

**MASSACHUSETTS WORKERS' COMPENSATION
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December 7, 1994

On December 23, 1991, Governor Weld and the Massachusetts General Court enacted legislation reforming the workers' compensation system. With the passage of chapter 398 of the Acts of 1991, substantive, procedural and institutional changes were made to the workers' compensation system. As part of the reforms, reductions were made to the level and duration of benefits provided to injured workers to replace lost wages for temporary total (section 34) and partial disability (section 35).

In association with these benefit changes, the legislature directed the Advisory Council to "conduct a study of the economic impact of changes to the wage replacement rates for partial and temporary total benefits on workers, employers, and insurers." (MGL ch. 23E, sec. 17 (1991)). This report is the outcome of that directive.

The late date of the issuance of this report reflects the fact that data was and continues to be largely unavailable and inconclusive. The Advisory Council has explained to the members of the Joint Committee on Commerce and Labor on more than one occasion that producing this report was delayed because of problems in collecting and interpreting data. Nevertheless, we stated we would meet our legislative mandate to produce the study, albeit with limited findings.

The Advisory Council contracted with Tillinghast, an actuarial consulting firm, to compile a data base using information obtained from the Department of Industrial Accidents (DIA). DIA data is more timely than insurance industry data, it includes employers with all types of insurance arrangements (including self insureds and members of self insurance groups), and assuming DIA cooperation, its access seemed easier than approaching insurance carriers. After constructing the data base, Tillinghast interpreted the data and made conclusions about the system. The Council also engaged Dr. Peter Kozel, a professor at Babson College and President of KEE, Inc., an economic consulting company, to examine the effect that changes in the wage replacement rates, as well as changes in the Massachusetts economy, have had on the utilization of the system.

Tillinghast and KEE, Inc. made limited conclusions about the benefits changes and utilization of the system for periods preceding and succeeding the implementation of the Chapter 398 reforms. With the data that was collected, Tillinghast discovered that substantial portions of information were missing from the data base of claim records. This was due in large part to incomplete data submissions where some types of information were not consistently entered in the DIA's system. Moreover, the data does not entirely reflect the chapter 398 amendments since not enough time had elapsed for the new durations for benefits to run their course.

At our request, Tillinghast provided a list of variables the Advisory Council can use to produce periodic updates of this analysis. The Advisory Council will continue to monitor the effects of the current wage benefit levels and durations, and will periodically assess their impact on the workers, employers and insurers of Massachusetts as more data becomes available.

MASSACHUSETTS WORKERS COMPENSATION ADVISORY COUNCIL

ANALYSIS OF WAGE REPLACEMENT RATES

MASSACHUSETTS WORKERS
COMPENSATION ADVISORY COUNCIL

Analysis of Wage Replacement Rates

December 1994

Tillinghast

A Towers Perrin Company

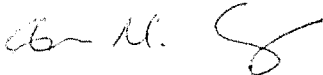
December 29, 1994

Mr. Matthew Chafe
Executive Director - Advisory Council
Commonwealth of Massachusetts
Department of Industrial Accidents
600 Washington Street
Boston, MA 02111

Dear Matt:

Enclosed, please find our analysis of wage replacement rates before and after the enactment of c.398. It has been a pleasure to work on this analysis for the Council. Please do not hesitate to call should you have any questions.

Sincerely,



Ann M. Conway, FCAS, MAAA
Consulting Actuary

AMC:jeq

MASSACHUSETTS WORKERS COMPENSATION
ADVISORY COUNCIL

Analysis of Wage Replacement Rates

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MASSACHUSETTS WORKERS COMPENSATION ADVISORY COUNCIL

Analysis of Wage Replacement Rates

EXECUTIVE SUMMARY

PURPOSE AND SCOPE

Tillinghast, a Towers Perrin company, was requested by the Massachusetts Workers Compensation Advisory Council (the Advisory Council) to develop an analysis of workers compensation wage replacement rates. The purpose of this study is to compare benefit utilization both before and after the enactment of Chapter 398 of the Acts of 1991 (c.398), which took effect on December 23, 1991.

DISTRIBUTION AND USE

We have prepared this report for the Advisory Council to allow it to meet its obligations under Chapter 398. We understand that copies of our report will be provided to the Secretary of Labor. Recipients of this report are advised that we are available to answer any questions regarding the report.

RELIANCES AND LIMITATIONS

In this review, we relied without verification or audit upon information supplied to us by the Department of Industrial Accidents (DIA). There are a significant number of limitations in the DIA database, which impacted the conclusions developed in our analysis. These limitations are discussed in more detail in the Data Issues and Data sections (see pages 5 and 16).

The following material presents a summary of our overall findings. Details of the calculations

and assumptions used to arrive at our findings are contained in the Analysis section and in the exhibits attached to this report. The exhibits should be considered an integral part of this report.

BACKGROUND

Chapter 398, which affects accidents subsequent to December 23, 1991, involved a significant number of revisions to workers compensation benefits. The most significant of these changes by benefit type are discussed in the following paragraphs.

1. Temporary Total (Section 34) - Key changes under this section include:

- the rate of compensation was reduced from two-thirds to sixty percent of the employee's wage, subject to the minimum and maximum provisions, which were unchanged.
- c.572 (the prior legislation) reflected a five-day waiting period, with a five-day retroactive period (i.e. if the incapacity extended for five or more days, benefits were paid back to the date of injury). Under c.398, this retroactive payment only applies for incapacity periods of 21 days or more; for claimants with shorter periods of incapacity, compensation is paid from the 6th day of incapacity.
- Temporary total duration was reduced from 260 weeks to 156 weeks. In addition, an aggregate duration (for temporary total and partial disability benefits) was imposed. This duration cap is generally 364 weeks. Workers with more severe injuries (e.g., a permanently life threatening physical condition) are subject to a 520-week aggregate duration.

2. **Permanent Total (Section 34A)** - c.572 incorporated a five-day waiting period with five days of retroactivity for permanent total benefits. Under c.398, these benefits are not paid until after temporary total and partial disability benefits have been exhausted. In addition, the cost of living adjustment (COLA) calculation was revised. However, given that the claimants analyzed in this study would not be eligible for a COLA until at least October 1, 1994, evaluating the impact of the COLA change at this time is beyond the scope of this analysis.

3. **Partial Disability (Section 35)** - The key changes under this section include:
 - a reduction in the compensation rate from $2/3$ of lost wage earning capacity to 60%.

 - a reduction in the maximum weekly benefit from the State Average Weekly Wage (SAWW) to 75% of the temporary total benefit, capped at the difference of twice the SAWW and post-injury weekly earnings.

 - a similar revision in the retroactive payment of benefits during the five-day waiting period as for temporary total claimants.

 - a reduction in the maximum duration from 600 weeks to either 260 weeks or 520 weeks, depending on the injury.

 - an imposition of an aggregate duration with temporary total benefits (see above).

 - The elimination of COLA benefits. As discussed above, the analysis of this provision is beyond the scope of this study, given that COLA's under this section begin the October 1st after three years after the date of injury.

During the late 1980's and the early 1990's the structure of the Massachusetts market changed significantly, as more employers became self-insurers. This risk financing alternative was attractive to many larger employees, who believed that it provided more potential to control workers compensation costs. This market expanded to include small employers, after self-insurance groups (SIG's) were approved. Self-insurers represent about 20% of the 1990/91 market and about 30% of the 1992/93 market.

DATA ISSUES

The data underlying this analysis was provided by the Massachusetts Department of Industrial Accidents. We reviewed experience prior to c.398 (from the 90/91 accident year, which runs from July 1, 1990 to June 30, 1991) and subsequent to c.398 (from the 92/93 accident year, which runs from July 1, 1992 to June 30, 1993). These periods were picked to coincide with DIA fiscal years and to avoid any distortions from the handling of injuries just prior to or subsequent to the implementation of c.398. A detailed description of the data used begins on page 16.

We note that there are a substantial number of limitations with respect to the DIA data. The most significant of these limitations include:

- Incomplete coding of wage data. About 80% of 92/93 claims and about 90% of 90/91 claims were missing this information.
- Missing activity dates (e.g., report dates, injury dates).
- Inaccurate entries (e.g., report dates prior to injury dates, unusually large weekly wages).
- Missing information on the section of the law under which benefits were received. These claims, which represent about 20% of the total, were not included in our analysis.

These limitations make it difficult to accurately measure the impact of c.398 with any degree of statistical significance. However, we elected to use this data for three reasons:

- It represents the entire universe of claims. Data reported by insurers would not include any self-insured employers' data.

- It is available on a more timely basis than insurance industry data.
- It is possible that insurer data would have similar or additional (such as combining data from various carriers) coding issues.

We also note that the demographic characteristics of the claimants are relatively similar for the two accident years (see Exhibit 8). For both periods the most common body part injured is backs (about 30% of total claims), while the most common injury type is sprains/strains (over 50% of total claims). This suggests that any observed changes in experience relate to the law revisions rather than to changes in the claimant characteristics. For example, if there were a significant change in the age of the average claimant, the claim frequency could change significantly without any change in the relevant statutes for the two periods.

FINDINGS

The next section of this report responds to the questions raised by the Advisory Council in the Request for Proposals (RFP). When possible, we have followed the format outlined in the RFP in our discussion.

1. **What impact do new wage replacement rates have on the number of claims filed for temporary total (Section 34) and partial (Section 35) benefits?**

Due to the limited availability of wage data, we can not directly measure the impact of wage replacement rates on the number of claims filed. Instead we compare claim frequencies (number of claims relative to payroll, in hundreds of dollars) for temporary and partial benefits prior to and subsequent to the enactment of c.398. We look at frequency, rather than total claim counts, to adjust for changes in exposure, of which payroll is one measure. For example, if payroll were to double from one period to the next and all other things remained unchanged, the total claim count would likely

double but the frequency would remain unchanged. The results of this analysis are shown in the following table.

Frequency by Section of the Law (per \$100 of Payroll)			
Section of the Law	Accident Year		% Change
	90/91	92/93	
34	.0000624	.0000579	- 7.2%
35	.0000065	.0000066	+ 1.5%

Subsequent to c.398, the frequency of temporary total claims decreased by about 7.2%, while the frequency of partial claims increased by 1.5%. This direction was observed in both the insured and self-insured data, although the relative levels of the change varied somewhat between the two market sectors (see Exhibit 1).

The changes expected from c.398 would include:

- elimination of some claims with short durations (length on benefit), due to the modification of the payment of benefits during the waiting period.
- a reduction in duration due to the imposition of the aggregate duration limitation.
- a decrease in claim frequency, due to the modification of the replacement rates.

The reduction in the temporary total frequency likely reflects both the modification of the payment of benefits during the waiting period and the change in wage replacement rates imposed by c.398, but the data available was too limited to measure its impact more directly. The increase in the partial frequency may be due to more rapid claims

processing on the part of the DIA, as we note that the elapsed time between the date of injury and the receipt of Section 35 benefits decreased significantly between 90/91 and 92/93 (see Exhibit 2, Sheet 2). It could also reflect an increase in the rate at which claimants apply for Section 35 benefits. Again, the data are too limited to measure this trend.

2. **What impact do new wage replacement rates have on the duration of claims for temporary total and partial benefits?**

The following table presents duration data (time on benefit) for temporary total and partial benefit claims for the two accident years.

Duration by Section of the Law (in months)			
Section of the Law	Accident Year		% Change
	90/91	92/93	
34	17.1	17.7	+ 3.3%
35	9.0	12.3	+ 36.7%

The above durations, which reflect both open and closed claims, are derived in Exhibit 3. Results are similar for both insurers and self-insurers. The results do not yet reflect the reduction in the aggregate durations imposed by c.398, since 92/93 claimants would not be affected by these provisions until at least December 1994.

Some points to consider in interpreting these results are as follows:

- The increase in the Section 35 duration may reflect an increase in the rate at which claims are processed by the DIA. Since both accident years are at comparable maturities, an increase in the rate at which claims move to permanent partial status (from temporary total status) could increase the apparent duration of claims under this section.

- The increase in the Section 34 duration is more than offset by the reduction in claim frequency for this section. This increase in duration, which is somewhat counterintuitive, may be affected by the limitations in the data with respect to coding (specifically dates and law sections)
- Relative to payroll, the change in Section 34 would more than offset the Section 35 experience. This is because Section 34 claims represent a much greater volume of claims than do the Section 35 claims.
- We were not able to directly evaluate the impact of the changes in the payment of benefits during the five-day waiting period due to limitations in the database. We also note that there were a significant number of claims that did not have sufficient information available to evaluate the duration on benefit.

3. What impact do the new rates have on the contestation of claims?

For purposes of this analysis, we consider contestation to occur when an insurer (or an employer for self-insured claims) files a notice to deny a claim. This can occur for a variety of reasons (e.g. if the insurer believes that the injury is not work related).

The following table presents contestation rates for both accident years 90/91 and 92/93.

Claims Contestation (% of claims) by Section of the Law			
Section of the Law	Accident Year		% Change
	90/91	92/93	
34	8.7%	5.9%	- 32.2%
34A	25.7	25.9	+ 0.8
35	24.2	19.9	- 17.8
Total	10.3%	7.4%	- 28.2%

The rate of contestation decreased substantially from accident year 90/91 to 92/93, for both Section 34 and 35 claims. This may be due, in part, to the decrease in the Section 34 claim frequency, as one reason for a reduction in claim frequency could be the elimination of some dubious claims which would be more likely to be contested. Also, the extension of the pay without prejudice period would reduce the contestation rate, as insurers would have a longer period to investigate a suspicious claim. We note that the contestation rates under all other sections (which include claims that could not be allocated to section) increased significantly (see Exhibit 4, Sheet 1). This suggests that insurers and self-insurers may have tried to eliminate claims under sections of the law which were not effected by c.398.

We also looked at reasons for claims contestation to see if there were any significant changes between the two accident years. The results, which are detailed in Exhibit 4, Sheet 2, are as follows:

Claims Contestation - Reasons for Action (% of contested claims)		
Reason	Accident Year	
	90/91	92/93
Injury not work related	22.0%	21.6%
No casual relationship	23.0	21.8
No injury	20.4	19.9
No medical proof	23.7	22.4
Other	10.9	14.3
Total	100.0%	100.0%

Overall, the distribution of the reasons for claims contestation is very stable between the two accident years.

4. Do the new partial and temporary total benefits have an impact upon application for permanent disability benefits?

To evaluate the impact of the c.398 changes, we looked at the following statistics:

- frequency of Section 34A claims
- lag from injury date to application for permanent total disability; and
- replacement ratios by section of the law. Replacement ratios are calculated by dividing an employee's weekly indemnity benefit by the employee's weekly wage. For example, an employee with a weekly benefit of \$300 and a weekly wage of \$500 would have a replacement ratio of 60% (.60 = 300/500).

The frequency of Section 34A claims for both insurers and self-insurers for the two accident years is as follows (see Exhibit 1).

Frequency of Section 34A Claims (per \$100 of payroll)	
Accident Year	
90/91	.0000006
92/93	.0000003
% Change	- 50%

Although the frequency for both insurers and self insurers decreased significantly, the reduction was more dramatic for self-insurers. The reduction in Section 34A claims is significant but it should be noted that these claims represent less than 1% of total claims. However, we would have expected this reduction to be more dramatic, since c.398 does not allow claimants to receive Section 34A benefits until Section 34 and 35 benefits have been exhausted.

We also attempted to measure the lag (in months) between the date of injury and the date of application for permanent total benefits but did not have sufficient data to evaluate this lag. Instead, we measured the difference in the date between the start of Section 34A benefits and the injury date (see Exhibit 2, Sheet 1). There is some indication that this lag has increased subsequent to c.398, but we also note that over 70% of claims for both accident years did not have sufficient data to measure the lag.

Exhibit 5 presents a distribution of benefits by wage levels by section of the law. We use this data to calculate average replacement ratios for each wage level. The results are developed separately for insurers and self-insurers.

Key observations are as follows:

- For Section 34 claims the average replacement ratio for the total market decreased 1.3%. The average replacement ratios for Section 34A claims

increased 12.6%, while the average Section 35 replacement ratio decreased 3.1%.

- The results presented above relate to the total market. Results for the insured and self-insured sectors differed somewhat from the overall result. This reflects sparse data rather than inherent differences in the two markets. We note that over 80% of claims did not have sufficient wage data to calculate replacement ratios.
- In general, replacement ratios decrease as the wage level increases. This is consistent with the imposition of statutory maximum benefits.

5. **What is the actual impact of new rates on claims experience?**

Based on the analysis presented this far, the major impact of the new rates on claims experience is as follows:

- Claim frequency for Section 34 claims is down slightly, while the Section 34A claim frequency decreased significantly.
- The elapsed time between the date of injury and the receipt of Section 34A benefits increased, while the elapsed time to receipt of Section 35 benefits decreased.
- Claim duration is up somewhat from the 90/91 year, while the rate of claim contestation decreased.
- Overall, replacement ratios for Section 34 and 35 claims decreased slightly from the 90/91 level, while the Section 34A replacement ratios increased.

We also looked at two other factors to evaluate the impact of c.398, reporting lags, and lump sum applications. Reporting lags (defined as the difference between the date

the claim was reported and the injury date) for claims reported within three months are as follows:

Reporting Lag (days) - Claims Reported within 3 Months			
Entity	Accident Year		
	90/91	92/93	% Change
Insurer	15.3	11.2	- 26.8%
Self-Insurer	11.6	8.4	- 27.6%
Total	14.4	10.3	- 28.5%

The results above do not include claims reported more than three months after the injury date because the coding for many of these claims appeared incorrect. For both insurers and self insurers, c.398 appeared to increase the speed at which claims were reported, although self insureds still report more rapidly to the DIA than insured employers. The acceleration in the reporting of claims is likely due to the extension of the pay without prejudice period (from 60 days to 180 days) and the DIA's improved collection efforts with respect to fines from employers failing to file first reports. Often, an increase in the speed at which claims are reported will result in an improvement in experience, since claims management and mitigation strategies can be implemented at an earlier stage.

Exhibit 7 presents detail on lump sums for the two accident periods. For accident year 92/93, the amount of time to receive a lump sum benefit (from the date of injury) increased by about 4% from the 90/91 level. The frequency of lump sum settlements (as a percentage of total claims) decreased from about 7.2% for the 90/91 year to about 5.5% for the 92/93 year. More importantly, the amount of the average lump sum settlement decreased by approximately 21% from accident year 90/91 to accident year 92/93. This decrease could contribute to an improvement in experience from the 90/91 to 92/93 period. It is likely that the reduction in benefit levels impacts this decrease but the available wage data is too sparse to measure its effect. The change

in replacement rates should effect lump sum settlements since a lump sum is essentially the present value of future benefits. Since both the amount of the future benefit and the payment duration is reduced, lump sum amounts under c.398 should generally be less than under the prior legislation.

6. What impact do the new rates have on the claims experience of self-insured employers?

As discussed in the previous section, the impact of c.398 on self-insured employers is generally similar to that of insured employers. In cases where the results for the two sectors differ (e.g., replacement ratios prior to and subsequent to c.398) it is likely that the observed differences may be due to limitations in the statistical credibility of the data.

7. What variables can the Advisory Council use to produce periodic updates of this analysis?

We have attached our data request to the DIA as Exhibit 9. All of the data that the Advisory Council would need to produce updates of this analysis could be captured in the DIA's current reporting, if the data were coded completely and reviewed for reasonableness. The biggest deficiencies in coding relate to wage levels and activity dates. As noted previously, over 80% of claims do not have wage information. This severely limits any conclusions that can be drawn with respect to the impact of the change in replacement rates mandated under c.398. Missing activity dates also make it difficult to accurately measure the impact of various c.398 provisions, such as revised waiting periods and benefit durations.

MASSACHUSETTS WORKERS COMPENSATION ADVISORY COUNCIL

Analysis of Wage Replacement Rates

ANALYSIS

This section begins with a description of the data underlying our analysis. We then present a description of each of the exhibits included in this report.

DATA

The data underlying this analysis was provided by the Massachusetts Department of Industrial Accidents (DIA). It includes all accidents with an injury date of July 1, 1990 to June 30, 1991 (accident year 90/91, which is prior to the enactment of c.398) and all accidents with an injury date of July 1, 1992 to June 30, 1993 (accident year 92/93, which is subsequent to the enactment of c.398). The database was provided in tape format, and included all transactions through May 5, 1994. To make both accident years' data have an equivalent maturity, we censored the 90/91 data to exclude all transactions subsequent to May 5, 1992 (or eleven months after the end of the fiscal year).

We relied on DIA data in this analysis for three reasons.

- this data is more comprehensive than insurers' data, since it comprises all employers
- the DIA data is compiled by the section of the law under which injured workers receive benefits, which is better suited to this analysis than insurer data, which is compiled using national injury type definitions
- the DIA data is developed on a more timely basis than insurer data

The DIA uses Diameter, a relational database, for its data processing requirements. Data from the various forms provided to the DIA are entered into this system. These forms report the various events that occur on an individual claim. For example, Form 101, Employer's First Report of Injury or Fatality, is filed by the employer when an employee is injured. If the employer does not complete this form, an employee can file Form 110 (Employee's Claim). Other events that occur through the life of a claim, such as an insurer's notification of denial or a request for a lump sum conference, are reported on forms (104 and 116, respectively) and entered into the Diameter system. This system produces data for tracking and scheduling cases and statistical reports for a variety of users. Data reported on the various forms (such as injury date) was extracted from the Diameter database for use in our analysis.

We note that the DIA compiles the data as it is entered on the various forms submitted to the agency. Due to staffing constraints, DIA employees generally do not correct potentially erroneous data nor do they complete incomplete submissions. For that reason, a significant number of records in the database are missing key elements (e.g., report date, weekly wage). In our analysis, we attempted to maximize the information available (e.g., using self-insurance status from a subsequent form if it were not included in the first report of injury). However, we did not approximate wage data from benefit information, since that would distort the results of the analysis.

The DIA data is compiled by event codes; each form entered for a particular claim generates an event code (e.g., a claim with a first report of injury and an agreement to compensate will generate two event codes). For both years, the databases included approximately 200,000 events. The total number of claims for 92/93 was approximately 25% less than for 90/91. This suggests that the processing time on the part of the DIA accelerated as the resolution of a claim typically generates multiple event codes (e.g., conference, hearing, agreement to compensation). The changes in the DIA's processing has a substantial effect on the results of our analyses. However, we do not have sufficient data to quantify the impact of these changes.

The DIA database is coded by section of the law. A claim can have multiple law section codes. This can arise as a claimant's benefit status changes (e.g., moving from temporary total to partial benefits) or if a claimant receives multiple payments (e.g., attorney fees and indemnity benefits). For purposes of this report, we confined our analysis to benefits received under three sections of the law - Section 34 (temporary total), Section 34A (permanent total) and Section 35 (permanent partial). This focus was dictated by the Advisory Council's RFP. We allocated claims to section based on the most recent event code. We also note that a single claim can generate multiple event codes under the same section of the law (e.g., if benefits are re-computed). For purposes of our analysis, we treated these multiple event codes as a single claim. In addition, about 20% of claims were missing section of the law codes.

Data is also compiled by incident, not by worker. Thus, a worker with multiple claims (as defined by date of accident) would be counted multiple times in the compilation. This approach is consistent with the normal industry measure of claim frequency.

Accident date was one of the data items that we used to consolidate multiple events that related to a single claim. To the extent that this item was not coded correctly on each individual form, this would distort the claim count.

EXHIBITS

The following section describes each of the exhibits, beginning with Exhibit 1.

Exhibit 1 - Distribution of Claimants and Frequency by Section of the Law

The top half of this exhibit presents a distribution of claimants by section of the law for the three sections analyzed in this study (34 - Temporary Total, 34A - Permanent Total and 35 - Partial Disability). The bottom part of this exhibit illustrates claim frequencies, which are calculated by dividing total claims by payroll (in hundreds of dollars), for each section.

Exhibit 2 - Lag From Injury Date Until Start of Benefits

In this exhibit, we show lags (difference between the start of benefits and the date of injury) for both Section 34A and 35 claims. Average lags are calculated using the distribution by lag and the midpoint of the lag intervals. We note that the conclusions that can be drawn from this analysis are limited, given the volume of claims for which insufficient data was available to determine these lags (coded as N/A in the exhibits).

Exhibit 3 - Duration on Benefits

We show duration on benefit separately for open and closed claims in this exhibit. Closed claims are defined as claims for which benefits were terminated as of the evaluation dates, (May 92 for 90/91 claims and May 94 for 92/93 claims), while open claims are those for which benefits were ongoing as of the evaluation dates. Average durations are calculated for each cohort using the distribution by duration and the midpoint of the duration intervals. Again, we note that the relatively large number of claims for which durations could not be calculated limits the reliance which can be placed on these results.

Exhibit 4 - Claims Contestation

Sheet 1 of this exhibit develops a distribution of contested claims by section of the law. We also calculate the percentage of claims contested by dividing the number of contested claims by section by the total number of claims by section. In Sheet 2 of this exhibit, we develop

distributions of the reasons for claims contestation for both accident years.

Exhibit 5 - Distribution of Benefits by Wage Level

This exhibit presents distributions of benefits by wage level for each section of the law. Sheet 4 of this exhibit details the calculation of replacement ratios (average benefit divided by average wage) for each cell. This grid of replacement ratios is used along with the distributions by accident year to calculate average replacement ratios. We note that over 80% of claims do not have sufficient data to calculate replacement ratios, which limits the reliance that can be placed on these results.

Exhibit 6 - Reporting Lags

This exhibit presents distributions of reporting lags (the difference between the report date and the injury date) for insurers and self-insurers. We use these distributions and the midpoints of each interval to calculate average lags in this exhibit. We also develop average lags excluding claims reported over three months after the injury date because the coding on a number of these claims looked unusual.

Exhibit 7 - Distribution of Lump Sum Payment Lags

In this exhibit, we calculate the average lag time (from the date of injury) to the receipt of lump sum benefits. We also calculate average lump sum awards and lump sum frequency (as a percentage of total claims) for both accident years. In developing the average lump sum award, we combine lump sum amounts for claimants receiving multiple lump sum awards.

Exhibit 8 - Demographic Analysis

As part of our analysis, we also reviewed the demographics of the sample data. Although this was not specifically requested in the Request for Proposals (RFP), we perform this analysis

to ensure that changes in claim activity more likely reflect the impact of the law reform, rather than changes in the claimant characteristics (e.g., sex, age). To do this, we look at six demographic characteristics of the claimant population:

- sex
- age
- number of dependents
- weekly wage
- body part injured
- nature of injury

Details on each of these items is as follows:

Sex - The sex distribution for both accident years is quite similar in that approximately 55% of claimants are male, while nearly 30% of claimants are female. Gender is not specified for approximately 15% of claimants (see Exhibit 8, Sheet 1).

Age - Exhibit 8, Sheet 2 presents a breakdown of the claimants by age. The average age of 90/91 claimants is 40.7 years, which is very close to the average age of the 92/93 claimants (39.4 years). Claimants of unknown age represent approximately 20% of the 90/91 population and about 10% of the 92/93 sample.

Number of Dependents - For both accident years, over 70% of claimants have no dependents, while approximately 10% have one dependent. The average number of dependents is slightly lower for the 90/91 year, but this difference is not significant (see Exhibit 8, Sheet 3).

Weekly Wage - Exhibit 8, Sheet 4 presents a distribution of weekly wages for all claims where this information was available. We note that this cohort represents about 8% of 90/91 claims and about 18% of 92/93 claims, due to limitations in the data reported on the forms submitted to the DIA. We also note that the quality of some of the information provided to the DIA is questionable, given that there are a number of claimants with weekly wages in excess of \$5,000. The average weekly wage for the 90/91 year, excluding claimants with

wages in excess of \$999 is \$437.90, while the average weekly wage for the 92/93 year on the same basis is \$443.20.

Body Part Injured - Claimant distributions by body part injured are shown in Exhibit 8, Sheet 5. We note that over 20% of total claims have more than one body part identified in this field (the first injury report allows for up to three items to be coded). For both years, backs represent the most common injury (approximately 30% of the total). The other more common injuries are:

Body Part	Approximate 90/91 - 92/93 Percentage of Injuries
Fingers	7%
Knees	6%
Shoulders	6%
Neck/Cervical Vertebrae	5%
Wrists	4%
Hands	4%

Nature of Injury - Sheet 6 of Exhibit 8 details the distributions by nature of injury. Similar to the coding for body part injured, about 10% of the claims have multiple coding, since the first report form allows for up to three entries in this field. For both years, sprains/strains represent over 50% of the total, while contusions, crushing and bruises represent over 10% of the injuries.

DEFINITIONS

This section presents definitions of some of the terms used in our analysis.

Accident Date - date of injury.

Accident Year - includes all claims with an accident date during the specified period. For example, accident year 1990/91 includes all claims with accident dates between July 1, 1990 and June 30, 1991.

Aggregate Duration - combined durations for two or more benefit types (e.g. temporary total and permanent partial).

Claim - a reported injury for an employee on a specific date. A claimant may not necessarily receive benefits. An employee injured on two different dates would generate two claims.

Contestation - an insurer's (or employer's, in the case of a self-insurer) request to discontinue or deny benefits.

Duration - amount of time on benefit, measured from the date of injury.

Event - a particular activity associated with a claim. For example, an application for a lump sum is considered to be an event. An individual claim can have more than one event.

Event Code - coding within Diameter to define an event. For example, AC is the event code for an agreement to compensate.

Frequency - number of claims relative to payroll in hundreds of dollars.

Insured Employer - an employer whose workers compensation exposure is financed through the purchase of insurance in either the voluntary market or through the assigned risk pool; includes retrospectively-rated and deductible policies.

Lag - difference (in months) between the start of benefits and the date of injury.

Maturity - the difference (in months) between the evaluation date and the average accident date, plus six.

Replacement Rates - the statutorily defined benefit, without consideration of the statutory maximum/minimum. For example, under c.398 Section 34 benefits are 60% of the pre-injury wage, so the replacement rate is 60%.

Replacement Ratios - calculated by dividing an employee's weekly indemnity benefit by the employee's weekly wage, based on data reported by the DIA. For example, an employee with a weekly benefit of \$300 and a weekly wage of \$500 would have a replacement ratio of 60% ($.60 = 300/500$).

Reporting Lag - difference (in months) between the date a claim is reported and the date of injury.

Retroactive Period - the period for which benefits are paid retroactively, if the disability extends to a certain duration. For example c.572 reflected a five-day waiting period, with a five-day retroactive period (i.e. if the incapacity extended for five or more days, benefits were paid back to the date of injury). Under c.398, this retroactive payment only applies for incapacity periods of 21 days or more; for claimants with shorter periods of incapacity, compensation is paid from the 6th day of incapacity.

Section of Law - section of the law under which benefits are paid, e.g. Section 34.

Self-Insured Employer - an employer whose workers compensation exposure is financed through either individual or group self-insurance.

Statutory Maximum/Minimum - the maximum and minimum indemnity benefits which are 100% and 20%, respectively, of the statewide average weekly wage.

**MASSACHUSETTS WORKERS COMPENSATION
ADVISORY COUNCIL**

Analysis of Wage Replacement Rates

INDEX OF EXHIBITS

1. Distribution of Claimants and Frequency by Section of the Law
2. Lag from Injury Date Until Start of Benefits
3. Duration on Benefit
4. Claims Contestation
5. Distribution of Benefits by Wage Level
6. Reporting Lags
7. Distribution of Lump Sum Payment Lag
8. Demographic Analysis
9. Data Request

Distribution of Claimants by Section of Law - Total

Section of the Law	Accident Year	
	90/91	92/93
34	89.8%	89.3%
34A	0.9%	0.5%
35	9.3%	10.2%
Total	100.0%	100.0%

Frequency by Section of Law - Total

Section of the Law	Accident Year	
	90/91	92/93
34	0.0000624	0.0000579
34A	0.0000006	0.0000003
35	0.0000065	0.0000066
Total	0.0000695	0.0000649

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Claimants by Section of Law - Insurers

Section of the Law	Accident Year	
	90/91	92/93
34	88.9%	88.3%
34A	1.0%	0.5%
35	10.1%	11.2%
Total	100.0%	100.0%

Frequency by Section of Law - Insurers

Section of the Law	Accident Year	
	90/91	92/93
34	0.0000601	0.0000555
34A	0.0000007	0.0000003
35	0.0000068	0.0000070
Total	0.0000676	0.0000629

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Claimants by Section of Law - Self-Insurers

Section of the Law	Accident Year	
	90/91	92/93
34	92.6%	91.6%
34A	0.7%	0.3%
35	6.7%	8.1%
Total	100.0%	100.0%

Frequency by Section of Law - Self-Insurers

Section of the Law	Accident Year	
	90/91	92/93
34	0.0000706	0.0000639
34A	0.0000005	0.0000002
35	0.0000051	0.0000056
Total	0.0000763	0.0000697

Notes:

Based on information provided by the Division of Industrial Accidents.

Massachusetts Workers Compensation Advisory Council
Lag from Injury Date Until the Start of Benefits - Section 34A

Insured Claims		
Lag (months)	Accident Year	
	1990/91	1992/93
1	6.5%	19.5%
2	1.2%	5.2%
3	0.6%	1.1%
4	0.6%	1.1%
5	0.0%	0.6%
6	0.3%	0.6%
> 6	0.0%	2.9%
N/A	90.9%	69.0%
Total	100.0%	100.0%
Average	1.61	2.54

Self-Insured Claims		
Lag (months)	Accident Year	
	1990/91	1992/93
1	16.9%	14.3%
2	5.2%	7.1%
3	1.3%	2.4%
4	0.0%	0.0%
5	0.0%	0.0%
6	0.0%	0.0%
> 6	0.0%	0.0%
N/A	76.6%	76.2%
Total	100.0%	100.0%
Average	1.33	1.50

Total		
Lag (months)	Accident Year	
	1990/91	1992/93
1	8.4%	18.5%
2	1.9%	5.6%
3	0.7%	1.4%
4	0.5%	0.9%
5	0.0%	0.5%
6	0.2%	0.5%
> 6	0.0%	2.3%
N/A	88.2%	70.4%
Total	100.0%	100.0%
Average	1.51	2.38

Notes:
Based on information provided by the Division of Industrial Accidents.

Lag (months)	Total	
	Accident Year	
	1990/91	1992/93
1	6.9%	14.2%
2	2.9%	4.7%
3	2.4%	3.3%
4	1.8%	2.7%
5	1.8%	2.5%
6	1.2%	2.7%
7	1.0%	2.6%
8	1.0%	1.4%
9	0.7%	1.2%
10	0.9%	1.1%
11	0.9%	1.4%
12	1.1%	1.1%
13	1.6%	0.9%
14	1.6%	0.9%
15	1.4%	0.6%
16	1.3%	0.6%
17	1.1%	0.4%
18	1.3%	0.2%
19	1.1%	0.3%
20	0.8%	0.2%
21	0.3%	0.2%
22	0.4%	0.1%
23	0.2%	0.0%
N/A	66.2%	56.7%
Total	100.0%	100.0%
Average	8.34	5.15

Notes:
Based on information provided by the Division of Industrial Accidents.

Massachusetts Workers Compensation Advisory Council
Lag from Injury Date Until the Start of Benefits - Section 35

Lag (months)	Insured Claims	
	Accident Year	
	1990/91	1992/93
1	6.6%	14.1%
2	2.9%	4.2%
3	2.1%	3.0%
4	1.7%	2.6%
5	1.6%	2.5%
6	1.2%	2.8%
7	0.9%	2.6%
8	0.8%	1.3%
9	0.7%	1.1%
10	0.9%	1.0%
11	0.7%	1.4%
12	1.0%	1.2%
13	1.5%	0.9%
14	1.6%	1.0%
15	1.4%	0.7%
16	1.2%	0.5%
17	1.0%	0.4%
18	1.3%	0.2%
19	1.2%	0.3%
20	0.8%	0.1%
21	0.3%	0.2%
22	0.4%	0.1%
23	0.2%	0.1%
N/A	68.0%	57.7%
Total	100.0%	100.0%
Average	8.40	5.22

Notes:
Based on information provided by the Division of Industrial Accidents.

Self- Insured Claims

Lag (months)	Accident Year	
	1990/91	1992/93
1	8.2%	14.5%
2	3.0%	6.2%
3	3.7%	4.4%
4	2.2%	3.0%
5	2.9%	2.4%
6	1.4%	2.2%
7	1.3%	2.5%
8	1.6%	1.8%
9	0.9%	1.5%
10	0.7%	1.5%
11	1.4%	1.3%
12	2.0%	0.8%
13	2.1%	1.0%
14	1.7%	0.9%
15	1.7%	0.4%
16	2.1%	0.8%
17	1.4%	0.4%
18	1.2%	0.3%
19	0.9%	0.4%
20	0.8%	0.3%
21	0.5%	0.2%
22	0.4%	0.0%
23	0.0%	0.0%
N/A	57.9%	53.6%
Total	100.0%	100.0%
Average	8.11	4.96

Notes:

Based on information provided by the Division of Industrial Accidents.

Duration on Benefit - Section 34

Total

Accident Year

Duration (months)	1990/91			1992/93		
	Closed	Open	Total	Closed	Open	Total
0-1	48.0%	0.0%	1.5%	36.2%	0.0%	0.7%
1-2	15.7%	0.1%	0.6%	16.5%	0.0%	0.3%
2-3	10.2%	0.1%	0.4%	11.1%	0.0%	0.2%
3-4	6.4%	0.1%	0.3%	5.4%	0.0%	0.1%
4-5	5.7%	0.1%	0.3%	4.9%	0.0%	0.1%
5-6	2.7%	0.1%	0.2%	6.0%	0.1%	0.2%
6-7	2.6%	0.3%	0.3%	3.4%	0.2%	0.3%
7-8	1.6%	0.2%	0.2%	3.7%	0.4%	0.4%
8-9	1.5%	0.3%	0.3%	3.0%	0.5%	0.5%
9-10	0.8%	1.0%	0.8%	3.2%	1.1%	1.1%
10-11	1.0%	5.2%	4.1%	0.9%	5.4%	4.8%
11-12	1.1%	11.3%	8.9%	1.6%	7.8%	7.0%
12-13	0.8%	9.1%	7.2%	1.0%	7.1%	6.4%
13-14	0.2%	8.1%	6.3%	1.1%	6.8%	6.0%
14-15	0.6%	8.5%	6.7%	0.2%	8.4%	7.5%
15-16	0.4%	6.8%	5.3%	0.2%	7.0%	6.2%
16-17	0.2%	6.8%	5.3%	0.5%	7.6%	6.7%
17-18	0.0%	5.2%	4.1%	0.4%	6.7%	6.0%
18-19	0.1%	5.2%	4.0%	0.4%	7.2%	6.4%
19-20	0.1%	6.6%	5.2%	0.1%	7.4%	6.6%
20-21	0.0%	6.6%	5.2%	0.1%	8.2%	7.3%
21-22	0.0%	7.4%	5.8%	0.0%	7.5%	6.6%
>22	0.3%	10.8%	8.5%	0.0%	10.4%	9.3%
N/A	0.0%	0.0%	18.5%	0.0%	0.0%	9.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average	2.54	17.64	17.08	3.40	18.04	17.72

Notes:

Based on information provided by the Division of Industrial Accidents.

Duration on Benefit - Section 34

Insured Claims

Duration (months)	Accident Year					
	1990/91			1992/93		
	Closed	Open	Total	Closed	Open	Total
0-1	50.4%	0.0%	1.4%	31.4%	0.0%	0.5%
1-2	13.6%	0.1%	0.5%	13.9%	0.0%	0.2%
2-3	9.6%	0.1%	0.3%	13.1%	0.0%	0.2%
3-4	6.6%	0.1%	0.3%	5.5%	0.0%	0.1%
4-5	6.4%	0.2%	0.3%	5.5%	0.0%	0.1%
5-6	2.8%	0.1%	0.2%	7.6%	0.1%	0.2%
6-7	1.9%	0.3%	0.3%	3.9%	0.2%	0.3%
7-8	1.9%	0.3%	0.3%	3.9%	0.4%	0.4%
8-9	1.2%	0.3%	0.3%	3.7%	0.6%	0.6%
9-10	0.9%	1.1%	0.9%	3.3%	1.2%	1.1%
10-11	0.8%	5.4%	4.2%	1.4%	5.1%	4.5%
11-12	1.2%	11.2%	8.7%	2.3%	7.8%	6.9%
12-13	0.6%	9.1%	7.0%	1.2%	7.0%	6.2%
13-14	0.2%	8.1%	6.3%	1.4%	6.7%	5.9%
14-15	0.5%	8.3%	6.5%	0.4%	8.2%	7.2%
15-16	0.5%	6.7%	5.2%	0.4%	7.1%	6.2%
16-17	0.4%	6.7%	5.2%	0.4%	7.5%	6.6%
17-18	0.0%	5.2%	4.1%	0.0%	6.5%	5.7%
18-19	0.1%	5.0%	3.9%	0.4%	7.2%	6.4%
19-20	0.0%	6.5%	5.1%	0.0%	7.5%	6.6%
20-21	0.0%	6.8%	5.2%	0.2%	8.2%	7.3%
21-22	0.0%	7.4%	5.7%	0.0%	7.9%	6.9%
>22	0.5%	10.9%	8.5%	0.0%	10.8%	9.5%
N/A	0.0%	0.0%	19.9%	0.0%	0.0%	10.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average	2.54	17.66	17.14	3.79	18.16	17.88

Notes:

Based on information provided by the Division of Industrial Accidents.

Duration on Benefit - Section 34

Self- Insured Claims

Duration (months)	Accident Year					
	1990/91			1992/93		
	Closed	Open	Total	Closed	Open	Total
0-1	42.9%	0.1%	1.7%	43.8%	0.0%	1.1%
1-2	20.1%	0.1%	0.9%	20.4%	0.0%	0.5%
2-3	11.4%	0.1%	0.5%	8.0%	0.0%	0.2%
3-4	6.0%	0.1%	0.3%	5.1%	0.0%	0.1%
4-5	4.2%	0.1%	0.2%	3.8%	0.0%	0.1%
5-6	2.5%	0.1%	0.2%	3.5%	0.1%	0.2%
6-7	4.2%	0.3%	0.4%	2.6%	0.2%	0.2%
7-8	1.0%	0.2%	0.2%	3.5%	0.3%	0.3%
8-9	2.2%	0.3%	0.3%	1.9%	0.5%	0.5%
9-10	0.5%	0.8%	0.7%	3.2%	1.0%	1.0%
10-11	1.5%	4.5%	3.8%	0.0%	6.2%	5.6%
11-12	1.0%	11.8%	9.7%	0.6%	8.0%	7.2%
12-13	1.2%	9.2%	7.6%	0.6%	7.5%	6.8%
13-14	0.0%	7.9%	6.4%	0.6%	6.9%	6.3%
14-15	0.7%	8.9%	7.3%	0.0%	9.0%	8.1%
15-16	0.2%	7.1%	5.8%	0.0%	6.9%	6.3%
16-17	0.0%	7.1%	5.8%	0.6%	7.8%	7.0%
17-18	0.0%	5.2%	4.2%	1.0%	7.1%	6.5%
18-19	0.0%	5.7%	4.6%	0.3%	7.0%	6.4%
19-20	0.2%	6.8%	5.6%	0.3%	7.3%	6.6%
20-21	0.0%	6.2%	5.0%	0.0%	8.1%	7.3%
21-22	0.0%	7.2%	5.9%	0.0%	6.6%	5.9%
>22	0.0%	10.3%	8.4%	0.0%	9.6%	8.7%
N/A	0.0%	0.0%	14.5%	0.0%	0.0%	7.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average	2.54	17.57	16.90	2.80	17.77	17.38

Notes:

Based on information provided by the Division of Industrial Accidents.

Duration on Benefit - Section 34A

Duration (months)	Total					
	Accident Year					
	1990/91			1992/93		
	Closed	Open	Total	Closed	Open	Total
0-1	35.3%	1.4%	1.7%	85.7%	0.0%	2.8%
1-2	5.9%	0.0%	0.2%	14.3%	0.0%	0.5%
2-3	17.6%	0.0%	0.7%	0.0%	0.0%	0.0%
3-4	17.6%	0.0%	0.7%	0.0%	0.0%	0.0%
4-5	5.9%	0.0%	0.2%	0.0%	0.0%	0.0%
5-6	0.0%	0.0%	0.0%	0.0%	1.3%	0.5%
6-7	17.6%	1.4%	1.0%	0.0%	2.6%	0.9%
7-8	0.0%	1.4%	0.2%	0.0%	1.3%	0.5%
8-9	0.0%	2.8%	0.5%	0.0%	1.3%	0.5%
9-10	0.0%	1.4%	0.2%	0.0%	0.0%	0.0%
10-11	0.0%	4.2%	0.7%	0.0%	1.3%	0.5%
11-12	0.0%	2.8%	0.5%	0.0%	0.0%	0.0%
12-13	0.0%	5.6%	1.0%	0.0%	2.6%	0.9%
13-14	0.0%	8.5%	1.4%	0.0%	1.3%	0.5%
14-15	0.0%	11.3%	1.9%	0.0%	3.9%	1.4%
15-16	0.0%	8.5%	1.4%	0.0%	13.0%	4.6%
16-17	0.0%	2.8%	0.5%	0.0%	6.5%	2.3%
17-18	0.0%	7.0%	1.2%	0.0%	3.9%	1.4%
18-19	0.0%	1.4%	0.2%	0.0%	3.9%	1.4%
19-20	0.0%	2.8%	0.5%	0.0%	5.2%	1.9%
20-21	0.0%	4.2%	0.7%	0.0%	32.5%	11.6%
21-22	0.0%	5.6%	1.0%	0.0%	19.5%	6.9%
>22	0.0%	26.8%	4.6%	0.0%	0.0%	0.0%
N/A	0.0%	0.0%	78.8%	0.0%	0.0%	61.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average	2.74	20.35	16.95	0.64	17.99	16.55

Notes:

Based on information provided by the Division of Industrial Accidents.

Duration on Benefit - Section 34A

Insured Claims

Duration (months)	Accident Year					
	1990/91			1992/93		
	Closed	Open	Total	Closed	Open	Total
0-1	41.7%	1.9%	1.8%	85.7%	0.0%	3.4%
1-2	8.3%	0.0%	0.3%	14.3%	0.0%	0.6%
2-3	8.3%	0.0%	0.3%	0.0%	0.0%	0.0%
3-4	16.7%	0.0%	0.6%	0.0%	0.0%	0.0%
4-5	8.3%	0.0%	0.3%	0.0%	0.0%	0.0%
5-6	0.0%	0.0%	0.0%	0.0%	1.5%	0.6%
6-7	16.7%	1.9%	0.9%	0.0%	3.1%	1.1%
7-8	0.0%	1.9%	0.3%	0.0%	1.5%	0.6%
8-9	0.0%	3.7%	0.6%	0.0%	0.0%	0.0%
9-10	0.0%	1.9%	0.3%	0.0%	0.0%	0.0%
10-11	0.0%	3.7%	0.6%	0.0%	1.5%	0.6%
11-12	0.0%	3.7%	0.6%	0.0%	0.0%	0.0%
12-13	0.0%	5.6%	0.9%	0.0%	3.1%	1.1%
13-14	0.0%	9.3%	1.5%	0.0%	1.5%	0.6%
14-15	0.0%	11.1%	1.8%	0.0%	4.6%	1.7%
15-16	0.0%	9.3%	1.5%	0.0%	13.8%	5.2%
16-17	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
17-18	0.0%	3.7%	0.6%	0.0%	3.1%	1.1%
18-19	0.0%	0.0%	0.0%	0.0%	3.1%	1.1%
19-20	0.0%	1.9%	0.3%	0.0%	4.6%	1.7%
20-21	0.0%	3.7%	0.6%	0.0%	36.9%	13.8%
21-22	0.0%	1.9%	0.3%	0.0%	21.5%	8.0%
>22	0.0%	35.2%	5.6%	0.0%	0.0%	0.0%
N/A	0.0%	0.0%	80.5%	0.0%	0.0%	58.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average	2.58	21.40	17.98	0.64	18.18	16.47

Notes:

Based on information provided by the Division of Industrial Accidents.

Duration on Benefit - Section 34A

Self- Insured Claims

Duration (months)	Accident Year					
	1990/91			1992/93		
	Closed	Open	Total	Closed	Open	Total
0-1	20.0%	0.0%	1.3%	0.0%	0.0%	0.0%
1-2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2-3	40.0%	0.0%	2.6%	0.0%	0.0%	0.0%
3-4	20.0%	0.0%	1.3%	0.0%	0.0%	0.0%
4-5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5-6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6-7	20.0%	0.0%	1.3%	0.0%	0.0%	0.0%
7-8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8-9	0.0%	0.0%	0.0%	0.0%	8.3%	2.4%
9-10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10-11	0.0%	5.9%	1.3%	0.0%	0.0%	0.0%
11-12	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
12-13	0.0%	5.9%	1.3%	0.0%	0.0%	0.0%
13-14	0.0%	5.9%	1.3%	0.0%	0.0%	0.0%
14-15	0.0%	11.8%	2.6%	0.0%	0.0%	0.0%
15-16	0.0%	5.9%	1.3%	0.0%	8.3%	2.4%
16-17	0.0%	11.8%	2.6%	0.0%	41.7%	11.9%
17-18	0.0%	17.6%	3.9%	0.0%	8.3%	2.4%
18-19	0.0%	5.9%	1.3%	0.0%	8.3%	2.4%
19-20	0.0%	5.9%	1.3%	0.0%	8.3%	2.4%
20-21	0.0%	5.9%	1.3%	0.0%	8.3%	2.4%
21-22	0.0%	17.6%	3.9%	0.0%	8.3%	2.4%
>22	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
N/A	0.0%	0.0%	71.4%	0.0%	0.0%	71.4%
Total	100.0%	100.0%	100.0%	0.0%	100.0%	100.0%
Average	3.10	17.03	13.86	0.00	17.00	17.00

Notes:

Based on information provided by the Division of Industrial Accidents.

Duration on Benefit - Section 35

Total

Accident Year

Duration (months)	1990/91			1992/93		
	Closed	Open	Total	Closed	Open	Total
0-1	13.5%	13.0%	7.4%	13.5%	0.9%	1.7%
1-2	12.7%	4.9%	3.5%	17.9%	1.7%	2.5%
2-3	9.5%	5.5%	3.5%	16.7%	1.2%	2.1%
3-4	10.6%	4.7%	3.2%	14.0%	1.8%	2.2%
4-5	9.0%	3.8%	2.6%	9.9%	2.4%	2.2%
5-6	9.0%	5.0%	3.2%	5.8%	3.5%	2.4%
6-7	6.6%	3.8%	2.4%	8.7%	3.3%	2.5%
7-8	6.9%	2.5%	1.8%	3.1%	3.5%	2.2%
8-9	7.1%	4.4%	2.7%	3.1%	4.4%	2.7%
9-10	3.4%	3.8%	2.1%	2.4%	4.9%	2.9%
10-11	4.0%	3.8%	2.2%	1.7%	6.9%	3.9%
11-12	2.9%	7.5%	3.9%	1.0%	6.8%	3.7%
12-13	2.4%	5.9%	3.0%	0.5%	7.2%	3.9%
13-14	0.8%	5.9%	2.9%	0.5%	7.6%	4.2%
14-15	0.5%	5.4%	2.6%	0.5%	6.7%	3.7%
15-16	0.5%	3.4%	1.7%	0.2%	6.3%	3.4%
16-17	0.5%	3.3%	1.6%	0.5%	6.4%	3.5%
17-18	0.3%	3.0%	1.4%	0.0%	4.2%	2.3%
18-19	0.0%	2.3%	1.1%	0.0%	3.9%	2.1%
19-20	0.0%	2.0%	1.0%	0.0%	3.9%	2.1%
20-21	0.0%	2.0%	1.0%	0.0%	3.9%	2.1%
21-22	0.0%	2.1%	1.0%	0.0%	3.9%	2.1%
>22	0.0%	2.2%	1.0%	0.0%	4.5%	2.4%
N/A	0.0%	0.0%	43.1%	0.0%	0.0%	37.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average	5.08	9.67	8.96	3.91	13.67	12.30

Notes:

Based on information provided by the Division of Industrial Accidents.

Duration on Benefit - Section 35

Insured Claims

Duration (months)	Accident Year					
	1990/91			1992/93		
	Closed	Open	Total	Closed	Open	Total
0-1	12.3%	13.2%	7.3%	10.9%	1.0%	1.5%
1-2	13.6%	5.1%	3.6%	15.8%	2.0%	2.5%
2-3	9.3%	5.7%	3.5%	18.3%	1.2%	2.3%
3-4	10.6%	5.1%	3.3%	16.1%	1.9%	2.4%
4-5	8.9%	3.8%	2.5%	10.2%	2.7%	2.4%
5-6	8.9%	5.1%	3.2%	5.6%	3.9%	2.6%
6-7	6.3%	3.7%	2.3%	9.3%	3.4%	2.6%
7-8	7.9%	2.8%	2.0%	4.0%	3.2%	2.0%
8-9	6.3%	4.1%	2.5%	2.5%	4.6%	2.7%
9-10	4.0%	3.8%	2.1%	2.8%	4.8%	2.8%
10-11	3.6%	3.8%	2.1%	1.2%	6.4%	3.5%
11-12	3.0%	6.9%	3.5%	0.9%	6.8%	3.7%
12-13	2.3%	5.8%	2.9%	0.3%	7.4%	4.0%
13-14	1.0%	5.9%	2.9%	0.3%	7.5%	4.0%
14-15	0.7%	5.0%	2.4%	0.6%	6.9%	3.7%
15-16	0.3%	3.4%	1.6%	0.3%	6.0%	3.2%
16-17	0.7%	3.3%	1.6%	0.6%	6.5%	3.5%
17-18	0.3%	2.8%	1.4%	0.0%	3.8%	2.0%
18-19	0.0%	1.9%	0.9%	0.0%	4.0%	2.1%
19-20	0.0%	2.2%	1.0%	0.0%	3.9%	2.1%
20-21	0.0%	2.0%	1.0%	0.0%	3.9%	2.0%
21-22	0.0%	2.2%	1.0%	0.0%	3.9%	2.1%
>22	0.0%	2.3%	1.1%	0.0%	4.7%	2.5%
N/A	0.0%	0.0%	44.2%	0.0%	0.0%	37.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average	5.14	9.58	8.90	4.03	13.62	12.22

Notes:

Based on information provided by the Division of Industrial Accidents.

Duration on Benefit - Section 35

Self- Insured Claims

Accident Year

Duration (months)	1990/91			1992/93		
	Closed	Open	Total	Closed	Open	Total
0-1	18.2%	12.2%	8.1%	22.8%	0.9%	2.4%
1-2	9.1%	4.1%	3.0%	25.0%	1.1%	2.6%
2-3	10.4%	4.3%	3.3%	10.9%	1.1%	1.5%
3-4	10.4%	2.8%	2.5%	6.5%	1.7%	1.5%
4-5	9.1%	4.1%	3.0%	8.7%	1.7%	1.7%
5-6	9.1%	4.6%	3.3%	6.5%	2.6%	2.0%
6-7	7.8%	4.3%	3.0%	6.5%	2.9%	2.2%
7-8	2.6%	1.5%	1.0%	0.0%	4.5%	2.5%
8-9	10.4%	5.3%	3.8%	5.4%	4.0%	2.7%
9-10	1.3%	3.8%	2.1%	1.1%	5.4%	3.2%
10-11	5.2%	3.5%	2.4%	3.3%	8.3%	5.0%
11-12	2.6%	10.1%	5.5%	1.1%	6.8%	3.9%
12-13	2.6%	6.3%	3.5%	1.1%	6.6%	3.9%
13-14	0.0%	5.8%	3.0%	1.1%	8.0%	4.6%
14-15	0.0%	6.8%	3.5%	0.0%	6.2%	3.5%
15-16	1.3%	3.3%	1.8%	0.0%	7.2%	4.1%
16-17	0.0%	3.3%	1.7%	0.0%	6.3%	3.6%
17-18	0.0%	3.5%	1.8%	0.0%	5.4%	3.1%
18-19	0.0%	4.1%	2.1%	0.0%	3.7%	2.1%
19-20	0.0%	1.3%	0.7%	0.0%	3.8%	2.2%
20-21	0.0%	1.8%	0.9%	0.0%	3.8%	2.2%
21-22	0.0%	1.5%	0.8%	0.0%	3.8%	2.2%
>22	0.0%	1.8%	0.9%	0.0%	4.2%	2.4%
N/A	0.0%	0.0%	38.3%	0.0%	0.0%	35.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average	4.84	10.07	9.22	3.48	13.80	12.52

Notes:

Based on information provided by the Division of Industrial Accidents.

Claims Contestation - By Section of Law

<u>Accident Year 90/91</u> (1)	<u>Contested Claims</u> (2)	<u>Distribution</u> (3)	<u>Claims by Section</u> (4)	<u>Percent Contested</u> (5)
Section 34	3,623	41.2%	41,554	8.7%
Section 34A	107	1.2%	416	25.7%
Section 35	1,040	11.8%	4,300	24.2%
Subtotal	4,770	54.2%	46,270	10.3%
Other	4,023	45.8%	25,260	15.9%
Total	8,793	100.0%	71,530	12.3%
 <u>Accident Year 92/93</u>				
Section 34	2,410	30.4%	41,041	5.9%
Section 34A	56	0.7%	216	25.9%
Section 35	938	11.8%	4,702	19.9%
Subtotal	3,404	43.0%	45,959	7.4%
Other	4,518	57.0%	11,476	39.4%
Total	7,922	100.0%	57,435	13.8%

Notes:

(2),(4) Based on information provided by the Division of Industrial Accidents.

(3) (2)/(2), Total.

(5) (2)/(4).

Claims Contestation - Reasons for Action

	Entity		
	Insurer	Self-Insurer	Total
<u>Accident Year 90/91</u>			
AGREEMENT WITH EMPLOYEE	0.0%	0.0%	0.0%
INCORRECT INSURER	2.1%	0.2%	1.7%
INJURY NOT WORK RELATED	21.5%	23.7%	22.0%
LACK OF NOTICE/LATE NOTICE	0.0%	0.0%	0.0%
LATE CLAIM	0.0%	0.0%	0.0%
NO CAUSAL RELATIONSHIP	22.6%	24.3%	23.0%
NO INJURY	19.8%	22.3%	20.4%
NO MEDICAL PROOF	23.5%	24.3%	23.7%
NOT AN EMPLOYEE	1.3%	0.4%	1.1%
NOT MASS JURISDICTION	0.5%	0.2%	0.4%
OTHER	8.7%	4.7%	7.8%
TOTAL	100.0%	100.0%	100.0%
<u>Accident Year 92/93</u>			
AGREEMENT WITH EMPLOYEE	0.0%	0.0%	0.0%
INCORRECT INSURER	1.6%	0.2%	1.2%
INJURY NOT WORK RELATED	21.1%	22.8%	21.6%
LACK OF NOTICE/LATE NOTICE	0.9%	0.5%	0.8%
LATE CLAIM	0.7%	0.6%	0.7%
NO CAUSAL RELATIONSHIP	21.3%	22.9%	21.8%
NO INJURY	19.4%	21.1%	19.9%
NO MEDICAL PROOF	22.3%	22.6%	22.4%
NOT AN EMPLOYEE	1.1%	0.1%	0.8%
NOT MASS JURISDICTION	0.8%	0.3%	0.6%
OTHER	10.9%	8.8%	10.2%
TOTAL	100.0%	100.0%	100.0%

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Benefits by Wage Level

Section 34 - Total

Accident Year 1990/91

Benefit Level	% N/A	Wage Level											Over 1000	Total
		92.4%	0	100	200	300	400	500	600	700	800	900		
	N/A	100	200	300	400	500	600	700	800	900	1000	1000		
0 - 100	22.6%	79.2%	45.8%	20.1%	17.2%	14.4%	14.2%	12.3%	10.1%	15.5%	16.2%	23.3%	22.3%	
100 - 200	16.6%	6.3%	44.8%	68.1%	6.9%	1.0%	0.2%	0.6%	0.0%	0.0%	2.7%	3.3%	16.4%	
200 - 300	25.7%	0.0%	5.0%	9.2%	70.6%	44.1%	2.4%	2.3%	1.9%	1.0%	2.7%	3.3%	25.9%	
300 - 400	16.9%	6.3%	1.0%	1.1%	3.2%	37.4%	69.2%	8.6%	3.8%	2.1%	5.4%	10.0%	17.0%	
400 - 500	17.3%	8.3%	2.5%	0.7%	1.5%	2.9%	12.0%	75.1%	81.8%	80.4%	70.3%	60.0%	17.5%	
500 - 600	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.3%	1.3%	1.0%	2.7%	0.0%	0.2%	
600 - 700	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.1%	
700 - 800	0.1%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.3%	0.6%	0.0%	0.0%	0.0%	0.1%	
800 - 900	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
900 - 1000	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Over 1,000	0.4%	0.0%	1.0%	0.7%	0.5%	0.2%	1.2%	0.0%	0.6%	0.0%	0.0%	0.0%	0.4%	
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Accident Year 1992/93

Benefit Level	% N/A	Wage Level											Over 1000	Total
		81.6%	0	100	200	300	400	500	600	700	800	900		
	N/A	100	200	300	400	500	600	700	800	900	1000	1000		
0 - 100	13.8%	63.9%	24.2%	10.2%	8.7%	5.9%	7.7%	5.8%	9.1%	4.6%	6.5%	12.3%	13.1%	
100 - 200	28.9%	26.3%	72.5%	80.2%	36.0%	2.5%	1.9%	1.4%	1.1%	1.5%	3.3%	17.6%	28.3%	
200 - 300	25.6%	3.8%	1.4%	6.2%	51.3%	79.6%	12.3%	3.2%	1.3%	1.1%	1.6%	6.4%	26.2%	
300 - 400	16.4%	3.8%	0.0%	2.1%	2.4%	9.8%	69.9%	57.4%	10.8%	7.6%	2.4%	6.4%	16.8%	
400 - 500	9.5%	0.0%	0.8%	0.7%	0.9%	1.1%	6.2%	28.0%	67.9%	32.3%	4.1%	8.6%	9.6%	
500 - 600	5.4%	1.5%	0.4%	0.3%	0.4%	0.6%	1.5%	4.0%	9.5%	51.0%	82.1%	47.1%	5.5%	
600 - 700	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.8%	0.0%	0.5%	0.1%	
700 - 800	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
800 - 900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
900 - 1000	0.0%	0.8%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Over 1,000	0.3%	0.0%	0.8%	0.3%	0.2%	0.3%	0.4%	0.1%	0.2%	1.1%	0.0%	0.5%	0.3%	
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Average Replacement Rate														
a) 90/91		2.17	0.86	0.61	0.63	0.59	0.60	0.60	0.55	0.45	0.39	0.28	0.63	
b) 92/93		2.19	0.93	0.63	0.58	0.56	0.59	0.56	0.54	0.56	0.52	0.32	0.62	
c) % change (b)/(a) - 1.0		1.0%	8.1%	3.2%	-7.4%	-4.3%	-1.3%	-6.2%	-0.5%	24.2%	33.0%	16.0%	-1.3%	

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Benefits by Wage Level

Section 34 - Insurer

Accident Year 1990/91

Benefit Level	% N/A	Wage Level											Over 1000	Total
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		
0 - 100	93.7%	23.9%	76.5%	45.8%	19.8%	16.1%	12.5%	13.7%	13.6%	12.5%	17.5%	25.0%	28.6%	23.6%
100 - 200		18.9%	5.9%	44.4%	66.1%	10.4%	1.6%	0.0%	0.5%	0.0%	0.0%	4.2%	4.8%	18.8%
200 - 300		25.4%	0.0%	6.3%	11.0%	67.6%	47.9%	4.0%	3.3%	1.3%	1.8%	4.2%	0.0%	25.6%
300 - 400		15.5%	8.8%	0.0%	1.4%	3.3%	34.0%	67.7%	13.0%	7.5%	3.5%	4.2%	9.5%	15.7%
400 - 500		15.3%	8.8%	2.1%	0.8%	2.2%	3.7%	11.9%	69.0%	77.5%	77.2%	62.5%	57.1%	15.4%
500 - 600		0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
600 - 700		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.1%
700 - 800		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.1%
800 - 900		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
900 - 1000		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Over 1,000		0.4%	0.0%	1.4%	0.8%	0.4%	0.3%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Accident Year 1992/93

Benefit Level	% N/A	Wage Level											Over 1000	Total
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		
0 - 100	84.3%	14.9%	60.5%	24.1%	11.9%	8.9%	5.6%	6.9%	6.9%	8.3%	4.7%	4.6%	14.4%	14.2%
100 - 200		32.6%	28.9%	72.5%	78.6%	43.6%	3.8%	2.4%	2.2%	1.7%	3.1%	4.6%	22.1%	32.6%
200 - 300		24.9%	2.6%	0.9%	6.1%	43.5%	77.7%	18.7%	4.6%	3.3%	1.6%	1.5%	7.7%	25.3%
300 - 400		15.2%	5.3%	0.0%	2.2%	2.7%	11.2%	62.4%	58.2%	18.9%	10.2%	4.6%	8.7%	15.6%
400 - 500		7.7%	0.0%	1.3%	0.7%	0.7%	0.7%	7.3%	24.3%	61.1%	40.6%	6.2%	13.5%	7.7%
500 - 600		4.2%	1.3%	0.3%	0.2%	0.5%	0.7%	1.8%	3.5%	6.7%	37.5%	78.5%	32.7%	4.2%
600 - 700		0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	1.6%	0.0%	0.0%	0.1%
700 - 800		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
800 - 900		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
900 - 1000		0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Over 1,000		0.3%	0.0%	0.9%	0.2%	0.2%	0.3%	0.4%	0.0%	0.0%	0.8%	0.0%	1.0%	0.3%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Average Replacement Rate

a) 90/91	2.35	0.88	0.62	0.63	0.59	0.60	0.58	0.53	0.44	0.34	0.26	0.64
b) 92/93	2.37	0.94	0.62	0.56	0.56	0.58	0.54	0.52	0.54	0.51	0.28	0.62
c) % change (b)/(a) - 1.0	0.7%	7.6%	-0.7%	-10.5%	-5.6%	-3.2%	-6.2%	-0.2%	22.1%	50.3%	9.6%	-3.4%

Notes:

Based on information provided by the Division of Industrial Accidents

Distribution of Benefits by Wage Level

Section 34 - Self-Insurer

Accident Year 1990/91

Benefit Level	% N/A	Wage Level											Over 1000	Total
		0	100	200	300	400	500	600	700	800	900	1000		
	88.5%	N/A	100	200	300	400	500	600	700	800	900	1000		
0 - 100	5.9%	35.3%	45.8%	21.2%	19.0%	17.4%	14.8%	10.9%	7.6%	12.5%	0.0%	11.1%	18.3%	
100 - 200	3.0%	2.9%	45.8%	75.0%	1.4%	0.0%	0.5%	0.6%	0.0%	0.0%	0.0%	0.0%	9.4%	
200 - 300	8.6%	0.0%	1.7%	2.9%	75.2%	38.5%	0.5%	1.2%	2.5%	0.0%	0.0%	11.1%	26.7%	
300 - 400	6.7%	0.0%	3.4%	0.0%	3.1%	42.5%	70.9%	3.6%	0.0%	0.0%	7.7%	11.1%	21.0%	
400 - 500	7.6%	2.9%	3.4%	0.0%	0.3%	1.6%	12.2%	81.8%	86.1%	85.0%	84.6%	66.7%	23.7%	
500 - 600	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	2.5%	2.5%	7.7%	0.0%	0.2%	
600 - 700	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.1%	
700 - 800	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.1%	
800 - 900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	
900 - 1000	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Over 1,000	0.1%	0.0%	0.0%	0.0%	0.7%	0.0%	1.1%	0.0%	1.3%	0.0%	0.0%	0.0%	0.5%	
Total	32.0%	41.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Accident Year 1992/93

Benefit Level	% N/A	Wage Level											Over 1000	Total
		0	100	200	300	400	500	600	700	800	900	1000		
	75.8%	N/A	100	200	300	400	500	600	700	800	900	1000		
0 - 100	11.1%	68.4%	24.3%	4.6%	8.3%	6.1%	8.6%	4.5%	9.6%	4.4%	8.6%	9.6%	10.6%	
100 - 200	19.8%	22.8%	72.4%	85.8%	24.2%	1.0%	1.4%	0.5%	0.7%	0.0%	1.7%	12.0%	19.1%	
200 - 300	27.2%	5.3%	2.2%	6.7%	63.7%	82.0%	5.2%	1.5%	0.0%	0.7%	1.7%	4.8%	28.1%	
300 - 400	19.1%	1.8%	0.0%	1.7%	2.0%	8.1%	78.2%	56.5%	5.7%	5.2%	0.0%	3.6%	19.6%	
400 - 500	14.0%	0.0%	0.0%	0.4%	1.1%	1.6%	5.0%	32.2%	72.2%	24.4%	1.7%	2.4%	13.8%	
500 - 600	8.2%	1.8%	0.5%	0.4%	0.3%	0.5%	1.1%	4.5%	11.4%	63.7%	86.2%	65.1%	8.2%	
600 - 700	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	1.2%	0.1%	
700 - 800	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
800 - 900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	
900 - 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Over 1,000	0.4%	0.0%	0.5%	0.4%	0.3%	0.3%	0.5%	0.3%	0.4%	1.5%	0.0%	0.0%	0.4%	
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Average Replacement Rate

a) 90/91	0.71	0.82	0.55	0.64	0.58	0.59	0.62	0.57	0.47	0.47	0.31	0.60
b) 92/93	1.95	0.90	0.65	0.62	0.57	0.60	0.58	0.56	0.59	0.52	0.36	0.63
c) % change (b)/(a) - 1.0	175.9%	10.4%	18.4%	-2.6%	-2.3%	0.9%	-6.2%	-2.1%	24.3%	9.6%	16.7%	4.1%

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Benefits by Wage Level

Section 34A - Total

Accident Year 1990/91

Benefit Level	% N/A	Wage Level											Total	
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		Over 1000
0 - 100	95.7%	78.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	50.0%	0.0%	0.0%	0.0%	0.0%	78.6%
100 - 200		6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	6.0%
200 - 300		6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.8%
300 - 400		4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%
400 - 500		3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	50.0%	0.0%	0.0%	3.4%
500 - 600		0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
600 - 700		0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
700 - 800		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
800 - 900		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
900 - 1000		0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%
Over 1,000		1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	1.2%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	100.0%

Accident Year 1992/93

Benefit Level	% N/A	Wage Level											Total	
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		Over 1000
0 - 100	83.3%	61.7%	100.0%	75.0%	0.0%	80.0%	33.3%	62.5%	50.0%	0.0%	100.0%	50.0%	100.0%	60.2%
100 - 200		15.6%	0.0%	25.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.3%
200 - 300		8.3%	0.0%	0.0%	0.0%	20.0%	66.7%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	10.2%
300 - 400		7.2%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.9%
400 - 500		3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	50.0%	0.0%	3.7%
500 - 600		1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%
600 - 700		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
700 - 800		0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%
800 - 900		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
900 - 1000		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Over 1,000		1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average Replacement Rate														
a) 90/91		1.00	0.33	0.20	0.14	0.11	0.09	0.67	0.40	0.00	0.00	0.00	0.00	0.37
b) 92/93		1.00	0.50	0.60	0.26	0.41	0.49	0.38	0.33	0.06	0.26	0.04	0.42	
c) % change (b)/(a) - 1.0		0.0%	50.0%	200.0%	80.0%	266.7%	437.5%	-42.9%	-16.7%	ERR	ERR	ERR	ERR	12.6%

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Benefits by Wage Level

Section 34 A- Insurer

Accident Year 1990/91

% N/A	96.8%	Wage Level											Total	
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		Over 1000
Benefit Level														
0 - 100	79.6%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	50.0%	0.0%	0.0%	0.0%	0.0%	79.6%
100 - 200	6.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.2%
200 - 300	6.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.5%
300 - 400	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%
400 - 500	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	1.8%
500 - 600	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%
600 - 700	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%
700 - 800	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
800 - 900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
900 - 1000	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%
Over 1,000	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	1.5%
Total	100.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Accident Year 1992/93

% N/A	86.2%	Wage Level											Total	
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		Over 1000
Benefit Level														
0 - 100	57.3%	100.0%	100.0%	0.0%	100.0%	40.0%	57.1%	50.0%	0.0%	0.0%	0.0%	0.0%	100.0%	56.3%
100 - 200	18.7%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.4%
200 - 300	9.3%	0.0%	0.0%	0.0%	0.0%	60.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.8%
300 - 400	8.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.0%
400 - 500	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%
500 - 600	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%
600 - 700	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
700 - 800	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%
800 - 900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
900 - 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Over 1,000	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%

Average Replacement Rate

a) 90/91	0.00	0.33	0.20	0.14	0.11	0.09	0.67	0.00	0.00	0.00	0.00	0.00	0.39
b) 92/93	1.00	0.33	0.60	0.14	0.38	0.55	0.38	0.00	0.00	0.00	0.00	0.04	0.44
c) % change (b)/(a) - 1.0	ERR	0.0%	200.0%	0.0%	240.0%	500.0%	-42.9%	ERR	ERR	ERR	ERR	ERR	14.0%

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Benefits by Wage Level

Section 34A- Self - Insurer

Accident Year 1990/91

% N/A	90.9%	Wage Level											Over 1000	Total
		0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000			
Benefit Level	N/A	100	200	300	400	500	600	700	800	900	1000	1000	Total	
0 - 100	74.3%	100.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	74.0%	
100 - 200	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	5.2%	
200 - 300	2.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	
300 - 400	8.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.8%	
400 - 500	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	10.4%	
500 - 600	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
600 - 700	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
700 - 800	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
800 - 900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
900 - 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Over 1,000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Total	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	

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% N/A	71.4%	Wage Level											Over 1000	Total
		0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000			
Benefit Level	N/A	100	200	300	400	500	600	700	800	900	1000	1000	Total	
0 - 100	83.3%	0.0%	66.7%	0.0%	66.7%	0.0%	100.0%	0.0%	0.0%	100.0%	100.0%	0.0%	76.2%	
100 - 200	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	
200 - 300	3.3%	0.0%	0.0%	0.0%	33.3%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	11.9%	
300 - 400	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	
400 - 500	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	
500 - 600	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
600 - 700	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
700 - 800	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
800 - 900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
900 - 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Over 1,000	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	
Total	100.0%	0.0%	100.0%	0.0%	100.0%	100.0%	100.0%	0.0%	100.0%	100.0%	100.0%	0.0%	100.0%	

Average Replacement Rate

a) 90/91	1.00	0.33	0.00	0.00	0.11	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.35
b) 92/93	0.00	0.56	0.00	0.33	0.56	0.09	0.00	0.33	0.06	0.05	0.00	0.00	0.34
c) % change (b)/(a) - 1.0	-100.0%	66.7%	ERR	ERR	400.0%	ERR	ERR	-16.7%	ERR	ERR	ERR	ERR	-3.2%

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Benefits by Wage Level

Section 35 - Total

Accident Year 1990/91

Benefit Level	% N/A	Wage Level											Over 1000	Total
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		
0 - 100	93.9%	57.6%	50.0%	90.9%	72.7%	49.3%	48.1%	36.1%	24.0%	37.5%	28.6%	71.4%	0.0%	57.1%
100 - 200		20.9%	50.0%	0.0%	24.2%	36.2%	25.9%	30.6%	12.0%	6.3%	0.0%	0.0%	0.0%	21.1%
200 - 300		10.6%	0.0%	9.1%	3.0%	11.6%	20.4%	19.4%	36.0%	18.8%	28.6%	0.0%	100.0%	11.0%
300 - 400		6.1%	0.0%	0.0%	0.0%	2.9%	3.7%	13.9%	20.0%	25.0%	42.9%	0.0%	0.0%	6.2%
400 - 500		3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
500 - 600		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
600 - 700		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
700 - 800		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
800 - 900		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
900 - 1000		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%
Over 1,000		1.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Accident Year 1992/93

Benefit Level	% N/A	Wage Level											Over 1000	Total
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		
0 - 100	87.1%	7.1%	88.9%	82.4%	77.7%	53.3%	38.1%	46.2%	47.7%	51.9%	50.0%	25.0%	45.5%	57.3%
100 - 200		2.5%	11.1%	14.7%	21.4%	39.3%	36.1%	25.6%	16.9%	7.4%	12.5%	12.5%	18.2%	21.5%
200 - 300		1.3%	0.0%	0.0%	0.0%	4.4%	18.6%	24.4%	21.5%	29.6%	16.7%	6.3%	9.1%	10.7%
300 - 400		0.7%	0.0%	0.0%	0.0%	0.7%	5.2%	2.6%	9.2%	7.4%	12.5%	25.0%	9.1%	5.6%
400 - 500		0.3%	0.0%	0.0%	0.0%	0.7%	1.0%	1.3%	3.1%	3.7%	4.2%	18.8%	18.2%	2.2%
500 - 600		0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	4.2%	6.3%	0.0%	1.3%
600 - 700		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
700 - 800		0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
800 - 900		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
900 - 1000		0.0%	0.0%	2.9%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Over 1,000		0.1%	0.0%	0.0%	0.9%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%
Total		12.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Average Replacement Rate														
a) 90/91			2.00	0.45	0.32	0.34	0.33	0.29	0.35	0.29	0.28	0.17	0.21	0.34
b) 92/93			1.22	0.61	0.33	0.34	0.33	0.25	0.24	0.20	0.20	0.32	0.16	0.33
c) % change (b)/(a) - 1.0			-38.9%	33.7%	1.7%	0.3%	0.6%	-14.9%	-30.2%	-29.7%	-27.5%	82.6%	-25.5%	-3.1%

Notes:
Based on information provided by the Division of Industrial Accidents.

Distribution of Benefits by Wage Level

Section 35 - Insurer

Accident Year 1990/91

Benefit Level	% N/A	Wage Level											Over 1000	Total
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		
0 - 100	94.9%	59.0%	0.0%	87.5%	77.8%	47.2%	55.2%	45.8%	21.1%	33.3%	20.0%	66.7%	0.0%	58.6%
100 - 200		19.5%	100.0%	0.0%	18.5%	37.7%	20.7%	25.0%	15.8%	8.3%	0.0%	0.0%	0.0%	19.7%
200 - 300		10.2%	0.0%	12.5%	3.7%	11.3%	20.7%	16.7%	36.8%	25.0%	40.0%	0.0%	100.0%	10.5%
300 - 400		6.4%	0.0%	0.0%	0.0%	3.8%	0.0%	12.5%	21.1%	25.0%	40.0%	0.0%	0.0%	6.4%
400 - 500		3.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	8.3%	0.0%	33.3%	0.0%	3.5%
500 - 600		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
600 - 700		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
700 - 800		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
800 - 900		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
900 - 1000		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Over 1,000		1.1%	0.0%	0.0%	0.0%	0.0%	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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Benefit Level	% N/A	Wage Level											Over 1000	Total
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		
0 - 100	88.6%	59.9%	88.9%	81.0%	78.9%	58.0%	40.3%	47.8%	42.9%	42.9%	30.0%	11.1%	50.0%	60.0%
100 - 200		20.5%	11.1%	14.3%	20.0%	33.0%	28.4%	21.7%	21.4%	7.1%	20.0%	11.1%	0.0%	21.0%
200 - 300		10.0%	0.0%	0.0%	0.0%	4.5%	23.9%	26.1%	26.2%	35.7%	20.0%	0.0%	0.0%	10.4%
300 - 400		5.4%	0.0%	0.0%	0.0%	1.1%	4.5%	2.2%	9.5%	7.1%	20.0%	33.3%	25.0%	5.3%
400 - 500		2.2%	0.0%	0.0%	0.0%	1.1%	1.5%	2.2%	0.0%	7.1%	0.0%	33.3%	25.0%	2.2%
500 - 600		0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	0.0%	0.3%
600 - 700		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
700 - 800		0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	11.1%	0.0%	0.1%
800 - 900		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
900 - 1000		0.0%	0.0%	4.8%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Over 1,000		1.3%	0.0%	0.0%	1.1%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.7%

Average Replacement Rate

a) 90/91		3.00	0.50	0.30	0.35	0.34	0.27	0.34	0.29	0.29	0.19	0.21	0.34
b) 92/93		1.22	0.71	0.33	0.35	0.35	0.25	0.23	0.24	0.26	0.39	0.19	0.35
c) % change (b)/(a) - 1.0		-59.3%	42.9%	8.1%	1.3%	2.8%	-4.6%	-31.9%	-17.6%	-12.0%	103.0%	-10.0%	3.7%

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Benefits by Wage Level

Section 35 - Self-Insurer

Accident Year 1990/91

% N/A	89.7%	Wage Level											Over 1000	Total
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		
0 - 100	50.9%	100.0%	100.0%	50.0%	56.3%	40.0%	16.7%	33.3%	50.0%	50.0%	75.0%	0.0%	50.3%	
100 - 200	27.7%	0.0%	0.0%	50.0%	31.3%	32.0%	41.7%	0.0%	0.0%	0.0%	0.0%	0.0%	27.6%	
200 - 300	12.7%	0.0%	0.0%	0.0%	12.5%	20.0%	25.0%	33.3%	0.0%	0.0%	0.0%	0.0%	12.9%	
300 - 400	4.8%	0.0%	0.0%	0.0%	0.0%	8.0%	16.7%	16.7%	25.0%	50.0%	0.0%	0.0%	5.2%	
400 - 500	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	25.0%	0.0%	25.0%	0.0%	2.9%	
500 - 600	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	
600 - 700	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	
700 - 800	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	
800 - 900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
900 - 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Over 1,000	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

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% N/A	82.2%	Wage Level											Over 1000	Total
		N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000		
0 - 100	50.2%	0.0%	84.6%	70.6%	44.7%	33.3%	43.8%	56.5%	61.5%	64.3%	42.9%	42.9%	50.4%	
100 - 200	22.0%	0.0%	15.4%	29.4%	51.1%	53.3%	31.3%	8.7%	7.7%	7.1%	14.3%	28.6%	23.7%	
200 - 300	12.3%	0.0%	0.0%	0.0%	4.3%	6.7%	21.9%	13.0%	23.1%	14.3%	14.3%	14.3%	11.9%	
300 - 400	7.1%	0.0%	0.0%	0.0%	0.0%	6.7%	3.1%	8.7%	7.7%	7.1%	14.3%	0.0%	6.6%	
400 - 500	2.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.7%	0.0%	7.1%	0.0%	14.3%	2.2%	
500 - 600	5.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	0.0%	0.0%	14.3%	0.0%	4.4%	
600 - 700	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	
700 - 800	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	
800 - 900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
900 - 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Over 1,000	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	
Total	100.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
<u>Average Replacement Rate</u>														
a) 90/91		1.00	0.33	0.40	0.30	0.32	0.35	0.36	0.30	0.24	0.16	0.00	0.33	
b) 92/93		0.00	0.44	0.32	0.31	0.30	0.24	0.26	0.17	0.16	0.22	0.14	0.27	
c) % change (b)/(a) - 1.0		-100.0%	30.8%	-20.6%	3.1%	-6.4%	-29.9%	-28.3%	-43.6%	-32.1%	38.1%	ERR	-16.9%	

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Benefits by Wage Level

Replacement Ratios

Benefit Level	N/A	0 100	100 200	200 300	300 400	400 500	500 600	600 700	700 800	800 900	900 1000	Over 1000
0 - 100		1.00	0.33	0.20	0.14	0.11	0.09	0.08	0.07	0.06	0.05	0.04
100 - 200		3.00	1.00	0.60	0.43	0.33	0.27	0.23	0.20	0.18	0.16	0.13
200 - 300		5.00	1.67	1.00	0.71	0.56	0.45	0.38	0.33	0.29	0.26	0.21
300 - 400		7.00	2.33	1.40	1.00	0.78	0.64	0.54	0.47	0.41	0.37	0.29
400 - 500		9.00	3.00	1.80	1.29	1.00	0.82	0.69	0.60	0.53	0.47	0.38
500 - 600		11.00	3.67	2.20	1.57	1.22	1.00	0.85	0.73	0.65	0.58	0.46
600 - 700		13.00	4.33	2.60	1.86	1.44	1.18	1.00	0.87	0.76	0.68	0.54
700 - 800		15.00	5.00	3.00	2.14	1.67	1.36	1.15	1.00	0.88	0.79	0.63
800 - 900		17.00	5.67	3.40	2.43	1.89	1.55	1.31	1.13	1.00	0.89	0.71
900 - 1000		19.00	6.33	3.80	2.71	2.11	1.73	1.46	1.27	1.12	1.00	0.79
Over 1,000		24.00	8.00	4.80	3.43	2.67	2.18	1.85	1.60	1.41	1.26	1.00
Total												

Notes:
Replacement rates defined as average benefit/average wage.

Reporting Lags - Sections 34, 34A, and 35 Claims

Accident Year 1990/91

Report Lag	Insured	Self-Insured	Total
0-7 Days	57.9%	68.6%	60.4%
8-14 Days	3.9%	5.1%	4.2%
15-21 Days	3.4%	3.4%	3.4%
22-28 Days	3.9%	3.3%	3.7%
4-6 Weeks	8.4%	6.4%	8.0%
6-8 Weeks	5.9%	4.2%	5.5%
8-10 Weeks	3.5%	1.9%	3.1%
10-12 Weeks	1.9%	1.4%	1.8%
> 12 Weeks	11.2%	5.9%	10.0%
Total	100.0%	100.0%	100.0%
Average	23.0	15.9	21.3
Avg x > 3 mos.	15.3	11.6	14.4

Accident Year 1992/93

Report Lag	Insured	Self-Insured	Total
0-7 Days	62.5%	71.6%	65.3%
8-14 Days	4.4%	5.3%	4.7%
15-21 Days	2.9%	3.1%	3.0%
22-28 Days	2.4%	1.9%	2.2%
4-6 Weeks	3.8%	2.4%	3.4%
6-8 Weeks	2.7%	1.7%	2.4%
8-10 Weeks	2.0%	1.2%	1.8%
10-12 Weeks	2.0%	1.1%	1.7%
> 12 Weeks	17.3%	11.6%	15.5%
Total	100.0%	100.0%	100.0%
Average	23.8	17.2	21.8
Avg x > 3 mos.	11.2	8.4	10.3

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Lump Sum Payment Lag

Total

<u>Lag(months)</u>	<u>Accident Year 1990/91</u>		<u>Accident Year 1992/93</u>	
	<u>Distribution</u>	<u>Average Lump Sum Payment</u>	<u>Distribution</u>	<u>Average Lump Sum Payment</u>
0-1	0.6%	26,781	0.4%	6,745
1-2	3.4%	23,356	0.8%	12,896
2-3	3.1%	13,612	1.2%	10,984
3-4	3.4%	12,719	2.9%	11,078
4-5	4.5%	11,540	4.1%	9,688
5-6	5.5%	12,717	4.8%	10,377
6-7	6.2%	14,148	6.1%	10,916
7-8	6.4%	16,794	7.5%	13,615
8-9	6.7%	17,978	7.9%	13,952
9-10	7.0%	18,967	9.2%	12,430
10-11	8.3%	17,640	8.7%	13,883
11-12	8.2%	18,396	9.1%	13,894
12-13	7.4%	19,248	7.6%	15,700
13-14	6.4%	19,243	6.9%	16,435
14-15	5.6%	21,152	5.7%	15,319
15-16	4.5%	21,998	4.8%	16,384
16-17	4.5%	23,455	4.4%	21,263
17-18	3.5%	23,252	2.8%	17,892
18-19	2.3%	21,872	2.3%	18,767
19-20	1.4%	23,362	1.5%	22,893
20-21	0.7%	22,797	0.8%	22,121
21-22	0.2%	23,949	0.3%	17,092
Total	100.0%		100.0%	
Average	10.3	18,261	10.7	14,343
Frequency	7.2%		5.5%	

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Lump Sum Payment Lag

Insured Claims

<u>Lag(months)</u>	<u>Accident Year 1990/91</u>		<u>Accident Year 1992/93</u>	
	<u>Distribution</u>	<u>Average Lump Sum Payment</u>	<u>Distribution</u>	<u>Average Lump Sum Payment</u>
0-1	0.7%	26,781	0.3%	2,525
1-2	3.5%	23,604	0.7%	9,570
2-3	3.1%	13,965	1.3%	10,896
3-4	3.6%	12,776	3.0%	10,390
4-5	4.7%	11,723	4.1%	9,824
5-6	5.7%	12,883	4.6%	11,045
6-7	6.4%	14,153	6.1%	10,908
7-8	6.5%	16,916	7.8%	13,896
8-9	6.9%	18,170	8.0%	13,577
9-10	6.9%	19,275	9.1%	12,731
10-11	8.5%	17,849	8.7%	14,160
11-12	8.0%	18,679	9.5%	14,240
12-13	7.2%	19,600	7.5%	16,355
13-14	6.2%	19,422	6.6%	17,059
14-15	5.3%	21,694	5.7%	16,183
15-16	4.4%	21,915	4.7%	16,874
16-17	4.6%	23,763	4.3%	21,819
17-18	3.4%	24,096	2.7%	17,590
18-19	2.3%	21,922	2.4%	18,468
19-20	1.2%	24,750	1.6%	22,889
20-21	0.6%	24,676	0.8%	23,025
21-22	0.2%	23,949	0.3%	14,769
Total	100.0%		100.0%	
Average	10.1	18,447	10.7	14,553
Frequency	8.7%		6.8%	

Notes:

Based on information provided by the Division of Industrial Accidents.

Distribution of Lump Sum Payment Lag

Self- Insured Claims

Lag(months)	Accident Year 1990/91		Accident Year 1992/93	
	Distribution	Average Lump Sum Payment	Distribution	Average Lump Sum Payment
0-1	0.0%	0	0.7%	18,000
1-2	1.9%	17,500	1.1%	26,200
2-3	2.4%	7,839	0.9%	11,750
3-4	0.8%	9,500	1.8%	18,131
4-5	2.7%	7,470	3.9%	8,792
5-6	2.4%	7,732	5.7%	7,037
6-7	3.5%	14,039	6.2%	10,967
7-8	4.9%	14,693	5.5%	11,130
8-9	3.8%	13,464	7.6%	16,403
9-10	7.9%	15,471	10.1%	10,746
10-11	6.3%	13,976	8.5%	12,113
11-12	11.4%	15,840	7.1%	11,035
12-13	10.3%	16,091	7.8%	11,789
13-14	9.5%	17,747	8.7%	13,514
14-15	9.0%	17,015	6.0%	10,199
15-16	6.8%	22,686	5.7%	13,897
16-17	3.5%	18,346	5.0%	18,332
17-18	5.4%	16,456	3.4%	19,360
18-19	2.2%	21,188	1.6%	21,543
19-20	3.5%	17,385	1.4%	22,917
20-21	1.6%	13,400	0.9%	17,375
21-22	0.0%	0	0.2%	38,000
Total	100.0%		100.0%	
Average	11.9	15,874	10.9	13,042
Frequency	2.2%		2.5%	

Notes:

Based on information provided by the Division of Industrial Accidents.

Demographic Analysis - Sex

Sex	Percentage of Claimants for Accident Year	
	90/91	92/93
Male	55.5%	55.6%
Female	26.3%	30.0%
Unknown	18.2%	14.3%
Total	100.0%	100.0%

Notes:

Based on information provided by the Division of Industrial Accidents.

Demographic Analysis - Age

Age	Percentage of Claimants for Accident Year	
	90/91	92/93
<20	0.3%	0.7%
20-29	15.7%	21.0%
30-39	25.7%	28.2%
40-49	18.2%	19.5%
50-59	11.9%	13.0%
60-69	6.5%	5.5%
70-79	0.8%	0.7%
>79	0.1%	0.1%
Unknown	20.8%	11.3%
Total	100.0%	100.0%
Average	40.7	39.4

Notes:

Based on information provided by the Division of Industrial Accidents.

Demographic Analysis - Number of Dependents

Number of Dependents	Percentage of Claimants for Accident Year	
	90/91	92/93
0	77.4%	70.4%
1	8.0%	11.0%
2	6.4%	8.5%
3	4.7%	5.7%
4	2.2%	2.8%
5	0.9%	1.1%
Over 5	0.4%	0.5%
Total	100.0%	100.0%
Average	0.5	0.7

Notes:

Based on information provided by the Division of Industrial Accidents.

Demographic Analysis - Weekly Wage

Weekly Wage	Percentage of Claimants for Accident Year		Average Wage in Band for Accident Year	
	90/91	92/93	90/91	92/93
0-99	0.2%	0.3%	69	71
100-199	0.5%	1.2%	150	151
200-299	1.1%	2.5%	255	248
300-399	1.8%	3.8%	347	346
400-499	1.6%	3.1%	445	442
500-599	1.1%	2.2%	543	544
600-699	0.9%	1.9%	644	642
700-799	0.4%	1.1%	739	740
800-899	0.2%	0.6%	840	836
900-999	0.1%	0.3%	942	941
>999	0.1%	0.5%	8,284	6,476
Unknown	92.1%	82.4%	N/A	N/A
Total/Average	100.0%	100.0%	519.5	599.4
Average Ex >\$999 Band			437.9	443.2

Notes:

Based on information provided by the Division of Industrial Accidents.

Body Part Injured	Percentage of Claimants for Accident Year	
	90/91	92/93
NA	1.1%	0.2%
HEAD, UNS	1.9%	1.9%
BRAIN	0.2%	0.1%
EAR(S), UNS	0.0%	0.0%
EAR(S), EXTERNAL	0.0%	0.0%
EAR(S), INTERNAL	0.1%	0.1%
EYE(S)	1.0%	0.9%
FACE, UNS	0.4%	0.4%
JAW, CHIN	0.1%	0.2%
MOUTH & THROAT (VOCAL CORDS, LARYNX)	0.1%	0.2%
NOSE	0.2%	0.3%
FACE, MULTIPLE PARTS	0.2%	0.2%
FACE, NEC	0.1%	0.2%
SCALP	0.1%	0.1%
SKULL	0.2%	0.2%
HEAD, MULTIPLE	0.4%	0.4%
NECK & CERVICAL VERTEBRAE	5.3%	5.2%
UPPER EXTREMITIES, UNS	0.6%	0.5%
ARMS(S), UNS	2.1%	2.0%
UPPER ARM(S)	0.7%	0.7%
ELBOW(S)	1.7%	1.8%
FOREARM(S)	1.0%	0.8%
ARMS(S), MULTIPLE	0.4%	0.4%
ARM(S), NEC	0.4%	0.4%
WRIST(S)	4.3%	4.4%
HAND(S), NOT WRIST OR FINGERS	4.3%	4.2%
FINGER(S)	6.9%	6.8%
UPPER EXTREMITIES, MULTIPLE	0.2%	0.3%
TRUNK, UNS	0.4%	0.3%
ABDOMEN..INTERNAL ORGANS	2.3%	2.3%
BACK	30.5%	29.6%
CHEST, RIBS, BREASTBONE, INTERNAL ORGANS	2.5%	2.4%
HIP(S)...PELVIS, ORGANS, BUTTOCKS	1.8%	1.8%
SHOULDER(S)	5.5%	5.7%
TRUNK, MULTIPLE	0.1%	0.1%
LOWER EXTREMITIES, UNS	0.5%	0.4%
LEG(S)	2.1%	2.0%
THIGH(S)	0.5%	0.5%
KNEE(S)	6.1%	6.8%
LOWER LEG(S)	0.9%	1.0%
LEG(S), MULTIPLE	0.4%	0.3%
LEG(S), NEC	0.4%	0.3%
ANKLE(S)	3.4%	3.7%
FOOT OR FEET, NOT ANKLE OR TOES	2.7%	2.5%
TOE(S)	1.0%	1.0%
LOWER EXTREMITIES, MULTIPLE	0.2%	0.2%
MULTIPLE PARTS	3.0%	3.3%
BODY SYSTEM	0.0%	0.0%
NONCLASSIFIABLE	1.4%	2.9%
TOTAL	100.0%	100.0%

Notes:

Based on information provided by the Division of Industrial Accidents.
UNS = Unspecified. NEC = Not elsewhere coded.

Nature of Injury	Percentage of Claimants for Accident Year	
	90/91	92/93
AMPUTATION OR ENUCLEATION	0.4%	0.3%
ASPHYXIA, STRANGULATION, ETC	0.0%	0.0%
BURN (HEAT)	1.7%	1.1%
BURN (CHEMICAL)	0.6%	0.4%
CONCUSSION	0.8%	0.5%
INFECTIVE OR PARASITIC DISEASE	0.1%	0.1%
ANTHRAX	0.0%	0.0%
BRUCELLOSIS	0.0%	0.0%
CONJUNCTIVITIS AND OPHTHALMIA	0.1%	0.1%
TETANUS	0.0%	0.0%
TUBERCULOSIS	0.1%	0.1%
OTHER INFECTIVE OR PARASITIC DISEASE	0.0%	0.0%
CONTUSION, CRUSHING, BRUISE	12.2%	9.1%
CUT, LACERATION, PUNCTURE	8.7%	7.7%
DERMATITIS, UNS	0.1%	0.1%
PRIMARY INFECTIONS OF THE SKIN	0.1%	0.1%
OTHER SKIN CONDITIONS	0.1%	0.1%
DERMATITIS, ALLERGENIC, OR CONTACT	0.2%	0.2%
SKIN CONDITION, NEC	0.1%	0.1%
DISLOCATION	1.1%	0.9%
ELECTRIC SHOCK, ELECTROCUTION	0.2%	0.2%
FRACTURE	6.8%	6.9%
EFFECTS OF EXPOSURE TO LOW TEMPERATURE	0.0%	0.0%
HEARING LOSS OR IMPAIRMENT	0.0%	0.0%
EFFECTS OF ENVIRONMENTAL HEAT	0.0%	0.0%
HERNIA, RUPTURE	2.3%	2.8%
INFLAMMATION OF JOINTS, ETC	0.7%	0.6%
CARPAL TUNNEL SYNDROME	0.9%	1.5%
POISONING, SYSTEMIC, UNS	0.1%	0.0%
DUE TO TOXIC MATERIALS	0.1%	0.1%
DISEASES OF BLOOD/ BLOOD FORMING ORGANS	0.0%	0.0%
UPPER RESPIRATORY CONDITIONS	0.1%	0.1%
INFLUENZA, PNEUMONIA, ETC	0.0%	0.0%
TOXIC HEPATITIS	0.0%	0.0%
OTHER DISEASES OF THE G-I TRACT	0.0%	0.0%
OTHER TOXIC EFFECTS OF ONE SYSTEM	0.0%	0.0%
PNEUMOCONIOSIS, UNS	0.0%	0.0%
ASBESTOSIS	0.0%	0.0%
BYSSINOSIS	0.0%	0.0%
SIDEROSIS	0.0%	0.0%
SILICOSIS	0.0%	0.0%
OTHER PNEUMOCONIOSES	0.0%	0.0%
PNEUMOCONIOSIS WITH TUBERCULOSIS	0.0%	0.0%
RADIATION EFFECTS	0.0%	0.0%
WELDER'S FLASH	0.0%	0.7%
SCRATCHES, ABRASIONS	1.1%	0.7%
SPRAINS, STRAINS	51.5%	53.8%
HEMORRHOIDS	0.1%	0.0%
HEPATITIS (SERUM AND INFECTIVE)	0.0%	0.0%
MULTIPLE INJURIES	2.0%	1.9%
EFFECTS OF CHANGES IN ATMOSPHERIC PRESSURE	0.0%	0.0%
CEREBROVASCULAR/OTHER CIRCULATORY CONDITION	0.1%	0.1%
COMPLICATIONS PECULIAR TO MEDICAL CARE	0.0%	0.0%
EYE, OTHER DISEASES OF THE EYE	0.2%	0.2%
MENTAL DISORDERS	0.2%	0.4%
NEOPLASM, TUMOR, UNS	0.0%	0.0%
MALIGNANT	0.0%	0.0%
BENIGN	0.0%	0.0%
NERVOUS SYSTEM, CONDITIONS OF,	0.2%	0.1%
DISEASES OF THE CENTRAL NERVOUS SYSTEM	0.0%	0.0%
DISEASES OF NERVES & PERIPHERAL GANGLIA	0.1%	0.0%
RESPIRATORY SYSTEM, CONDITIONS. OF.	0.2%	0.1%
UPPER RESPIRATORY	0.1%	0.1%
ASTHMA, INFLUENZA, PNEUMONIA	0.1%	0.1%
SYMPTONS & ILL-DEFINED CONDITIONS	0.2%	0.2%
NO INJURY OR ILLNESS	0.2%	0.1%
DAMAGE TO PROSTHETIC DEVICES	0.0%	0.0%
OCCUPATIONAL DISEASE, NEC	0.2%	0.1%
HEART CONDITION (INCL HEART ATTACK)	0.5%	0.4%
OTHER INJURY, NEC	0.8%	0.8%
NONCLASSIFIABLE	4.5%	7.4%
TOTAL	100.0%	100.0%

Notes:
Based on information provided by the Division of Industrial Accidents.
UNS = Unspecified. NEC = Not elsewhere coded.

MASSACHUSETTS WORKERS COMPENSATION ADVISORY COUNCIL
Data Request

- Claims with injury dates from 7/1/90 - 6/30/91;
 claims with injury dates from 7/1/92 - 6/30/93 -

RECORD NAME	FIELD NAME	FORM	PURPOSE
claim identifier	incid	system creates	uniquely identifies record
date of birth	dob	101	demographic data
sex	sex	101	demographic data
number of dependents	dependents	101	demographic data
average weekly wage	wage	101	impacts benefits
occupation		101	demographic data
industry code	sic	101	industry data
self-insurer		101	identify self-insurers
insurance carrier	insurer	101	identify carriers
injury date	doi	101	identify accident date
report date		101	determine reporting lags
injury code	njucd	101	identify type of injury
body part	bpccd	101	identify body part injured
nature of injury	natcd	101	identify nature of injury
type of compensation	sctcd	102	identify applicable section of law
compensation amount	amount	102	identify weekly benefit
denial code		104	identify grounds for denial
denial date		104	use date prepared by insurer as proxy for denial date
termination grounds		106	identify basis for termination
termination date		106	determine date of change - specified on form

modification grounds		106	identify basis for modification
prior rate		106	identify prior weekly benefit
modified rate		106	identify revised weekly benefit
modification date		106	determine date of change - specified on form
modified comp code		107	establish section of law modified benefits paid under
former rate		107	establish prior benefit level
modified rate		107	establish modified benefit level
modification date		107	determine date of change - specified on form
permanent total application		110	determine if applied for PT benefits
permanent total date		110	use date form prepared as proxy for date of application for PT benefits
lump sum amount		113	establish amount of lump sum
lump sum conference request date		116	use this date as proxy for date of application for lump sum benefit
award code			establish lump sum award issued

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**A STUDY OF THE
MASSACHUSETTS WORKERS'
COMPENSATION SYSTEM**

**FOR THE
MASSACHUSETTS WORKERS'
COMPENSATION ADVISORY
COUNCIL**

Prepared by
PETER P. KOZEL
KEE, INC.

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SUMMARY OF FINDINGS

The Massachusetts Workers' Compensation Advisory Council requested that KEE, Inc. undertake a study to investigate the economic implications of the change in wage replacement rates incorporated in the reform law, Chapter 398 of the Acts of 1991. After an extensive search of the literature, it was found that virtually nothing has been written that explicitly deals with the interplay between the structure or changes in the structure of a state's workers' compensation system and the general economic environment or the economic conditions of the various interest groups involved with the workers' compensation system. Moreover, the changes introduced by the reform law have had a very brief time to have an impact on the system. Most studies encountered in the literature delay analysis of structural changes for at least three years after the adjustments. Nevertheless, this study does find some large shifts in the utilization of the workers' compensation system. At the present time, however, there does not seem to be a clear and definitive answer as to why such a large reduction in the claims rates occurred in 1993 versus the levels in 1991.

The percent change in claims per million dollars of payroll ranged from an increase of 35.1 percent at holding and other investment offices, SIC 67, to a decline of 71.27 percent for pipe lines except natural gas, SIC 46. Of the 63 industry categories studied, only 4 experienced an increase in the claims rate. Moreover, 56 industries had declines exceeding 10 percent, and the average percentage decline for all 63 industries is 27.9 percent.

Several large papers have appeared in the literature where the objective of the study was to relate changes in the replacement rate schedule to changes in the claims rate. While the statistical relationship between these two factors was found not be particularly strong, the general consensus of the studies is that the claims rate increases or decreases by approximately 3.5 percent when the replacement rate increases or decreases by 10 percent. Since the reform law reduced the replacement rate by 10 percent, 66.67 to 60.0 percent, one would expect to find approximately a 3.5 percent decline in the claims rate, assuming that the relationship determined by these previous studies is correct. Even if the influence of a change in the replacement rate is significantly larger than that estimated by these studies, it would still be difficult to attribute an average decline in the claims rate of 27.9 percent solely to the change in the replacement rate.

To study the impact of economic conditions on the utilization of the workers' compensation system, a subsection of seventeen industries was selected. These seventeen industries had experienced widely differing economic conditions in the 1990-1993 period, and they represented 48.9 percent of the total payroll earned in the original group of sixty-three industries. Regression analysis utilizing employment and wage data from these seventeen industries indicated that industries with gains or relatively smaller declines in employment tended to have smaller declines in the claims rate, while industries with larger gains in average wages had larger declines in the claims rate. These regressions only explain about 11.5 percent of the differences in the claims rates among these seventeen industries, and the regression coefficients are not significant at

the 95 percent level. However, these results are suggestive of a shift in the employment mix that may account for some of the decline in the claims rate.

Industries where the average wage rate is increasing rapidly, given the soft economic condition in the state during the 1990-1993 period, are likely to be reducing the number of lower valued-added positions more rapidly than employment in general. These lower value-added positions are likely to be ones that are more exposed to injury. By reducing the number of these positions, the industry should see a larger fall in its claims rate.

The employment variable works in the same direction. Industries with rising employment are likely to be adding employees in areas that have a significant exposure to risk of injury. Therefore, the claims rate for those industries should decline by less.

The regression analysis indicates that a shift in employment composition may account for some of the reduction in the claims rate from 1991 to 1993. However, the linkages have not been firmly established and the extent of the impact of the change in the composition of employment on the claims rate remains nebulous.

Aside from the magnitude of the decline in the claims rate, the shift in the range of employees utilizing the system was most surprising. From 1991 to 1993 a very large increase in the percentage of temporary total claims where the weekly benefit was \$150 or less occurred, a 47.9 percent increase. In contrast there was a significant decline in the percentage of temporary total claims where the weekly benefit was \$450 or more, 22.2 percent.

Combining these results with the ones reported earlier portrays an interesting picture. While the total number of claims declined dramatically from fiscal year 1991 to fiscal year 1993, the relative number of claims filed for individuals at the lower end of the wage range grew significantly. In an attempt to determine whether this shift could be explained in terms of economic factors, the seventeen industry subgroup was studied intensely. In fact, some clear patterns did emerge from the analysis. For all seventeen industries, the percentage of claimants receiving a benefit of \$150 or less was larger in 1993 than in 1991. Moreover, the average increase in the percent of claims receiving this range of benefits was substantially larger for industries that experienced large declines in employment from 1991 to 1993 versus those that had gains in employment. This is fairly strong evidence that economic factors have an important impact on the utilization of the workers' compensation system.

At the other end of the benefit range, where benefits received were \$450 or larger, an interesting pattern also appeared. The percentage of claims receiving benefits in this range fell by 22.2 percent from fiscal year 1991 to fiscal year 1993, and the change in employment had no impact on the percentage decline. However, four industries experienced an increase in the percentage receiving benefits above \$450, and each of these industries had an increase in or stable payroll from 1991 to 1993. These results tend to indicate that expanding industries have a relatively more stable employment structure and therefore smaller shifts in claims rates. Also, these results on the relative percentage of claimants at the two ends of the benefits range tend to confirm

reports about the types of injuries that result in claims; that is more claims based on repetitive motion or exposure.

The data analysis and statistical tests performed for this report point to certain tentative conclusions concerning the impact of the reform law.

1. The decline in the number of claims as indicated by filings of first reports is highly significant. The degree to which this decline in claims will result in a less costly workers' compensation system will depend on the duration of the claims that actually receive benefits and the nature of those claims.
2. The extent of the decline in the claims rate can not be explained entirely by the reduction in the replacement rate. Even allowing for significant inaccuracies in the estimates of the relationship precludes ones ascribing the replacement rate change as the principal factor.
3. The direct influence of macroeconomics industry factors (employment and average wage) appears to have a modest influence on the industry claims rates. The impact of these two factors seems to indicate that shifts in industry employment patterns are a force shaping industry claims rates.
4. The distribution of weekly benefits received indicates that individuals at the lower end of the wage scale utilized the workers' compensation system more intensely in 1993 than 1991. At the same time, those at the upper end of the wage scale used the system less intensely. However, the relative utilization

rate at the top benefit level category increased modestly for those industries experiencing rising payrolls. The steady increase in the average wage in each industry partially offset the impact of the reduction in the replacement rate on the level of benefits received relative to income. Therefore, these shifts in utilization seem to indicate that employees' use of the system was motivated only partially by the replacement rate and was influenced by economic conditions within the industry.

5. The analysis undertaken in this report provides only a partial explanation for the large decline in the claims rates that have occurred. The reduction in the replacement rate could explain only a relatively small percentage of the entire decline in the claims rate. Economic factors do appear to have had some influence on the claims rates, but the tests performed in this report analyze the variances in the claims rates among industries within Massachusetts. To test for the impact of general economic conditions on the utilization of the workers' compensation system, a study considering relative economic conditions within many different states and their respective claims rates would be needed.
6. The generally weak economic conditions during the period used in this study may have made individuals reluctant to report injuries because they feared the long term impact of such a report on their employment status. This fear, in turn, results from the general perception of limited employment alternatives. If this is a correct assessment, a broad improvement in economic

conditions, would result in an increase in the claims rate. The data that was available for this report does lend some credibility to this assessment, but the data are very limited and preliminary. Future studies should be sensitive to this issue. Also, as has been widely reported, employers have become much more active in qualified loss management programs, and it is generally perceived that there is better enforcement of the fraud provisions. Both of these developments could have a significant impact on controlling the duration of cases and possibly also the number of claims. Measures need to be developed for both of these factors and tested for their impact on the claims rate.

7. The size of the decline in the claims rate does seem to indicate that factors beyond the change in the replacement rate and the shifts in the composition of the labor force are at work. Better management of the system and general economic conditions are the obvious and likely factors. However, an extensive study that compares the experience in many different states under various economic conditions would be needed to fully test that proposition.

THE MASSACHUSETTS ECONOMY

During the latter half of the 1980s, the costs associated with the workers' compensation system in Massachusetts escalated dramatically. Also, the Massachusetts economy started a sustained slide in 1988, and the rapid increase in the costs of doing business in the Commonwealth that had occurred during the 1980s received some blame for the state's economic travails.

That factor along with others prompted the legislature to pass in December 1991 a reform of the workers' compensation system. The reform law, Chapter 398 of the Acts of 1991, is a complex piece of legislation, and one of its more salient elements is the reduction in the replacement rate on temporary total disability claims to 60 percent from two-thirds of the injured employee's average weekly wage before the injury. Also, the partial disability benefit was lowered from two-thirds to 60 percent of the difference between the employee's pre-injury average weekly wage and the worker's post-injury earnings capacity. The legislature directed that a study should be conducted to evaluate the impact of the changes in replacement rates on the utilization of the workers' compensation system and the general economic impact of those replacement rate changes.

Over the past twenty years a series of studies has appeared in the academic literature that have the intent of determining the extent to which changes in the level of replacement income available under a workers' compensation system alters how

employees use the program. These studies have usually structured the analysis primarily within the theoretical framework of consumer behavior. The net results of these studies are some tentative conclusions on the impact on total costs of a state's workers' compensation system caused by changes in the replacement rates. This relationship tends to be expressed in terms of the percentage change in the utilization of the workers' compensation system for a given percentage change in the replacement rate. Utilization is defined as the number of claims filed plus the durations associated with the claims. However, duration and claims filed are traditionally investigated as separate dependent variables.

Most of the prior studies, however, have not dealt with episodes where the structure of the underlying economy was experiencing such a large change as has occurred in Massachusetts over the past five years. Consequently, the Advisory Council determined that it would be appropriate to devote a portion of this overall study to an explicit investigation of the potential impact of changes in the structure of the underlying economy on the utilization of the workers' compensation system.

The studies that we have been able to review that investigated the impact of replacement rates on the incidence or duration of claims encompass periods of time in which the underlying economy was subject to the combination of gradual evolutionary changes and business cycles of normal dimensions. In contrast, the changes incorporated in Chapter 398 were implemented during a period of structural change in the Massachusetts economy not seen since the end of the Second World War. To crystallize

this point it is useful to briefly outline the performance of the Massachusetts economy before, during, and after the implementation of the reform act.

The Massachusetts economy peaked during calendar year 1988, and by the end of 1991 total non-farm employment had declined by 10.6 percent. During fiscal year 1991 alone, total non-farm employment fell by 5.7 percent. In the goods producing sector of the economy (manufacturing plus construction), employment dropped by 7.1 percent during fiscal year 1991. These declines are matched only by those during the Great Depression of the 1930s. Since the national economy was experiencing only a moderate recession during 1991 and solid growth from 1988-1990, the contraction in the Massachusetts economy was clearly something more than just a business cycle phenomenon. In fact, manufacturing employment in Massachusetts reached its last peak in 1984 and declined through 1993, down over 30.0 percent. For the nation manufacturing employment fell by 7.5 percent over the same ten year period.

Fiscal year 1993 saw the beginning of a recovery in the Massachusetts economy. Non-farm employment grew at a .2 percent annual rate in the third quarter of 1992 and increased 1.5 percent from the beginning to the end of fiscal year 1993 (1992:3 – 1993:2). Other general measures of economic activity also showed improvement. Personal income increased 4.4 percent, and housing permits for calendar year 1993 were 37.9 percent above the 1991 calendar year level.

While the broad measures of economic activity improved in 1993, some sectors of the economy continued to weaken. For example, employment in the durable goods

manufacturing sector in calendar year 1993 was 9.5 percent lower than in 1991. For the entire country, durable goods manufacturing employment was down 3.75 percent over the same period of time.

As just indicated, the economic recovery finally did begin in Massachusetts during the latter half of 1992. However, the unemployment rate averaged 8.6 percent during the latter half of 1992, 7.5 percent in the first quarter of 1993 and 6.7 percent during the second quarter of 1993. So while the Massachusetts economy was improving during fiscal year 1993, there was still considerable slack in the labor markets; and, as just indicated, some sectors of the economy were continuing to decline. In analyzing the workers' compensation system, one needs to be sensitive to both the overall performance of the economy as well as the behavior of individual sectors.

MEASURING THE RESPONSE TO CHANGES IN THE REPLACEMENT RATE

The economic theory of consumer behavior provides a clear answer as to what to expect in terms of the utilization of the workers' compensation system as the replacement rate is changed. With the reform act, the benefit obtained from workers' compensation benefits relative to the return from working declined. This change in the relative return has an impact on the choice of the amounts of employment and workers' compensation benefits that an individual selects through two factors – the substitution effect and the income effect.

The individual will decrease the relative amount of benefits sought from workers' compensation versus employment income as the worker “substitutes” the higher return activity, earning wages, for the one with the lowered return, which is workers' compensation benefits. The influence of the “income effect” is easier to appreciate if one looks at the reduction of benefits as an increase of the opportunity cost of using the workers' compensation system. This increase in cost lowers the potential income of the employee; and as a result, the individual will opt for less usage of the system.

Consequently, both the substitution and the income effects point in the same direction. A reduced replacement rate should cause a lower utilization rate and a tendency to try to remain on the job or seek other types of benefits. For example, the employee might have sick leave available or a short term disability insurance program. The employee might even qualify for social security disability insurance. This reduction

can appear as fewer claims filed and/or shorter durations for the termination of cases on workers' compensation.

In the academic literature one can find several attempts to quantify the relationship between changes in the replacement rate and/or changes in maximum and minimum benefits on the duration of claims and the incidence of claims. This literature has been surveyed by both ourselves and other analysts in the field of workers' compensation.^{1,2,3,4} Before reporting on the conclusions of these studies, it is appropriate to briefly discuss the manner in which the responsiveness is measured.

The statistical results are usually expressed in terms of a technical concept known as the "elasticity". For our subject the question is, "How much does the claims rate change when the replacement rate is changed?" The claims rate is called the dependent

¹ John Gardner, *Return to Work Incentives: Lessons for Policymakers from Economic Studies* (Cambridge, Massachusetts: Workers Compensation Research Institute, 1989), pp. 31-47.

² Richard J. Butler and John D. Worrall, "Workers' Compensation: Benefit and Injury Claims Rates in the Seventies," *Review of Economics and Statistics*, 65 (November 1983), pp. 580-589.

³ Richard J. Butler, "Wage and Injury Rate Response to Shifting Levels of Workers' Compensation," *Safety and the Work Force*, ed. John D. Worrall, (Ithaca, New York: ILR Press, 1983), pp. 61-86.

⁴ Richard J. Butler and John D. Worrall, "Work Injury Compensation and the Duration of Nonwork Spells," *The Economic Journal*, 95 (September, 1985), pp. 714-724.

variable (the subject whose behavior we are trying to explain), and the replacement rate is called the independent variable (a factor that might help explain the behavior of the claims rate). The elasticity measure simply says that for a given percentage change in the independent variable (the replacement rate in this study) by what percentage does the dependent variable (the claims rate) change. If the replacement rate for temporary total benefits decreased by 10.0 percent, for example, the elasticity would indicate to us what percentage decline or increase in the claims rate one should expect.

Based on the theory of consumer behavior as expressed in terms of the income and substitution effects, one expects that the relationship between changes in the replacement rate and the claims rate should be direct. An increase in the replacement rate should result in an increase in the claims rate, and a decrease in the replacement rate should cause a decline in the claims rate. The empirical work reported in the various academic studies does suggest that the relationship is direct. Moreover, these studies quantify the relationship. They estimate that for a 10.0 percent increase or decrease in the replacement rate, the claims filing rate will increase or decrease by 3.5 percent. This result would be reported as an elasticity of .35. Also, a 10.0 percent increase or decrease in the replacement rate causes a 2.0 percent increase or decrease in the duration of claims, or an elasticity of .2. In equation form, these results can be written as:

$$\% \text{ change in claims rate} = (.35) * (\% \text{ change in replacement rate})$$

$$\% \text{ change in duration} = (.2) * (\% \text{ change in replacement rate})$$

While the academic studies footnoted earlier were refereed by and published in very prestigious journals, the papers themselves investigated episodes that only roughly approximate the experience in Massachusetts. The paper, "Workers' Compensation: Benefit and Injury Claims Rates in the Seventies," used highly aggregated national data to estimate the elasticities. The other major investigation of the subject, "Wage and Injury Rate Response to Shifting Levels of Workers' Compensation," relied on a long series of data for South Carolina. Additionally, both studies investigated the relationship between benefits and claims rates during periods of time in which the general economic environment was quite different from that which existed in Massachusetts during the early 1990s. In addition to these shortcomings, the statistical significance of the elasticities calculated is low. Therefore, the .35 elasticity for the claims rate and the .2 elasticity for the duration are simply estimates for the most likely value of these parameters. The actual values for the elasticities could fall within a wide range centered around the .35 and .2 values. For example, with respect to the elasticity for the claims rate, there is a sixty-six percent probability that the elasticity could fall between -.145 and .889. Even though there is considerable uncertainty about the true elasticity, the empirical results in this study show such a large decline in the claims rate that it is virtually impossible to attribute the entire fall in the claims rate to the reduction in the replacement rate.

Finally, the elasticities just discussed apply to situations in which the replacement rates fall in the range of 40-100 percent of gross income. This means, of course, that these studies and the estimated elasticities are appropriate for the episode analyzed in this

report. Prior to the implementation of the reform act the replacement rate for temporary total benefits was two-thirds of pre-injury gross income, and it became sixty percent after the reform act became effective.

The gross replacement rate indicates how much of the gross pre-injury wage is replaced by the benefits received from the workers' compensation system. For example, if the injured worker's pre-injury gross earnings were \$500 per week and the benefits received totaled \$300 per week, the gross replacement rate would equal $\$300 \div \500 or 60 percent. Generally, though, workers' compensation benefits are not taxed. Therefore, many analysts believe that the comparisons between workers' compensation benefits and pre-injury earnings should be based on after-tax earnings.

For explanatory purposes only, consider the situation in which the employee faces a combined marginal income tax rate of 30.0 percent. This implies that each additional dollar of gross wage income will result in 70 cents of after-tax income; while under the current replacement rate, this individual would receive 60 cents in workers' compensation benefits. This means that, the after-tax replacement rate would equal $60 \div 70 = .857$ or 85.7 percent. Therefore, even ignoring other possible benefits, the after-tax replacement rate remains quite substantial. Of course, the after-tax replacement rate depends on both the average and marginal income tax rates. The lower these rates are, the smaller will be the after-tax replacement rate, and this will tend to impact individuals at the lower end of the income rat

To offset that impact of marginal income tax rates, the workers' compensation system also sets a maximum and minimum level of benefits. The maximum payment usually equals the state average weekly wage as determined under the unemployment insurance law. In Massachusetts the minimum benefit is set at twenty percent of the state's average weekly wage. The state average weekly wage equaled \$565.94 for 1993. At a sixty percent replacement rate, gross weekly pre-injury income must equal \$943.23 to hit the maximum payments. Those receiving weekly earnings above \$943.23 will still be entitled to a maximum benefit of \$565.94. At a gross replacement rate of two-thirds, a pre-injury weekly gross income of \$848.91 would entitle one to the maximum benefit. Consequently, for someone with a pre-injury gross weekly wage falling between \$943.23 and \$848.91, the shift to a sixty percent replacement rate results in a reduction of weekly workers' compensation benefits. Of course, this is also true for all pre-injury gross incomes that are above \$188.65 per week. This figure is derived from sixty percent of the income that equals the minimum benefit. Under present law,

$$(.6) * (\text{weekly gross income}) = (.2) * (\text{state average weekly wage})$$

$$(.6) * (\text{weekly income}) = (.2) * (565.94)$$

$$\text{weekly income} = [(.2) * (565.94)] \div .6 = \$188.65$$

If the replacement rate were still two-thirds of the gross weekly income, then weekly incomes below \$168.94 would receive the minimum benefit of $(.2) * (565.94) = \$113.19$. Consequently, the replacement rate reduction also impacts those with a gross weekly wage falling in the range of \$168.94 – \$188.65.

In summary, the shift in the replacement rate for temporary total benefits potentially impacts any employee with a gross weekly wage falling in the range of \$168.94 – \$943.23. The average weekly wage for virtually all of the two digit code industries used in this report fall within this range. Consequently, the elasticities of response to changes in the replacement rate on the claim-filing rate reported in the academic studied should have validity for the Massachusetts industries during the 1990-1993 time period that are analyzed in this report.

DATA UTILIZED

The Department of Industrial Accidents (DIA) provided extensive records of the claims experience for fiscal years 1991 and 1993. The contents of these records are described and analyzed in the companion report prepared by Tillinghast. To study the potential impact of economic conditions on the utilization of the workers' compensation system, it is necessary to relate this claims data to specific sectors of the economy.

Employment and payroll data are collected and maintained by the Department of Employment and Training (DET). These data are collected and categorized by three digit Standard Industrial Classification codes that are then aggregated up to two digit codes. For example, industry code 35 includes all of the firms that are engaged in the manufacture of industrial machinery and equipment. This particular industry sums the employment and payroll data for nine three digit industries: Engines & Turbines, SIC 351; Farm and Garden Machinery, SIC 352; Construction & Related Machinery, SIC 353; Metalworking Machinery, SIC 354; Special Industry Machinery, SIC 355; General Industrial Machinery, SIC 356; Computer & Office Equipment, SIC 357; Refrigeration & Service Machinery, SIC 358; and Industrial Machinery Not Elsewhere Categorized, SIC 369. The payroll and employment data that the DET records for this database is derived from the ES202 reports; the reports that companies are required to provide for the unemployment insurance program. It is estimated that the ES202 reports cover approximately 98 percent of total employment. In summary, we were able to collect from the Massachusetts Department of Employment and Training annual employment

and payroll data by two digit SIC code, for the calendar years 1988 - 1993. At the time of collection, the data for 1993 was just preliminary.

The employment and payroll data obtained from the DET was related to the claims data obtained from the DIA through the SIC codes. On the Employer's First Report on Injury or Fatality, item 15 solicits the SIC code of the employer's company. The industry codes that are listed on the First Report match the two digit SIC codes that are utilized by the DET. Tillinghast sorted and listed the claims data by the numbers recorded in item 15 on the First Report. For 1991, 85.7 percent of the First Reports had an entry in item 15. For 1993, 75.2 percent had an entry. Most employers followed the instruction for entering in the two digit codes listed on the back of the First Report. However, some entered one, three, or four digit numbers. The single digit entries had a zero added. Therefore, 8 became industry 80. The three and four digit entries kept the first two digits. Therefore, 815 became industry 81. After consultation with data analysis and entry experts at the DIA, we determined that this was the correct manner in which to categorize the claims data. The claims incident data for fiscal years 1991 and 1993 was then matched with an estimate of payroll by two digit SIC code for each of those two years. The estimate for fiscal year 1991 is the average of calendar years 1990 and 1991, and the estimate for fiscal year 1993 is the arithmetic average of calendar years 1992 and 1993. We chose this approach to estimating the payrolls in each fiscal year to avoid problems with seasonal adjustment. Table 1 displays the payroll data by SIC code for each fiscal year, and Table 2 shows the number of claims for the two periods.

The decision to utilize payroll as the standard to compare claims frequency in the two periods is founded on the well established procedures in workers' compensation premium calculations. Empirical studies continue to show⁵ that payroll is a sound indicator of risk of claims, and workers' compensation insurance premiums are usually based on payroll. In addition, the payroll data has a long established record for accuracy. Table 3 displays the claims rate by SIC industry for each \$100 of payroll.

⁵Massachusetts Workers' Compensation Advisory Council, *A Study of the Massachusetts Workers' Compensation Rating Methodology*, A report prepared by the Wyatt Company, (Wellesley Massachusetts, July, 1994).

METHODOLOGY AND ANALYSIS OF THE DATA

The first step in analyzing the interaction of changes in the workers' compensation system and the economic environment on the utilization of the system involved measuring the frequency of claims in both fiscal years 1991 and 1993. Clearly, a comparison of the actual count of the number of claims in the two years for each industry would be inadequate. If a particular industry is growing or contracting in terms of payroll, then one would expect, if nothing else has occurred to alter the use of the system, the number of claims to increase or decrease. Therefore, it is necessary to standardize the claims count by a factor that accurately portrays the level of activity in the industry and the risk level of a claim developing.

As indicated in the previous section of this report, empirical analysis and industry convention indicate that payroll provides a good measure of activity and risk for a broad range of industries. Consequently, to establish a claims frequency series, the claims count for each industry group was divided by the payroll estimate for that industry and year. This ratio was then multiplied by one hundred to develop a claims frequency based on number of claims per one hundred dollars of payroll. However, before this calculation was done, it was necessary to adjust the claims count for fiscal year 1993.

Again, as indicated earlier in this report, the percentage of First Reports that had a SIC code entered equaled 85.7 percent in fiscal year 1991 and 76.2 percent in 1993. Since the claims included in the count are those with a SIC code, the number of claims

would have declined by 11.09 percent $[(.762 \div .857) - 1.0]$ even if there had been no changes in the utilization of the workers' compensation system. Consequently, to correct for this drop in the percentage of First Reports with a SIC code, the count for each industry in 1993 was increased by 12.5 percent $[(.857 \div .762) - 1.0]$. These adjusted claims counts were then divided by the industries' payroll, and the ratio was multiplied by 100 to give the adjusted claims rate per hundred dollars of payroll. The results of these calculations are reported in Table 3.

The percentage declines in the claims rates from fiscal year 1991 to fiscal year 1993 are quite substantial. There are four industry groups that do show an increase: SIC 52, Building Materials and Garden Supplies Retailers; SIC 60, Depository Institutions; SIC 67, Holding and Other Investment Offices; and SIC 86, Membership Organizations. The other fifty-nine industry groups show declines in the claims rate, and fifty-five industries have declines that exceed 10.0 percent. These sixty-three industries are quite diverse in size as measured by their respective payrolls. Therefore, a simple average of the percentage declines might portray a misleading view of exactly how large the average decline was. For example, with a simple average the 71.27 percent decline in SIC 46, Pipelines Except Natural Gas, would have the same weight as the 15.84 percent decline for SIC 80, Health Services. This would happen even though the health services industry in Massachusetts is 13,415 times larger than the pipelines except natural gas industry as measured by payroll for each of these two industries. To calculate an average percent change in the claims rates, therefore, the percent change for each industry was multiplied by the fraction of total payroll derived in the respective industries in fiscal year 1993.

For example, the estimated payroll in fiscal year 1993 for the entire sixty-three industries is \$70,804,416,154. The health services industry, SIC 80, had a payroll of \$8,789,550,452 or 12.41 percent of the total. To calculate the weighted percentage change, the 15.84 percent decline in the claims rate was multiplied by .1241, the proportion of payroll derived in this industry. This same calculation was performed for the other sixty-two industries and the resulting products were then summed. Table 4 shows the data and the result, which is a weighted average decline of 27.86 percent.

In the section of this report titled Measuring the Response to Changes in the Replacement Rate, it was noted that previous analytical studies found that a 10.0 percent change in the replacement rate would result in a 3.5 percent change in the claims rate. The shift in the replacement rate from two-thirds to sixty percent represents a 10.0 percent decline in benefits. Based on these previous studies, one could attribute approximately 3.5 percentage points of the average decline to the reduction in the replacement rate. However, even if the estimated elasticity is in error by a factor between 2 and 3, which encompasses about two-thirds of the statistically possible values for the elasticity, the change in the replacement rate can explain only a modest fraction of the average 27.86 percent decline. For example, if the elasticity is correct, then only 12.6 percent of the decline ($3.5 \div 27.9$) can be directly attributed to the reduction in the replacement rate. If the elasticity is in error by a factor of 2, .7 instead of .35, then the replacement rate reduction would still only explain about 25.1 percent of the 27.9 percent average decline.

On the face of it, these results provide overwhelming evidence that the decline in the claims filing rate is not attributable to just the reduction of the replacement rate incorporated in Chapter 398. A standard statistical test can be employed, however, to confirm the visual test. It is a nonparametric test known as the sign test.⁶ This test is explained in the Appendix. The results of this formal statistical test show that there is substantially less than a one percent probability that the decline in the claims rate from 1991 to 1993 is not statistically significant. That is, one can be virtually certain that the claims rate for FY 1993 is in fact lower than the FY 1994 claims rate.

The statistical analysis reported above indicates that it is highly unlikely that the change in the replacement rate can explain more than just a modest percentage of the calculated average decline in the claims rate. To further investigate the factors that may have had an influence on the claims rates, a subgroup of the sixty-three industries was studied very intensely. There were three principal criteria for selecting the industries that were included in this subgroup. First, the industry needed to represent a significant factor in the economy of Massachusetts. This was indicated by the size of the industry's payroll and by its role in determining the growth characteristics of the state's economy. Second, the industries included in the group should provide a significant representation from the major sectors of the state's economy; i.e., construction, manufacturing, and services. Third, as wide a diversity in economic performance during this period of time

⁶ Paul G. Hoel, *Introduction to Mathematical Statistics* (New York: John Wiley & Sons, Inc., 1965), pp. 329-333.

was sought. This means that industries were selected on the basis of whether employment grew, remained roughly constant, or declined during the time period of this study. Table 5 shows the industries included in this subgroup and the relevant employment, payroll, and wage data for these industries. The estimated 1993 payroll for these seventeen industries equals 48.9 percent of the total payroll for the sixty-three industries. Consequently, the analysis that follows applies to a large component of the overall Massachusetts economy.

Statistical tests were performed to determine whether the employment trends helped to explain the changes in the claims rates from fiscal year 1991 versus fiscal year 1993. The results of a regression in which the percent change in the claims rate is regressed against the change in the average wage and the change in the level of employment is reported below.

$$\% \text{ change - claims rate} = \text{Intercept} + b (\% \text{ change - wage}) + c (\% \text{ change - employment})$$

	<i>Coefficient</i>	<i>Standard Error</i>	<i>T-Statistic</i>
<i>Intercept</i>	-20.810	12.093	-1.72
<i>Percent Change in Average Wage</i>	-0.719	1.176	-0.61
<i>Percent Change in Employment</i>	0.541	.410	1.32

R Square: 0.115
 Standard Error: 13.275
 Observations: 17
 F Statistic 0.910

The regression coefficients are not statistically significant at the 95.0 percent level, and the regression factors explain 11.5 percent of the variability in the percent change of the claims rates. While this analysis does not provide strong statistical evidence that wage and employment trends can explain a significant portion of the claims rate experience, the signs of the regression coefficients do offer some indication that shifts in the types of jobs in the Massachusetts economy may help one understand the dynamics of the process of falling claims rates.

The normal supply-demand analysis would lead one to expect that wages would rise in an environment of strong demand for labor. However, even in industries in which employment fell dramatically, average wages increased. For example, from 1991 to 1993, employment in SIC 15, General Building Contractors, declined by 29.3 percent, while the average wage increased by 6.86 percent. Even more striking is the 12.9 percent increase in the average wage in SIC 35, Industrial Machinery and Equipment, along with a 13.1 percent decline in employment. Of the seventeen industries in the group, the gain in the average wage for SIC 35 was the largest. This behavior of average wages in the face of declining employment would tend to indicate that higher value-added jobs were becoming a larger percentage of total employment in that industry. If these types of jobs involve less exposure to risk of injury, then one would expect a negative relationship between the change in the claims rate and the change in the average wage. That is, the larger the percentage increase in the average wage, the smaller or more negative should be the percent change in the claims rate. The coefficient on the

percent change in average wage variable is in fact negative (the coefficient equals $-.719$) but does not differ from a value of zero by a statistically significant amount. For example, if the average wage in a particular industry increased by 10.0 percent from 1991 to 1993, the value of the regression coefficient on that factor, $-.719$, implies that the percent change of the claims rate will be reduced by 7.19 percentage points.

The single industry that appears to be most important in reducing the significance of this factor in explaining the percent change in the claims rate is SIC 47, Transportation Services. The average wage increased by 12.6 percent but the claims rate declined by just 6.3 percent. The claims rate in this industry is very high. Excluding the residual category SIC 89, Services NEC; Transportation Services had the second highest claims rate in fiscal year 1991 and the highest in fiscal year 1993 of all the sixty-two industries. With the claims rate for this industry being several multiples of the average claims rate, one has to consider the possibility that the characteristics of this industry are so different from the general conditions of the workplace that the customary economic factors have little influence. Additionally, the transportation services industry is quite small. Its 1993 payroll represented only 0.39 percent of the total payroll for the sixty-three industries and just 0.80 percent of the seventeen industry subgroup's total payroll.

The second variable included in the regression, percent change in employment, is supposed to explicitly account for the changing demand conditions mentioned above. A positive percentage gain in an industry's employment implies that a wide spectrum of employees is being added, both high and low value added positions. Therefore for an industry with increasing employment, one would expect a smaller percentage decline in

the claims rate. Similarly, declines in employment ought to be associated with larger percentage declines in the claims rate. This implies that there should be a direct positive relationship between the percent change in employment and the percent change in the claims rate. In fact, that is what is found. The regression coefficient equals .541; meaning that a 10 percent decrease in employment causes a 5.41 percentage point decrease in the claims rate percent change, while a 10 percent increase means 5.41 percentage points added to the percent change in the claims rate. Again, industry SIC 47 appears to be obfuscating this relationship. In fact, a regression that excludes industry 47 does improve the results. The R-Square rises to 0.18 and the t-statistics on the two independent variables increase in value.

To investigate further the issue of whether a shifting labor market profile can explain some of the variance in the claims rate percentage changes, the distribution of weekly benefits received were analyzed. Table 6 shows the percent change in the percentage of benefits received categorized by size of benefit. The most startling result indicated by this analysis is the dramatic increase in the percentage of benefits received that fall in the category \$0 – \$150. Of course, this category really tabulates the number of temporary total cases receiving a benefit that ranges between the minimum weekly benefit and \$150.00. For fiscal year 1993, 19.67 percent of the temporary total benefits received in these seventeen industries fell in this range. This represents a 47.87 percent increase from the 13.30 percent level in 1991. All seventeen industries recorded an increase in this benefit category. Listing the seventeen industries on the basis of percentage change in employment from 1991 to 1993 and then forming three groups

indicates that the group containing the industries with the largest decline in employment recorded the largest increase in the percent of benefits in the \$0 – \$150 category, 92.0 percent. The group with a net increase in employment over this period experienced a 46.8 percent increase. Table 7 summarizes these results.

It is difficult to reconcile the results reported in Table 7 for category \$0 – \$150 with those for the category above \$450. For the above \$450 category, the percent change in employment appears to have no explanatory power. The averages for the three groups are virtually identical. Based on our previous empirical analysis it appears that industries with declining employment were eliminating their lower value-added positions. Therefore, one would not expect to see a large percentage increase in benefits received by individuals at the lower end of the wage range and would expect an increase in the percentage of claims coming from the higher end of the wage range.

There is, perhaps, an explanation that reconciles this benefits received data with the previous empirical work indicating that labor force shifts account for some of the decline in the claims rate. Both plaintiff attorneys and representatives from insurance companies report that they detect an increase in cases that involve repetitive or cumulative injury; for example, exposure to dangerous materials or hand injuries related to keyboard use. Sometimes these claims are made after the individual has left the employer, meaning that a First Report would not have been filed at the time of injury. Also, it is quite possible that these types of injuries occur more frequently among employees at the lower end of the wage range. This is especially likely given the type of injury that precipitates the claim. Therefore, it is still possible that the shifting structure

of the labor force accounts for some of the decline in the overall claims rate. However, some of those individuals who have been separated from their previous employer still file claims as just described, and those claims help drive the relative distribution of the size of benefits received.

To corroborate the ideas just offered, the seventeen industries were grouped on the basis of their percent change in payroll from 1991 to 1993. Table 8 contains the results of that grouping. For the first group with a 10.18 percent decline in average payroll, benefit received in the \$0 – \$150 category increased by the largest amount while benefit received in the above \$450 category declined by the largest percentage. The group with rising payroll showed just the opposite performance, and the middle group with flat payroll growth fell between these two groups.

As with the groups based on employment change, the stronger industries as measured by payroll showed a smaller increase in the percentage of claims in category \$0 – \$150. However, the stronger industries recorded a smaller decline in the above \$450 category. In fact, four industries showed an increase in the percentage of claims for the above \$450 category, and three of them had a significant increase in payroll from 1991 to 1993. In summary, these results are roughly consistent with the analysis presented earlier. Moreover, they tend to show the impact of general economic conditions. Stronger industries tend not to be undergoing massive changes in the composition of their labor forces. Therefore, the pattern of claims filed changes less dramatically. However, even in the strongest industries; health services for example,

claims rates and benefits received declined. Therefore, factors beyond simple industry economic forces must have also been at work to reduce the overall claims rate.

Chapter 398 changed many other provisions in the workers' compensation system. The retroactive period was changed, for example. Also, in July 1992 an impartial system of medical review went into effect. This increased the uncertainty about what medical evidence would be presented in a contested claim. These and other changes must have some impact on the claims rate, but their influence could not be tested in this study.

Finally, the full impact of economic forces on the utilization of the system could only be tested by including the experiences of many other states in a study. Such a study is well beyond the scope of this project, and the data needed to accurately assess these impacts may not exist

TABLE I
ESTIMATED MASSACHUSETTS PAYROLLS
by SIC Code

SIC Code	Industry	FY 91		FY 93	
		Estimated Payroll	% of Total Payroll	Estimated Payroll	% of Total Payroll
SIC 15	general building contractors	\$787,558,375	1.18%	\$598,487,136	0.85%
SIC 16	heavy construction, except building	\$302,976,998	0.46%	\$359,680,771	0.51%
SIC 17	specialty trade contractors	\$1,764,690,726	2.65%	\$1,578,477,061	2.23%
SIC 20	food & kindred products	\$557,888,278	0.84%	\$601,112,581	0.85%
SIC 22	textile mill products	\$397,746,820	0.60%	\$454,394,035	0.64%
SIC 23	apparel & other textile products	\$327,796,708	0.49%	\$340,663,939	0.48%
SIC 24	lumber, wood products	\$88,576,637	0.13%	\$87,476,635	0.12%
SIC 25	furniture fixtures	\$109,895,784	0.17%	\$105,610,239	0.15%
SIC 26	paper, allied products	\$663,581,031	1.00%	\$688,823,618	0.97%
SIC 27	printing, publishing	\$1,533,916,914	2.31%	\$1,546,427,125	2.18%
SIC 28	chemicals, allied products	\$710,005,941	1.07%	\$763,484,842	1.08%
SIC 29	petroleum refining industry	\$52,702,398	0.08%	\$66,343,361	0.09%
SIC 30	rubber and plastics	\$635,325,205	0.96%	\$725,584,572	1.02%
SIC 31	leather products	\$148,914,631	0.22%	\$135,229,552	0.19%
SIC 32	stone clay, glass	\$276,995,095	0.42%	\$285,014,427	0.40%
SIC 33	primary metal industry	\$320,623,643	0.48%	\$301,822,126	0.43%
SIC 34	fabricated metal	\$1,278,202,448	1.92%	\$1,277,195,864	1.80%
SIC 35	industrial machinery & equipment	\$3,246,664,639	4.88%	\$3,185,371,808	4.50%
SIC 36	electric equipment	\$2,464,490,134	3.71%	\$2,358,598,732	3.33%
SIC 37	transportation equipment	\$1,089,409,607	1.64%	\$1,015,317,412	1.43%
SIC 38	instruments	\$2,601,537,281	3.91%	\$2,590,047,521	3.66%
SIC 39	miscellaneous manufacturing	\$446,507,057	0.67%	\$480,672,369	0.68%
SIC 41	local passenger transportation	\$241,312,391	0.36%	\$255,688,317	0.36%
SIC 42	trucking and warehousing	\$717,544,368	1.08%	\$763,239,992	1.08%
SIC 44	water transportation	\$88,848,439	0.13%	\$81,941,894	0.12%
SIC 45	air transportation	\$445,233,768	0.67%	\$490,616,919	0.69%
SIC 46	pipelines except natural gas	\$585,776	0.00%	\$655,208	0.00%
SIC 47	transportation services	\$249,370,310	0.37%	\$276,357,068	0.39%
SIC 48	communication	\$1,189,061,382	1.79%	\$1,265,262,931	1.79%
SIC 49	electric, gas & sanitary services	\$994,470,707	1.50%	\$1,051,592,554	1.49%
SIC 50	wholesale trade durable goods	\$3,658,873,979	5.50%	\$3,709,722,389	5.24%
SIC 51	wholesale trade nondurables	\$2,196,234,481	3.30%	\$2,362,890,319	3.34%
SIC 52	building materials & garden supplies	\$409,707,309	0.62%	\$376,647,291	0.53%
SIC 53	general merchandise stores	\$723,030,904	1.09%	\$765,635,618	1.08%
SIC 54	food stores	\$1,320,406,657	1.99%	\$1,313,690,926	1.86%
SIC 55	auto dealers & service stations	\$957,925,129	1.44%	\$950,732,696	1.34%
SIC 56	apparel & accessory stores	\$588,992,364	0.89%	\$617,503,366	0.87%
SIC 57	furniture & home furnishings	\$422,500,182	0.64%	\$422,551,223	0.60%
SIC 58	eating & drinking places	\$1,683,334,238	2.53%	\$1,768,723,966	2.50%
SIC 59	miscellaneous retail	\$1,248,734,284	1.88%	\$1,296,357,635	1.83%
SIC 60	depository institutions	\$1,850,878,534	2.78%	\$1,908,221,124	2.70%
SIC 61	nondepository institutions	\$224,664,950	0.34%	\$348,072,823	0.49%
SIC 62	securities & commodities brokers	\$1,463,860,189	2.20%	\$2,050,743,497	2.90%
SIC 63	insurance carriers	\$1,683,819,246	2.53%	\$1,851,228,379	2.61%
SIC 64	insurance agents, brokers	\$766,815,904	1.15%	\$773,750,230	1.09%
SIC 65	real estate	\$804,283,406	1.21%	\$801,878,629	1.13%
SIC 67	holding & other investment offices	\$197,871,993	0.30%	\$192,184,666	0.27%
SIC 70	hotel & other lodging places	\$529,053,917	0.80%	\$544,893,494	0.77%
SIC 72	personal services	\$418,236,359	0.63%	\$432,696,163	0.61%
SIC 73	business services	\$3,716,646,252	5.59%	\$4,196,892,933	5.93%
SIC 75	auto repair & services	\$443,686,462	0.67%	\$446,635,335	0.63%

TABLE 1
ESTIMATED MASSACHUSETTS PAYROLLS
by SIC Code

SIC Code	Industry	FY 91		FY 93	
		Estimated Payroll	% of Total Payroll	Estimated Payroll	% of Total Payroll
SIC 76	miscellaneous repair services	\$231,781,317	0.35%	\$239,523,288	0.34%
SIC 78	motion pictures	\$143,388,026	0.22%	\$154,908,688	0.22%
SIC 79	amusement & recreation services	\$391,334,667	0.59%	\$471,619,033	0.67%
SIC 80	health services	\$7,475,858,809	11.24%	\$8,789,550,452	12.41%
SIC 81	legal services	\$1,126,180,486	1.69%	\$1,195,398,108	1.69%
SIC 82	educational services	\$2,482,149,579	3.73%	\$2,720,817,018	3.84%
SIC 83	social services	\$985,328,936	1.48%	\$1,128,119,964	1.59%
SIC 84	museum & gardens	\$72,154,491	0.11%	\$76,901,174	0.11%
SIC 86	membership organizations	\$362,539,481	0.55%	\$357,379,435	0.50%
SIC 87	engineering & management services	\$4,110,029,567	6.18%	\$4,716,218,368	6.66%
SIC 88	private households	\$43,322,544	0.07%	\$50,895,140	0.07%
SIC 89	services, NEC	\$40,296,626	0.06%	\$40,242,193	0.06%
	Total	\$66,506,354,743	100.00%	\$70,804,416,154	100.00%

Source: Department of Employment and Training, Employment & Wages State Summary by Year

TABLE 2

MASSACHUSETTS INCIDENTS BY SIC

SIC Code	Industry	Number of Incidents	
		FY 1991	FY1993
SIC 15	general building contractors	1,650	797
SIC 16	heavy construction, except building	703	402
SIC 17	specialty trade contractors	2,553	1,256
SIC 20	food & kindred products	1,713	1,062
SIC 22	textile mill products	686	408
SIC 23	apparel & other textile products	429	319
SIC 24	lumber, wood products	207	139
SIC 25	furniture fixtures	203	135
SIC 26	paper, allied products	1,220	669
SIC 27	printing, publishing	1,127	811
SIC 28	chemicals, allied products	393	215
SIC 29	petroleum refining industry	116	73
SIC 30	rubber and plastics	1,131	642
SIC 31	leather products	181	79
SIC 32	stone clay, glass	421	181
SIC 33	primary metal industry	568	288
SIC 34	fabricated metal	2,281	1,416
SIC 35	industrial machinery & equipment	1,044	390
SIC 36	electric equipment	1,940	1,068
SIC 37	transportation equipment	638	487
SIC 38	instruments	286	156
SIC 39	miscellaneous manufacturing	2,344	1,412
SIC 41	local passenger transportation	1,149	939
SIC 42	trucking and warehousing	1,947	1,110
SIC 44	water transportation	55	37
SIC 45	air transportation	653	611
SIC 46	pipelines except natural gas	7	2
SIC 47	transportation services	1,584	1,463
SIC 48	communication	396	326
SIC 49	electric, gas & sanitary services	1,041	732
SIC 50	wholesale trade durable goods	910	563
SIC 51	wholesale trade nondurables	943	618
SIC 52	building materials & garden supplies	313	259
SIC 53	general merchandise stores	1,046	717
SIC 54	food stores	3,793	2,608
SIC 55	auto dealers & service stations	663	379
SIC 56	apparel & accessory stores	374	257
SIC 57	furniture & home furnishings	185	130
SIC 58	eating & drinking places	1,929	1,372

TABLE 2

MASSACHUSETTS INCIDENTS BY SIC

SIC Code	Industry	Number of Incidents	
		FY 1991	FY1993
SIC 59	miscellaneous retail	1,085	894
SIC 60	depository institutions	238	220
SIC 61	nondepository institutions	91	54
SIC 62	securities & commodities brokers	22	14
SIC 63	insurance carriers	326	233
SIC 64	insurance agents, brokers	73	56
SIC 65	real estate	437	281
SIC 67	holding & other investment offices	24	28
SIC 70	hotel & other lodging places	857	668
SIC 72	personal services	374	212
SIC 73	business services	1,061	786
SIC 75	auto repair & services	631	311
SIC 76	miscellaneous repair services	266	114
SIC 78	motion pictures	36	11
SIC 79	amusement & recreation services	202	136
SIC 80	health services	9,307	8,188
SIC 81	legal services	92	67
SIC 82	educational services	2,431	2,054
SIC 83	social services	708	556
SIC 84	museum & gardens	42	30
SIC 86	membership organizations	65	74
SIC 87	engineering & management services	204	124
SIC 88	private households	49	47
SIC 89	services, NEC	1,516	1,110

Source: Department of Industrial Accidents

TABLE 3

**MASSACHUSETTS INCIDENTS PER HUNDRED DOLLARS OF PAYROLL
USING ADJUSTED 1993 INCIDENTS
by SIC Code**

SIC Code	Industry	Incidents per Hundred Dollars of Payroll		% change in Incident Rate
		FY 1991	Adjusted FY 1993	FY 91 - Adj. FY93
SIC 15	general building contractors	0.0002095	0.0001498	-28.51%
SIC 16	heavy construction, except building	0.0002320	0.0001257	-45.82%
SIC 17	specialty trade contractors	0.0001447	0.0000895	-38.14%
SIC 20	food & kindred products	0.0003071	0.0001987	-35.29%
SIC 22	textile mill products	0.0001725	0.0001010	-41.45%
SIC 23	apparel & other textile products	0.0001309	0.0001053	-19.53%
SIC 24	lumber, wood products	0.0002337	0.0001787	-23.53%
SIC 25	furniture fixtures	0.0001847	0.0001438	-22.17%
SIC 26	paper, allied products	0.0001839	0.0001092	-40.59%
SIC 27	printing, publishing	0.0000735	0.0000590	-19.72%
SIC 28	chemicals, allied products	0.0000554	0.0000317	-42.78%
SIC 29	petroleum refining industry	0.0002201	0.0001238	-43.77%
SIC 30	rubber and plastics	0.0001780	0.0000995	-44.10%
SIC 31	leather products	0.0001215	0.0000657	-45.94%
SIC 32	stone clay, glass	0.0001520	0.0000714	-53.01%
SIC 33	primary metal industry	0.0001772	0.0001073	-39.42%
SIC 34	fabricated metal	0.0001785	0.0001247	-30.13%
SIC 35	industrial machinery & equipment	0.0000322	0.0000138	-57.18%
SIC 36	electric equipment	0.0000787	0.0000509	-35.30%
SIC 37	transportation equipment	0.0000586	0.0000539	-7.88%
SIC 38	instruments	0.0000110	0.0000068	-38.38%
SIC 39	miscellaneous manufacturing	0.0005250	0.0003304	-37.06%
SIC 41	local passenger transportation	0.0004761	0.0004130	-13.25%
SIC 42	trucking and warehousing	0.0002713	0.0001636	-39.72%
SIC 44	water transportation	0.0000619	0.0000508	-17.96%
SIC 45	air transportation	0.0001467	0.0001401	-4.50%
SIC 46	pipelines except natural gas	0.0011950	0.0003433	-71.27%
SIC 47	transportation services	0.0006352	0.0005954	-6.27%
SIC 48	communication	0.0000333	0.0000290	-12.99%
SIC 49	electric, gas & sanitary services	0.0001047	0.0000783	-25.21%
SIC 50	wholesale trade durable goods	0.0000249	0.0000171	-31.37%
SIC 51	wholesale trade nondurables	0.0000429	0.0000294	-31.49%
SIC 52	building materials & garden supplies	0.0000764	0.0000773	1.24%
SIC 53	general merchandise stores	0.0001447	0.0001053	-27.20%
SIC 54	food stores	0.0002873	0.0002233	-22.27%
SIC 55	auto dealers & service stations	0.0000692	0.0000448	-35.22%
SIC 56	apparel & accessory stores	0.0000635	0.0000468	-26.28%
SIC 57	furniture & home furnishings	0.0000438	0.0000346	-20.98%

TABLE 3

**MASSACHUSETTS INCIDENTS PER HUNDRED DOLLARS OF PAYROLL
USING ADJUSTED 1993 INCIDENTS
by SIC Code**

SIC Code	Industry	Incidents per Hundred Dollars of Payroll		% change in Incident Rate
		FY 1991	Adjusted FY 1993	FY 91 - Adj. FY93
SIC 58	eating & drinking places	0.0001146	0.0000872	-23.87%
SIC 59	miscellaneous retail	0.0000869	0.0000776	-10.73%
SIC 60	depository institutions	0.0000129	0.0000130	0.84%
SIC 61	nondepository institutions	0.0000405	0.0000174	-56.92%
SIC 62	securities & commodities brokers	0.0000015	0.0000008	-48.91%
SIC 63	insurance carriers	0.0000194	0.0000142	-26.88%
SIC 64	insurance agents, brokers	0.0000095	0.0000081	-14.49%
SIC 65	real estate	0.0000543	0.0000394	-27.46%
SIC 67	holding & other investment offices	0.0000121	0.0000164	35.10%
SIC 70	hotel & other lodging places	0.0001620	0.0001379	-14.88%
SIC 72	personal services	0.0000894	0.0000551	-38.38%
SIC 73	business services	0.0000285	0.0000211	-26.22%
SIC 75	auto repair & services	0.0001422	0.0000783	-44.93%
SIC 76	miscellaneous repair services	0.0001148	0.0000535	-53.36%
SIC 78	motion pictures	0.0000251	0.0000080	-68.19%
SIC 79	amusement & recreation services	0.0000516	0.0000324	-37.17%
SIC 80	health services	0.0001245	0.0001048	-15.84%
SIC 81	legal services	0.0000082	0.0000063	-22.84%
SIC 82	educational services	0.0000979	0.0000849	-13.31%
SIC 83	social services	0.0000719	0.0000554	-22.86%
SIC 84	museum & gardens	0.0000582	0.0000439	-24.62%
SIC 86	membership organizations	0.0000179	0.0000233	29.89%
SIC 87	engineering & management services	0.0000050	0.0000030	-40.42%
SIC 88	private households	0.0001131	0.0001039	-8.17%
SIC 89	services, NEC	0.0037621	0.0031023	-17.54%

Source: Department of Industrial Accidents and Employment and Training

TABLE 4

AVERAGE PERCENT CHANGE IN MASSACHUSETTS INCIDENT RATE

SIC Code	Industry	% change in Incident Rate	Proportion of Total Payroll	Change in Incident Rate Weighted by % of Total Payroll
		FY 91 - Adj. FY93	Fy 1993	
SIC 15	general building contractors	-28.51%	0.0085	-0.24%
SIC 16	heavy construction, except building	-45.82%	0.0051	-0.23%
SIC 17	specialty trade contractors	-38.14%	0.0223	-0.85%
SIC 20	food & kindred products	-35.29%	0.0085	-0.30%
SIC 22	textile mill products	-41.45%	0.0064	-0.27%
SIC 23	apparel & other textile products	-19.53%	0.0048	-0.09%
SIC 24	lumber, wood products	-23.53%	0.0012	-0.03%
SIC 25	furniture fixtures	-22.17%	0.0015	-0.03%
SIC 26	paper, allied products	-40.59%	0.0097	-0.39%
SIC 27	printing, publishing	-19.72%	0.0218	-0.43%
SIC 28	chemicals, allied products	-42.78%	0.0108	-0.46%
SIC 29	petroleum refining industry	-43.77%	0.0009	-0.04%
SIC 30	rubber and plastics	-44.10%	0.0102	-0.45%
SIC 31	leather products	-45.94%	0.0019	-0.09%
SIC 32	stone clay, glass	-53.01%	0.0040	-0.21%
SIC 33	primary metal industry	-39.42%	0.0043	-0.17%
SIC 34	fabricated metal	-30.13%	0.0180	-0.54%
SIC 35	industrial machinery & equipment	-57.18%	0.0450	-2.57%
SIC 36	electric equipment	-35.30%	0.0333	-1.18%
SIC 37	transportation equipment	-7.88%	0.0143	-0.11%
SIC 38	instruments	-38.38%	0.0366	-1.40%
SIC 39	miscellaneous manufacturing	-37.06%	0.0068	-0.25%
SIC 41	local passenger transportation	-13.25%	0.0036	-0.05%
SIC 42	trucking and warehousing	-39.72%	0.0108	-0.43%
SIC 44	water transportation	-17.96%	0.0012	-0.02%
SIC 45	air transportation	-4.50%	0.0069	-0.03%
SIC 46	pipelines except natural gas	-71.27%	0.0000	0.00%
SIC 47	transportation services	-6.27%	0.0039	-0.02%
SIC 48	communication	-12.99%	0.0179	-0.23%
SIC 49	electric, gas & sanitary services	-25.21%	0.0149	-0.37%
SIC 50	wholesale trade durable goods	-31.37%	0.0524	-1.64%
SIC 51	wholesale trade nondurables	-31.49%	0.0334	-1.05%
SIC 52	building materials & garden supplies	1.24%	0.0053	0.01%
SIC 53	general merchandise stores	-27.20%	0.0108	-0.29%
SIC 54	food stores	-22.27%	0.0186	-0.41%
SIC 55	auto dealers & service stations	-35.22%	0.0134	-0.47%
SIC 56	apparel & accessory stores	-26.28%	0.0087	-0.23%
SIC 57	furniture & home furnishings	-20.98%	0.0060	-0.13%
SIC 58	eating & drinking places	-23.87%	0.0250	-0.60%
SIC 59	miscellaneous retail	-10.73%	0.0183	-0.20%
SIC 60	depository institutions	0.84%	0.0270	0.02%

TABLE 4

AVERAGE PERCENT CHANGE IN MASSACHUSETTS INCIDENT RATE

SIC Code	Industry	% change in Incident Rate	Proportion of Total Payroll	Change in Incident Rate Weighted by % of Total Payroll
		FY 91 - Adj. FY93	Fy 1993	
SIC 61	nondepository institutions	-56.92%	0.0049	-0.28%
SIC 62	securities & commodities brokers	-48.91%	0.0290	-1.42%
SIC 63	insurance carriers	-26.88%	0.0261	-0.70%
SIC 64	insurance agents, brokers	-14.49%	0.0109	-0.16%
SIC 65	real estate	-27.46%	0.0113	-0.31%
SIC 67	holding & other investment offices	35.10%	0.0027	0.10%
SIC 70	hotel & other lodging places	-14.88%	0.0077	-0.11%
SIC 72	personal services	-38.38%	0.0061	-0.23%
SIC 73	business services	-26.22%	0.0593	-1.55%
SIC 75	auto repair & services	-44.93%	0.0063	-0.28%
SIC 76	miscellaneous repair services	-53.36%	0.0034	-0.18%
SIC 78	motion pictures	-68.19%	0.0022	-0.15%
SIC 79	amusement & recreation services	-37.17%	0.0067	-0.25%
SIC 80	health services	-15.84%	0.1241	-1.97%
SIC 81	legal services	-22.84%	0.0169	-0.39%
SIC 82	educational services	-13.31%	0.0384	-0.51%
SIC 83	social services	-22.86%	0.0159	-0.36%
SIC 84	museum & gardens	-24.62%	0.0011	-0.03%
SIC 86	membership organizations	29.89%	0.0050	0.15%
SIC 87	engineering & management services	-40.42%	0.0666	-2.69%
SIC 88	private households	-8.17%	0.0007	-0.01%
SIC 89	services, NEC	-17.54%	0.0006	-0.01%
	SUM OF INDUSTRIES		1.0000	-27.86%

Source: Department of Industrial Accidents and Employment and Training

TABLE 5

SEVENTEEN INDUSTRY SUBGROUP

Industry SIC	Percent Change			
	Claims Rate	Payroll	Average Wage	Employment
15	-28.51	-24.01	6.86	-29.30
17	-38.14	-10.55	3.37	-13.81
26	-40.59	3.80	10.27	-5.94
27	-19.72	0.82	8.44	-7.09
28	-42.78	7.53	12.32	-4.29
30	-44.10	14.21	11.70	1.98
34	-30.13	0.01	9.93	-9.20
35	-57.18	-1.89	12.88	-13.13
36	-35.30	-4.28	9.90	-12.88
47	-6.27	10.82	12.45	-1.72
51	-31.49	7.59	10.78	-2.97
54	-22.27	0.01	5.88	-6.11
58	-23.87	5.07	4.14	0.75
73	-26.22	12.92	9.92	2.45
75	-44.93	0.66	6.20	-5.36
80	-15.84	17.57	9.70	7.16
82	-13.31	9.62	11.41	-1.61

TABLE 6

PERCENT CHANGE IN DISTRIBUTION OF WEEKLY BENEFITS RECEIVED
 TEMPORARY TOTAL BENEFITS
 1991 to 1993

SIC Code	\$0 to \$150		\$150 to \$200		\$200 to \$250		\$250 to \$300		\$300 to \$350		\$350 to \$400		\$400 to \$450		Above \$450	
15	227.83%	79.70%	49.01%	-8.09%	28.75%	47.92%	-40.66%	-40.14%								
17	60.16%	52.65%	47.97%	-12.21%	16.57%	38.84%	-28.48%	-26.99%								
26	182.66%	12.54%	-12.74%	-22.59%	-9.84%	45.49%	-41.33%	19.59%								
27	96.94%	28.22%	-11.04%	-12.35%	0.28%	42.11%	-30.11%	-25.81%								
28	88.21%	19.77%	33.07%	10.55%	1.34%	-48.10%	19.77%	-34.67%								
30	69.60%	29.23%	-15.24%	-21.37%	-34.85%	-3.33%	10.89%	6.62%								
34	94.13%	31.34%	-11.22%	-8.19%	-17.48%	-21.01%	10.07%	8.98%								
35	39.31%	25.09%	-1.86%	31.52%	-13.81%	-5.66%	29.72%	-20.40%								
36	33.80%	47.66%	1.15%	12.75%	-7.96%	-5.28%	-32.44%	-36.85%								
47	30.29%	11.79%	8.03%	-15.31%	-2.09%	-26.10%	-11.29%	2.13%								
51	82.81%	37.73%	6.32%	-28.86%	12.66%	-11.49%	-9.36%	-37.57%								
54	42.09%	-9.25%	-33.33%	-22.32%	-24.10%	1.17%	-21.37%	-24.72%								
58	26.86%	-11.54%	-38.82%	-36.44%	5.01%	-15.46%	-37.71%	-53.57%								
73	48.53%	22.27%	-25.97%	-32.44%	28.01%	-33.08%	-3.99%	-39.76%								
75	78.49%	21.15%	-17.62%	-11.73%	19.70%	59.27%	-68.32%	-51.54%								
80	25.97%	39.48%	-19.87%	-26.09%	-19.56%	13.58%	-17.18%	-5.12%								
82	60.08%	42.16%	8.53%	-23.01%	-30.14%	-12.94%	21.52%	-20.13%								
Total	47.87%	34.52%	-10.14%	-19.70%	-13.91%	0.29%	-21.22%	-22.22%								

TABLE 7

*PERCENT CHANGE IN THE PERCENTAGE OF BENEFITS RECEIVED
RANKED BY EMPLOYMENT CHANGE*

Industry	Percent Change in Employment	Change in Benefit Category \$0 – \$150	Change in Benefit Category Above \$450
SIC 15	-29.30	227.83	-40.14
SIC 17	-13.81	60.16	-26.99
SIC 35	-13.13	39.31	-20.40
SIC 36	-12.88	33.80	-36.85
SIC 34	-9.20	94.13	8.98
SIC 27	-7.00	96.94	-25.81
Group One Average	-14.22	92.03	-23.54
SIC 54	-6.11	42.04	-24.72
SIC 26	-5.94	182.66	19.59
SIC 75	-5.36	78.49	-51.54
SIC 28	-4.29	88.21	-34.67
SIC 51	-2.97	82.81	-37.57
SIC 47	-1.72	30.29	2.13
Group Two Average	-4.40	84.08	-21.13
SIC 82	-1.61	60.08	-20.13
SIC 58	.75	29.86	-53.57
SIC 30	1.98	69.60	6.67
SIC 73	2.45	48.53	-39.76
SIC 80	7.16	25.97	-5.12
Group Three Average	2.15	46.81	-22.38

TABLE 8

*PERCENT CHANGE IN THE PERCENTAGE OF BENEFITS RECEIVED RANKED BY
PAYROLL CHANGE*

Industry	Change in Payroll	Change in Benefit Category \$0-\$150	Change in Benefit Category Above \$450
SIC 15	-24.01	227.83	-40.14
SIC 17	-10.55	60.16	-26.99
SIC 35	-1.89	39.31	-20.40
SIC 36	-4.28	33.80	-36.85
Group One Average	-10.18	90.28	-31.10
SIC 27	.82	96.94	-25.81
SIC 34	-.01	94.13	8.98
SIC 54	-.01	42.09	-24.72
SIC 75	.66	78.49	-51.54
Group Two Average	.37	77.91	-23.27
SIC 26	3.80	182.66	19.59
SIC 28	7.53	88.21	-34.67
SIC 30	14.21	69.60	6.62
SIC 47	10.82	30.29	2.13
SIC 51	7.59	82.81	-37.57
SIC 58	5.07	26.86	-53.57
SIC 73	12.92	48.53	-39.76
SIC 80	17.57	25.97	-5.12
SIC 82	9.62	60.08	20.13
Group Three Average	9.90	68.33	-13.58

APPENDIX

For each SIC sector, -3.5 percent is subtracted from the percent change in the adjusted claims filing rate. If the resulting number is greater than zero, then that SIC category is given a value of 1. If the resulting number is less than zero, that SIC category is given a value of 0. For example, SIC 60, depository institutions, has a .84 percent change in the claims filing rate. Therefore, $.84 - (-3.5) = 4.34$, and SIC 60 is given a value of 1; while SIC 59, miscellaneous retail stores, has a -10.73 percent change, resulting in a value of 0, from $-10.73 - (-3.5) = -7.23$. This calculation is performed for all sixty-three SIC industries, and the resulting data set of 1s and 0s is taken as drawings from a binomial variable in which the probability of obtaining a 1 is equal to one-half. The sum of the 1s and 0s is then a binomial variable corresponding to 63 independent trials in which the probability of drawing a 1 is .5.

Using the normal distribution approximation to the binomial distribution, the probability of obtaining only four categories out of sixty-three with a percent change above -3.5 percent is much less than one percent. In summary, this statistical test confirms that the difference in claims filing rates from fiscal year 1991 to fiscal year 1993 is very significant and that this significant difference holds true even when the claim filing rate is adjusted to account for the expected decline attributable to the reduction in the replacement rate.

Estimates of the elasticity of the claims filing rate relative to changes in the replacement rate do have considerable variability. Consequently, to test the strength of the empirical results, it would be helpful to run the test in which the four additional SIC categories with percentage declines in the rate filing rate of less than ten percent are also given binomial values of 1. Now the sign test is considering a result with eight ones and fifty-five zeros. Again the chance of obtaining this result if the claim filing distributions in fiscal years 1991 and 1993 are identical is less than one percent.

To summarize, based on the partial data available to us now, only a small portion of the decline in the claims-filing rates is explained by the reduction in the replacement

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