MASSACHUSETTS
WORKERS' COMPENSATION ADVISORY COUNCIL

REPORT ON
THE ANALYSIS OF FRICTION COSTS
ASSOCIATED WITH THE MASSACHUSETTS
WORKERS' COMPENSATION SYSTEM

VOLUME III - Milliman & Robertson

Prepared by:

Milliman & Robertson, Inc.
Danvers, MA

and

John Lewis, Independent Consulta

June 22, 1990

VOLUME III - MILLIMAN & ROBERTSON, INC.

TABLE OF CONTENTS

INTRODUCTION

This report was prepared by an interdisciplinary team consisting of John Lewis, an independent consultant, and Milliman & Robertson (M&R), an independent actuarial consulting firm. Due to the length of the report, we have divided it into three volumes.

M&R prepared the report that you are now reading (Volume III), which discusses the following issues:

Section IX - RESEARCH AND ANALYSIS OF YEARLY CLAIM FILINGS

Section X - DISTRIBUTION OF PREMIUM AND BENEFIT DOLLARS MASSACHUSETTS VS OTHER STATES

Section XI - OTHER AREAS OF ANALYSIS

John Lewis prepared the report that appears in Volume II and analyses the following issues:

Section VI - ASSESSMENT OF CONCILIATION PROCEDURES

Section VII - THE LUMP SUM PROCESS

Section VIII - ASSESSMENT OF ATTORNEY FEE STRUCTURE

Volume I contains the following Sections:

Section I - BACKGROUND

Section II - SCOPE OF PROJECT

Section III - FINDINGS AND RECOMMENDATIONS

Section IV - SOURCES OF DATA AND INFORMATION

Section V - REPORT LIMITATIONS

Each Volume contains a brief introduction and a table of contents section. Although we have divided the report into three volumes, we would emphasize that Volume I which includes the Background, Scope of Project, Sources of Data and Information and Report Limitations sections should be read in conjunction with and be considered an integral part of Volumes II and III.

SECTION IX - RESEARCH AND ANALYSIS OF YEARLY CLAIM FILINGS

Analysis of Yearly Claim Filings - DIA Data

One of the problems with analyzing DIA data is the lack of uniform definitions of terms. Claims are considered to be requests for adjudication. These can be filed by either the claimant or the insurer.

The DIA keeps track of two statistics relating to claims on a weekly basis. These are:

1. The Number of Claims and Requests for Discontinuances (Claim/Discs)
2. The Number of Referrals to Conciliation. (Referrals)

Both of these statistics are available starting with January 1987.

Graphs of these statistics appear in Exhibits 1-4, while the underlying data appears in Exhibit 5. The DIA keeps track of two related statistical items. The first is number of claims by month and the second is number of claims by month divided by number of weeks in the month. (Month/Week) Weeks are assigned to a month depending on the date the week ends. Exhibits 1 and 2

display the number of Claims and Discontinuances by Month and the Number of Referrals to Conciliation by Month. We have been informed that the Claims/Discs statistics are distorted by the fact that invalid or otherwise improper claims will appear here, and that a more reasonable statistic to examine is the Referrals. Nevertheless, we present both here for analysis purposes.

The monthly statistics show a drop in June 1988. The June data is not available for a full month. Instead for Claims/Discs, only 2 weeks of data were reported, while for Referrals, 3 weeks were reported. We have been unable to determine whether this data is simply missing, or represents a gap in data processing, or whether the data is included in subsequent weeks. In order to adjust for this potential problem, we have used the statistic of month/week. This way the effect of the distortion in the June 1988 figures can be ameliorated.

The Referrals by month/week (Exhibit 3) indicate a rapid acceleration from June 1988 through April 1989. After April 1989 the level per month fluctuates, but does not seem to be rising. The final month (May 1990) indicates the highest level per month, so far, but it is not clear at this point whether this is just statistical fluctuation or the start of a new upward movement.

The Claims/Discs by month/week (Exhibit 4) show a similar, but slightly different pattern. Instead of a trend from June 1988

through April 1989, it seems more like a step from a low level prior to June 1988 to a new, higher level afterwards. Again, the May 1990 point seems quite high, but we cannot conclude at this time that there is a movement to a higher level.

We understand that in of April of 1988 there was a change in the attorney fee structure. This may have contributed to the acceleration in claims and Referrals. Our economic analysis indicates that the economy began a downturn in 1988. (See Section XI). This may also have an impact on claim levels.

In Exhibit 6, we have graphed all of the years together for Referrals by Month/week. This was done in an attempt to measure seasonality. There may be a seasonal influence on the number of claim filings, since some of the years seem to show similar patterns of increases and decreases from month to month.

We currently do not have data available to measure how the level of claims compares with the level under the pre-1985 system. However, we understand that there has been a significant increase.

Changes in the law and changes in attitudes since 1985 may also have contributed to the higher level of claims. These include:

1. Lawyer advertising is now permitted.

2. The new law made injured workers more aware of their rights.

3. There are few forces that would tend to discourage the filing of claims.

4. If a claimant files a claim the "win" condition is additional benefits, while the "lose" condition is no additional benefits. With the rising litigiousness of society in general and Workers' Compensation in particular in many states, it would seem inevitable that claims would increase in such a situation.

5. There is now an affirmative duty for the Workers' Compensation agency to contact the injured worker.

6. Changes in Conciliation set up a pathway for what will happen after a claim gets filed. Under the old law, frequently claims would be filed and there was no level of confidence that they would be acted on in a timely fashion.

7. As noted in Volume II, the prevalence of lump sum settlements may cause an increase in the frequency of small claims.

Therefore, it seems as if it is more the absence of discouraging factors than the overt presence of encouraging factors that is impacting on claim filings. Clearly for every claim filed, the issue underlying the claim must be resolved either through conciliation, benefit award, benefit denial, withdrawal or other means. Obviously, this requires system resources.

Other Data and Information

In Volume II, the research on Attorneys Fees indicated that there may be a small number of attorneys abusing the system. We do not have the data available to analyze claim filings by attorney or law firm, so we cannot determine if a small number of number of attorneys are causing the overall movements in claim filings. However, abuse of the system would imply the filing of more claims than necessary.

Findings

Our findings are summarized below:

1. Data on Claim/Discs and referrals available since 1987 indicates that the level of claims reported has increased substantially, with a large upward movement taking place in the middle of 1988.

2. It is difficult to identify specific causes for increasing frequency in 1988, but two possible items that may have influenced the level of claims include the increase in attorney fees in 1988 and the downturn in the economy in 1988.

3. The overall level of claim activity is reported to be higher under the new law than under the old law. Possible causes for this include:

   a. Lawyers are allowed to advertise.
   b. Injured workers are more aware of their rights.
   c. The system does not discourage filing of claims.
   d. The Prevalence of Lump Sums may lead to an increase in the frequency of small claims.

4. There does appear to be a potential seasonal influence on the number of claim filings. For example, 1987 and 1989 show similar monthly movements from January

through July, but then they diverge. In addition, 1988 and 1989 show similar changes through approximately 10 months. In summary, the seasonal effect seems to generally show a decrease in June (which typically follows a surge in May.) August also may show a surge followed by a drop in September.

System Delays and Systemic Factors

The reasons cited above regarding the increase in claim levels are also reasons that would add to system delays. A review of Volume II indicates how complicated the system has become and how it fosters delay.

It is not clear whether the delays inherent in the Massachusetts system are the result of the large numbers of claims filed or whether the opposite is true, namely that large numbers of claims are filed because the system is so subject to delay that all potential issues have to be put into the system, in order to get all potential issues resolved. There is general agreement that the system is not being used as efficiently as possible and that the system is not being used in accordance with the intentions underlying the 1985 legislation.

Findings

Based on the surveys and interviews conducted by John Lewis in Volume II, we have identified the following list of possible Systemic factors that may lead to delays:

1. Too many claims are coming in compared to the system resources available to process them.

2. The Two-step process required for Lump Sum settlements is time consuming.

3. The built in delay caused by the system backlog. It takes up to six or seven months to get a case heard.

4. The files at the DIA are poorly organized. This can add to delays by making important information hard to find, or by processing incorrect information and then having to go back and adjust for errors.

5. Increasing use of attorneys will add to delays.

6. The system is over-utilized by people who are not prepared. System resources could be used more efficiently.

The Relationship of DIA data and Insurance Industry Data

In their rate filings each year, the Workers' Compensation Rating and Inspection Bureau of Massachusetts (WCRB) prepares an analysis of trends in the state of Massachusetts. This analysis is performed by separately analyzing the changes in the cost of injuries, the frequency of injuries, and the growth in payrolls. The "net trend" is the amount by which the cost and frequency of injuries exceeds the change in payrolls. In their 1990 filing, the WCRB estimated that the net annual trend was 3.8%. As part of their trend calculation, WCRB also determined that injury frequencies are increasing. However, data reported to the DIA indicates that the frequencies of first reports are level or decreasing.

Other DIA data which measures "incidents" indicates that incidents have been fairly level between 87 and 1989.

How can these apparent contradictions be reconciled?

There are a number of points to be considered.

1. Timing and source of the WCRB data.

In order to study injury frequencies, the WCRB analyzes what is commonly called Schedule Z data. The WCRB has no data on the number of requests for adjudication. To them a "claim" is simply an occurrence of an injury. Their latest filing for rate to be effective 1/1/90 used Schedule Z data only as recent as Policy Year 86/87. (That is, experience on all policies with effective dates from 7/86 through 6/87.) Policy year 86/87 was analyzed in conjunction with many other older policy years. Clearly, this latest policy year is all "new law" data, but the prior policy years analyzed contain all or substantially all "old law" data. Therefore, the total experience only includes a small amount of "new law" data. The data does indicate an increase in injury frequency for the new law time period compared to the old law time period.

2. Timing and Source of DIA Data

We have analyzed data from the DIA. This was data for first reports of injury based on lost time cases with accident dates in 1986 through May 1990, which were reported as of May 1990. (See Exhibit 7). This data indicates a large frequency decrease from 1986 to 1987, and continued decreases in each subsequent year. However, the 1986 data was based on information reported on all

injuries. The data forms as reported did not indicate whether or not the injury was a lost time case. Therefore, estimates were made by data entry personnel. In addition, we have concerns about the quality of data at the DIA in general. Therefore, direct comparisons of 1986 and 1987 are subject to serious question, while comparison of 1987 and 1988 are not without risk. Finally, lags in reporting lost time cases may cause the number of cases to change as future reports become available. This effect would be most likely to impact the 1989 and 1990 data.

Service Economy Considerations

Finally, studies by the WCRB have indicated that in Massachusetts, there has been a shift in class mix from more hazardous classes to less hazardous classes. This effect is commonly referred to as changing to a service economy. In such a situation, aggregate injury frequencies could show a decrease, while for individual classes, the trend is upward.

We believe that this phenomenon accounts for the changes in first reports for 1988 versus 1987.

Findings on the Relationship Between DIA Data and Insurance Industry Data.

1. The insurance industry does not maintain data analogous to DIA Claim data.

2. DIA data is generally reported to be of questionable quality.

3. The level of first reports and incidents in DIA data are not necessarily inconsistent with insurance industry figures.

4. Due to the shift to a service economy, there has been change in the class mix. Based on this shift, we would expect fewer injuries, all other things being equal.

SECTION X - DISTRIBUTION OF PREMIUM AND BENEFIT DOLLARS

MASSACHUSETTS VS OTHER STATES

A. The Distribution of the Premium Dollar in Massachusetts

Exhibit 8 displays the estimated breakdown of the premium dollar into its components. We have displayed how the premium dollar has been distributed into benefits, amounts to claimant's attorneys, insurance company expenses, and underwriting profit on an historical basis, for Calendar Year 1988. (Underwriting profit is the amount remaining from the premium after all insurer losses and expenses are deducted. It will be discussed in more detail later in this report.) A Calendar year records all financial transactions for the given year. Thus, incurred losses for Calendar Year 1988 include all loss payments made in 1988 no matter when the injuries that resulted in those payments took place. The breakdown of insurer losses into benefits and amounts paid to claimant's attorneys was estimated based on a combination of data reported to the DIA and data derived from insurers. There are a number of problems with the DIA data which will be discussed later. Our breakdown of insurer losses into benefits and amounts paid to claimant's attorneys is a rough estimate and subject to a high degree of uncertainty.

One of the items that the Advisory Council is interested in investigating is how are premium dollars distributed in the state and how this distribution compares to other states. On the face of it, this seems to be a simple question to answer. However, there are only two types of data that are readily available for a multi-state comparison. The first type is insurance company loss data categorized by type of injury. This will yield insight into the distribution of loss payment dollars among states. A discussion of this topic appears later in this report.

The other type of data that is generally available is calendar year loss and expense data. This data is routinely captured and published by the National Council on Compensation Insurance for many states. However, in Massachusetts, the rating bureau (WCRB) does not publish this information, although the underlying statistics are available to them. In the discussion above, we have attempted to estimate the Calendar year 1988 loss and expense ratios for Massachusetts Workers' Compensation Insurers. These figures appear in Exhibit 8 and again in Exhibit 9, along with a comparison to our selected group of states.

However, this data is not useful to evaluate the relative frictional costs among the state systems. We believe that the Advisory Council would be interested in seeing what percentage of insurer loss payments go to injured workers and what percentage

go to attorneys representing these workers. This data is currently not compiled in a comprehensive fashion by any parties in Massachusetts, and is generally not compiled on a complete basis countrywide. We will discuss these facts in more detail below:

Data Captured by the Department of Industrial Accidents

The Department of Industrial Accidents compiles Attorney Fee data based on information reported to the DIA. The report for 1989 (See Exhibit 10) indicates approximately $1.2 million paid for Calendar Year 1989, based on "Pay Forms" filed by attorneys and $63.6 million based on Lump sums, conferences, hearings, and board decisions.

There are a number of problems with using this data for analysis purposes.

1. Some of the information is based on attorney pay forms.

Attorneys are not required to file these forms is all cases. Therefore, there is an underreporting of data, the extent of which is unknown. Some very rough estimates indicate that actual reported dollar amounts may be as low as 4% of the true total or 12% of the true total. The actual reporting percentages are unknown and they may differ substantially from these estimates.

2. Attorneys are paid when the case or subsidiary issues in the case are resolved. This could take a number of years and therefore the 1989 payments may relate to injuries that occurred in many different prior years, including prior to 1985.

3. There was a concerted effort in 1989 to reduce the backlog of cases. This should have accelerated payments to attorneys beyond their normal levels.

In Exhibit 8, we have estimated the payments to claimant's attorney's in Calendar Year 1988 for insurance companies only. This indicates that for each premium dollar earned in 1988 approximately .04 was paid for this item.

Data Reported by Insurance Companies

Most Insurance Companies do not routinely collect for themselves or report to their rating and statistical bureaus, the amounts of payments to claimant attorneys. However in a number of states including Massachusetts (approximately 17), the insurance industry collects extra data on a sampling basis for individual lost time cases. This supplemental data base is known as the Detailed Claim Information Call (DCI). Currently, the DCI asks insurers to report both "Claimant's Attorney Fee in Addition to Award" and "Claimant's Attorney Fee Included In Award." In

addition information is also gathered to help measure the percentage of cases with attorney legal representation.

In 1987, the NCCI published a book entitled "Workers' Compensation Claim Characteristics." This book displayed a number of charts and graphs based on information from the DCI. The Massachusetts data underlying the book is almost exclusively pre 1985 law data. However, no information relating to the amounts of attorneys fees was published, presumably due to either instability of the data, lack of data actually reported, and questions regarding data quality.

The book did contain information relating to the presence of attorneys on lost time cases. (See Exhibit 11.) This shows that Massachusetts was reported as having 10.3% of lost time cases with attorney representation. This was 5th highest out of 17 states and compared to a 17 state average of 7.8%.

As noted above, cases with attorney involvement take longer to resolve than other cases, so it would be desirable to look at mature data on a post 1985 basis to measure attorney involvement in Massachusetts and the payments made to claimant's attorneys. This data is not currently published and only exists internally in the DCI data base. Currently only one year of post 1985 data is in the data base.

The DCI data base is maintained by the NCCI and then forwarded to WCRB for their use in analysis or to respond to data requests. However, it is our understanding that the Massachusetts data base was damaged and is currently being reconstructed. Report requests will be able to be handled by the WCRB in several weeks. However, at this time, no data is available.

The NCCI is willing to extract data from the DCI based on requests from member companies for a nominal charge. For non-members the access charge will be higher, but we do not know by how much.

The DCI has a number of shortcomings which should be considered when reviewing the data, including the following:

1. Claims are selected on a sampling basis. Therefore, it may be difficult to draw conclusions on the state as a whole.

2. The data is based on individual reports derived by reviewing claim files. The data is not reconciled to any insurance company financial, audit, or ratemaking reports.

3. Data is only collected for a few states.

4. Possible Data Quality problems.

Counterbalancing these potential shortcomings is the fact that the DCI is often the "only game in town" and has information in it that is not readily obtainable elsewhere.

We recognize that this is an area that is of importance to the Advisory Council. However, due to the short time frames available for this project, it was impossible to develop the detailed data required. Therefore, the Advisory Council might consider a request for the necessary data from the sources we have cited. However, since this data has never been published before, it is unclear as to its quality and its ability to add insight to the questions in Massachusetts.

Findings

Our findings are summarized below:

1. There is a general lack of quality data in all states to analyze the amounts paid to claimant's attorneys.

2. Based on data from Massachusetts, a rough estimate is that in 1988, approximately 3% of insurer outlays went to Claimant's Attorneys, 76% went to benefits, 19% went towards insurance company expenses and 3% went to dividends to policyholders. Data

from other states on amounts to claimant's attorneys is not readily available. (The amount is included with losses). However, ignoring the split of insurer losses into benefits and amounts to claimant's attorneys, the distribution in Massachusetts seems to be similar to that in other states.

B. The Distribution of Benefit Dollars in Massachusetts Compared to Other States.

We have prepared some Exhibits which compare Massachusetts to a number of other states that we have selected. (See Exhibit 12-15) Each of these exhibits displays information by "type of injury." The types of injuries analyzed are the following:

1. Fatal - Indemnity Benefits
2. Permanent Total - Indemnity Benefits
3. Permanent Partial - Indemnity Benefits
4. Temporary Total - Indemnity Benefits
5. Medical (Includes the medical costs of all claims including Medical only)

These injury categories are based on the way Workers' Compensation rating and statistical organizations around the country (such as the WCRB) record their data. That is, not all states have an exact Permanent Partial Benefit. This category

can include impairment benefits, wage loss benefits, scheduled benefits, or other categories depending on the state.

Based on a request from the Advisory Council, in order to assist in the comparison of state to state, we have categorized each of the states by benefit type. This categorization is not meant to be all inclusive, but merely to highlight some of the differences among states that should be recognized when making comparisons.

State	Benefit System
Massachusetts	Income Benefit and Impairment
New York	Income Benefit, Impairment and Earning Capacity
Pennsylvania	Primarily Impairment Benefit
New Hampshire	Income Benefit and Impairment
Rhode Island	Income Benefit and Impairment
Vermont	Income Benefit and Impairment
Maine	Income Benefit and Impairment
Connecticut	Income Benefit and Impairment
California	Impairment modified by Employment related Factors

However, we would advise the reader that difference among states are caused by a number of factors in addition to the benefit structure. These include the following:

1. Differences in administration of the law
2. Differences in local economies
3. Differences in judicial interpretation
4. Other Differences in the Legal Climate

Exhibit 12 displays the distribution of incurred dollars by type of injury.

For example Sheet 1 displays that in Massachusetts approximately 1% of all benefit dollars went to indemnity benefits for fatal injuries, while in New York, the percentage was approximately 4%. Other sheets display information for the remaining injury types as follows:

Sheet 2 Permanent Total

Sheet 3 Permanent Partial

Sheet 4 Temporary Total

Sheet 5 Temporary Total and Permanent Partial Combined

Sheet 6 Medical

Massachusetts shows a relatively high percentage of dollars in the category Temporary Total. (See Sheet 4.) However, there may be some data handling issues that are causing this phenomenon.

These reports are based on "Unit Statistical Data" that is reported to various rating bureaus around the country. Most states use the National Council on Compensation Insurance (NCCI) for reporting data to. The NCCI edits their unit statistical data and converts some claims from Temporary Total to Permanent Partial, if the claim is sufficiently large. However, as

mentioned, Massachusetts has its own independent rating bureau. They have indicated that they perform no such edit on the type of injury reported by insurance companies. Thus, comparisons of Massachusetts with other states will be difficult. For this reason, where available, we have combined the categories for Temporary Total (TT) and Permanent Partial (PP). On a combined basis Massachusetts (See Sheet 5) seems more like most other states.

Exhibit 13 displays the average cost per case by type of injury. Again, sheets 1- 5 display information by various injury types. Here we were unable to combine the TT and PP categories. As expected Massachusetts has a relatively high cost for TT claims (Approximately $5,000. See Sheet 4) and a relatively low cost for PP claims. (Approximately $38,000. See Sheet 3.)

Regarding Exhibit 14, frequency by injury type, Massachusetts has a relatively low frequency for PP as expected. (See Sheet 3.) However, the frequency for TT seems to be middle of the road. (See Sheet 4.) The frequency for PP and TT combined (Sheet 5) also appears to be near the median for the 10 states combined.

Findings

Our analysis leads us to conclude that there do not appear to be any outstanding differences between Massachusetts and the other states. In addition, the recent cost increases in Massachusetts do not seem to be driven by significant benefit cost differences with other states.

SECTION X - OTHER AREAS OF ANALYSIS

A. Underlying Causes for Rate Level Activity Since 1988

We have developed a number of possibilities as to why Workers' Compensation rates have gone up 70% since 1988 in Massachusetts even though the system was reformed in 1985.

These include the following:

1. Rate Change History

Prior to 1988, the last approved rate level change in Massachusetts was in January 1983. The Workers' Compensation Rating and Inspection Bureau of Massachusetts (WCRB) is a rating and statistical bureau that will file rate changes on behalf of insurance companies. In their latest rate filing, the WCRB estimated that the current net trend is +3.8% per year. The "net trend" is the amount by which the cost and frequency of claims exceeds the change in payrolls. At that trend rate, a premium level change of approximately 20% would be required in 1988 to reflect cost changes since 1983, all other things being equal.

2. Average Weekly Wage Changes

Each October 1st, there is an adjustment in the Statewide average weekly wage (SAWW). The SAWW serves as an index which increase benefit levels for a number of categories, such as the maximum weekly benefit. In most states, changing the SAWW causes a slight increase in the rate level which is routinely included with an experience level change. However, in Massachusetts, due to the long time period between rate filings (1983 to 1988), there was a substantial amount of catchup in benefits. We estimate that this contributed approximately 5 points to the +19.9% rate change implemented on January 1, 1988.

3. Underwriting Profit Provision

Each Workers' Compensation rate filing contains a provision for Underwriting Profit. The ratemaking procedure is based on an analysis of losses and expenses. The underwriting profit provision reflects the percentage of the rate that is targeted during the ratemaking process to remain after losses and all operating expenses are subtracted. Historically, this profit provision was set by the various Workers' Compensation rating Bureaus around the country at 2.5%. The theory underlying this selection was that insurance companies would make some profit on their underwriting, and some profit on their investments and the

combined profit would be reasonable as compared to the risk that insurers were facing. However, beginning in the 1970's, it became apparent to regulators in many states that insurers could operate profitably with a lower underwriting profit provision. Exactly what is an appropriate profit provision and how it should be determined are still highly complex and highly controversial areas of the ratemaking process. In Massachusetts the profit provision is set after a rate hearing at the insurance department. The January 1, 1988 rate filing changed this provision from -17.8% to -13.5%. A negative underwriting profit provision implies that expenses and losses are targeted to be greater than premiums. The theory underlying a negative underwriting profit provision is that investment income will be sufficient to offset the loss from underwriting and still produce enough remaining profit to reward the insurance companies for the risks they are bearing. It is beyond the scope of our project to analyze the method for determining the profit provision, but we will comment that -13.5% is the lowest profit provision of which we are aware in the entire US. Exhibit 16 shows the latest approved profit provision in states administered by the NCCI. The Rhode Island provision is approximately -12%. Most other NCCI states have a higher provision. A significant number are still even using the +2.5% provision.

The non-NCCI states of which we have some knowledge include the following:

State	Underwriting Profit Provision
Texas	-7%
California	0%

The profit provision depends to a great extent on the payout pattern of benefits. Thus, comparisons between different states, which have different benefit structures, may not always be meaningful. In any case, the change in the underwriting profit provision in the January 1, 1988 filing contributed 4.6% to the overall 19.9% increase.

4. Pricing of the 1985 Law Changes

The 1985 law amendments were implemented in 1988 with a rate change of +0.8%. (Subsequent rate filings may have altered this number slightly as updated loss distributions may have redistributed the weights used in combining the effects of various pieces of the legislation. However, this would not have a significant effect on the overall pricing.) At this time, we do not have any quantitative evidence to estimate whether this was an appropriate figure. However, information from insurance

companies and the WCRB indicate that legal involvement in Workers' Compensation is up, and that delays in dispute resolution at the DIA are common.

5. Increase in the Frequency of lost time cases

Detailed data by type of injury is very slow to arrive through the insurance industry. The latest filing for rates to be effective 1/1/90 used Schedule Z data only as recent as Policy Year 86/87. (That is, experience on all policies with effective dates from 7/86 through 6/87.) Schedule Z data contains highly detailed information by class and by type of injury. This experience only includes a small amount of "new law" data. The overall rate level change is based on a different data base which contained data through 12/31/88.

The Schedule Z data indicated a slight overall frequency increase in lost time cases, especially in the Permanent Partial and Temporary Total categories. (This fact was discussed briefly in the previous section on differences between DIA data and insurance industry data.) These categories of benefits contain a large percentage of the overall benefit dollars, approximately 70% in Massachusetts based on available data. Medical only claims are showing a decrease in frequency.

6. Residual Market Growth

Obtaining coverage for Workers' Compensation in Massachusetts is essentially mandatory. Employers that do not self-insure must obtain coverage through the commercial insurance market. However, since rates are set by the State, there are some firms that insurers do not want to sell policies to at the mandated rate level. To solve this problem, Workers' Compensation insurers have established assigned risk plans. These plans contain the following elements:

1. Policies are issued by only a few carriers in the state. These carriers are known as "servicing carriers."

2. Risks are randomly assigned to each of the servicing carriers in the state.

3. The servicing carriers issue the policies and handle the claims for their assigned risk business.

4. The servicing carriers are paid a flat percentage of the premium to cover all expenses including policy issuance, administration, general overhead, and loss adjustment.

5. The size of the servicing carrier allowance does not impact the rate level charged in the state. The assigned risk pool is accounted for by all carriers as a reinsurance transaction. However, ratemaking is performed on a direct basis, so the reinsurance profit, loss, or expense does not impact the rate calculation.

6. The entire experience of all assigned risks in the state is pooled together and shared by all writers participating in the voluntary market. The sharing is done on a percentage basis. That is, if a carrier writes 10% of the voluntary business in the state, the carrier is responsible for 10% of the operating results of the pool, whether or not that carrier is servicing any of the assigned risk business.

7. If the assigned risk plan loses money, all carriers are assessed to fund the deficit.

In Massachusetts, the size of the residual market has grown substantially, from the early 1980's as shown below:

Calendar Year	Residual Market Share
1984	10.4%
1985	14.7%
1986	20.4%
1987	25.0%
1988	29.5%
1989	40% (Preliminary)

Obviously, growth in the residual market occurs when insurers believe that they cannot operate profitably in the voluntary market and they reduce their voluntary writings. In other words, they perceive the rates to be inadequate. What commonly happens when the assigned risk market expands rapidly is that losses in the assigned risk plan increase rapidly, and this creates a further drain on the profitability of the voluntary market.

Possible reasons for the increased unprofitableness of business written in the residual market include:

a. Insurers are correct in their assessment that rates are inadequate.

b. Assigned risk servicing carriers are not able to efficiently handle the rapid increases in business.

c. When the total market deteriorates in a state, carriers withdraw resources from that state, and the remaining resources are overburdened and not able to handle the business in an efficient manner.

We have not analyzed which, if any, of these reasons are correct, but we have presented them to indicate a range of possible opinions.

B. An Analysis of Economic Indicators.

The Economic Consulting staff at Milliman & Robertson has performed a series of analyses of economic indicators to attempt to measure when the Massachusetts economy experienced a downturn. Some researchers believe that the performance of the economy can have a significant impact on Workers' Compensation results. (For example, see Burton, John F., "Compensation For Permanent Partial Disabilities" in John D. Worrall, ed., Safety and the Work Force, IRL Press, Cornell University, 1983, also see Butler, Richard J. and Worrall, John D., "Premium and Loss Cycles in Workers' Compensation" and Worrall, John D. and Butler, Richard J.,

"Heterogeneity Bias in the Estimation of the Determinance of Workers' Compensation Loss Distributions" both articles appear in Philip Borba and David Appel, ed., Benefits, Costs, and Cycles in Workers' Compensation, Kluwer Academic Publishers, 1990)

This is of interest because the latest rate filing submitted by the WCRB requested a rate increase of +42.6% and they were awarded +26.2% This filing contained aggregate financial experience of insurance companies based on data through 12/31/88.

We have included the report of M&R's economists in Appendix B of this document. Set forth below is the conclusion section from this report.

Conclusions from Economic Indicators

Based on evidence from reliable data sources, and based on historical and statistical analyses of factors that lead and are coincident with changes in the business cycles, it appears the Massachusetts economy began to weaken in the fall of 1987 and peaked and began to decline in the first quarter of 1988.

There are a number of reasons to believe that Workers' Compensation experience will lag the turn down in the economy. First, on the premium side, the exposure for Workers' Compensation is a function of wages and employment. Job creation

has slowed and total employment has remained flat since the beginning of 1988. As the labor market tightens further wage gains will begin to slow. These are typically a lagging indicator given the contractual nature (at least implicitly) of most wages and salaries. Thus, premium growth will likely slow and lag behind the changes in the business cycle.

On the loss side there are a host of phenomena that may give rise to increases as the economy turns. Research suggests that as unemployment and layoffs increase workers will be more likely to file for Workers' Compensation claims or extend the duration (of a claim) once on a claim to effectively subsidize their unemployed status. The pool of potential applicants for Workers' Compensation will not have declined as the economy turns as employment itself may decline. This has the effect of potentially increasing losses while not being offset by an increase in premiums thereby increasing loss ratios. Further, the change in employment as observed in Massachusetts was significant in high risk employment like construction. This may tend to exacerbate, at least initially, Workers' Compensation results until unemployed workers are no longer likely to file additional claims.

EXHIBITS

EXHIBIT 1

CLAIMS/DISCS
MONTHLY

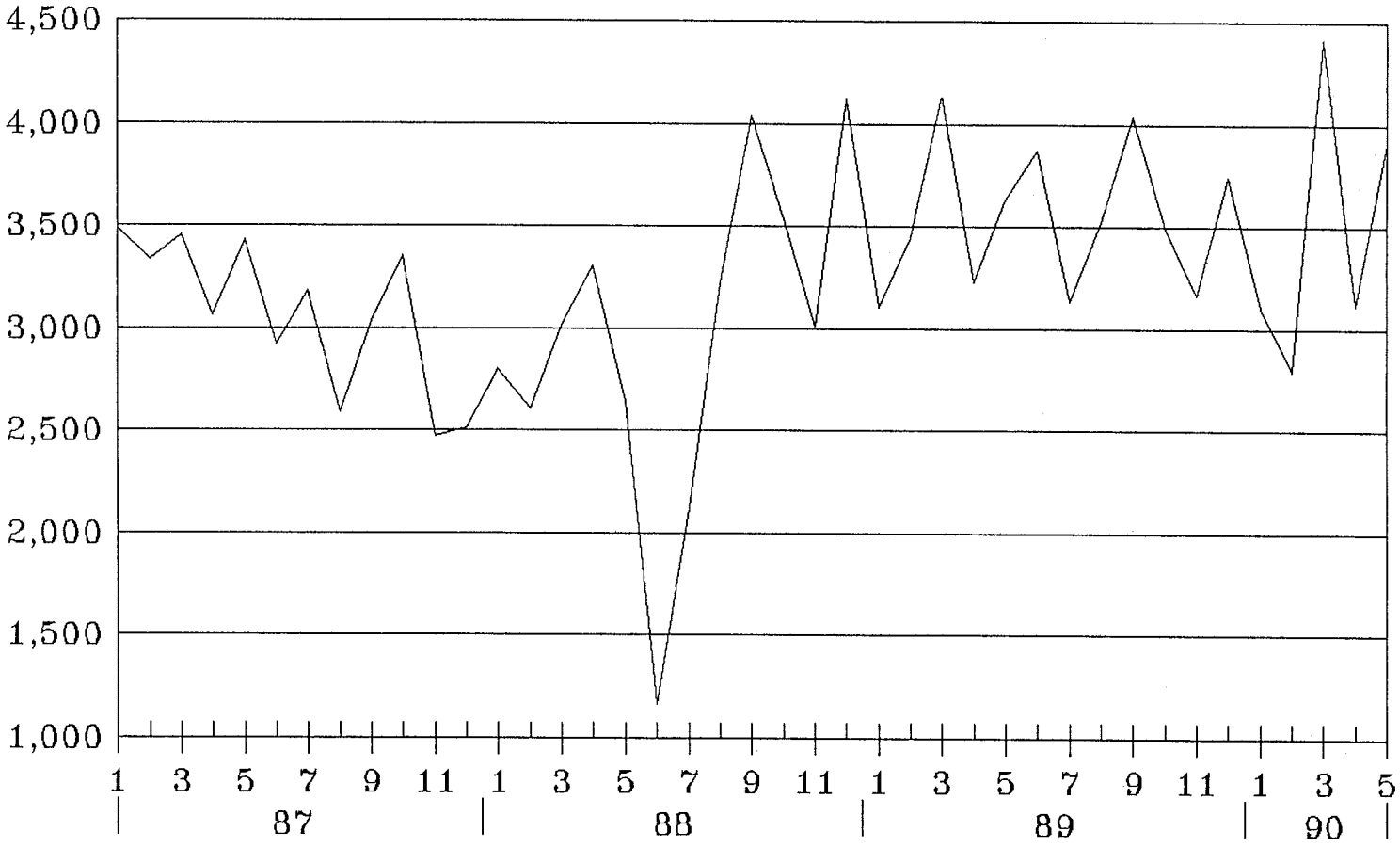


EXHIBIT 2

REFERRALS TO
RECONCILIATION BY MONTH

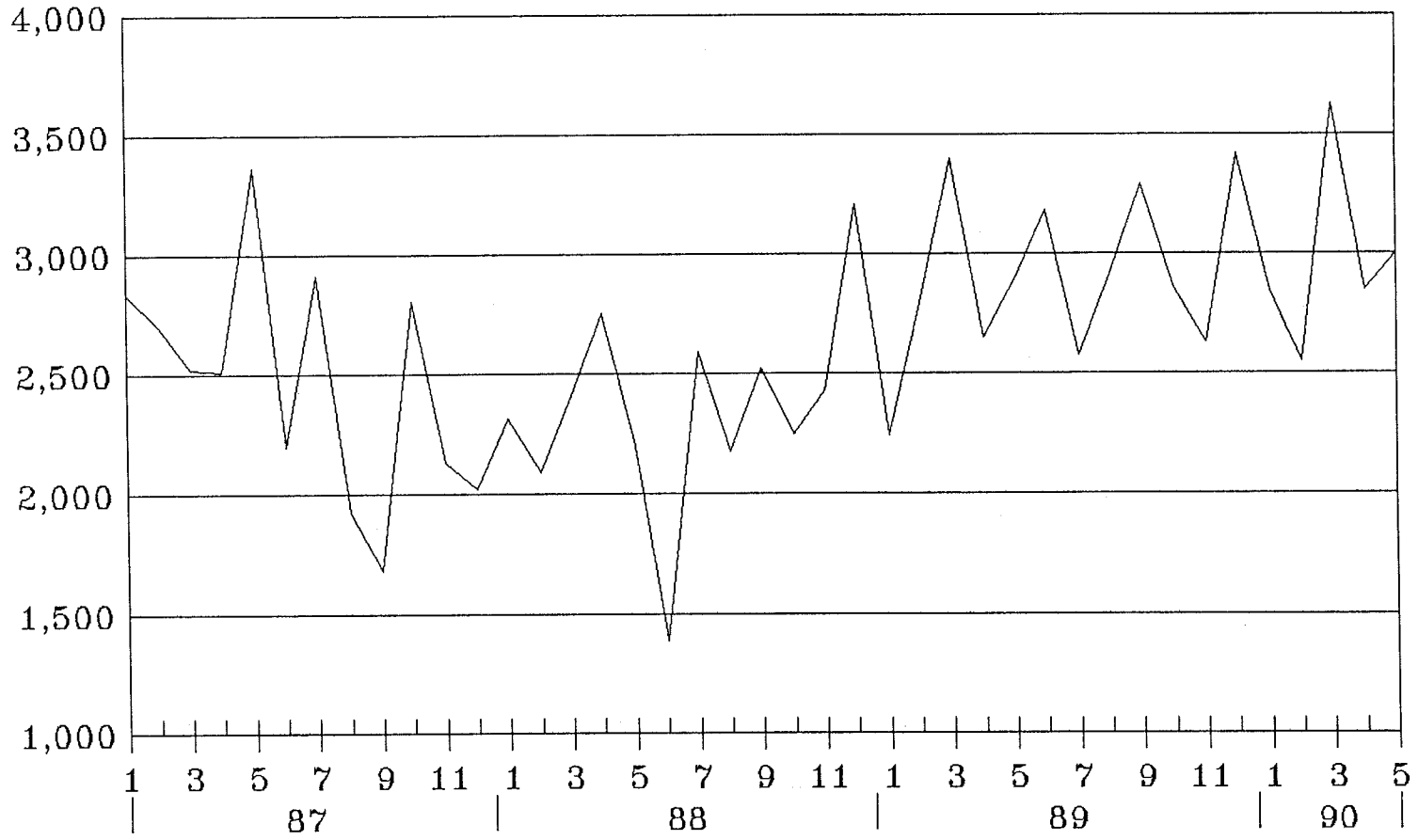


EXHIBIT 3

CLAIMS/DISCS
MONTH/WEEK

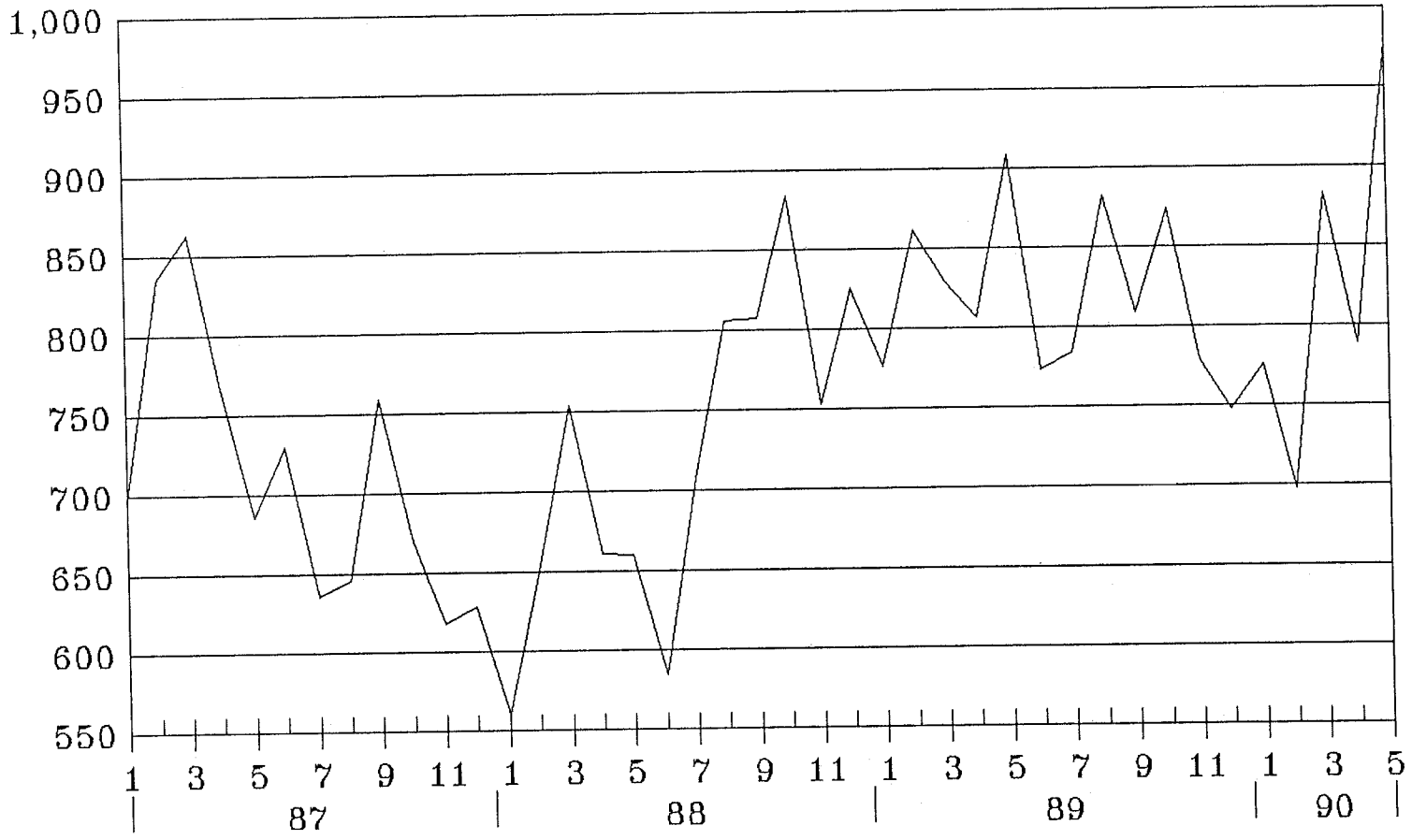
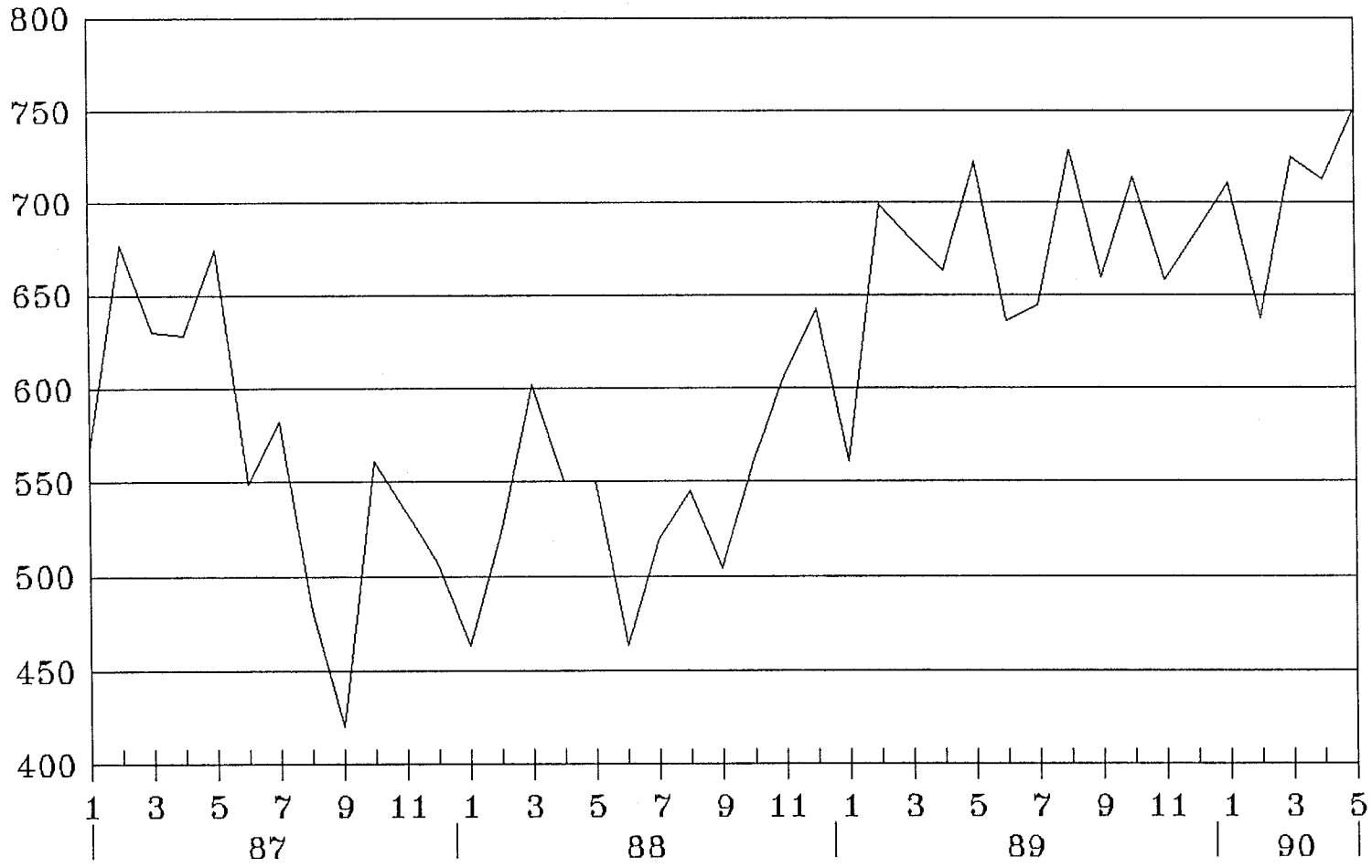


EXHIBIT 4

REFERALS TO RECONCILIATION BY MONTH/WEEK



MASSACHUSETTS ADVISORY COUNCIL

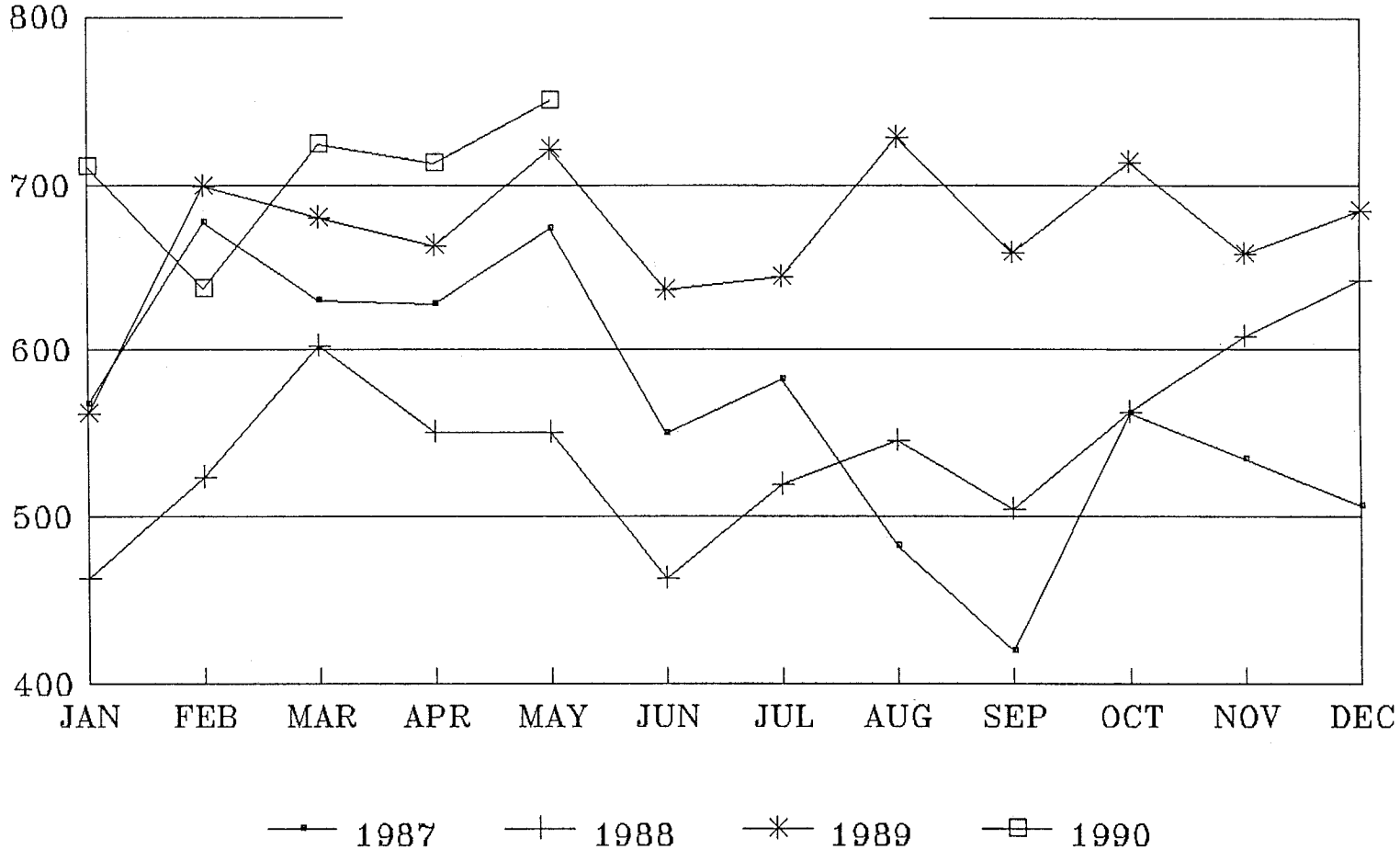
EXHIBIT 5

MONTH & YEAR	CLAIMS/DISCS TOTAL/ MONTH	CLAIMS/DISCS MONTH/ WEEK	REFER TO RECOUNCILIATION TOTAL/ MONTH	REFER TO RECOUNCILIATION MONTH/ WEEK
Jan-87	3,486	697	2,833	567
Feb-87	3,338	835	2,706	677
Mar-87	3,452	863	2,520	630
Apr-87	3,067	767	2,511	628
May-87	3,431	686	3,368	674
Jun-87	2,921	730	2,197	549
Jul-87	3,182	636	2,909	582
Aug-87	2,585	646	1,928	482
Sep-87	3,036	759	1,682	420
Oct-87	3,352	670	2,807	561
Nov-87	2,470	618	2,135	534
Dec-87	2,511	628	2,022	506
Jan-88	2,800	560	2,313	463
Feb-88	2,605	651	2,091	523
Mar-88	3,017	754	2,409	602
Apr-88	3,306	661	2,752	550
May-88	2,641	660	2,199	550
Jun-88	1,168	584	1,388	463
Jul-88	2,124	708	2,593	519
Aug-88	3,224	806	2,179	545
Sep-88	4,042	808	2,520	504
Oct-88	3,534	884	2,248	562
Nov-88	3,011	753	2,431	608
Dec-88	4,123	825	3,209	642
Jan-89	3,106	777	2,242	561
Feb-89	3,449	862	2,796	699
Mar-89	4,144	829	3,399	680
Apr-89	3,229	807	2,651	663
May-89	3,637	909	2,889	722
Jun-89	3,871	774	3,182	636
Jul-89	3,134	784	2,577	644
Aug-89	3,527	882	2,917	729
Sep-89	4,043	809	3,293	659
Oct-89	3,494	874	2,855	714
Nov-89	3,166	779	2,633	658
Dec-89	3,741	748	3,421	684
Jan-90	3,104	776	2,846	711
Feb-90	2,791	698	2,551	637
Mar-90	4,415	883	3,627	725
Apr-90	3,115	789	2,850	713
May-90	3,913	978	3,003	751

SOURCE: MASSACHUSETTS DEPARTMENT OF INDUSTRIAL ACCIDENTS
OFFICE OF CLAIM ADMINISTRATION

EXHIBIT 6

REFERALS TO RECONCILIATION BY MONTH/WEEK



THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF INDUSTRIAL ACCIDENTS

EXHIBIT 7
SHEET 1

COUNTS OF FIRST REPORTS
BY DATE OF INJURY
ON FIRST REPORT INQUIRY AS OF 05/16/90

FOR DATE OF INJURY 1986

MONTH	COUNT OF FIRST REPORTS
JANUARY	6,393
FEBRUARY	6,014
MARCH	6,786
APRIL	7,200
MAY	6,598
JUNE	7,001
JULY	7,043
AUGUST	7,304
SEPTEMBER	6,882
OCTOBER	5,301
NOVEMBER	0
DECEMBER	0
TOTAL	66,522

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF INDUSTRIAL ACCIDENTS

COUNTS OF FIRST REPORTS
BY DATE OF INJURY
ON DIAMETER AS OF 05/16/90

FOR DATE OF INJURY 1986

MONTH	COUNT OF FIRST REPORTS
JANUARY	5
FEBRUARY	3
MARCH	9
APRIL	9
MAY	9
JUNE	2
JULY	5
AUGUST	8
SEPTEMBER	7
OCTOBER	13
NOVEMBER	2,501
DECEMBER	3,604
TOTAL	6,175

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF INDUSTRIAL ACCIDENTS

COUNTS OF FIRST REPORTS
BY DATE OF INJURY
ON DIAMETER AS OF 05/16/90

FOR DATE OF INJURY 1987

MONTH	COUNT OF FIRST REPORTS
JANUARY	4,760
FEBRUARY	4,242
MARCH	4,851
APRIL	4,784
MAY	4,974
JUNE	6,118
JULY	5,588
AUGUST	5,542
SEPTEMBER	5,482
OCTOBER	5,480
NOVEMBER	4,688
DECEMBER	4,352
TOTAL	60,861

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF INDUSTRIAL ACCIDENTS

COUNTS OF FIRST REPORTS
BY DATE OF INJURY
ON DIAMETER AS OF 05/16/90

FOR DATE OF INJURY 1988

MONTH	COUNT OF FIRST REPORTS
JANUARY	5,377
FEBRUARY	5,027
MARCH	5,246
APRIL	4,848
MAY	4,859
JUNE	5,033
JULY	4,540
AUGUST	5,736
SEPTEMBER	5,001
OCTOBER	4,979
NOVEMBER	4,415
DECEMBER	4,470
TOTAL	59,531

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF INDUSTRIAL ACCIDENTS

COUNTS OF FIRST REPORTS
BY DATE OF INJURY
ON DIAMETER AS OF 05/16/90

FOR DATE OF INJURY 1989

MONTH	COUNT OF FIRST REPORTS
JANUARY	5,104
FEBRUARY	4,925
MARCH	5,477
APRIL	4,555
MAY	4,788
JUNE	2,822
JULY	2,169
AUGUST	3,269
SEPTEMBER	3,377
OCTOBER	3,647
NOVEMBER	2,742
DECEMBER	3,711
TOTAL	46,586

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF INDUSTRIAL ACCIDENTS

COUNTS OF FIRST REPORTS
BY DATE OF INJURY
ON DIAMETER AS OF 05/16/90

FOR DATE OF INJURY 1990

MONTH	COUNT OF FIRST REPORTS
JANUARY	4,661
FEBRUARY	4,020
MARCH	4,334
APRIL	3,126
MAY	61
JUNE	
JULY	
AUGUST	
SEPTEMBER	
OCTOBER	
NOVEMBER	
DECEMBER	
TOTAL	16,202

MASSSACHUSETTS

EXHIBIT 8

CALENDER YEAR 1988 PREMIUM AND BENEFIT AMOUNTS

	Dollar Amounts (In $1,000)	Percent Of Premium
1. Premium	$1,118,353	100.0%
2. Benefits to Claimants	$1,191,219	106.5%
3. Claimants Attorney Fees	$48,513	4.3%
4. Insurance Company Expenses	$291,909	26.1%
5. Dividends to Policyholders	$43,168	3.9%
6. Underwriting Results	($456,456)	-40.8%

DISTRIBUTION OF INSURERS OUTLAY

7. Benefits to Claimants	75.64%
8. Claimants Attorney Fees	3.08%
9. Insurance Company Expenses	18.54%
10. Dividends to Policyholders	2.74%
11. Total	100.00%

EXHIBIT 9

LOSSES, EXPENSES, AND DIVIDEND DISTRIBUTION
AS PERCENT OF TOTAL INSURER OUTLAY

State	Losses	Expenses	Policyholder Dividends
Massachusetts	78.7%	18.5%	2.7%
Maine	84.0%	11.5%	0.5%
New Hampshire	73.8%	23.5%	2.7%
Rhode Island	80.1%	18.5%	1.4%
Vermont	70.8%	25.9%	3.3%

Notes: The MA numbers were estimated from WCRB of Massachusetts data.
ME, NH, RI, and VT figures are from the NCCI Statistical Bulletin.
Data was not available from NCCI for the other states.

RUN DATE: 02/10/90

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF INDUSTRIAL ACCIDENTS

ATTORNEY FEES AND PENALTIES AWARDED
FOR CONF,HEAR,LUMP,REV
WITH DISPOSITION DATES OF
01/01/89 to 12/31/89

AWARDS	NUMBER OF AWARDS	TOTAL AMOUNT
PENALTIES SEC. 7	48	59312.91
PENALTIES SEC. 8	13	16956.58
ALL ATTORNEY FEES	16631	63562551.72
ATTORNEY FEES WITH SEC. 7 AND/OR 8	42	44853.98

DATE: 02/10/90

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF INDUSTRIAL ACCIDENTS

ATTORNEY FEES AND PENALTIES AWARDED
FOR (AC,PC,RC)
WITH EVENT DATES OF
01/01/89 to 12/31/89

AWARDS	NUMBER OF AWARDS	TOTAL AMOUNT
PENALTIES SEC. 7	71	83369.72
PENALTIES SEC. 8	8	3525.99
ALL ATTORNEY FEES	1387	1177976.91
ATTORNEY FEES WITH SEC. 7 AND/OR 8	56	47895.03

EXHIBIT VIII-A

Percentage of Cases with Legal Representation and Controverted Cases by State of Jurisdiction
'Lost-Time' Claims Only

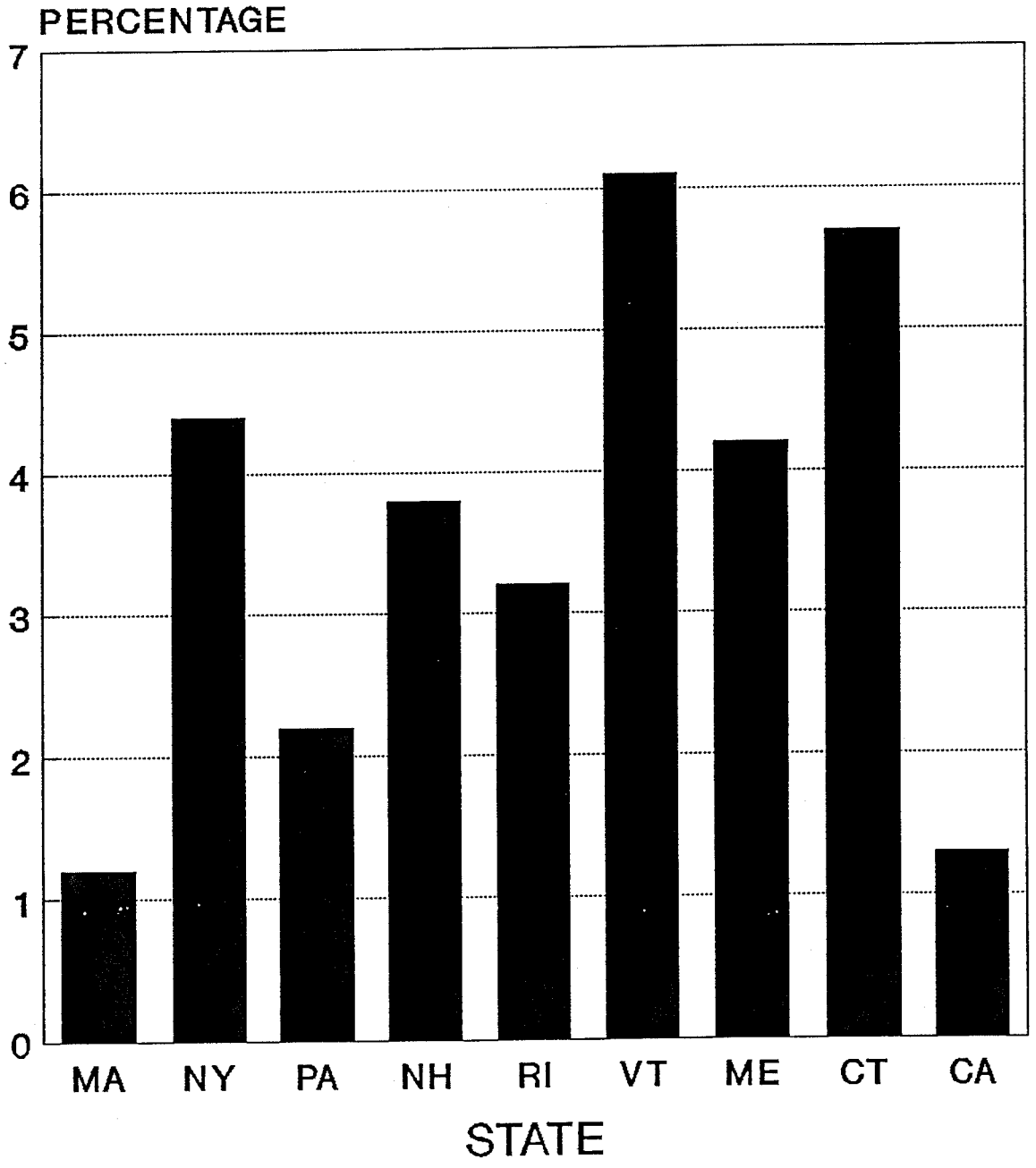
(A) State	(B) Percent of Cases with Legal Representation	(C) Percent of Cases Controverted	(D) Percent of Cases with Legal Rep. & Controverted
Connecticut	3.5%	3.8%	0.9%
Florida (a)	18.8%	5.3%	4.0%
Florida (b)	5.7%	2.3%	1.2%
Florida (Total)	7.8%	2.8%	1.6%
Georgia	9.3%	5.6%	2.8%
Illinois	20.9%	14.5%	9.7%
Kentucky	9.7%	10.2%	6.7%
Louisiana	8.4%	4.7%	2.5%
Maine	11.5%	4.9%	2.9%
Massachusetts	10.3%	6.5%	3.7%
Michigan	19.7%	23.1%	16.8%
Minnesota	4.1%	5.3%	1.9%
New York	12.2%	6.0%	2.2%
Oregon	9.6%	8.8%	5.8%
Pennsylvania	2.7%	5.2%	1.7%
Virginia	4.9%	5.3%	2.1%
Wisconsin	2.4%	2.7%	1.1%
Hawaii	1.7%	3.0%	0.8%
USL&HW	5.6%	2.3%	1.2%
All DCI States	7.8%	7.2%	4.0%

(a) Accident dates January 1, 1978 through July 31, 1979 with report dates subsequent to April 1, 1979.

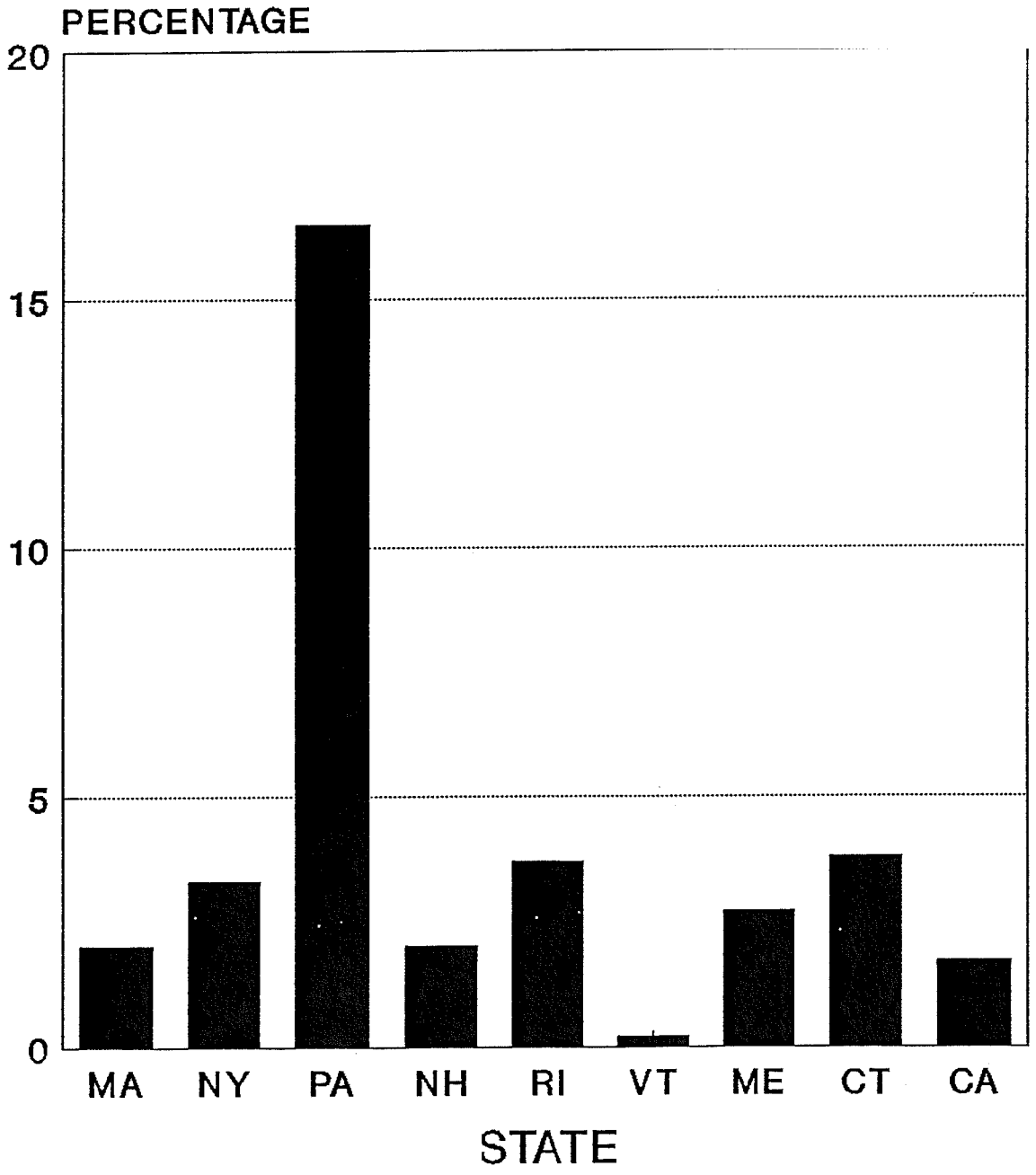
(b) Accident dates subsequent to August 1, 1979.

Note: The introduction of the Florida 'Wage-Loss' program was on August 1, 1979.

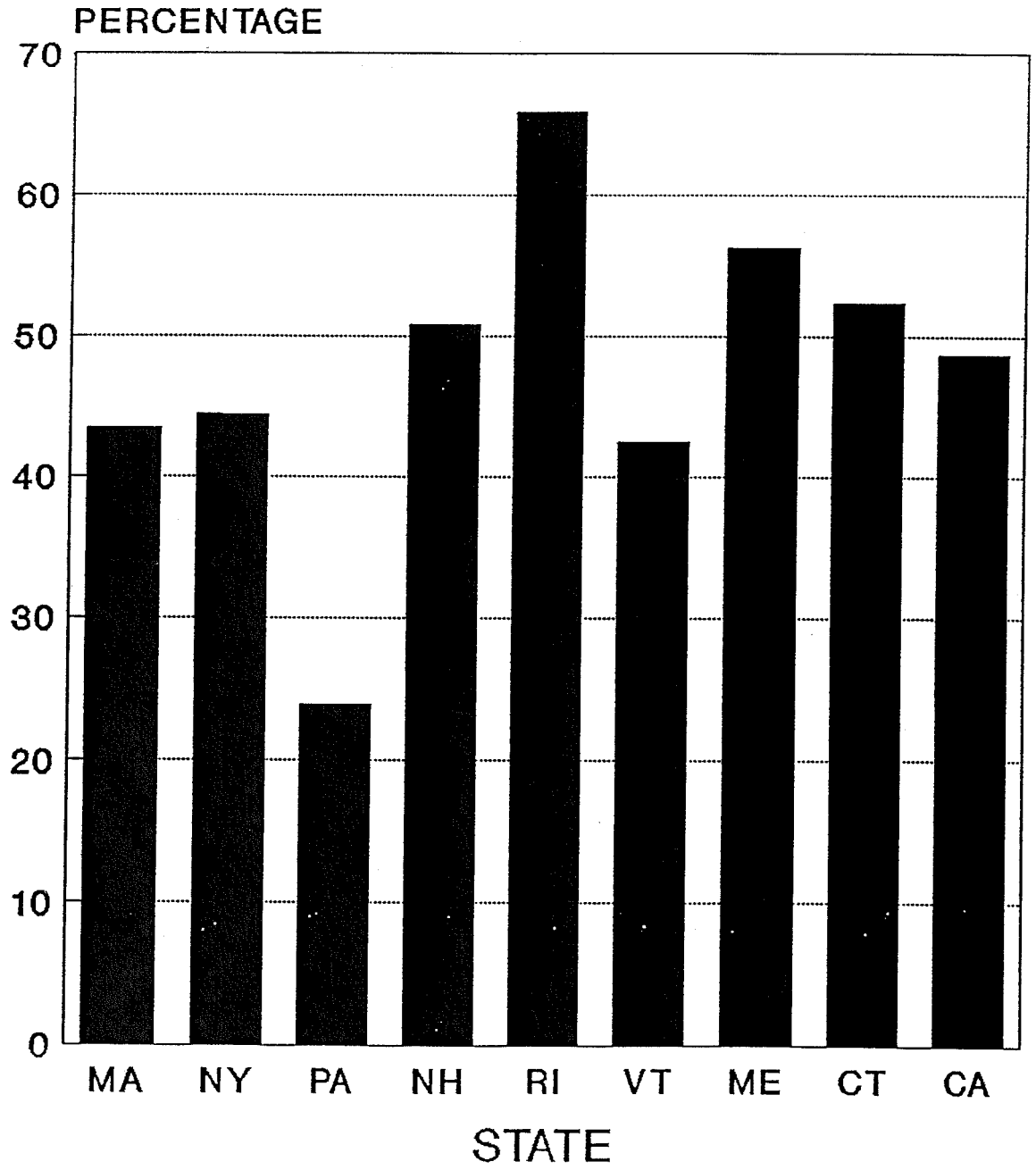
PERCENTAGE OF INCURRED COSTS FATAL



PERCENTAGE OF INCURRED COSTS
PERMANENT TOTAL

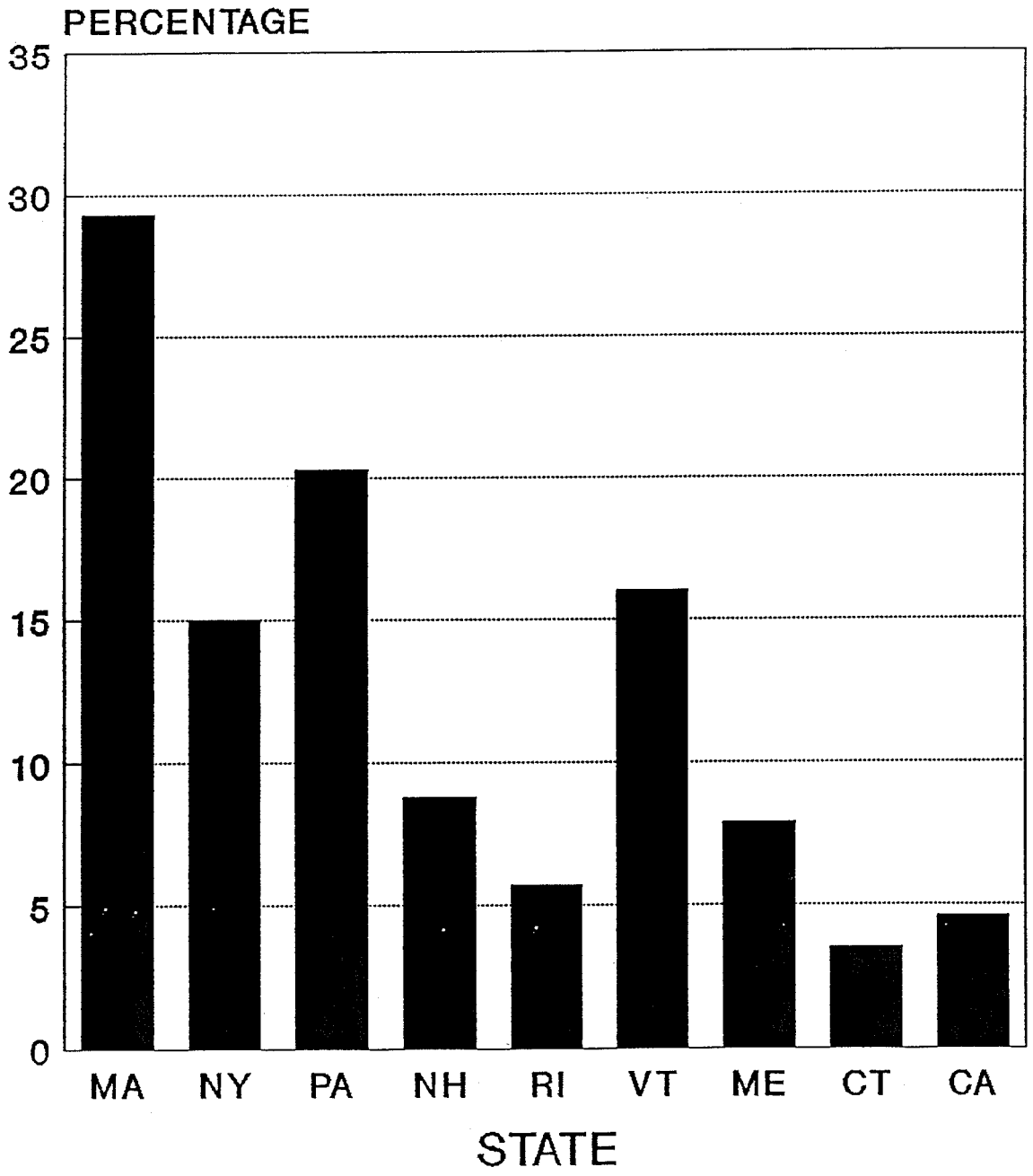


PERCENTAGE OF INCURRED COSTS
PERMANENT PARTIAL



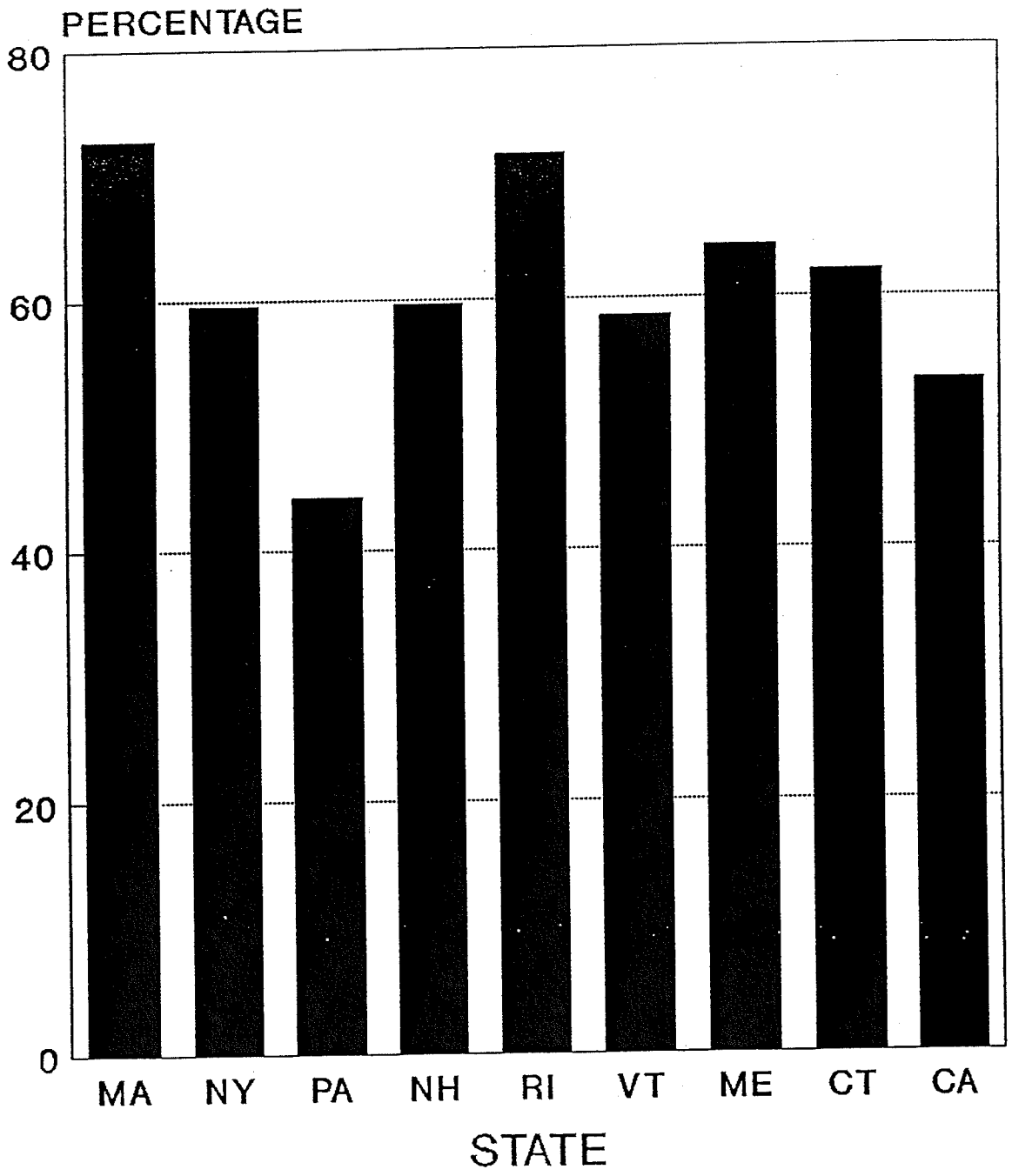
Footnote: Injury type definition may not be compatible between Massachusetts and other states.

PERCENTAGE OF INCURRED COSTS
TEMPORAY TOTAL



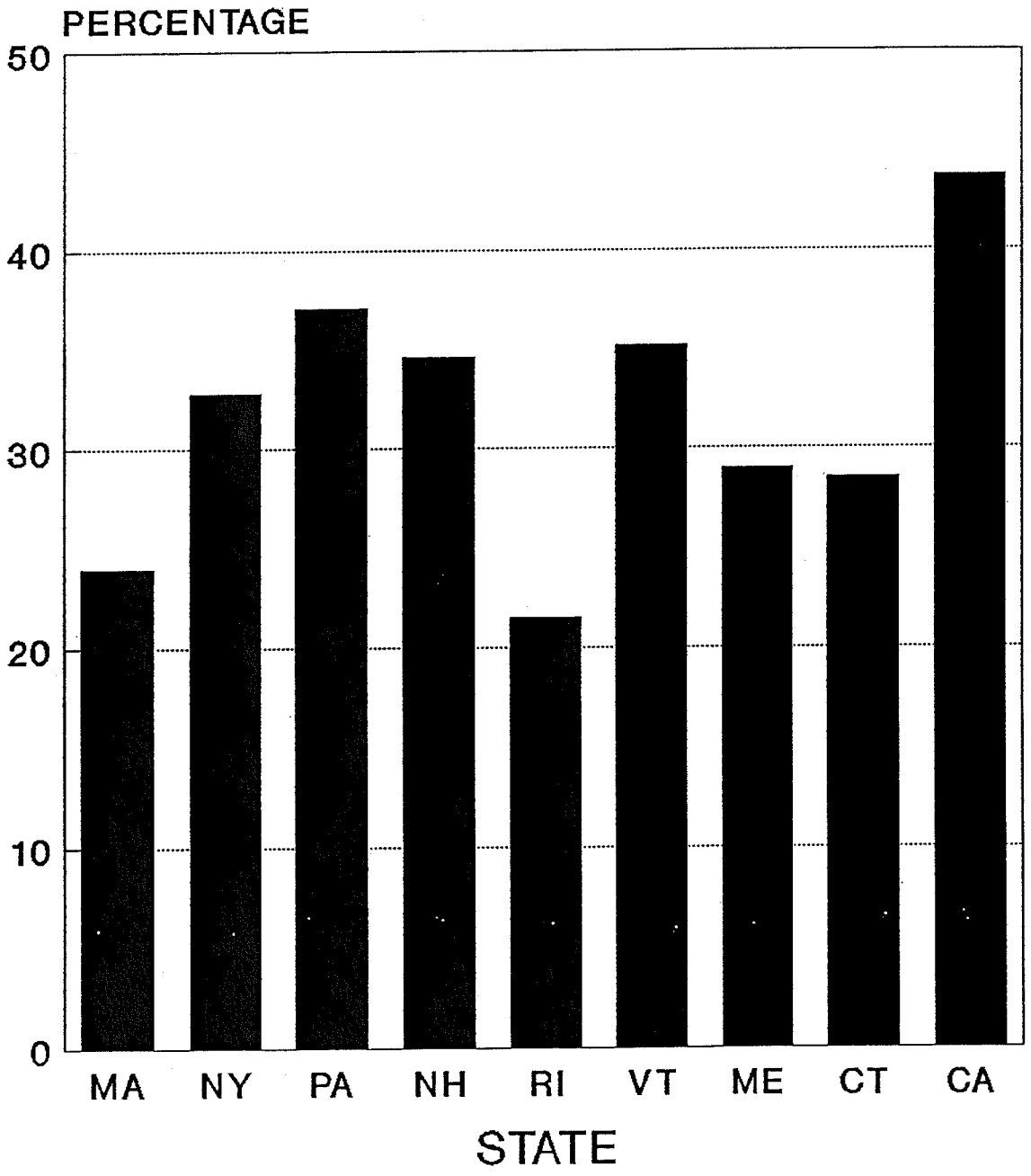
Footnote: Injury type definition may not be compatible between Massachusetts and other states.

PERCENTAGE OF INCURRED COSTS
PERMANENT PARTIAL AND TEMPORARY TOTAL



Footnote: Injury type definition may not be compatible between Massachusetts and other states.

PERCENTAGE OF INCURRED COSTS
MEDICAL



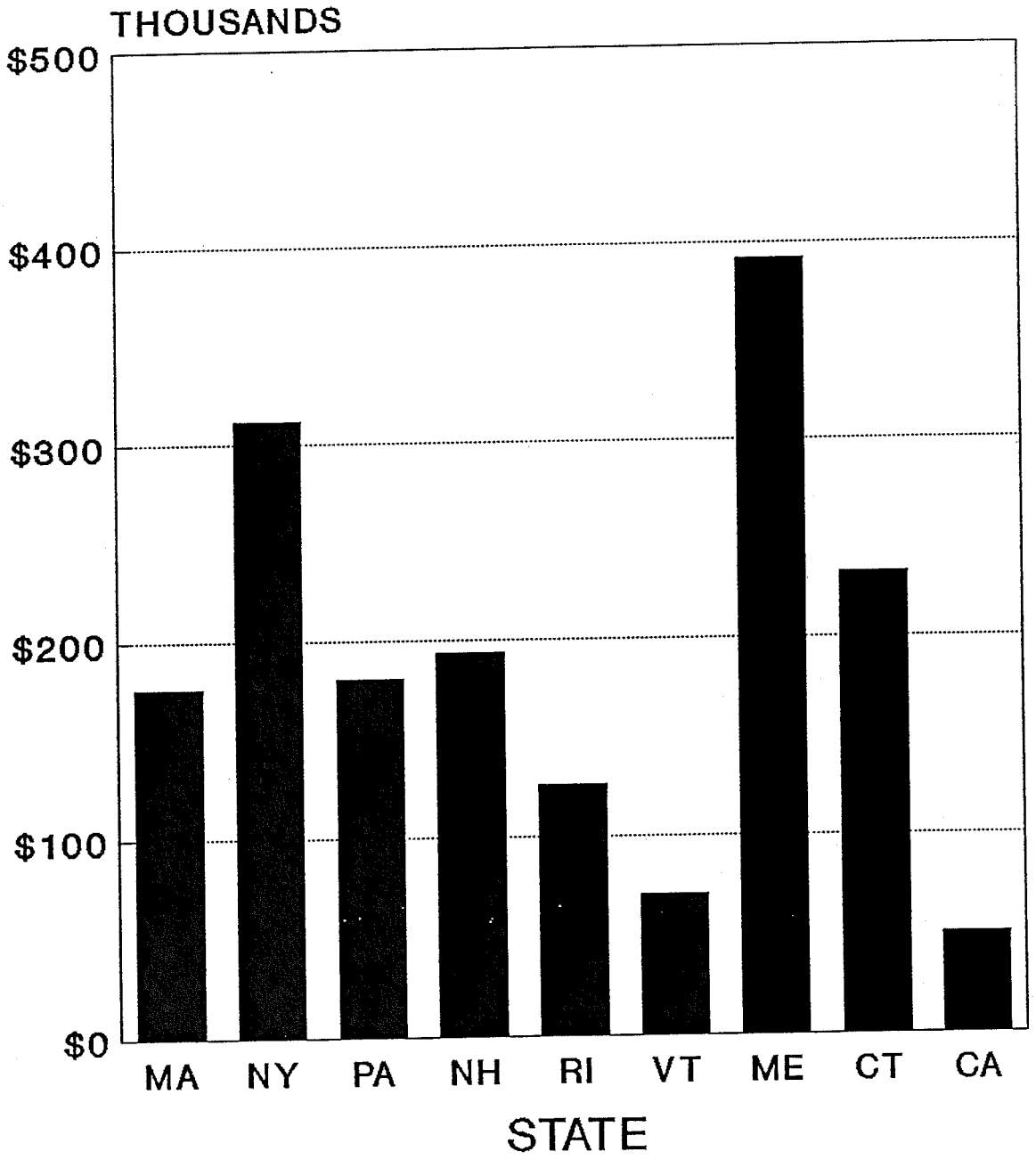
PERCENTAGE OF INCURRED COSTS

DATA INFORMATION

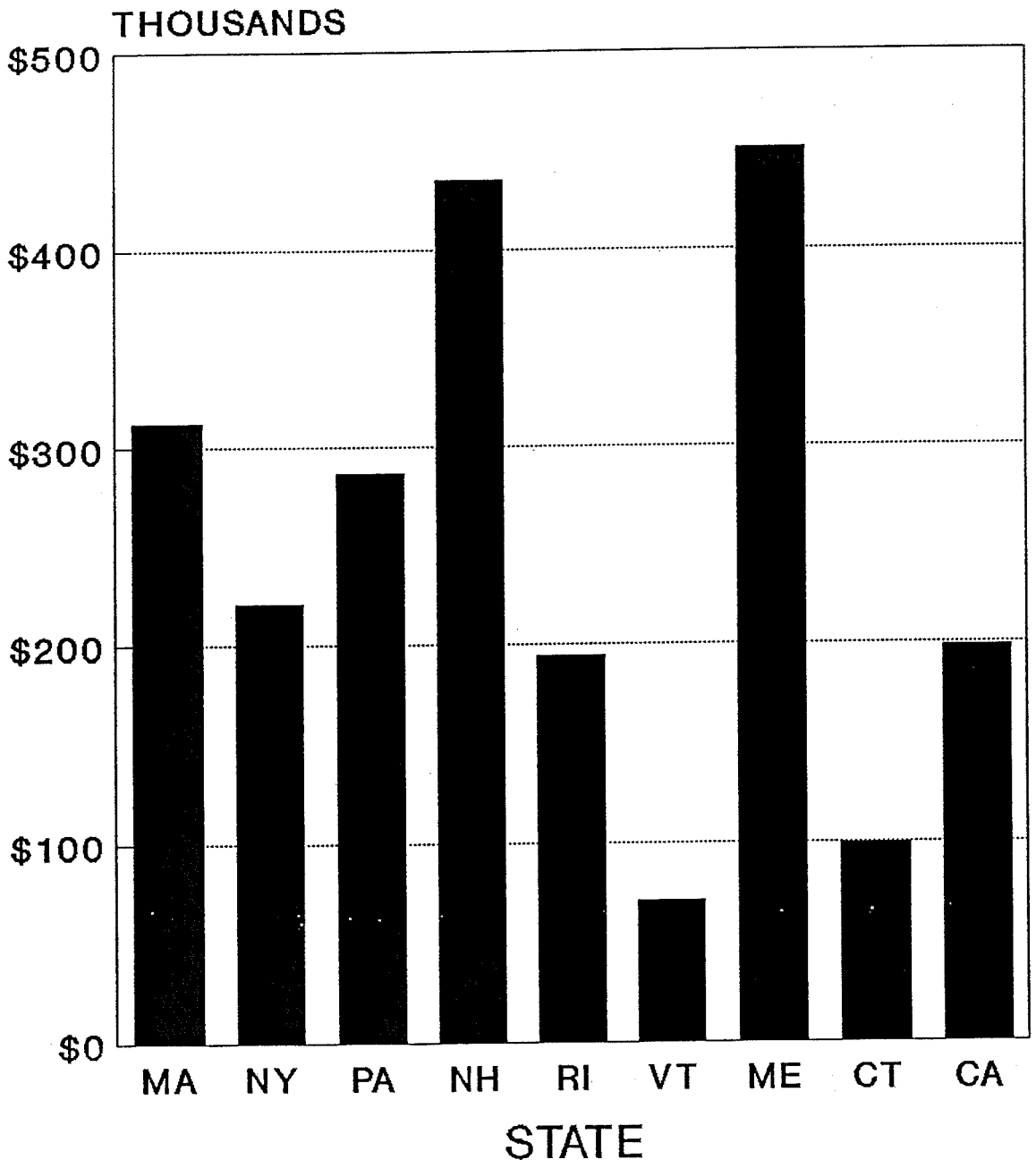
STATE	Policy Period	Law Level
California	1/85 - 12/86	7/1/87
Connecticut	3/84 - 2/86	10/1/89
Maine	6/84 - 5/86	7/1/89
Massachusetts	7/86 - 6/87	10/1/89
New Hampshire	4/86 - 3/87	7/1/89
New York	1/85 - 12/86	7/1/89
Pennsylvania	3/85 - 2/87	1/1/89
Rhode Island	1/84 - 12/85	9/1/89
Vermont	4/84 - 3/86	7/1/89

Source: NCCI ANNUAL STATISTICAL BULLETIN
1990 EDITION

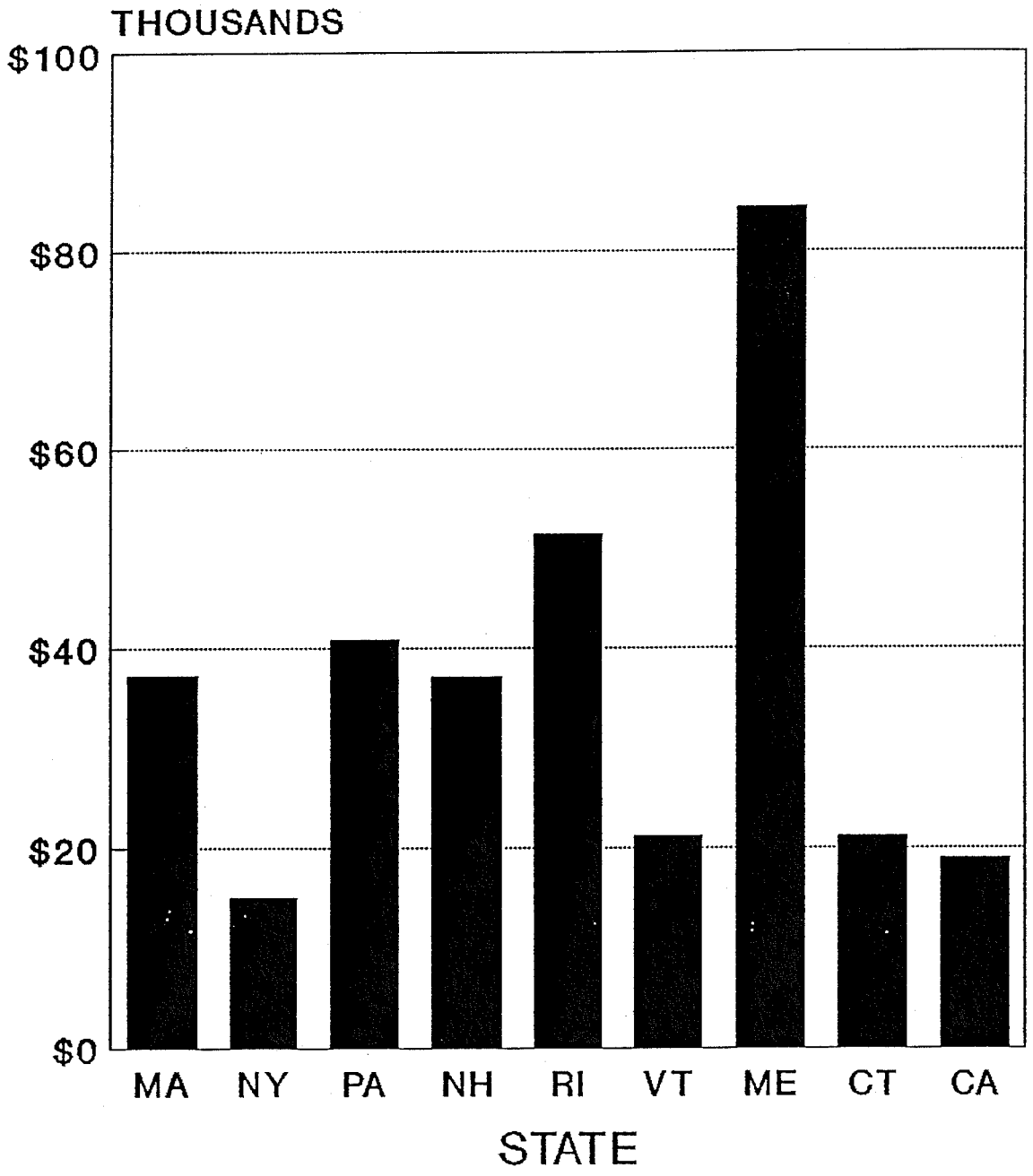
AVERAGE COST PER CASE
FATAL



AVERAGE COST PER CASE
PERMANENT TOTAL

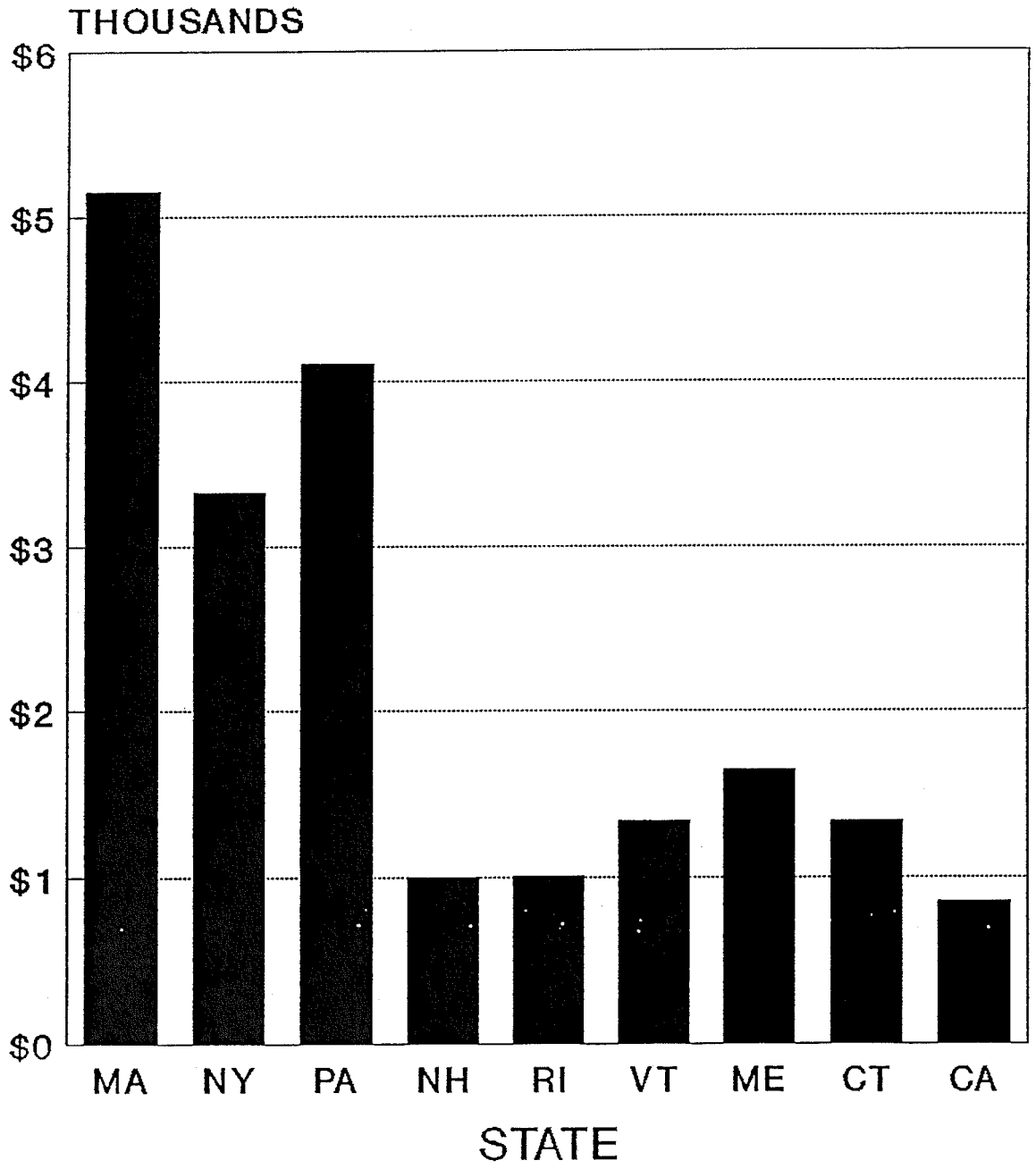


AVERAGE COST PER CASE
PERMANENT PARTIAL



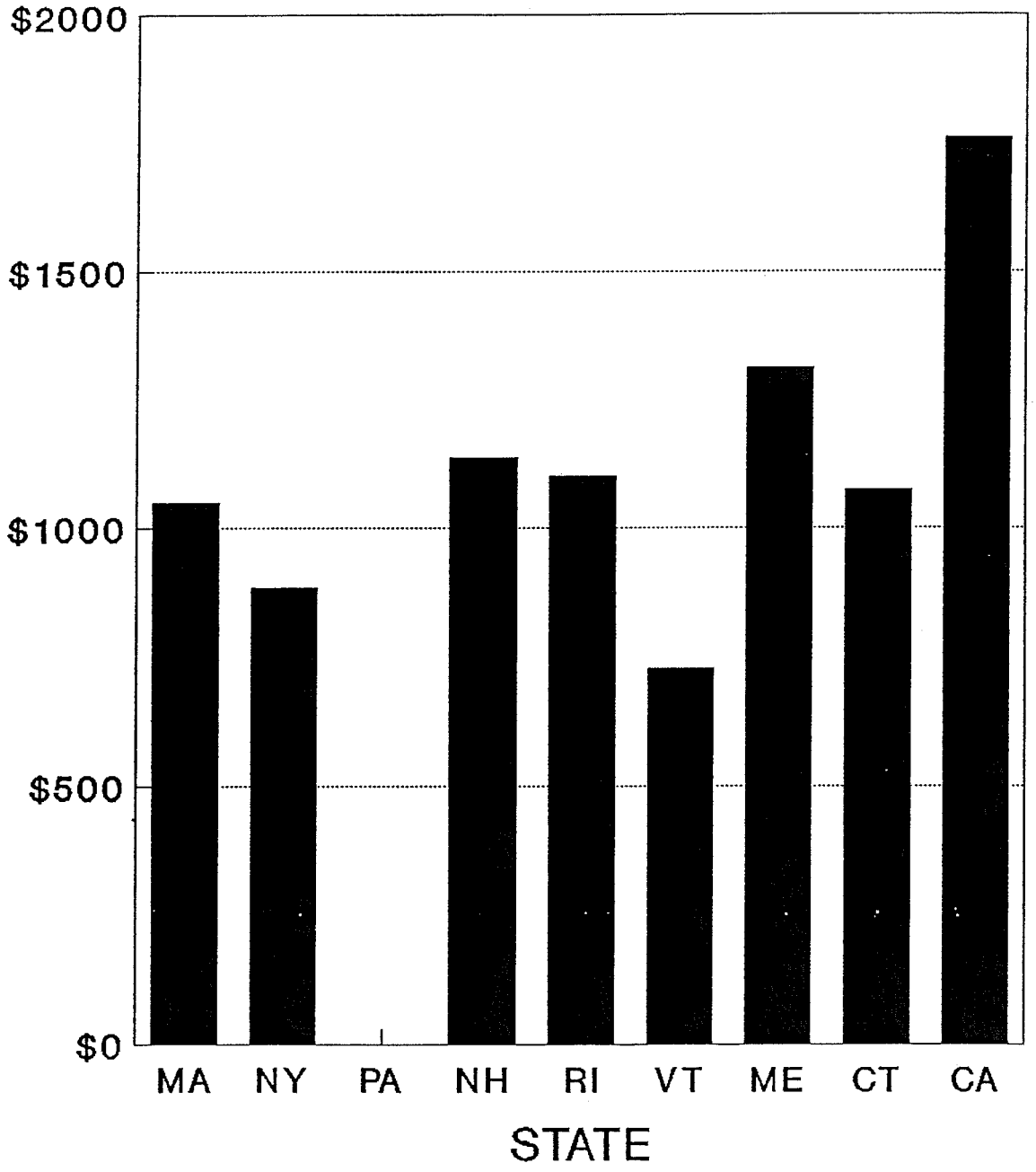
Footnote: Injury type definition may not be compatible between Massachusetts and other states.

AVERAGE COST PER CASE
TEMPORARY TOTAL



Footnote: Injury type definition may not be compatible between Massachusetts and other states.

AVERAGE COST PER CASE
MEDICAL



PA data is not available.

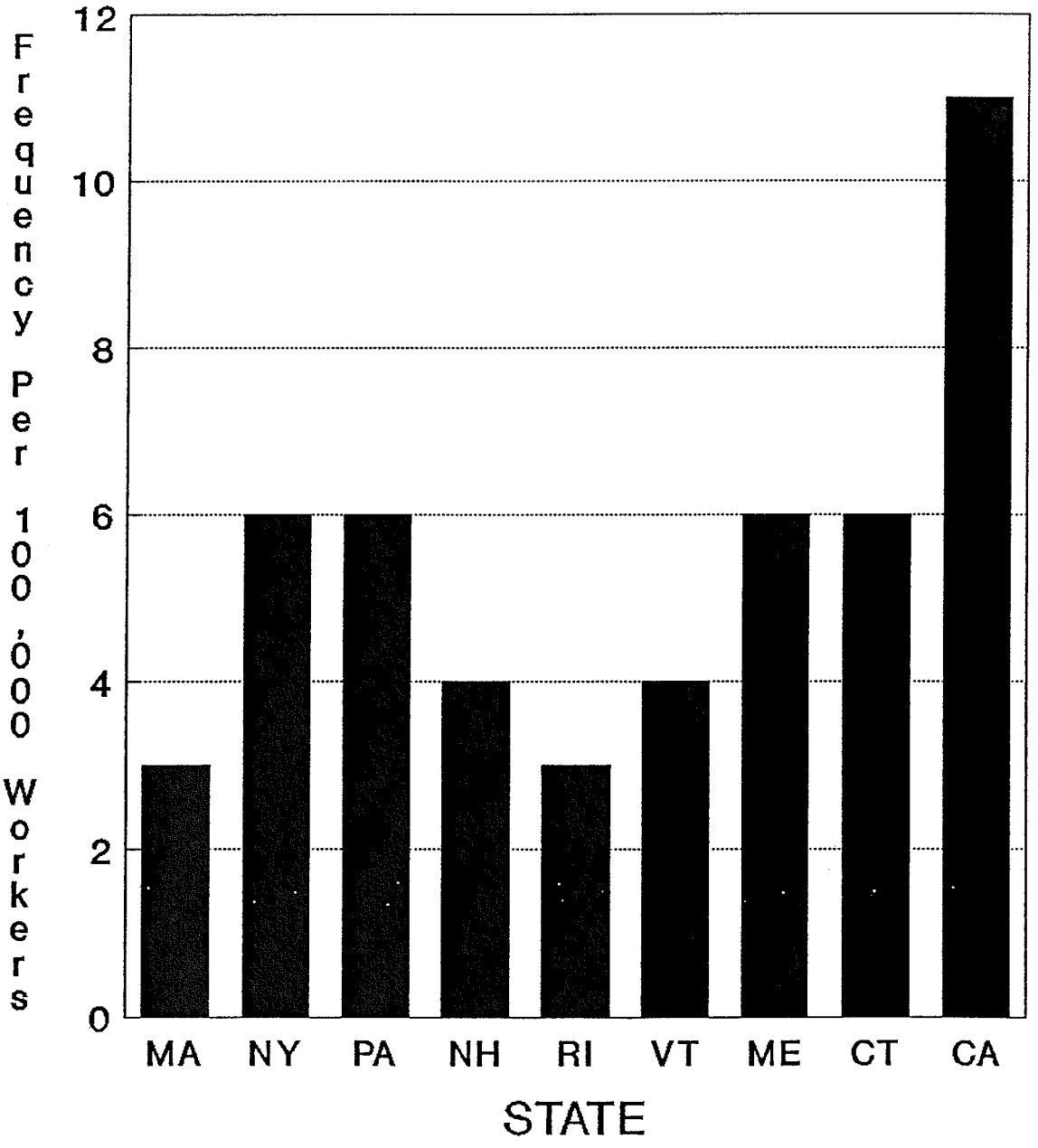
AVERAGE OF INCURRED COSTS

DATA INFORMATION

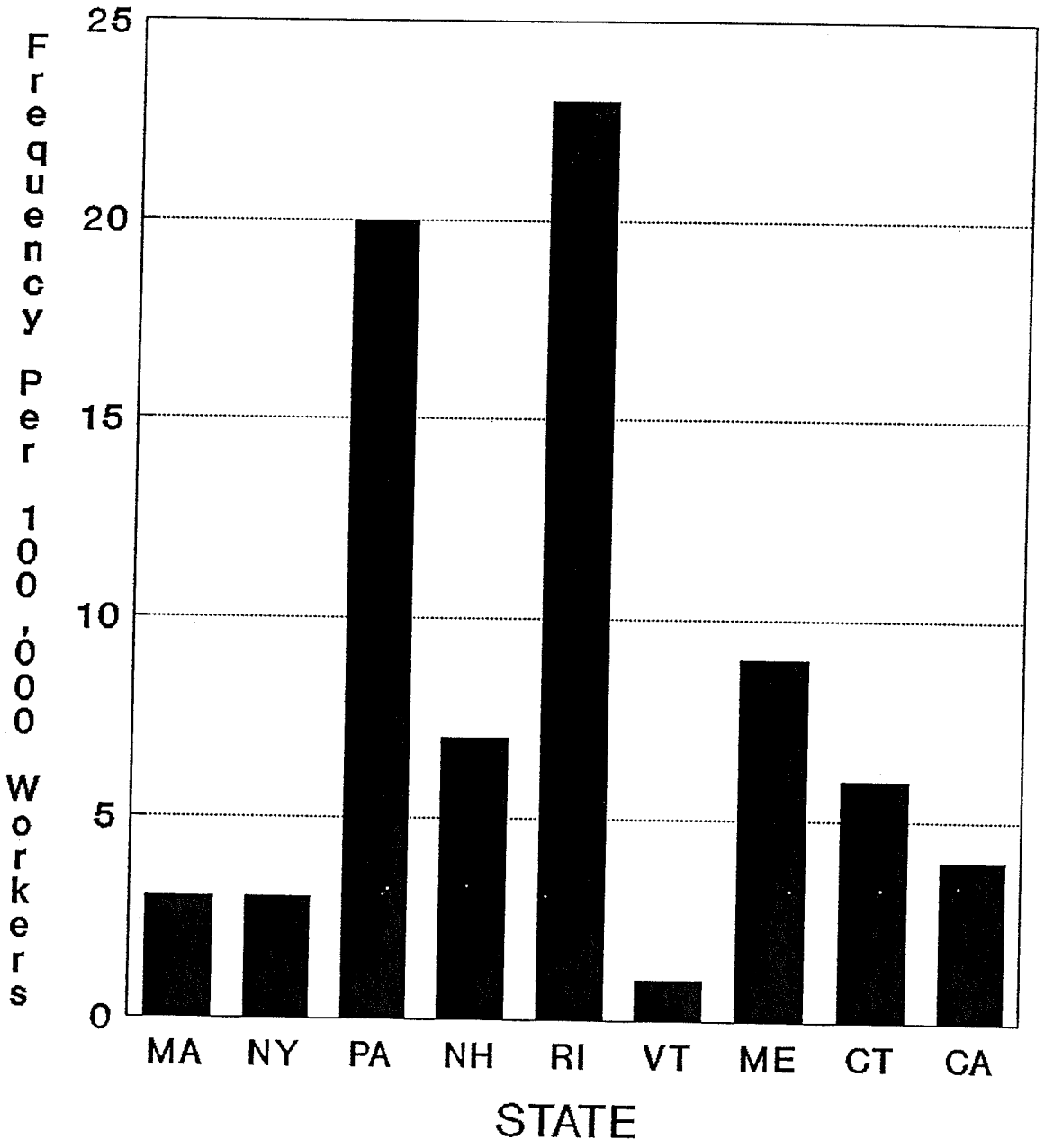
STATE	Policy Period
California	1/86 - 12/86
Connecticut	3/85 - 2/86
Maine	6/85 - 5/86
Massachusetts	7/86 - 6/87
New Hampshire	4/85 - 3/86
New York	1/86 - 12/86
Pennsylvania	4/85 - 3/86
Rhode Island	1/85 - 12/85
Vermont	4/85 - 3/86

Source: NCCI ANNUAL STATISTICAL BULLETIN
1990 EDITION

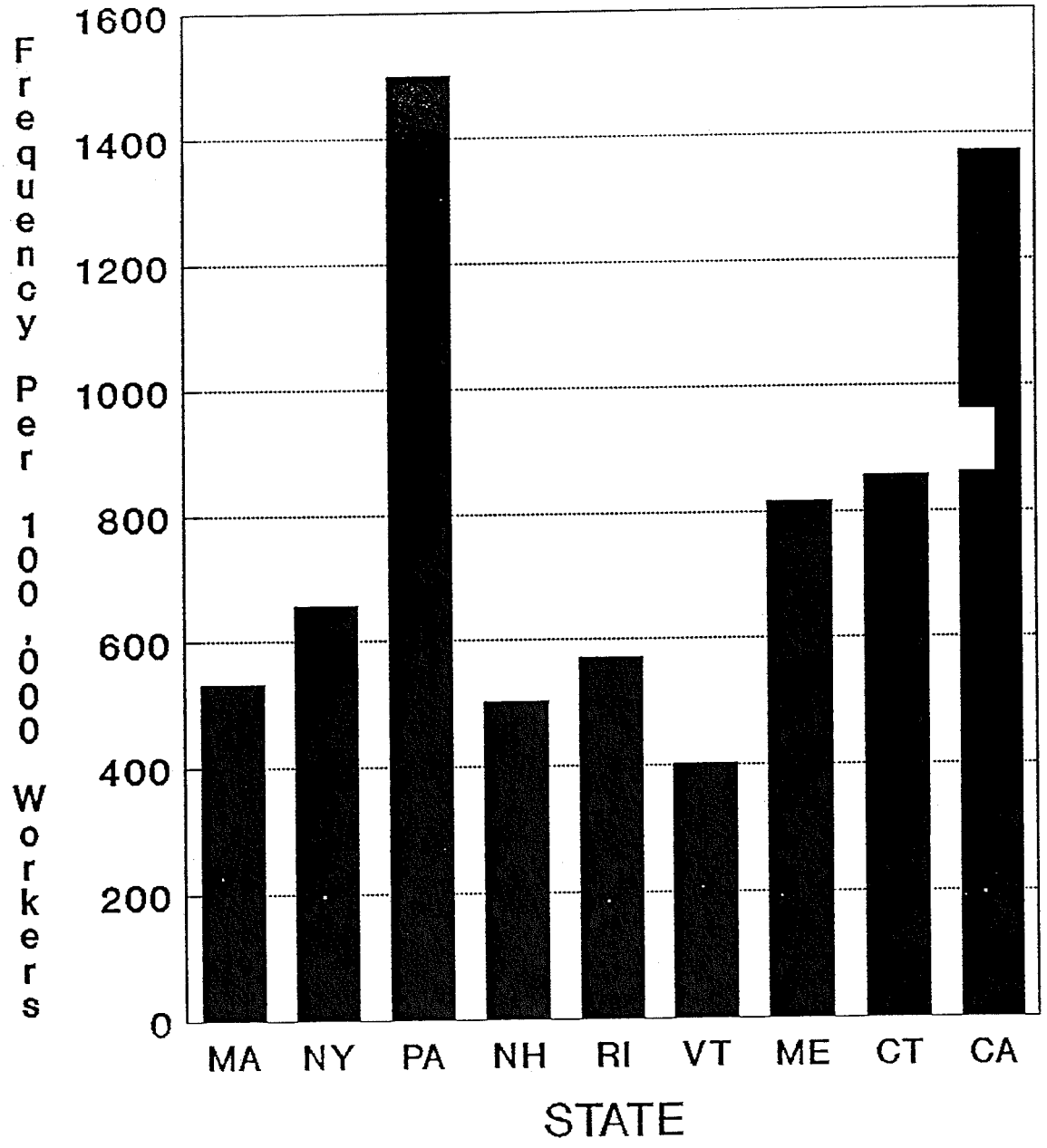
FREQUENCY BY INJURY TYPE
FATAL



FREQUENCY BY INJURY TYPE
PERMANENT TOTAL

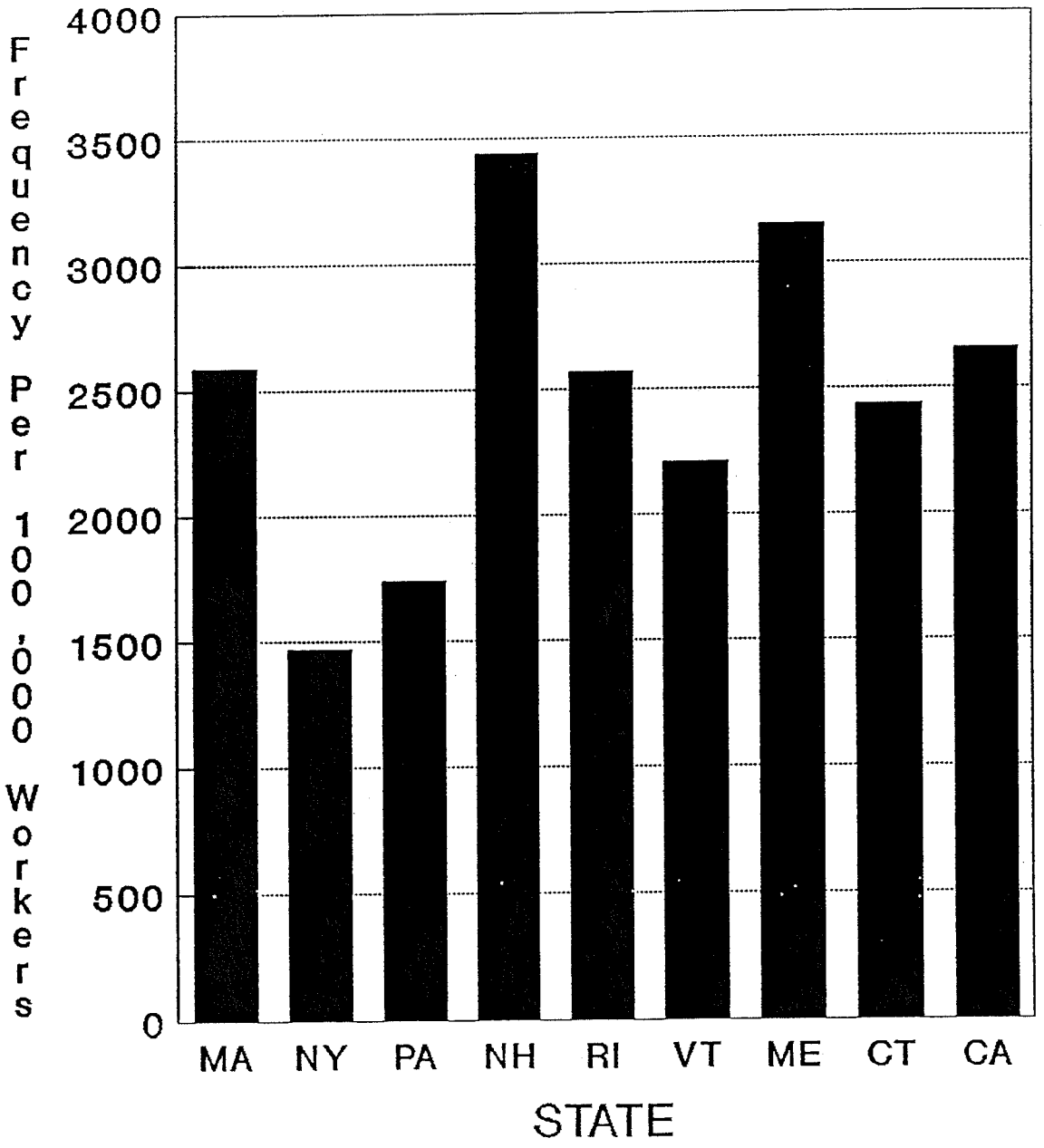


FREQUENCY BY INJURY TYPE
PERMANENT PARTIAL



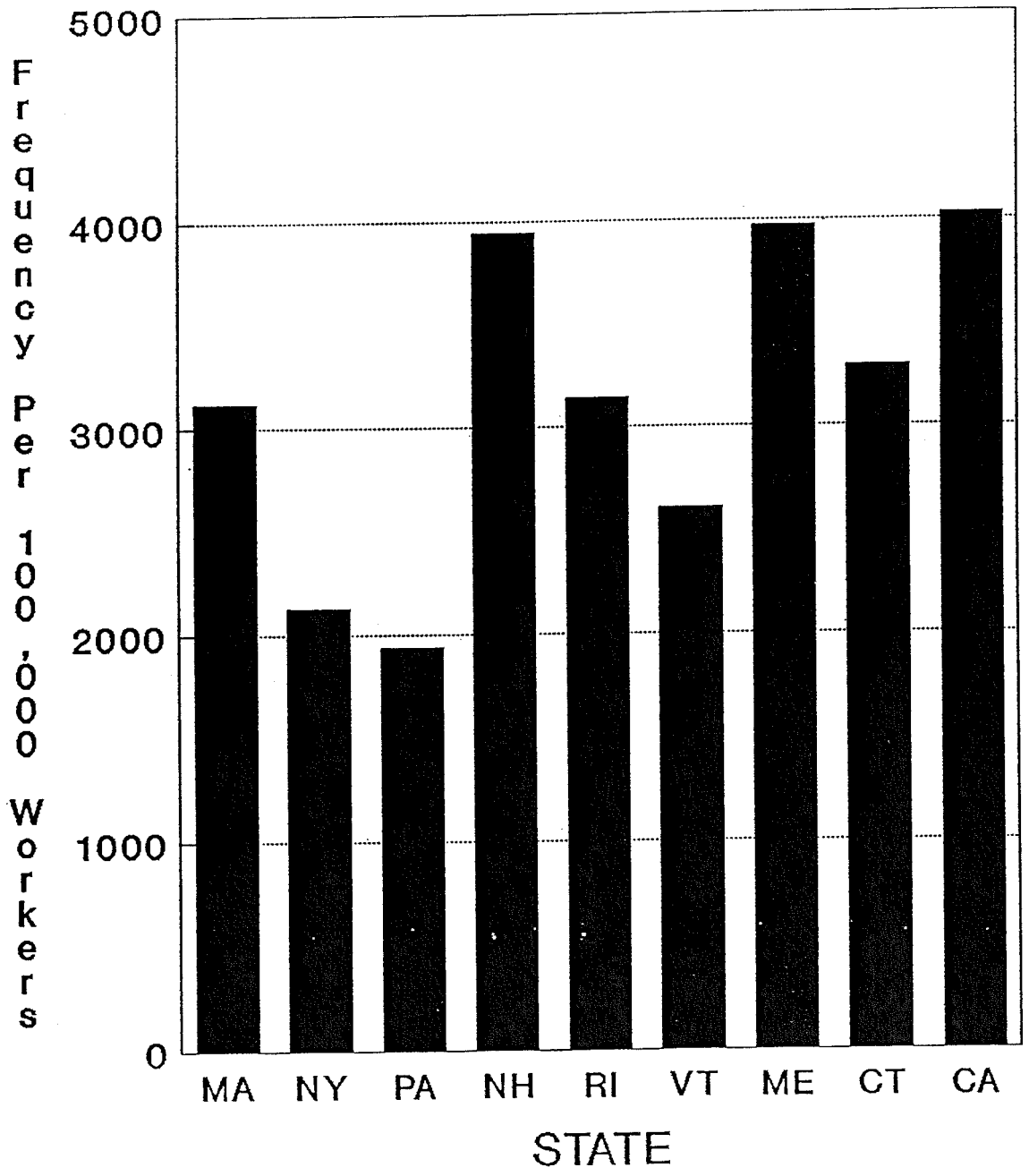
Footnote: Injury type definition may not be compatible between Massachusetts and other states.

FREQUENCY BY INJURY TYPE
TEMPORARY TOTAL



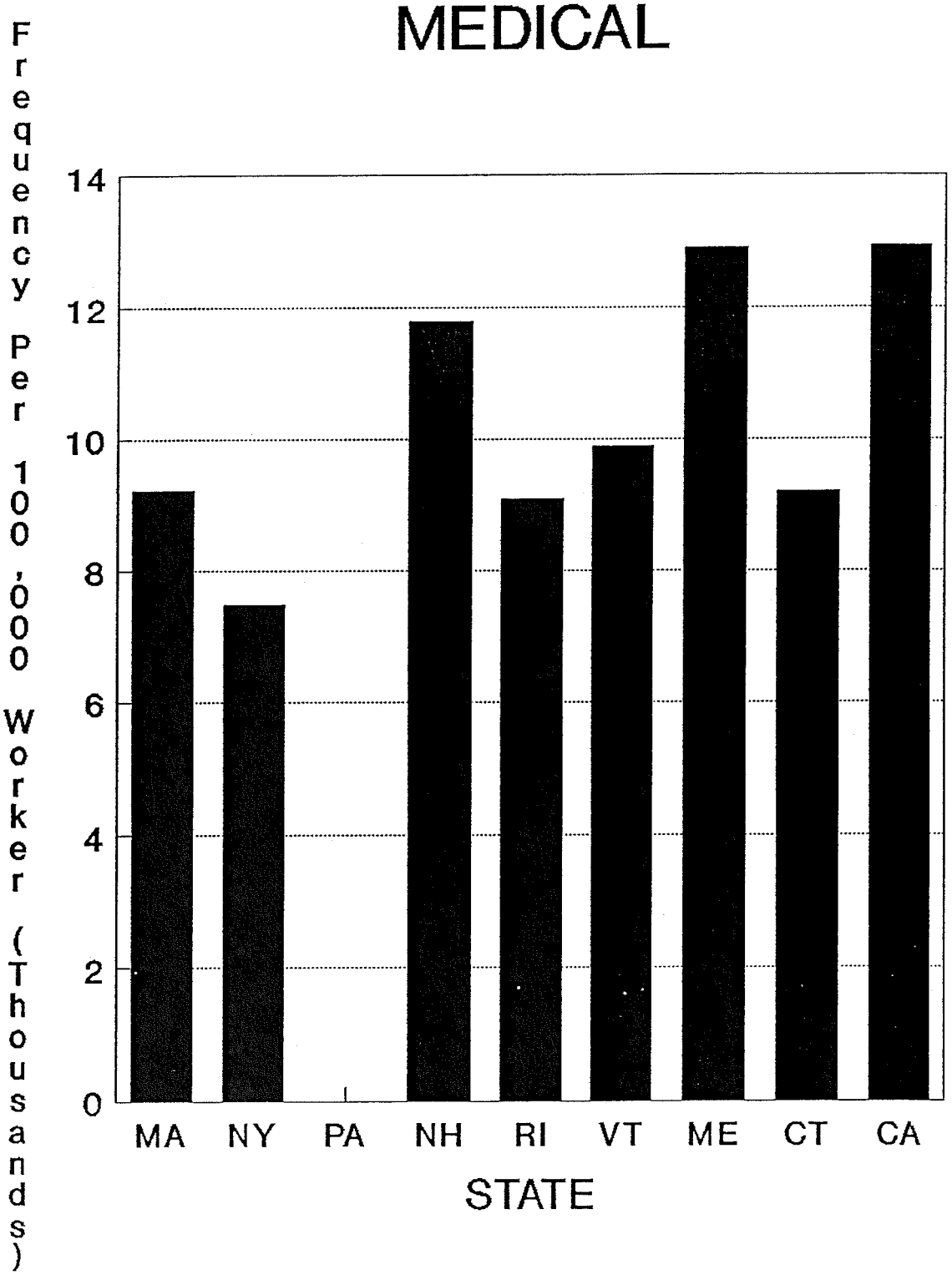
Footnote: Injury type definition may not be compatible between Massachusetts and other states.

FREQUENCY BY INJURY TYPE
PERMANENT PARTIAL AND TEMPORARY TOTAL



Footnote: Injury type definition may not be compatible between Massachusetts and other states.

FREQUENCY BY INJURY TYPE
MEDICAL



FREQUENCY BY INJURY TYPE

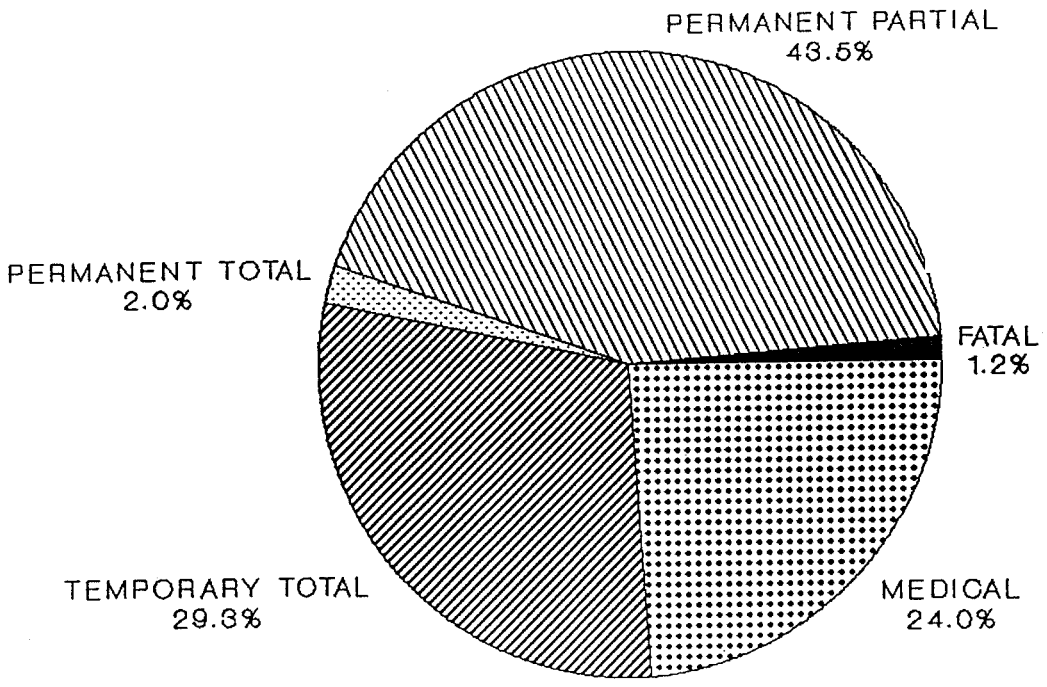
EXHIBIT 14
SHEET 7

DATA INFORMATION

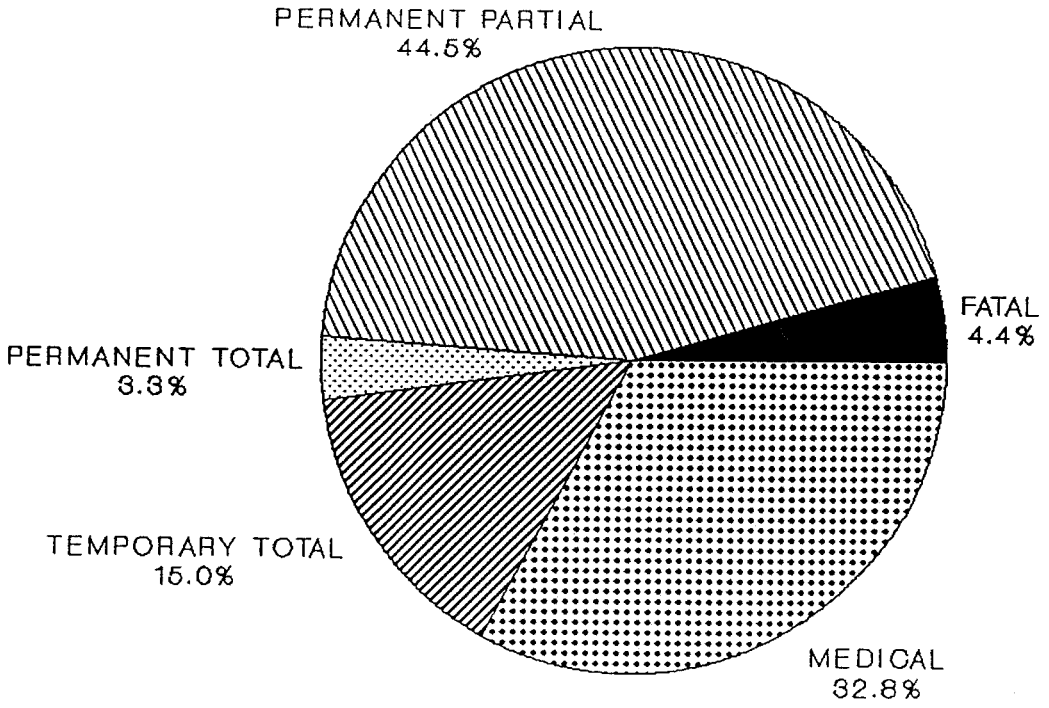
STATE	Policy Period
California	1/86 - 12/86
Connecticut	3/85 - 2/86
Maine	6/85 - 5/86
Massachusetts	7/86 - 6/87
New Hampshire	4/85 - 3/86
New York	1/86 - 12/86
Pennsylvania	4/85 - 3/86
Rhode Island	1/85 - 12/85
Vermont	4/85 - 3/86

Source: NCCI ANNUAL STATISTICAL BULLETIN
1990 EDITION

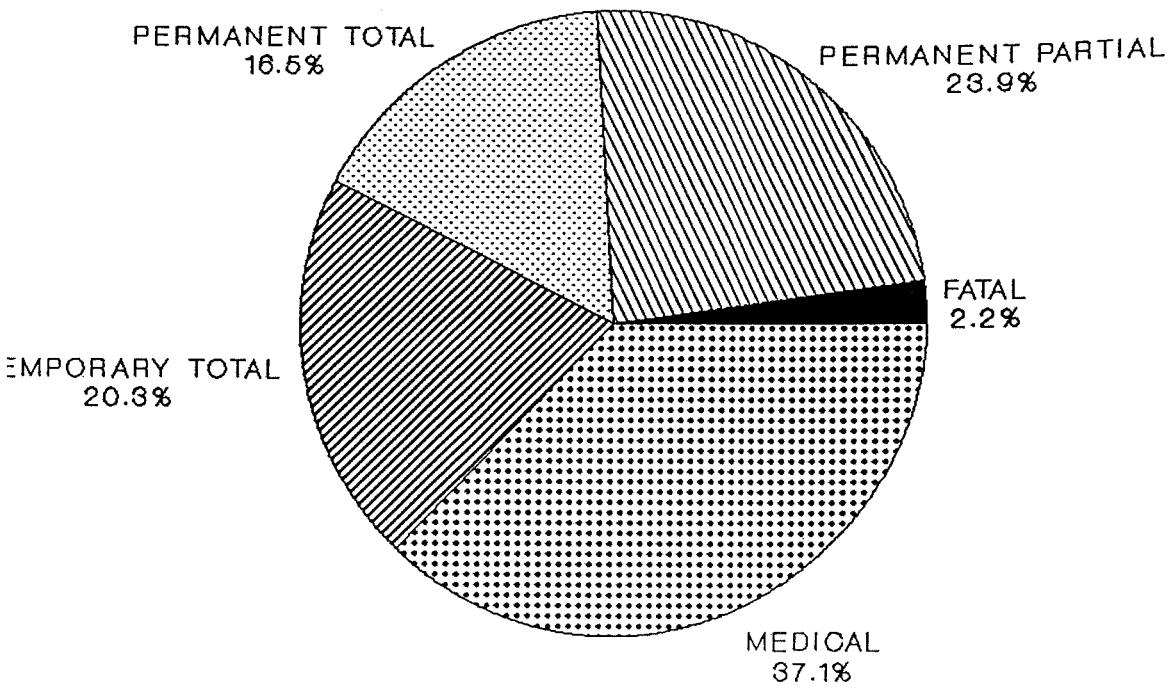
PERCENTAGE OF INCURRED COSTS MASSACHUSETTS



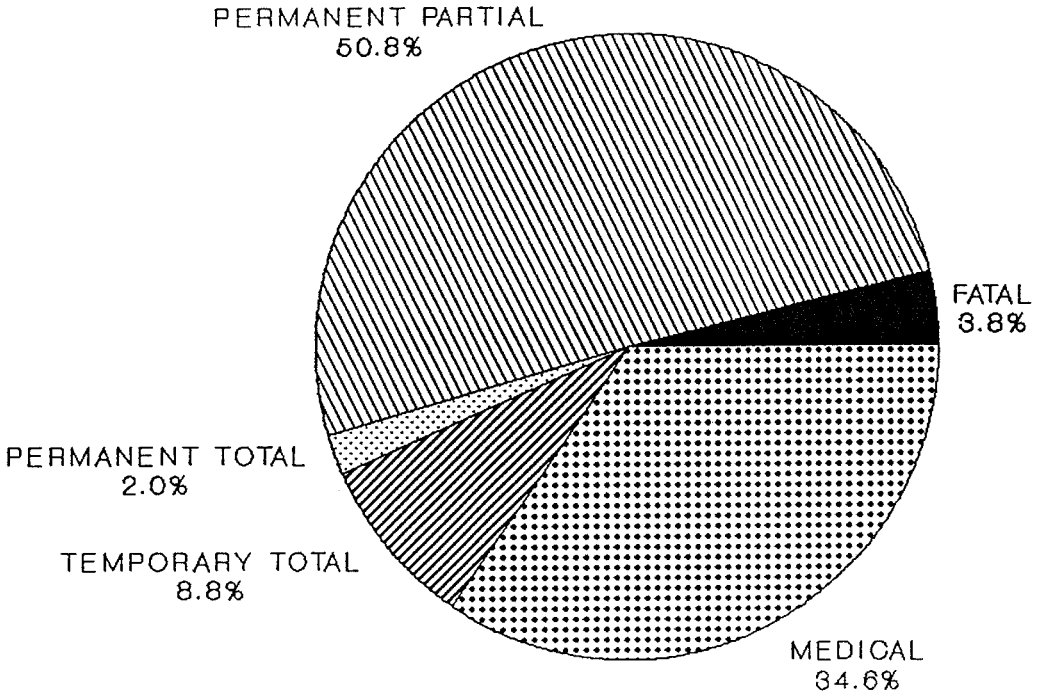
PERCENTAGE OF INCURRED COSTS
NEW YORK



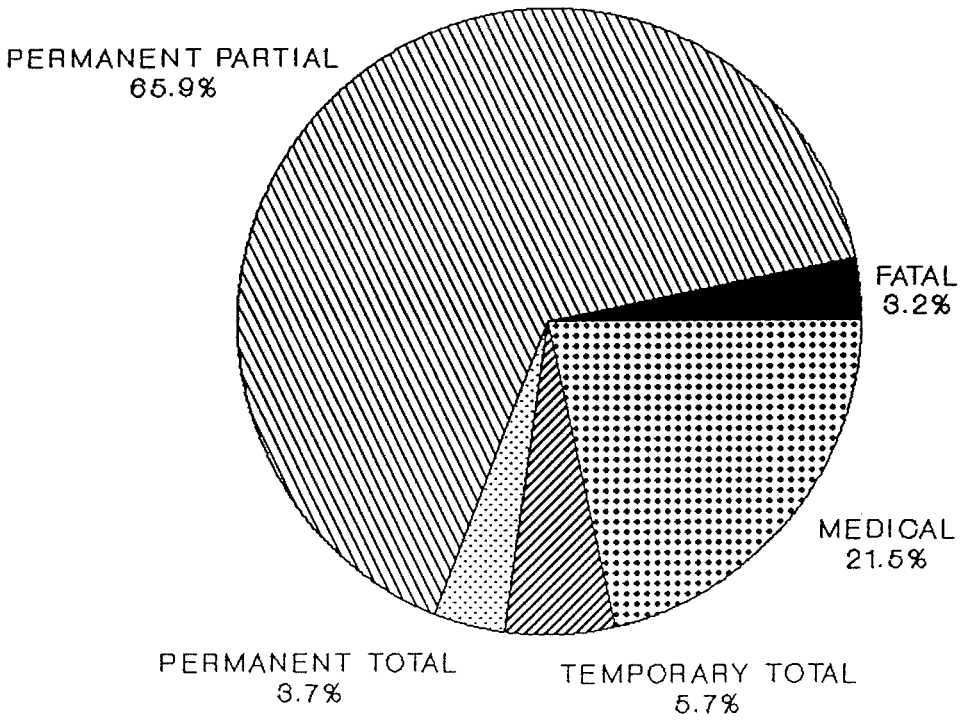
PERCENTAGE OF INCURRED COSTS
PENNSYLVANIA



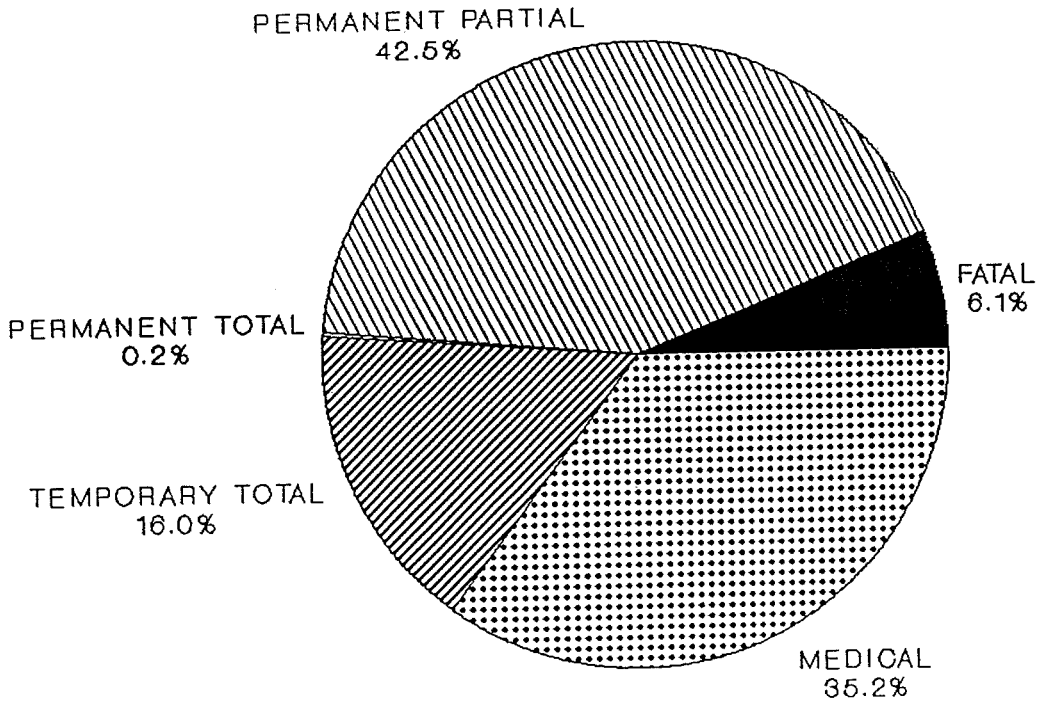
PERCENTAGE OF INCURRED COSTS
NEW HAMPSHIRE



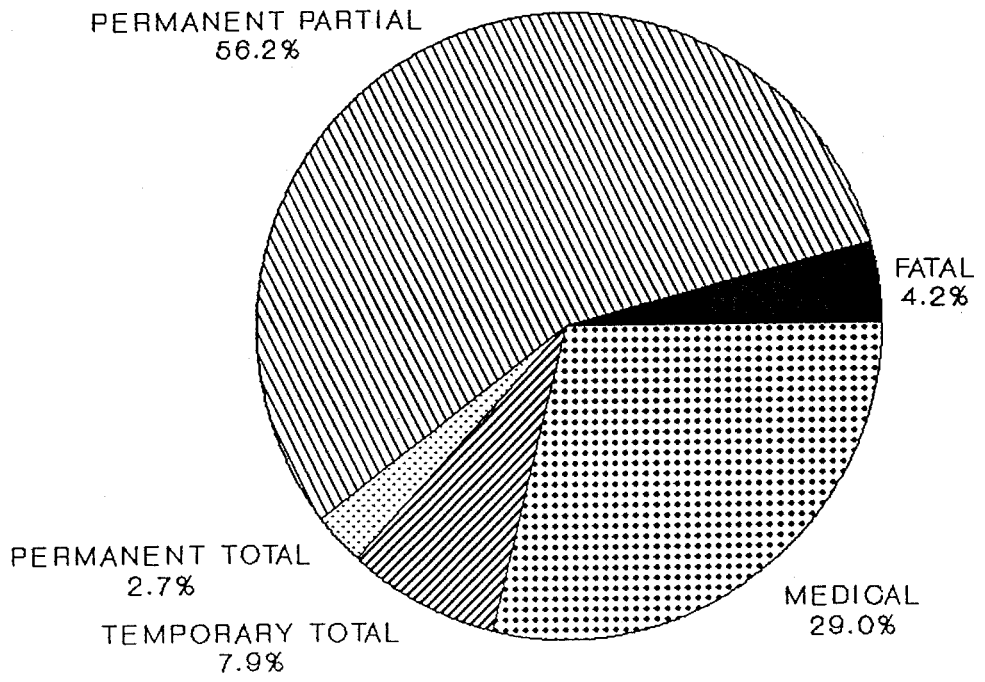
PERCENTAGE OF INCURRED COSTS
RHODE ISLAND



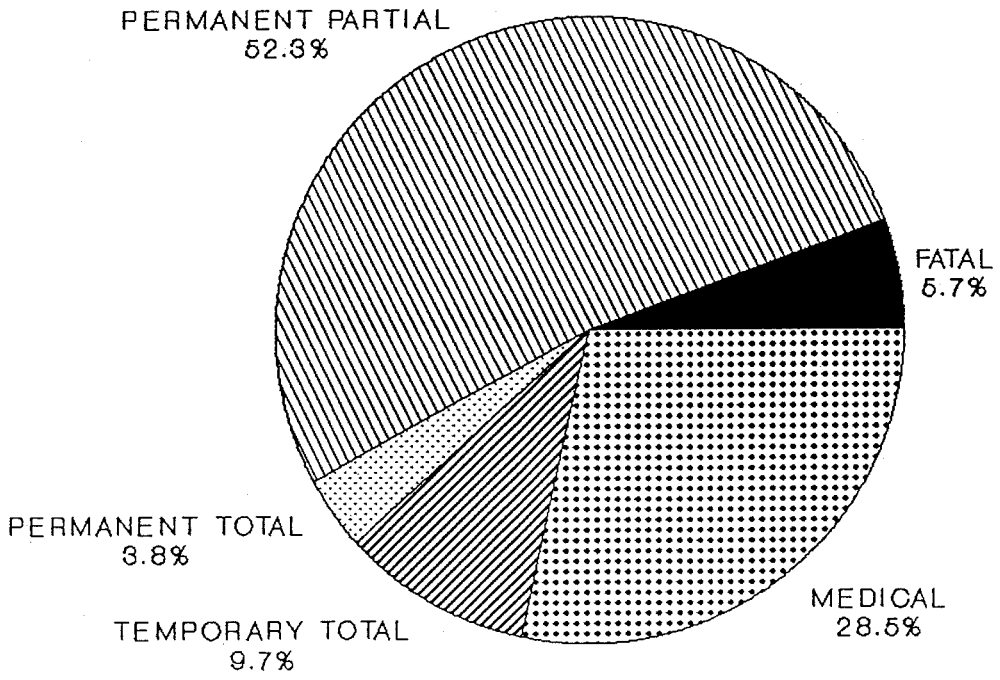
PERCENTAGE OF INCURRED COSTS
VERMONT



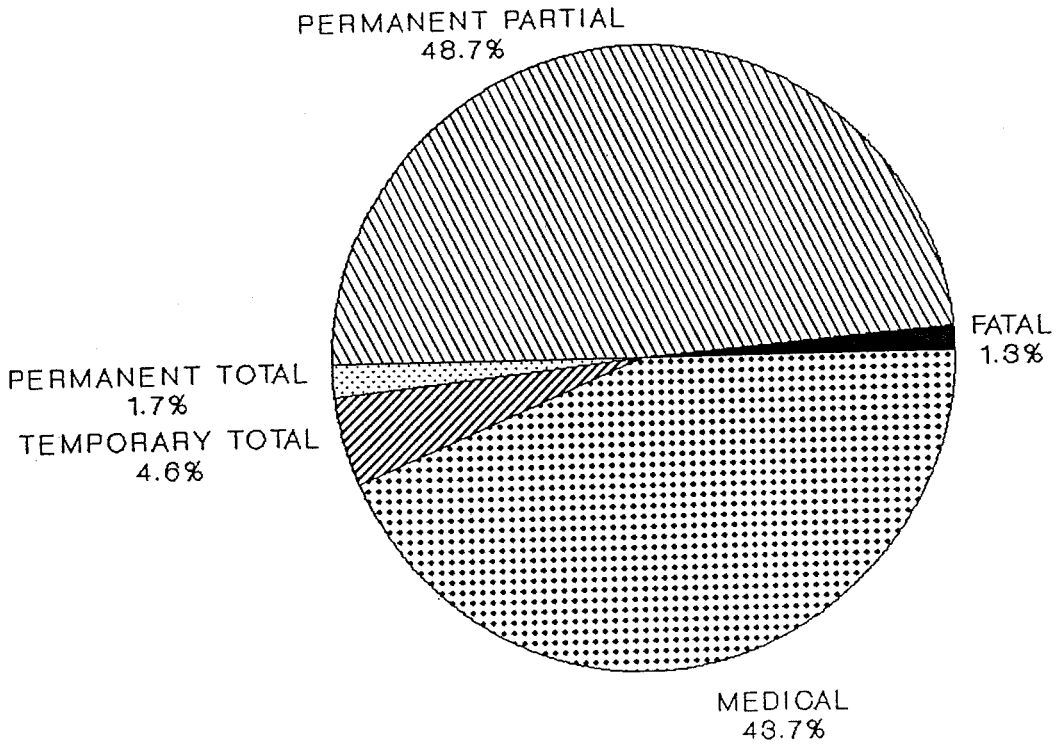
PERCENTAGE OF INCURRED COSTS
MAINE



PERCENTAGE OF INCURRED COSTS
CONNECTICUT



PERCENTAGE OF INCURRED COSTS
CALIFORNIA



PERCENTAGE OF INCURRED COSTS

DATA INFORMATION

STATE	Policy Period	Law Level
California	1/85 - 12/86	7/1/87
Connecticut	3/84 - 2/86	10/1/89
Maine	6/84 - 5/86	7/1/89
Massachusetts	7/86 - 6/87	10/1/89
New Hampshire	4/86 - 3/87	7/1/89
New York	1/85 - 12/86	7/1/89
Pennsylvania	3/85 - 2/87	1/1/89
Rhode Island	1/84 - 12/85	9/1/89
Vermont	4/84 - 3/86	7/1/89

Source: NCCI ANNUAL STATISTICAL BULLETIN
1990 EDITION

PROFIT AND CONTINGENCY

EXHIBIT 16

State	Approved	
Alabama	2.50%	
Alaska	2.50%	
Arizona	2.50%	
Arkansas	2.50%	
Colorado	2.50%	
Connecticut	0.00%	(a)
	2.50%	(b)
D. C.	2.50%	
Florida	-4.00%	
Georgia	2.50%	
Idaho	2.50%	
Illinois	0.00%	(a)
	2.50%	(b)
Indiana	2.50%	
Iowa	2.50%	
Kansas	2.50%	
Kentucky	2.50%	
Louisiana	2.50%	
Maine	-5.00%	
Maryland	2.50%	
Mississippi	2.50%	
Missouri	2.50%	
Montana	2.50%	
Nebraska	2.50%	
New Hampshire	-0.50%	
New Mexico	-3.00%	(a)
	2.50%	(b)
Oklahoma	-2.00%	
Oregon	2.50%	
Rhode Island	-12.01%	
South Carolina	-2.64%	
South Dakota	2.50%	
Tennessee	2.50%	
Texas	-6.55%	
Utah	2.50%	
Vermont	2.50%	
Virginia	-11.58%	

Notes: (a) Applicable to assigned risk policies only.
(b) Applicable to voluntary risk policies only.

APPENDIX B

M&R ECONOMIC REPORT

MASSACHUSETTS ECONOMY:

EFFECTS ON WORKERS' COMPENSATION

Background

It has long been observed that economic conditions play a significant role in influencing both Workers' Compensation losses and premiums. In Massachusetts, there is strong evidence that the economy has experienced a downturn and that this in turn has affected results in Workers' Compensation. The Economic Consulting practice at Milliman and Robertson was asked to determine, as precisely as possible, the timing of the downturn of the Massachusetts economy, and suggest the current and future effects on Workers' Compensation.

Methodology

The Bureau of Economic Analysis of the U.S. Department of Commerce in conjunction with the National Bureau of Economic Research have a long research tradition investigating business cycles. This research has considered many different data series and their relationships to the various phases of the cycle. An important part of this work has been to categorize, based on historical observation and statistical analysis, data series

that are leading, coincident and lagging indicators with respect to business cycle peaks and troughs. A number of such data series specific to Massachusetts were consulted, to identify the most recent peak of the Massachusetts business cycle and the subsequent downturn. The use of such leading, coincident and lagging indicators is consistent with economic theory: changing production processes and profit expectations drive employment and unemployment patterns which affect financial and monetary factors such as interest rates, velocity of money and amount of debt.

Results

Based on specific data series that are traditionally identified as leading indicators, the Massachusetts economy began to show signs of a downturn from the substantial growth and prosperity of the early and middle 1980's in the fourth quarter of 1987. During the first quarter of 1988, the economy in Massachusetts peaked and turned down according to the coincident indicators. This downturn has continued and apparently worsened through the beginning of 1990, and based on our analysis, this trend will continue. As of the spring of 1990, no economic data indicate any turnaround in the near term.

The conclusion that the Massachusetts economy peaked and began to slide in the first quarter of 1988 is based on analyses of leading and coincident indicators from reliable data sources and

where appropriate seasonal adjustments have been accounted for. The following discussion and exhibits will document these findings.

Leading Indicators

As mentioned above, one of the principal forces driving economic fluctuations is expectations about the future especially future profits. One such indicator is the formation of new business ventures. Exhibit I contains information on the number of new business incorporations in Massachusetts from 1986 to the present. Although month-to-month fluctuations are observed, it is apparent that beginning in September of 1987, the number of new business incorporations began to turn down, and even taking into consideration the stock market crash of October 1987, the downturn has been sharp and continues into the spring of 1990.

A second force that has been observed to lead economic cycles is the rate at which new houses are constructed. This is important as it reflects builders' and the public's expectations; in addition, increases in housing starts create a derived demand for other goods and services, which tends to fuel an economic expansion. The number of new housing permits for construction are contained in Exhibit II. The number of housing permits increased through 1986, declined and were flat for the first few months in 1987, and then begin to decline significantly in the

autumn of 1987. This decline has continued through the end of 1989.

As economic expectations begin to change, and as is the case in Massachusetts the economy begins to peak and stall, economic expansion especially in the labor market begins to be affected. The typical economic scenario in the beginnings of a downturn are for firms to tighten and slow the hiring of new employees and as already observed for new firms not to start up as frequently. This trend can be observed in Exhibit III which contains an index based on the number of help-wanted advertisements printed in the classified sections of leading Boston newspapers. This index was relatively flat through much of 1987, but peaked and began to decline in October of 1987. This decline has also continued through the end of 1989.

As the economy begins to tighten especially the labor market, firms begin to scale back their existing operations. This will be reflected in an increase in applications for unemployment insurance. Beginning in the fourth quarter of 1987 as shown in Exhibit IV, this was precisely what occurred in the Massachusetts economy. After remaining stable at about 80 thousand initial claims for unemployment through the first three quarters of 1987, initial claims have risen to 140 thousand per quarter by the end of 1989. These new claims for unemployment have increased the unemployment rate in Massachusetts from about

2.5% in November of 1987 to just under 5% by the end of 1989. This is shown in Exhibit V.

In total, the traditional leading indicators that were reviewed all suggest that beginning in the fall of 1987 the Massachusetts economy was losing momentum from the prosperous growth of the early and middle 1980's. Expectations were changing and the labor market was beginning to tighten.

Coincident Indicators

One of the most significant vehicles driving economic growth is the increase in jobs. Whereas Massachusetts ranked seventeenth out of the 50 states in job growth from 1979 to 1987, since then Massachusetts has ranked forty-ninth. This is a significant turn- around signalling the change in the state's economy. As noted above, the number of new housing permits began to decline towards the end of 1987. This eventually affects the number of workers employed in construction. As is clear in Exhibit VI, construction employment peaked in March of 1988 and has declined by roughly 15% since.

Further evidence of the Massachusetts downturn can be observed in Exhibit VII which depicts total nonagricultural employment. During 1986 and 1987 employment growth was strong but beginning in March of 1988 has been flat and even declined slightly through the beginning of 1989. This indicator has been traditional observed to be coincident with economic growth and

clearly shows the Massachusetts economy to stall during the first quarter of 1988.

As the economy stalls and consumers revise their expectations about the future, and indeed as some consumers are without jobs, discretionary purchases are curtailed. This so-called "wealth effect" can be observed in Exhibit VIII which contains an index of retail sales for Massachusetts. From the middle 1980's until March of 1988 this index increased roughly 45%. This index began to decline in the first quarter of 1988 signalling the turn in the Massachusetts economy.

Conclusions

Based on evidence from reliable data sources, and based on historical and statistical analyses of factors that lead and are coincident with changes in business cycles, it appears the Massachusetts economy began to weaken in the fall of 1987 and peaked and began to decline in the first quarter of 1988.

There are a number of reasons to believe that Workers' Compensation experience will lag the turn down in the economy. First, on the premium side, the exposure for Workers' Compensation is a function of wages and employment. Job creation has slowed and total employment has remained flat since the middle of 1988. As the labor market tightens further wage gains will begin to slow. These are typically a lagging indicator

given the contractual nature (at least implicitly) of most wages and salaries. Thus, premium growth will likely slow and lag behind the change in business cycle.

On the loss side there are a host of phenomena that may give rise to increases as the economy turns. Research suggests that as unemployment and layoffs increase workers will be more likely to file for Workers' Compensation claims or extend the duration once on a claim to effectively subsidize their unemployed status. The pool of potential applicants for Workers' Compensation will not have declined as the economy turns even as employment itself may decline. This has the effect of potentially increasing losses while not being offset by an increase in premiums thereby increasing loss ratios. Further, the change in employment as observed in Massachusetts was significant in high risk employment like construction. This may tend to exacerbate, at least initially, Workers' Compensation results until unemployed workers are no longer likely to file additional claims.