | 1.585 | |
| 2 | Non-Group 2 | \$192,854 | \$332,611 | 58.0% | \$595,995 | 179.2% | 0.140 | 0.226 | |
| 3 | Group Member 1 | (\$10,333) | \$341,578 | -3.0% | \$131,655 | 38.5% | 1.100 | 1.090 | |
| 4 | Group Member 2 | \$72,032 | \$406,182 | 17.7% | \$1,002,023 | 246.7% | 0.330 | 0.397 | |

Example 1 is an employer who has the largest proposed 1993 premium decrease (\$182,443) for employers not in a group.
 Example 2 is an employer who has the largest proposed 1993 premium increase (\$192,854) for employers not in a group.
 Example 3 is an employer who has the largest proposed 1993 premium decrease (\$10,333) for employers in a group.
 Example 4 is an employer who has the largest proposed 1993 premium increase (\$72,032) for employers in a group.

Example 3 is a member of a group that has a total of 7 employers. The group has a proposed premium decrease of \$20,632 and a loss ratio of 84.3%.
 Example 4 is a member of a group that has a total of 331 employers. The group has a proposed premium increase of \$1,486,276 and a loss ratio of 111.3%.

**Examples of Largest Premium Increases and Decreases from
the 90% Credibility Table**

Example 1 is a non-group employer who would receive a premium decrease of \$182,443, which is a 6.0% reduction. The employer had a 1993 premium of \$3,045,566 and losses of \$634,200. The resulting loss ratio was 20.8%. The current modification factor is 1.650 and the proposed modification factor is 1.585.

Example 2 is also a non-group employer with a premium increase of \$192,854, which is a 58.0% increase. This employer had a 1993 premium of \$332,611 and losses of \$595,995. The corresponding loss ratio was 179.2%. The current modification factor is 0.140 and the proposed modification factor is 0.226.

Example 3 is an employer who is in a group containing 7 total members. This employer would receive a premium decrease of \$10,333, which is a 3.0% reduction. The corresponding group would receive a total premium decrease of \$20,632. The employer's premium and losses in 1993 were \$341,578 and \$131,655, respectively, and the loss ratio was 38.5%. The group's 1993 premium and losses were \$682,067, and \$575,165, respectively, with a group loss ratio of 84.3%. The current modification factor is 1.100 and the proposed modification factor is 1.090.

Example 4 is an employer who is in a group with a total of 331 members. This employer would receive a premium increase of \$72,032, which is a 17.7% increase. Example 4's group would receive a total premium increase of \$1,486,276. The employer's premium and losses for 1993 were \$406,182 and \$1,002,023, respectively, with a corresponding loss ratio of 246.7%. The group's 1993 premium was \$8,380,937 and the losses were \$9,330,916. The loss ratio for the group was 111.3%. The current modification factor is 0.330 whereas the proposed modification factor is 0.397.

**Ohio Bureau of Workers' Compensation
Change in 1993 Premium Using
90% Credibility Table - Method 4
Premium Increase Greater than 50%**

| Premium Change | Count of Employers | |
|----------------|--------------------|--------------|
| | Non-Group | Group |
| > | 16 | 19 |
| \$4,000 | 1 | 82 |
| \$2,000 | 2 | 191 |
| \$1,000 | 0 | 375 |
| \$700 | 0 | 282 |
| \$500 | 0 | 326 |
| \$400 | 0 | 271 |
| \$300 | 0 | 382 |
| \$200 | 0 | 639 |
| \$100 | 0 | 1,249 |
| <= | 0 | 2,976 |
| Total | 19 | 6,792 |

**Ohio Bureau of Workers' Compensation
Change in 1993 Premium Using
90% Credibility Table - Method 4
Premium Increase Greater than 20% &
Less than 50%**

| Premium Change | | Count of Employers | |
|----------------|-----------|--------------------|--------------|
| | | Non-Group | Group |
| > | \$100,000 | 2 | - |
| \$30,000 | \$100,000 | 13 | 5 |
| \$20,000 | \$30,000 | 15 | 17 |
| \$10,000 | \$20,000 | 22 | 74 |
| \$7,000 | \$10,000 | 3 | 78 |
| \$5,000 | \$7,000 | 2 | 132 |
| \$4,000 | \$5,000 | 3 | 138 |
| \$3,000 | \$4,000 | 5 | 177 |
| \$2,000 | \$3,000 | 18 | 336 |
| \$1,000 | \$2,000 | 28 | 706 |
| \$700 | \$1,000 | 7 | 401 |
| \$500 | \$700 | 4 | 424 |
| \$400 | \$500 | 0 | 294 |
| \$300 | \$400 | 0 | 348 |
| \$200 | \$300 | 0 | 409 |
| \$100 | \$200 | 0 | 587 |
| <= | \$100 | 0 | <u>1,131</u> |
| Total | | 122 | 5,257 |

**Ohio Bureau of Workers' Compensation
Change in 1993 Premium Using
90% Credibility Table - Method 4
Premium Decrease Greater than 10%**

| <u>Premium Change</u> | | <u>Count of Employers</u> | |
|-----------------------|----------|---------------------------|--------------|
| | | <u>Non-Group</u> | <u>Group</u> |
| > | \$60,000 | 3 | - |
| \$50,000 | \$60,000 | 2 | - |
| \$30,000 | \$50,000 | 17 | - |
| \$20,000 | \$30,000 | 18 | - |
| \$10,000 | \$20,000 | 32 | - |
| \$7,500 | \$10,000 | 25 | - |
| \$5,500 | \$7,500 | 21 | - |
| \$4,000 | \$5,500 | 24 | - |
| \$3,000 | \$4,000 | 21 | - |
| \$2,500 | \$3,000 | 18 | - |
| \$2,000 | \$2,500 | 16 | - |
| \$1,000 | \$2,000 | 28 | - |
| \$500 | \$1,000 | 11 | - |
| \$100 | \$500 | 10 | - |
| <= | \$100 | 7 | - |
| Total | | 253 | - |