

Commonwealth of Massachusetts

Actuarial Estimate of Outstanding Liability

As of June 30, 2011

EXECUTIVE SUMMARY

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Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011

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I. Introduction

Purpose

Aon Global Risk Consulting (“AGRC”) has conducted an actuarial review of the GAAP outstanding loss reserves of the Commonwealth of Massachusetts’ (“Commonwealth”) self-insured Workers Compensation program.

Scope

The specific scope of this study is to prepare an independent estimate of the required workers compensation reserves as of June 30, 2011, separately for seven clusters of agencies:

- a) The Department of Mental Retardation (“DMR”)
- b) The Department of Mental Health (“DMH”)
- c) The Department of Corrections (“DOC”)
- d) UMass – Amherst
- e) UMass – Medical School
- f) All Other Colleges and Universities
- g) All Other Departments

For the “All Other Colleges and Universities” cluster, we have provided estimates of each educational institution’s obligations.

In addition, we have provided estimates of the outstanding liability contained within the “All Other Departments” cluster that is associated with agencies that during fiscal year 2010 ceased to be the liability of the Commonwealth and instead became the liability of the newly created Massachusetts Department of Transportation (MDOT).

We have provided a range of reserves that can be used to test the reasonableness of the carried reserves established by the Commonwealth. Estimates have been prepared on both a discounted and undiscounted basis, utilizing rates of discount equal to 4% and 6%.

Our estimates do not include any provision for allocated loss adjustment expenses (ALAE) that may be incurred in the processing and settlement of claims, other than rehabilitation/investigation payments included with medical losses as described in the Data section (Section V) of this report.

* * * * *

Vahan A. Mahdasian ACAS, MAAA and Mujtaba Datoo ACAS, MAAA are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial report contained herein.



We performed this analysis using generally accepted actuarial principles and in accordance with all relevant Actuarial Standards of Practice.

Please contact us if you have any questions regarding this report.

Respectfully submitted,

Aon Global Risk Consulting

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II. Conditions and Limitations

Inherent Uncertainty

Actuarial calculations produce estimates of inherently uncertain future contingent events. We believe that the estimates provided represent reasonable provisions based on the appropriate application of actuarial techniques to the available data. However, there is no guarantee that actual future payments will not differ from estimates included herein.

Extraordinary Future Emergence

Our projections make no provision for the extraordinary future emergence of losses or types of losses not sufficiently represented in the historical data or which are not yet quantifiable.

Data Reliance

In conducting this analysis, we relied upon the provided data without audit or independent verification; however, we reviewed it for reasonableness and consistency. Any inaccuracies in quantitative data or qualitative representations could have a significant effect on the results of our review and analysis.

Discounting

The uncertainty inherent in the discounted unpaid loss estimates is greater than that of the undiscounted unpaid loss estimates. This is because undiscounted liabilities normally contemplate an implicit risk margin for the uncertainty in the loss estimation process (e.g., under-estimating). Discounting takes away this implicit risk margin and would subject the unpaid loss estimates to additional risks such as yields on the investment portfolio and the timing risk. Future loss payments could occur more or less rapidly than expected due to random variation and the timing of claim payments. We made no adjustment to account for these risks. The interest rate used to discount the unpaid losses was provided by the Commonwealth of Massachusetts. We express no opinion and have not independently evaluated the appropriateness of the interest rate.

Use and Distribution

Use of this report is limited to the Commonwealth of Massachusetts for the specific purpose described in the Introduction section. Other uses are prohibited without an executed release with Aon.

Distribution by the Commonwealth of Massachusetts is unrestricted. We recognize that this report may be distributed to others and we request that Aon be notified of further distribution of this report. The report should only be distributed in its entirety including all supporting exhibits.



III. Executive Summary

Summary of Results

As stated in the “Introduction” and detailed in the “Program Description” section of this report, this analysis considers those liabilities within the “All Other Departments” cluster that are attributed to the agencies of the newly created MDOT.

Consistent with the methodology and presentation in the prior report issued in 2010, the liability amounts in the summary tables below are provided both **Gross** (including) and **Net** (excluding) of those liabilities associated with the MDOT.

A summary table of the composition of the “All Other Departments” cluster with respect to the MDOT and Non-MDOT agencies is also provided.

Total Gross Reserves

Based on our review, which utilized loss and exposure data valued as of June 30, 2011, we estimate that the range of reasonable undiscounted **gross** (inclusive of MDOT liability) loss reserves for the Commonwealth’s aggregate workers compensation program to be: **\$323.8M to \$409.8M.**

We also calculated reasonable ranges on a present value basis, using interest rates of 4% and 6% and the Commonwealth’s historical payment patterns. We estimate the range of reasonable **gross** reserves to be as follows:

Discounted at 4%: **\$243.6M to \$311.6M** | Discounted at 6%: **\$217.1M to \$278.9M**

The following table shows **gross** reserves for each cluster identified in the Scope section:

Cluster	Cluster	Report	Undiscounted	Discounted at 4%	Discounted at 6%
		Section			
DMR	1	2	\$28.9 - 35.7M	\$23.3 - 29.2M	\$21.4 - 26.9M
DMH	2	3	\$27.1 - 33.2M	\$20.9 - 26.0M	\$18.9 - 23.5M
DOC	3	4	\$72.2 - 94.4M	\$54.2 - 71.6M	\$48.2 - 64.1M
UMass - Amherst	4	5	\$7.7 - 11.2M	\$6.0 - 8.9M	\$5.4 - 8.1M
UMass - Medical	4	6	\$4.2 - 6.1M	\$3.6 - 5.2M	\$3.3 - 4.8M
Other Colleges & Univ's	4	7	\$13.2 - 17.2M	\$10.9 - 14.3M	\$10.1 - 13.2M
All Other Dept's (incl. MDOT)	5	8	\$170.5 - 212.0M	\$124.6 - 156.5M	\$109.8 - 138.4M
Total			\$323.8 - 409.8M	\$243.6 - 311.6M	\$217.1 - 278.9M



Total Net Reserves

Based on our review, which utilized loss and exposure data valued as of June 30, 2011, we estimate that the range of reasonable undiscounted **net** (excluding MDOT liability) loss reserves for the Commonwealth's aggregate workers compensation program to be: **\$310.5M to \$393.5M.**

We also calculated reasonable ranges on a present value basis, using interest rates of 4% and 6% and the Commonwealth's historical payment patterns. We estimate the range of reasonable **net** reserves to be as follows:

Discounted at 4%: **\$233.9M to \$299.6M** | Discounted at 6%: **\$208.6M to \$268.3M**

The following shows **net** reserves for each cluster identified in the Scope section:

Cluster	Cluster	Report Section	Undiscounted	Discounted at 4%	Discounted at 6%
DMR	1	2	\$28.9 - 35.7M	\$23.3 - 29.2M	\$21.4 - 26.9M
DMH	2	3	\$27.1 - 33.2M	\$20.9 - 26.0M	\$18.9 - 23.5M
DOC	3	4	\$72.2 - 94.4M	\$54.2 - 71.6M	\$48.2 - 64.1M
UMass - Amherst	4	5	\$7.7 - 11.2M	\$6.0 - 8.9M	\$5.4 - 8.1M
UMass - Medical	4	6	\$4.2 - 6.1M	\$3.6 - 5.2M	\$3.3 - 4.8M
Other Colleges & Univs	4	7	\$13.2 - 17.2M	\$10.9 - 14.3M	\$10.1 - 13.2M
All Other Dept's (excl MDOT)	5	8	\$157.2 - 195.7M	\$114.9 - 144.4M	\$101.2 - 127.7M
Total			\$310.5 - 393.5M	\$233.9 - 299.6M	\$208.6 - 268.3M

All Other Departments – Decomposition of Departmental Liability

The total gross reserve of the All Other Departments cluster contains both MDOT and Non-MDOT liabilities. As shown in the table below, approximately 7.7% of the gross reserve for All Other Departments is attributed to MDOT agencies.

The following shows the range of reasonable reserves at various discount rates for the cluster segments.

	Cluster	% of Cluster	Undiscounted	Discounted at 4%	Discounted at 6%
All Other Departments					
MDOT Agencies	5	7.7%	\$13.3 - 16.3M	\$9.7 - 12.0M	\$8.5 - 10.6M
Non-MDOT Agencies	5	92.3%	\$157.2 - 195.7M	\$114.9 - 144.4M	\$101.2 - 127.7M
Total			\$170.5 - 212.0M	\$124.6 - 156.5M	\$109.8 - 138.4M



Fiscal Year 2011 Loss Rates

The cost of the workers compensation program as measured by the estimated FY2011 loss rates (losses per \$100 payroll) varied significantly by cluster.

As shown in the table below, overall rates increased by 2.2% when compared to the prior year

Cluster	Payroll (000)	Average Ult Loss	Average FY 11 Loss Rate	Prior Loss Rate	% Change
DMR	292,432	5,438,500	1.860	1.693	9.8%
DMH	169,689	4,449,500	2.622	2.262	15.9%
DOC	333,783	14,257,500	4.271	4.537	-5.9%
UMass - Amherst	444,673	2,121,500	0.477	0.275	73.3%
UMass - Medical	394,924	1,794,850	0.454	0.408	11.3%
Other C & Univ's	1,134,164	4,300,500	0.379	0.377	0.5%
All Other Dept's	2,942,638	31,873,000	1.083	1.050	3.1%
Total	5,712,303	64,235,350	1.125	1.100	2.2%

As has been observed in prior analyses, the UMass Amherst and UMass Medical clusters continue to exhibit volatile loss rate fluctuations year over year. The loss rate of these clusters continue to be some of the lowest in the Commonwealth, and therefore only minor nominal changes (+0.202 for UMass Amherst) can produce percentage changes that appear distorted.

In consideration for future studies, in order to introduce credibility and stability benefits, we propose to evaluate the impact of combining all of the Colleges and University experience into a single development pattern for the selection of the loss development factors used in all of Cluster 4.

All Other Departments – Fiscal Year 2011 Loss Rates

In the table below, we have estimated, the composition of the All Other Departments FY2011 loss rate as a function of both the MDOT and Non-MDOT departments experience and exposure:

All Other Dept's	Payroll (000)	Average Ult Loss	Average FY 11 Loss Rate	Prior Loss Rate	% Change
MDOT	197,766	2,244,116	1.135	1.006	12.8%
Non-MDOT	2,744,871	29,628,884	1.079	1.054	2.4%
Total	2,942,638	31,873,000	1.083	1.050	3.1%

It is important to note that the loss rates estimated via the decomposition methodology are inherently volatile due to their derivation being reliant on a variety of assumptions and estimations which are themselves also volatile.



UMass Reserves

To facilitate the use of this report by the University of Massachusetts (“UMass”), we present an aggregate estimate of the liabilities for each UMass segment. These include UMass Amherst and UMass Medical School (shown separately in table above) as well as UMass Lowell, Boston, and Dartmouth (included as part of the “Other Colleges and & Universities” cluster above).

A reasonable range of reserves for the aggregate UMass program is estimated at **\$15.0M to \$21.4M**.

Discounted at 4%: **\$12.1M to \$17.4M** | Discounted at 6%: **\$11.1M to \$16.0M**

The following shows the range of reasonable reserves at various discount rates for each UMass segment.

Cluster	Undiscounted	Discounted at 4%	Discounted at 6%
UMass - Amherst	\$7.7 - 11.2M	\$6.0 - 8.9M	\$5.4 - 8.1M
UMass - Medical	\$4.2 - 6.1M	\$3.6 - 5.2M	\$3.3 - 4.8M
UMass - Dartmouth	\$1.1 - 1.4M	\$0.9 - 1.1M	\$0.8 - 1.1M
University of Lowell	\$1.0 - 1.4M	\$0.9 - 1.1M	\$0.8 - 1.1M
UMass - Boston	\$1.0 - 1.3M	\$0.8 - 1.1M	\$0.8 - 1.0M
Total UMass	\$15.0 - 21.4M	\$12.1 - 17.4M	\$11.1 - 16.0M

Other Colleges and Universities Reserve

We have allocated the aggregate reserve estimate for All Other Colleges and Universities to the individual institutions within the cluster. Estimates for each institution are shown on Summary Exhibit 7.

Short Term Reserve Percentages

We have determined the percentage of the reserve estimates that can be considered short-term, meaning the percentage of projected payments of the total reserves expected to be made over the next twelve month period. The calculation of these percentages is shown on Exhibit 1 Page 16 of Sections 1-8 in the Full Report



IV. Program Description

The Commonwealth has provided workers compensation coverage to its employees on a self-insured basis since the early 1920's ("the Program"). The Program covers all workers, except those employed by the Commonwealth's various public authorities and the State Police.

The Commonwealth retains responsibility for all claims and does not purchase per claim or aggregate reinsurance.

Pursuant to legislation effective July 1, 1997, the Program is administered by the Commonwealth's Human Resources Division ("HRD"); prior to that date, certain workers compensation administration responsibilities had been under the supervision of the Public Employee Retirement Administration Commission ("PERAC"). HRD is responsible for making fair and timely payments of indemnity and medical benefits to injured employees, maintaining the claim and financial records of the Program and for negotiating appropriate settlements for all Program claims.

Effective November 1, 2009 a new entity, the Massachusetts Department of Transportation (MDOT) was created. As part of the creation, various agencies ceased to be considered part of the Commonwealth and became part of the MDOT. The agencies, previously part of the Commonwealth, that now comprise the MDOT are the Old Mass Highway Department (MHD), Registry of Motor vehicle (RMV), The Office of Transportation (TRP); The Mass Aeronautics Commission (MAC); Tobin Bridge (TOBIN) and a small operation of the Department of Conservation and Recreation (DCR).

Per discussions with the Commonwealth, it is our understanding that the MDOT would assume the total historical liability of each of those departments; MHD, RMV, TRP, MAC, TOBIN and DCR.



V. Data Loss

Claim payments for the 12 month period ending June 30, 2011 were provided by the Commonwealth. Payments were provided by department and agency and were split into four categories: compensation, medical, lump sum, and rehabilitation/investigations. For our review, we analyzed compensation (Indemnity) and lump sum payments separately. Medical and rehabilitation/ investigation payments were combined and analyzed as “Medical” losses.

Our estimates do not include any provision for allocated loss adjustment expenses (ALAE) that may be incurred in the processing and settlement of claims, other than rehabilitation/investigation payments included with medical losses noted above. Also, the estimates do not consider unallocated loss adjustment expenses (ULAE), such as fees of adjusters and settling agents, etc.

The 12 month incremental payments provided by the Commonwealth were added to the cumulative claim payments from the prior analysis (at June 30, 2010) to derive cumulative paid figures as of June 30, 2011 found in this report.

Exposure

Exposure information for FY2011, in the form of payroll was provided by the Commonwealth and fully consistent with the “object code” classification which was revised as part of the FY2010 study. The following is a restatement of the discussion regarding the “object code” adjustment that was considered as part of the FY2010 study.

For the FY2010 analysis, we were instructed by the Commonwealth to consider additional payroll amounts to match the claims data detail. There were certain “object codes” for which claims were part of the previous analysis and payroll data was updated to match the object codes included in claims detail. While the additional payroll amounts were available for the FY2010 year, historical values were unavailable. Therefore, we estimated the value of this additional payroll for each of the prior policy years, detrending the additional FY2010 payroll by 3.3% per fiscal year and adding it to the payroll for the prior years. Therefore, for FY2010 the claims base is consistent to prior years but the payroll base has been modified and not comparable.

We relied on loss and exposure data provided by responsible officers or employees of the Commonwealth. We also relied on data found in the prior analysis and thereby also those sources described in it; utilizing last year’s triangles and updating them with data provided by the HRD. We also relied on payroll data provided by the Office of the Comptroller. As mentioned previously, any inaccuracies in quantitative data or qualitative representations could have a significant effect on the results of our analysis.

Industry Data

Loss development factors were derived from the Commonwealth’s own triangles and industry data provided by:

- The National Council on Compensation Insurance (NCCI)
- The Workers Compensation Rating and Inspection Bureau of Massachusetts (WCRIBMA)

Trend factors used to adjust for changes in historical wage and benefit levels are based on data from these sources as well.



VI. Actuarial Analysis

Overview

Performing an actuarial analysis involves developing a qualitative understanding of the risk and applying actuarial techniques and methods to available data. These methods attempt to project unpaid losses to ultimate settlement value. Each method requires certain underlying assumptions and varies in its responsiveness to loss data. As a result, not all methods are appropriate for use in all circumstances. For each unique situation, actuaries assess the strengths and weaknesses inherent in the results of each method in producing reasonable estimates of ultimate loss.

The following methods were employed in developing the recommendations contained in this report.

Methods/Models of Estimating Unpaid Loss Estimates

Paid Loss Development Method

This method is based on the assumption that losses from a group of claims are paid in a sufficiently consistent pattern such that past experience can be used to predict future development. The term loss development is used to describe changes that take place in the value of a group of claims over time. In order to reflect loss development arithmetically, incremental loss development factors are calculated by dividing losses at a given evaluation date by the immediately preceding evaluation date. A multiplicative process is then used to calculate a cumulative loss development factor that represents the development to ultimate for a given age of maturity.

This method can be applied using either cumulative paid losses or incurred losses (cumulative paid losses plus case reserves). For a given group of claims, cumulative losses are multiplied by the appropriate cumulative loss development factor to estimate ultimate losses. For the Commonwealth, we relied on the Paid Loss Development Method only, as the Commonwealth does not currently establish case reserves.

This method relies heavily on data as of the most recent evaluation date and assumes past patterns are predictive of future development. If the program has inadequate history to develop predictive loss development patterns, other sources of loss development information may be considered.

In addition to the cumulative loss development factors, we apply an additional factor to bring losses from their current paid status to a projected ultimate basis. This factor is called an “Additional Tail Consideration” factor.

The “Additional Tail Factor” consideration is based on our observation that for certain clusters, some of the older policy periods showed more open claims and higher development than other periods. We also evaluated the average age of the paid claimants for each cluster and year, and noticed that in certain years payments were being made to relatively young claimants. We judgmentally added a tail factor selection to account for these observations.



Paid Bornhuetter-Ferguson (BF) Method

This method offers a blend of stability and responsiveness by estimating ultimate losses using a percentage of the expected loss results and current loss data. It calculates future loss development based on expected loss estimates and the cumulative loss development factors described in the Loss Development Method.

The B-F Method can be applied using either cumulative paid or incurred losses. Again, for the Commonwealth, we relied on the Paid B-F Method only as the Commonwealth does not currently establish case reserves.

In determining future loss development, the percent of expected losses remaining to be paid is based on the appropriate loss development factor. This percentage is multiplied by expected losses to determine expected future development. This estimate of future loss development is added to losses at the current evaluation date to project ultimate losses.

To determine the expected losses, we determine an initial expected pure premium (or an “a priori” loss rate) based upon (1) a review of the Commonwealth’s historic pure premiums (losses divided by payroll) as well as (2) consideration of the selected rate. By considering both metrics, we attempt to balance stability and responsiveness in the selection of the initial expected pure premium.

Following the FY2010 analysis, it was suggested by the Commonwealth auditors, KPMG, that in determining an initial expected pure premium to be used as an “a priori” loss rate we should consider the selected loss rate (2) with the trend and benefit level adjustments removed (“de-trended”). It was agreed that utilizing the detrended selected loss rate would be appropriate in order to have the benefit on-level removed and to get loss costs on a consistent basis and therefore, this methodology has been incorporated into this FY2011 analysis.

The potential impact of this revised methodology is that estimates of total outstanding liability will be more “aggressive” as the detrended loss rate will typically be lower than the selected loss rate. Using a lower a priori loss rate will produce lower expected ultimates and reductions in total outstanding liabilities.

Lump Sum Methodology

Lump sum indemnity payments are analyzed separately from all other indemnity payments. We relied on two methods to develop lump sum payments to ultimate levels. The first is a standard paid loss development method, where current lump sum payments are multiplied by a cumulative lump sum development factor to arrive at the estimate of ultimate lump sum losses.

The second method uses ultimate indemnity losses excluding lump sums as a base for estimating remaining outstanding lump sum payments. Outstanding lump sum payments are estimated by multiplying base ultimates by cumulative incremental lump sums as a percent of ultimate losses excluding lump sums ratio. The outstanding lump sum payments are added to payments to date to arrive at the estimate of ultimate lump sum losses. An estimate of ultimate lump sums is selected based on a review of both methods.



7/1/81-82 and Prior Periods Methodology

In order to estimate liabilities relating to periods 7/1/81-82 and prior, we again relied on two methods. The first uses an average payment trend to estimate the reserves needed for prior periods. This estimate is added to payments to date to arrive at the estimate of ultimate loss. The average payment trend is derived from the Commonwealth's history of incremental payments and is credibility weighted with the total Commonwealth payment trend (derived from all Commonwealth data combined).

The second method multiplies average incremental payments over the last three fiscal years by a selected number of survival years in order to estimate the needed reserve. The needed reserve is added to payments to date to arrive at an estimate of the ultimate loss. An estimate of ultimate loss is selected based on a review of both methods

Selection of Ultimate Losses and Reasonable Reserve Estimates

Our estimates of ultimate losses by year were judgmentally selected based on the methods described above. Generally, we selected the lower and higher of the Paid Loss Development and Paid Bornhuetter-Ferguson methods as the "Low End" and "High End" selections by year. In certain cases, we judgmentally increased the high end of the range if we felt there was not enough "differential" in the two methodologies.

Similar to the prior analysis, we assume that any payment made during fiscal year 2011 implies an "open" claim and will remain open during fiscal year 2011. As a rule, if no payments were made for two years in a row, we project minimal reserves for that year, assuming the claims in that year are closed

Allocation Methodology for Massachusetts Colleges and Universities

The allocation of reserves to each college and university is based on a credibility weighting of expected loss experience based on exposure (payroll) and actual loss experience. The credibility weight is based on the formula $P / (P + K)$ where P is average payroll for the entity over the past five years and K is 20,000,000 for entities with a low coefficient of variation (CV) and 50,000,000 for entities with a high coefficient of variation (> 1.00).

The expected loss experience is the 5 year average payroll for each entity multiplied by the overall indemnity and medical loss rates for the entire Other Colleges and Universities group. The actual loss experience used in the allocation is a 5-year average ultimate loss for each entity. The ultimate loss for each entity is calculated by applying the paid loss development method to each entity's loss experience. The outstanding losses estimated for Other Colleges and Universities is then allocated to each entity based on its percentage share of the ultimate credibility weighted losses.



Composition Analysis Methodology for Cluster 5 - All Other Departments

The decomposition of the All Other Departments cluster into the liability associated with MDOT and Non-MDOT agencies is based on a blended consideration of three different methods. Each method, estimates a percentage share of the total liability for each fiscal year that is associated with the agencies of the MDOT agencies. Each of the three methods described below are applied to both the Medical and Indemnity analyses independently:

Method 1: The number of loss payments made to claimants of the MDOT agencies during the fiscal year as a proportion of the total number of claim payments made during the fiscal year to the All Other Departments in Cluster 5

Method 2: The value of loss payments made to claimants of the MDOT during the fiscal year as a proportion of the total value of claim payments made during the fiscal year to All Other Departments in Cluster 5.

Method 3: The payroll of the MDOT agencies during each of the past fiscal years as a proportion of the total payroll paid to All Other Departments in Cluster 5 over the past fiscal years. Where this historical payroll split was not available, an assumption was made based upon available information.



Actuarial Assumptions

Incurred But Not Reported (IBNR)

Generally, losses will increase over time for the following reasons:

1. It is impossible to estimate precisely the ultimate losses and allocated loss adjustment expenses for claims when they are initially reported.
2. It takes a period of time for some claims to be discovered, reported, and recorded. Unreported claims are referred to as “pure” IBNR claims. Claims that are reported but not yet recorded are referred to as “pipeline” IBNR claims.
3. Closed claims are sometimes reopened.

These three conditions result in the need for IBNR reserves.

Loss Trend

Loss trend is the change in claim frequency and cost levels from one time period to the next. Factors that affect the frequency and severity of claims are constantly changing over time. Examples of causes of these changes include inflation, societal attitudes toward legal action, and changes in laws. Actuaries use trend factors to adjust historical loss experience to comparable cost levels. Using workers compensation as an example, three elements of cost are combined within this single factor:

Increases in defined benefits for Workers Compensation: Benefits are established by legislative authority and typically reviewed annually by state legislatures. Many times, benefits are expanded by legislatures through changes such as broadening the definition of injury, decreasing waiting periods, increasing benefit duration, or increasing maximum benefit limits.

Increases in medical costs: This causes inflationary trend in the medical component of workers compensation losses.

Increase in wage costs: Wage inflation, although relatively small in some economic sectors, has occurred over the past several years as well.

Specifically, for this analysis, trend factors were obtained from the 2010 rate filing published by the WCRIB of Massachusetts.

Exposure

Actuaries select an exposure base expected to vary directly with the incidence and/or severity of claims. The actuary must consider both the historical loss level and the corresponding exposures in evaluating claim liabilities and expected future costs.

As previously discussed, payroll exposure for FY1985 through FY2011 were provided by the Commonwealth. For the FY2011 non-MTA element of the MDOT payroll in Cluster 5, it was necessary to estimate the MTA-only payroll based upon the FY2010 value as a FY2011 figure was not available. This figure was then subtracted from the total MDOT payroll.



Time Value of Money

Due to the time lag between when claims are incurred, reported, and finally paid, a sound funding recommendation may consider the time value of money. Income will be earned on self-insurance fund assets until those assets are liquidated to pay losses. If this income is retained in the self-insurance fund, such investment income may be considered.

At the Commonwealth's direction, we used 4% and 6% rates to discount the estimated reserves. We have not formed any opinion regarding the reasonability of these rates. It is noted that discounting reserves introduces additional risk to the analysis since the timing of actual loss payments may differ from the estimated payment pattern, and since the realized investment yield may differ from that assumed.

Provision for Uncertainty

An actuarial projection may consider the degree of uncertainty inherent in its projection. An estimate stated at its ultimate value on a nominal basis may include an implicit provision for uncertainty due to the time value of money. If an estimate is stated at present value, it may be appropriate to include an explicit provision for uncertainty. Further, an explicit provision for uncertainty may be warranted when losses are subject to a high degree of variability.

For the Commonwealth, we have not explicitly used any provision for risk in our calculations. Instead, we have determined a "low" and "high" end range of reasonable reserves. It should be understood that the range does not represent all possible outcomes, but rather a range of reasonable estimates



VII. Arrangement of Exhibits

This Executive Summary report contains a set of summary exhibits. The summary exhibits are arranged as follows:

<u>Summary Exhibit</u>	<u>Description</u>
1	Summary of Reserve Estimates - Undiscounted
2	Summary of Reserve Estimates - Discounted at 4%
3	Summary of Reserve Estimates - Discounted at 6%
4	Summary of Change in Ultimate Loss
5	Summary of Estimates for 10-11 Fiscal Year
6	Summary of Reserve Estimates by Cluster
7	Summary of Reserve Estimates by College
8	Summary of Ultimate Losses by Cluster
9	Calculation of Implied Development Factors
10	MA Colleges and Universities Allocation



VIII. Description of Exhibits

Summary Exhibits

Summary Exhibit 1 shows the undiscounted low and high reserve estimates by cluster for indemnity and medical separately.

Summary Exhibit 2 shows the low and high reserve estimates by cluster for indemnity and medical separately, discounted at 4%.

Summary Exhibit 3 shows the low and high reserve estimates by cluster for indemnity and medical separately, discounted at 6%.

Summary Exhibit 4 shows the change in ultimate loss from the prior report by cluster and for indemnity and medical separately. Changes in the ultimate loss for the current fiscal year are excluded.

Summary Exhibit 5 shows the low and high ultimate loss estimate for the current fiscal year. The estimates are shown by cluster and for indemnity and medical separately. The midpoint of the range of estimates is used to calculate the loss rate for each cluster.

Summary Exhibit 6 contains an additional summary of reserve estimates by cluster, showing both the discounted and undiscounted ranges of reserves.

Summary Exhibit 7 contains a summary of reserve estimates by college. High and low reserve estimates are shown undiscounted as well as at 4% and 6% discount rates.

Summary Exhibit 8 shows the selection of ultimate losses by accident year for all clusters. A calculation of the outstanding losses and loss rates is also shown by accident year.

Page 1 shows results for all clusters combined.

Pages 2 – 8 show results for each of the clusters specified in the Scope section.

Summary Exhibit 9 shows the calculation of the implied loss development factors underlying the results of our analysis by accident year. The selected ultimate loss for all clusters is divided by the paid losses to date for all clusters to derive the indicated LDF by accident year.

Summary Exhibit 10 Page 1 shows the results of the methodology used to allocate ultimate losses to each of the college and universities contained in the Other Colleges and Universities group. This methodology is discussed in the Overview section of this report.

Summary Exhibit 10 Page 2 shows the estimated loss costs for indemnity and medical combined for each college and university. The loss costs are calculated by dividing the sum of the estimated ultimate indemnity and medical losses on Page 4 by the payroll figures on Page 3.

Summary Exhibit 10 Page 3 shows the historical payrolls for each college and university.



Summary Exhibit 10 Page 4 shows the estimated ultimate indemnity and medical losses for each college and university. The estimated ultimate losses are calculated by multiplying the cumulative paid indemnity and medical losses on Page 5 by the Age-to-Ultimate LDF's shown on Page 4.

Summary Exhibit 10 Page 5 shows the historical cumulative indemnity and medical payments for each college and university.

Summary Exhibit 10 Page 6 shows the current fiscal year indemnity and medical payments for each college and university.

IX. Exhibits



Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011

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I. Narrative

II. Summary Exhibits



Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011

Summary
Exhibit 1

Summary of Reserve Estimates - Undiscounted

<u>Cluster</u>	<u>Cluster #</u>	<u>Report Section</u>	<u>Loss Reserve Estimate</u>	
			<u>Low End</u>	<u>High End</u>
Department of Mental Retardation	1	Section 2		
Indemnity			25,164,740	30,816,319
Medical			<u>3,742,603</u>	<u>4,864,838</u>
Total			28,907,342	35,681,156
Department of Mental Health	2	Section 3		
Indemnity			23,236,195	28,600,151
Medical			<u>3,844,373</u>	<u>4,617,547</u>
Total			27,080,568	33,217,698
Department of Corrections	3	Section 4		
Indemnity			59,031,845	77,607,134
Medical			<u>13,210,451</u>	<u>16,757,024</u>
Total			72,242,297	94,364,158
UMass - Amherst	4	Section 5		
Indemnity			6,231,954	9,241,144
Medical			<u>1,473,475</u>	<u>1,938,957</u>
Total			7,705,430	11,180,101
UMass - Medical School	4	Section 6		
Indemnity			3,330,935	4,694,586
Medical			<u>905,597</u>	<u>1,452,932</u>
Total			4,236,533	6,147,517
Other Colleges & Universities	4	Section 7		
Indemnity			10,703,818	14,052,148
Medical			<u>2,509,926</u>	<u>3,187,757</u>
Total			13,213,745	17,239,905
All Others	5-17 & 95	Section 8		
Indemnity			147,665,545	180,484,288
Medical			<u>22,786,333</u>	<u>31,494,837</u>
Total			170,451,877	211,979,125
Grand Total		Section 1		
Indemnity			275,365,033	345,495,770
Medical			<u>48,472,759</u>	<u>64,313,891</u>
Total			323,837,792	409,809,661



Commonwealth of Massachusetts
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Summary
Exhibit 2

Summary of Reserve Estimates - Discounted at 4%

<u>Cluster</u>	<u>Cluster #</u>	<u>Report Section</u>	<u>Loss Reserve Estimate</u>	
			<u>Low End</u>	<u>High End</u>
Department of Mental Retardation	1	Section 2		
Indemnity			20,255,352	25,114,638
Medical			<u>3,088,057</u>	<u>4,042,799</u>
Total			23,343,409	29,157,436
Department of Mental Health	2	Section 3		
Indemnity			17,936,781	22,331,281
Medical			<u>2,996,634</u>	<u>3,619,465</u>
Total			20,933,414	25,950,746
Department of Corrections	3	Section 4		
Indemnity			44,000,156	58,605,115
Medical			<u>10,192,897</u>	<u>13,006,532</u>
Total			54,193,053	71,611,648
UMass - Amherst	4	Section 5		
Indemnity			4,783,317	7,254,440
Medical			<u>1,226,343</u>	<u>1,617,429</u>
Total			6,009,660	8,871,869
UMass - Medical School	4	Section 6		
Indemnity			2,769,108	3,920,683
Medical			<u>789,958</u>	<u>1,249,618</u>
Total			3,559,066	5,170,301
Other Colleges & Universities	4	Section 7		
Indemnity			8,818,881	11,623,376
Medical			<u>2,124,527</u>	<u>2,717,869</u>
Total			10,943,408	14,341,245
All Others	5-17 & 95	Section 8		
Indemnity			107,603,508	132,870,403
Medical			<u>17,044,416</u>	<u>23,601,910</u>
Total			124,647,924	156,472,313
Grand Total		Section 1		
Indemnity			206,167,102	261,719,936
Medical			<u>37,462,833</u>	<u>49,855,622</u>
Total			243,629,934	311,575,558



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Summary
Exhibit 3

Summary of Reserve Estimates - Discounted at 6%

<u>Cluster</u>	<u>Cluster #</u>	<u>Report Section</u>	<u>Loss Reserve Estimate</u>	
			<u>Low End</u>	<u>High End</u>
Department of Mental Retardation	1	Section 2		
Indemnity			18,568,894	23,126,823
Medical			<u>2,858,666</u>	<u>3,754,376</u>
Total			21,427,560	26,881,199
Department of Mental Health	2	Section 3		
Indemnity			16,138,684	20,183,817
Medical			<u>2,711,794</u>	<u>3,284,250</u>
Total			18,850,477	23,468,067
Department of Corrections	3	Section 4		
Indemnity			39,069,115	52,340,234
Medical			<u>9,177,968</u>	<u>11,748,049</u>
Total			48,247,083	64,088,282
UMass - Amherst	4	Section 5		
Indemnity			4,289,280	6,557,890
Medical			<u>1,136,576</u>	<u>1,500,559</u>
Total			5,425,856	8,058,449
UMass - Medical School	4	Section 6		
Indemnity			2,569,557	3,640,486
Medical			<u>745,653</u>	<u>1,172,127</u>
Total			3,315,211	4,812,613
Other Colleges & Universities	4	Section 7		
Indemnity			8,111,865	10,706,074
Medical			<u>1,981,356</u>	<u>2,542,913</u>
Total			10,093,221	13,248,987
All Others	5-17 & 95	Section 8		
Indemnity			94,570,678	117,312,807
Medical			<u>15,184,688</u>	<u>21,071,065</u>
Total			109,755,367	138,383,872
Grand Total		Section 1		
Indemnity			183,318,073	233,868,130
Medical			<u>33,796,702</u>	<u>45,073,339</u>
Total			217,114,775	278,941,469



Commonwealth of Massachusetts
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Reserve Analysis at June 30, 2011

Summary
Exhibit 4

Summary of Change in Ultimate Loss (excluding current Fiscal Year)

<u>Cluster</u>	<u>Cluster #</u>	<u>Report Section</u>	<u>Current Ult Loss Estimate less Previous Ult Loss Estimate</u>	
			<u>Low End</u>	<u>High End</u>
Department of Mental Retardation	1	Section 2		
Indemnity			769,210	20,711
Medical			(475,595)	(730,725)
Total			293,614	(710,014)
Department of Mental Health	2	Section 3		
Indemnity			(1,085,801)	(2,227,970)
Medical			(296,647)	(608,843)
Total			(1,382,447)	(2,836,813)
Department of Corrections	3	Section 4		
Indemnity			(12,561,507)	(19,092,427)
Medical			(1,357,855)	(2,568,687)
Total			(13,919,362)	(21,661,114)
UMass - Amherst	4	Section 5		
Indemnity			60,503	(323,636)
Medical			112,882	(45,000)
Total			173,385	(368,636)
UMass - Medical School	4	Section 6		
Indemnity			169,000	(3,131)
Medical			(144,000)	(197,550)
Total			25,000	(200,681)
Other Colleges & Universities	4	Section 7		
Indemnity			(546,113)	(919,978)
Medical			(87,047)	(448,875)
Total			(633,160)	(1,368,853)
All Others	5-17 & 95	Section 8		
Indemnity			(1,823,508)	(5,181,059)
Medical			(909,514)	(1,075,415)
Total			(2,733,022)	(6,256,474)
Grand Total		Section 1		
Indemnity			(15,018,217)	(27,727,489)
Medical			(3,157,776)	(5,675,095)
Total			(18,175,992)	(33,402,585)



Commonwealth of Massachusetts
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Summary
Exhibit 5

Summary of Estimates for 2010-11 Fiscal Year

<u>Cluster</u>	<u>Cluster #</u>	<u>Report Section</u>	<u>Ultimate Loss Estimate</u>		<u>Average</u>	<u>Payroll (000)</u>	<u>Loss Rate</u>
			<u>Low End</u>	<u>High End</u>			
Department of Mental Retardation	1	Section 2					
Indemnity			3,721,000	3,867,000			
Medical			<u>1,518,000</u>	<u>1,771,000</u>			
Total			5,239,000	5,638,000	5,438,500	292,432	1.860
Department of Mental Health	2	Section 3					
Indemnity			3,092,000	3,317,000			
Medical			<u>1,042,000</u>	<u>1,448,000</u>			
Total			4,134,000	4,765,000	4,449,500	169,689	2.622
Department of Corrections	3	Section 4					
Indemnity			9,259,000	12,775,000			
Medical			<u>3,063,000</u>	<u>3,418,000</u>			
Total			12,322,000	16,193,000	14,257,500	333,783	4.271
UMass - Amherst	4	Section 5					
Indemnity			1,240,000	1,528,000			
Medical			<u>658,000</u>	<u>817,000</u>			
Total			1,898,000	2,345,000	2,121,500	444,673	0.477
UMass - Medical School	4	Section 6					
Indemnity			1,140,000	1,182,000			
Medical			<u>581,000</u>	<u>686,700</u>			
Total			1,721,000	1,868,700	1,794,850	394,924	0.454
Other Colleges & Universities	4	Section 7					
Indemnity			2,604,000	2,995,000			
Medical			<u>1,274,000</u>	<u>1,728,000</u>			
Total			3,878,000	4,723,000	4,300,500	1,134,164	0.379
All Others	5-17 & 95	Section 8					
Indemnity			20,774,000	26,302,000			
Medical			<u>6,700,000</u>	<u>9,970,000</u>			
Total			27,474,000	36,272,000	31,873,000	2,942,638	1.083
Grand Total		Section 1					
Indemnity			41,830,000	51,966,000			
Medical			<u>14,836,000</u>	<u>19,838,700</u>			
Total			56,666,000	71,804,700	64,235,350	5,712,303	1.125



Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011

Summary
Exhibit 6

Summary of Reserve Estimates by Cluster

Cluster	Cluster / Report	Undiscounted		Discounted at 4%		Discounted at 6%	
	Section	Low End	High End	Low End	High End	Low End	High End
DMR	1 / 2	28,907,342	35,681,156	23,343,409	29,157,436	21,427,560	26,881,199
DMH	2 / 3	27,080,568	33,217,698	20,933,414	25,950,746	18,850,477	23,468,067
DOC	3 / 4	72,242,297	94,364,158	54,193,053	71,611,648	48,247,083	64,088,282
UMass - Amherst	4 / 5	7,705,430	11,180,101	6,009,660	8,871,869	5,425,856	8,058,449
UMass - Medical	4 / 6	4,236,533	6,147,517	3,559,066	5,170,301	3,315,211	4,812,613
Other Colleges & Univ's	4 / 7	13,213,745	17,239,905	10,943,408	14,341,245	10,093,221	13,248,987
All Other Dept's (incl. MDOT)	5 / 8	170,451,877	211,979,125	124,647,924	156,472,313	109,755,367	138,383,872
Total		323,837,792	409,809,661	243,629,934	311,575,558	217,114,775	278,941,469

All Other Departments	Cluster / Report	Undiscounted		Discounted at 4%		Discounted at 6%	
	Section	Low End	High End	Low End	High End	Low End	High End
MDOT Agencies	5 / 8	13,266,020	16,289,007	9,701,017	12,023,911	8,541,900	10,634,032
Non-MDOT Agencies	5 / 8	157,185,857	195,690,118	114,946,907	144,448,403	101,213,467	127,749,840



**Commonwealth of Massachusetts
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Reserve Analysis at June 30, 2011**

[Summary](#)
[Exhibit 7](#)

Summary of Reserve Estimates by College

Cluster	Undiscounted		Discounted at 4%		Discounted at 6%	
	Low End	High End	Low End	High End	Low End	High End
Berkshire Community College	133,581	174,282	110,629	144,979	102,035	133,937
Bridgewater State College	992,319	1,294,673	821,822	1,076,991	757,975	994,965
Bristol Community College	282,507	368,586	233,968	306,613	215,791	283,261
Bunker Hill Community College	439,941	573,989	364,352	477,481	336,046	441,115
Cape Cod Community College	242,400	316,258	200,751	263,083	185,155	243,046
Fitchburg State College	752,198	981,389	622,958	816,382	574,561	754,204
Framingham State College	555,960	725,358	460,437	603,399	424,666	557,443
Greenfield Community College	114,943	149,965	95,194	124,751	87,798	115,249
Holyoke Community College	280,012	365,330	231,901	303,904	213,885	280,759
Mass Bay Community College	206,607	269,559	171,109	224,236	157,815	207,158
Mass College of Art	299,128	390,271	247,733	324,652	228,487	299,926
Mass Maritime Academy	297,492	388,136	246,378	322,876	227,237	298,285
Massachusetts College of Liberal Arts	250,744	327,144	207,662	272,139	191,529	251,413
Massasoit Community College	573,621	748,401	475,064	622,567	438,156	575,151
Middlesex Community College	214,873	280,343	177,954	233,207	164,129	215,446
Mt Wachusett Community College	270,318	352,683	223,873	293,384	206,481	271,039
North Essex Community College	205,522	268,143	170,210	223,058	156,986	206,070
North Shore Community College	323,518	422,092	267,932	351,123	247,117	324,381
Quinsigamond Community College	412,683	538,426	341,778	447,897	315,225	413,784
Roxbury Community College	219,624	286,543	181,889	238,365	167,759	220,210
Salem State College	1,004,030	1,309,953	831,521	1,089,702	766,921	1,006,708
Springfield Tech Community College	834,315	1,088,527	690,966	905,505	637,285	836,540
UMass (Boston)	999,389	1,303,897	827,677	1,084,664	763,376	1,002,054
UMass (Dartmouth)	1,053,396	1,374,360	872,405	1,143,280	804,629	1,056,205
University of Lowell	1,049,719	1,369,563	869,360	1,139,289	801,820	1,052,518
Westfield State College	797,241	1,040,156	660,262	865,268	608,967	799,367
Worcester State College	407,665	531,878	337,621	442,450	311,392	408,752
Total	13,213,745	17,239,905	10,943,408	14,341,245	10,093,221	13,248,987



**Commonwealth of Massachusetts
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Reserve Analysis at June 30, 2011**

[Summary](#)
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**All Clusters Combined
Total Indemnity (Including Lump Sums) + Medical
Summary of Ultimate Losses**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Pd Loss Including Lump Sum	Ult Loss - Paid Loss Method	Ult Loss - Paid BF Method	Aon Selected Ult (Low)	Aon Selected Ult (High)	Outstanding Losses (Low)	Outstanding Losses (High)	Ult Loss Cost (Low)	Ult Loss Cost (High)
All Prior Yrs		96,029,571			114,944,067	125,526,390	18,914,496	29,496,819		
6/30/82-83		17,595,774	19,066,132		18,643,932	19,612,111	1,048,159	2,016,337		
6/30/83-84		25,508,347	28,379,053		27,829,577	29,232,177	2,321,230	3,723,830		
6/30/84-85	1,823,085	37,933,407	42,477,052	39,538,268	39,785,948	41,917,962	1,852,541	3,984,555	2.182	2.299
6/30/85-86	1,952,445	51,324,719	58,032,030	53,935,242	54,709,721	56,438,441	3,385,002	5,113,722	2.802	2.891
6/30/86-87	2,220,820	56,514,730	62,407,593	59,912,363	59,196,562	61,717,047	2,681,833	5,202,317	2.666	2.779
6/30/87-88	2,885,583	81,238,003	91,052,372	87,322,459	87,720,059	90,975,707	6,482,057	9,737,705	3.040	3.153
6/30/88-89	3,098,180	80,367,566	88,567,368	86,739,574	87,087,429	88,757,024	6,719,863	8,389,458	2.811	2.865
6/30/89-90	3,079,763	77,698,377	85,731,413	85,198,214	83,890,113	84,944,695	6,191,736	7,246,318	2.724	2.758
6/30/90-91	2,914,364	64,372,112	76,663,208	72,086,020	70,715,545	75,325,696	6,343,433	10,953,584	2.426	2.585
6/30/91-92	2,880,434	43,005,920	48,712,735	48,002,227	47,676,357	48,994,592	4,670,437	5,988,672	1.655	1.701
6/30/92-93	2,887,238	29,683,922	34,505,065	33,686,388	33,305,124	34,253,630	3,621,202	4,569,708	1.154	1.186
6/30/93-94	3,056,850	31,974,700	37,188,296	36,650,772	36,397,000	36,973,000	4,422,300	4,998,300	1.191	1.210
6/30/94-95	3,158,808	29,316,879	34,294,698	34,112,103	33,990,423	34,204,476	4,673,544	4,887,597	1.076	1.083
6/30/95-96	3,301,791	27,879,724	33,136,369	33,067,620	32,657,029	33,481,516	4,777,305	5,601,793	0.989	1.014
6/30/96-97	3,902,868	28,083,739	33,896,604	33,866,498	33,717,684	34,480,912	5,633,946	6,397,173	0.864	0.883
6/30/97-98	3,776,138	30,556,654	37,017,185	36,962,911	36,841,642	37,523,656	6,284,988	6,967,002	0.976	0.994
6/30/98-99	4,017,530	28,843,086	35,891,952	35,878,390	35,864,000	36,576,000	7,020,914	7,732,914	0.893	0.910
6/30/99-00	4,221,786	32,609,611	41,618,796	41,516,827	41,507,000	42,346,000	8,897,389	9,736,389	0.983	1.003
6/30/00-01	4,310,725	37,761,283	48,673,466	48,489,508	48,404,900	49,751,000	10,643,617	11,989,717	1.123	1.154
6/30/01-02	4,438,755	33,338,173	44,386,945	44,310,788	44,293,000	45,159,000	10,954,827	11,820,827	0.998	1.017
6/30/02-03	4,423,888	32,838,124	44,843,848	44,780,565	44,613,000	45,629,000	11,774,876	12,790,876	1.008	1.031
6/30/03-04	4,482,207	32,932,043	45,678,904	45,655,335	45,488,000	46,506,650	12,555,957	13,574,607	1.015	1.038
6/30/04-05	4,639,517	33,781,595	48,978,448	48,121,160	47,364,000	49,259,250	13,582,405	15,477,655	1.021	1.062
6/30/05-06	4,938,165	28,756,594	43,753,023	45,589,948	43,829,000	45,746,950	15,072,406	16,990,356	0.888	0.926
6/30/06-07	5,183,126	26,448,426	42,720,398	46,084,265	42,321,000	46,641,250	15,872,574	20,192,824	0.817	0.900
6/30/07-08	5,508,425	26,316,269	48,226,751	52,109,953	47,373,000	53,931,400	21,056,731	27,615,131	0.860	0.979
6/30/08-09	5,447,676	22,723,137	49,542,711	53,651,818	49,423,000	55,286,800	26,699,863	32,563,663	0.907	1.015
6/30/09-10	5,525,579	17,566,288	51,288,726	55,979,660	50,559,000	59,787,950	32,992,712	42,221,662	0.915	1.082
6/30/10-11	5,712,303	9,976,549	63,787,424	61,350,279	56,666,000	71,804,700	46,689,451	61,828,151	0.992	1.257
Total	103,788,048	1,172,975,321	1,420,518,565	1,364,599,152	1,496,813,112	1,582,784,981	323,837,792	409,809,661		
Tot 6/30/84-10	103,788,048	1,033,841,629	1,373,073,380	1,364,599,152	1,335,395,536	1,408,414,304	301,553,907	374,572,675	1.287	1.357

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) - (9) = Sum of Summary Exhibit 8, Pages 2-8

(10) = (6) / (2) / 10

(11) = (7) / (2) / 10



Commonwealth of Massachusetts

Workers Compensation

Reserve Analysis at June 30, 2011

Department of Mental Retardation - Cluster 1

Total Indemnity (Including Lump Sums) + Medical

Summary of Ultimate Losses

[Summary](#)

[Exhibit 8](#)

[Page 2](#)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Pd Loss Including Lump Sum	Ult Loss - Paid Loss Method	Ult Loss - Paid BF Method	Aon Selected Ult (Low)	Aon Selected Ult (High)	Outstanding Losses (Low)	Outstanding Losses (High)	Ult Loss Cost (Low)	Ult Loss Cost (High)
All Prior Yrs		20,757,648			25,863,129	28,138,246	5,105,481	7,380,598		
6/30/82-83		4,842,275	5,331,274		5,203,142	5,466,875	360,867	624,600		
6/30/83-84		9,198,763	10,885,594		10,685,633	11,118,549	1,486,870	1,919,785		
6/30/84-85	181,560	7,511,271	7,721,558	7,728,183	7,586,530	7,661,842	75,259	150,571	4.179	4.220
6/30/85-86	195,247	11,874,262	12,329,758	12,322,832	12,217,000	12,321,000	342,739	446,739	6.257	6.310
6/30/86-87	224,370	15,376,859	16,058,083	16,069,749	15,665,316	15,819,280	288,457	442,421	6.982	7.051
6/30/87-88	262,864	21,366,443	24,234,054	22,475,092	22,471,000	23,356,000	1,104,557	1,989,557	8.549	8.885
6/30/88-89	283,884	23,526,156	24,941,303	24,950,112	24,941,000	24,950,000	1,414,844	1,423,844	8.786	8.789
6/30/89-90	285,078	18,643,899	19,882,800	20,019,236	18,830,037	19,016,809	186,138	372,911	6.605	6.671
6/30/90-91	267,732	13,742,956	14,721,651	14,714,682	13,943,000	14,053,000	200,044	310,044	5.208	5.249
6/30/91-92	261,442	9,797,808	10,533,881	10,524,631	10,524,000	10,533,000	726,192	735,192	4.025	4.029
6/30/92-93	259,992	5,939,765	6,391,292	6,384,869	6,043,000	6,087,000	103,235	147,235	2.324	2.341
6/30/93-94	257,062	4,759,655	5,131,513	5,126,593	4,877,000	4,913,000	117,345	153,345	1.897	1.911
6/30/94-95	255,854	3,009,043	3,251,327	3,251,859	3,251,000	3,252,000	241,957	242,957	1.271	1.271
6/30/95-96	255,539	3,959,098	4,318,730	4,314,090	4,314,000	4,319,000	354,902	359,902	1.688	1.690
6/30/96-97	270,071	3,349,599	3,669,683	3,669,780	3,669,000	3,670,000	319,401	320,401	1.359	1.359
6/30/97-98	245,367	3,282,200	3,645,505	3,641,872	3,642,000	3,646,000	359,800	363,800	1.484	1.486
6/30/98-99	251,453	2,890,104	3,228,633	3,229,642	3,229,000	3,230,000	338,896	339,896	1.284	1.285
6/30/99-00	255,641	2,957,037	3,340,155	3,339,513	3,339,000	3,340,000	381,963	382,963	1.306	1.307
6/30/00-01	263,918	4,266,862	4,869,044	4,852,659	4,852,000	4,870,000	585,138	603,138	1.838	1.845
6/30/01-02	267,598	3,032,246	3,496,714	3,498,512	3,497,000	3,498,000	464,754	465,754	1.307	1.307
6/30/02-03	274,465	3,680,359	4,458,325	4,449,475	4,449,000	4,459,000	768,641	778,641	1.621	1.625
6/30/03-04	272,384	3,706,381	4,581,863	4,570,888	4,570,000	4,583,000	863,619	876,619	1.678	1.683
6/30/04-05	273,647	3,612,757	4,498,847	4,432,236	4,432,000	4,498,000	819,243	885,243	1.620	1.644
6/30/05-06	285,139	3,371,935	4,403,288	4,404,243	4,339,000	4,420,000	967,065	1,048,065	1.522	1.550
6/30/06-07	298,516	3,335,622	4,514,501	4,554,279	4,448,000	4,566,000	1,112,378	1,230,378	1.490	1.530
6/30/07-08	314,231	2,035,791	3,238,100	3,762,661	3,185,000	3,763,000	1,149,209	1,727,209	1.014	1.198
6/30/08-09	302,998	2,429,205	4,288,420	4,561,946	4,143,000	4,663,000	1,713,795	2,233,795	1.367	1.539
6/30/09-10	297,252	2,273,354	5,432,214	5,230,285	5,138,000	5,510,000	2,864,646	3,236,646	1.728	1.854
6/30/10-11	292,432	1,149,092	5,554,054	5,230,699	5,239,000	5,638,000	4,089,908	4,488,908	1.792	1.928
Total	7,155,736	219,678,445	228,952,163	211,310,619	248,585,787	255,359,601	28,907,342	35,681,156		
Tot 6/30/84-10	7,155,736	184,879,758	212,735,295	211,310,619	206,833,883	210,635,931	21,954,125	25,756,173	2.890	2.944

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) - (9) = Sum of Section 2, Exhibit 1, Page 1 + Section 2, Exhibit 2, Page 1

(10) = (6) / (2) / 10

(11) = (7) / (2) / 10



Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011
Department of Mental Health - Cluster 2
Total Indemnity (Including Lump Sums) + Medical
Summary of Ultimate Losses

Summary
Exhibit 8
Page 3

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Pd Loss Including Lump Sum	Ult Loss - Paid Loss Method	Ult Loss - Paid BF Method	Aon Selected Ult (Low)	Aon Selected Ult (High)	Outstanding Losses (Low)	Outstanding Losses (High)	Ult Loss Cost (Low)	Ult Loss Cost (High)
All Prior Yrs		19,470,318			23,384,076	24,800,276	3,913,759	5,329,959		
6/30/82-83		2,581,286	2,666,752		2,603,631	2,731,293	22,344	150,007		
6/30/83-84		2,864,047	3,091,610		3,019,722	3,165,658	155,675	301,612		
6/30/84-85	142,561	4,448,614	5,017,767	4,624,637	4,625,000	5,018,000	176,386	569,386	3.244	3.520
6/30/85-86	153,298	4,891,866	5,172,193	5,158,868	5,159,000	5,172,000	267,134	280,134	3.365	3.374
6/30/86-87	176,136	6,911,248	7,357,820	7,366,240	7,066,000	7,190,000	154,752	278,752	4.012	4.082
6/30/87-88	206,319	13,004,187	14,456,287	13,865,196	14,213,203	14,456,000	1,209,016	1,451,813	6.889	7.007
6/30/88-89	222,806	13,884,892	15,507,901	14,922,946	15,272,566	15,508,000	1,387,674	1,623,108	6.855	6.960
6/30/89-90	223,751	13,193,429	14,825,203	14,286,757	14,225,000	14,781,000	1,031,571	1,587,571	6.358	6.606
6/30/90-91	210,162	9,454,910	10,641,621	10,333,684	9,785,000	9,939,000	330,090	484,090	4.656	4.729
6/30/91-92	205,241	5,517,293	6,029,362	6,025,762	5,670,000	5,768,000	152,707	250,707	2.763	2.810
6/30/92-93	176,705	4,498,194	4,968,138	4,962,418	4,962,000	4,968,000	463,806	469,806	2.808	2.811
6/30/93-94	173,075	2,973,289	3,334,818	3,332,180	3,332,000	3,334,000	358,711	360,711	1.925	1.926
6/30/94-95	178,317	3,641,053	4,248,479	4,123,872	4,124,000	4,249,000	482,947	607,947	2.313	2.383
6/30/95-96	175,996	2,718,381	3,061,454	3,062,519	2,824,000	2,863,000	105,619	144,619	1.605	1.627
6/30/96-97	190,083	2,089,054	2,354,164	2,364,518	2,354,000	2,364,000	264,946	274,946	1.238	1.244
6/30/97-98	177,278	3,418,030	3,957,028	3,951,310	3,950,000	3,958,000	531,970	539,970	2.228	2.233
6/30/98-99	189,080	2,281,567	2,660,862	2,672,346	2,661,000	2,672,000	379,433	390,433	1.407	1.413
6/30/99-00	194,494	2,906,630	3,423,974	3,431,170	3,424,000	3,431,000	517,370	524,370	1.760	1.764
6/30/00-01	201,568	3,974,453	4,809,164	4,797,383	4,712,900	4,809,000	738,447	834,547	2.338	2.386
6/30/01-02	203,105	3,190,479	3,975,431	3,975,246	3,973,000	3,978,000	782,521	787,521	1.956	1.959
6/30/02-03	202,515	2,490,372	3,118,744	3,139,474	3,119,000	3,140,000	628,628	649,628	1.540	1.551
6/30/03-04	189,588	4,435,428	5,745,607	5,707,635	5,707,000	5,745,000	1,271,572	1,309,572	3.010	3.030
6/30/04-05	186,990	3,449,223	4,637,883	4,494,418	4,494,000	4,638,000	1,044,777	1,188,777	2.403	2.480
6/30/05-06	193,254	2,607,298	3,667,633	3,858,825	3,655,000	3,871,000	1,047,702	1,263,702	1.891	2.003
6/30/06-07	203,359	2,570,248	3,863,554	4,007,114	3,864,000	4,007,000	1,293,752	1,436,752	1.900	1.970
6/30/07-08	212,083	2,061,116	3,384,448	3,838,768	3,385,000	3,839,000	1,323,884	1,777,884	1.596	1.810
6/30/08-09	204,679	2,109,633	4,074,545	4,385,210	4,074,000	4,385,000	1,964,367	2,275,367	1.990	2.142
6/30/09-10	184,688	1,187,104	2,821,835	3,493,490	3,129,000	3,493,000	1,941,896	2,305,896	1.694	1.891
6/30/10-11	169,689	996,889	4,606,818	4,134,352	4,134,000	4,765,000	3,137,111	3,768,111	2.436	2.808
Total	5,146,821	149,820,530	157,481,096	150,316,340	176,901,098	183,038,228	27,080,568	33,217,698		
Tot 6/30/84-10	5,146,821	124,904,879	151,722,734	150,316,340	147,893,669	152,341,000	22,988,790	27,436,121	2.873	2.960

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) - (9) = Sum of Section 3, Exhibit 1, Page 1 + Section 3, Exhibit 2, Page 1

(10) = (6) / (2) / 10

(11) = (7) / (2) / 10



Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011
Department of Corrections - Cluster 3
Total Indemnity (Including Lump Sums) + Medical
Summary of Ultimate Losses

[Summary](#)
[Exhibit 8](#)
Page 4

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Pd Loss Including Lump Sum	Ult Loss - Paid Loss Method	Ult Loss - Paid BF Method	Aon Selected Ult (Low)	Aon Selected Ult (High)	Outstanding Losses (Low)	Outstanding Losses (High)	Ult Loss Cost (Low)	Ult Loss Cost (High)
All Prior Yrs		4,126,753			5,489,523	6,640,998	1,362,770	2,514,246		
6/30/82-83		2,912,565	3,285,187		3,202,252	3,288,195	289,687	375,631		
6/30/83-84		2,135,674	2,221,311		2,159,271	2,235,933	23,597	100,259		
6/30/84-85	115,258	4,201,051	5,521,792	4,345,378	4,704,940	4,936,000	503,889	734,949	4.082	4.283
6/30/85-86	123,937	6,942,586	9,833,081	7,218,085	8,126,280	8,528,000	1,183,694	1,585,414	6.557	6.881
6/30/86-87	142,396	4,528,334	4,757,249	4,766,235	4,757,000	4,766,000	228,666	237,666	3.341	3.347
6/30/87-88	166,792	7,242,881	7,934,982	7,676,482	7,673,000	7,939,000	430,119	696,119	4.600	4.760
6/30/88-89	180,117	8,185,748	9,396,451	8,658,647	8,658,000	9,397,000	472,252	1,211,252	4.807	5.217
6/30/89-90	180,883	10,887,194	11,732,267	11,711,329	11,711,000	11,732,000	823,806	844,806	6.474	6.486
6/30/90-91	169,902	11,667,730	17,440,275	13,207,264	13,208,000	17,441,000	1,540,270	5,773,270	7.774	10.265
6/30/91-92	165,926	5,831,105	6,439,710	6,441,577	6,438,000	6,442,000	606,895	610,895	3.880	3.882
6/30/92-93	174,198	4,479,099	4,956,931	4,964,098	4,956,000	4,965,000	476,901	485,901	2.845	2.850
6/30/93-94	185,946	6,276,924	7,053,406	7,056,904	7,052,000	7,058,000	775,076	781,076	3.792	3.796
6/30/94-95	194,051	7,467,040	8,512,971	8,509,316	8,509,000	8,513,000	1,041,960	1,045,960	4.385	4.387
6/30/95-96	205,262	6,479,598	7,504,184	7,511,427	7,503,000	7,513,000	1,023,402	1,033,402	3.655	3.660
6/30/96-97	234,073	7,708,083	8,995,207	9,005,974	8,993,000	9,008,000	1,284,917	1,299,917	3.842	3.848
6/30/97-98	221,865	9,660,499	11,572,369	11,540,561	11,540,000	11,572,000	1,879,501	1,911,501	5.201	5.216
6/30/98-99	256,071	9,272,470	11,345,944	11,333,172	11,333,000	11,346,000	2,060,530	2,073,530	4.426	4.431
6/30/99-00	268,486	10,089,018	12,523,753	12,502,779	12,503,000	12,524,000	2,413,982	2,434,982	4.657	4.665
6/30/00-01	279,182	13,293,210	16,752,767	16,665,447	16,666,000	17,153,000	3,372,790	3,859,790	5.970	6.144
6/30/01-02	283,070	10,653,549	13,723,570	13,705,108	13,705,000	13,723,000	3,051,452	3,069,452	4.842	4.848
6/30/02-03	289,846	10,800,585	14,203,504	14,188,552	14,050,000	14,203,000	3,249,415	3,402,415	4.847	4.900
6/30/03-04	293,771	9,846,955	13,263,910	13,281,224	13,132,000	13,281,000	3,285,045	3,434,045	4.470	4.521
6/30/04-05	291,382	10,512,119	14,673,371	14,495,926	14,495,000	14,674,000	3,982,881	4,161,881	4.975	5.036
6/30/05-06	294,709	7,602,846	11,066,256	12,124,095	11,587,000	12,140,000	3,984,154	4,537,154	3.932	4.119
6/30/06-07	289,603	5,918,221	9,097,533	10,936,497	9,927,000	10,936,000	4,008,779	5,017,779	3.428	3.776
6/30/07-08	354,668	5,396,833	9,057,942	12,580,524	10,612,000	12,580,000	5,215,167	7,183,167	2.992	3.547
6/30/08-09	332,413	4,151,588	8,203,416	12,541,315	10,039,000	12,542,000	5,887,412	8,390,412	3.020	3.773
6/30/09-10	336,338	2,329,135	6,188,918	13,174,924	9,272,000	13,175,000	6,942,865	10,845,865	2.757	3.917
6/30/10-11	333,783	1,481,575	8,967,961	16,192,330	12,322,000	16,193,000	10,840,425	14,711,425	3.692	4.851
Total	6,363,929	212,080,969	276,226,217	286,335,171	284,323,266	306,445,127	72,242,297	94,364,158		
Tot 6/30/84-10	6,363,929	202,905,978	270,719,718	286,335,171	273,472,220	294,280,000	70,566,242	91,374,022	4.297	4.624

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) - (9) = Sum of Section 4, Exhibit 1, Page 1 + Section 4, Exhibit 2, Page 1

(10) = (6) / (2) / 10

(11) = (7) / (2) / 10



**Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011**

Summary
Exhibit 8
Page 5

**University of Massachusetts (Amherst) - Cluster 4
Total Indemnity (Including Lump Sums) + Medical**

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Pd Loss Including Lump Sum	Ult Loss - Paid Loss Method	Ult Loss - Paid BF Method	Aon Selected Ult (Low)	Aon Selected Ult (High)	Outstanding Losses (Low)	Outstanding Losses (High)	Ult Loss Cost (Low)	Ult Loss Cost (High)
All Prior Yrs		2,174,550			2,556,893	2,679,449	382,342	504,899		
6/30/82-83		225,530	228,864		229,124	232,786	3,594	7,256		
6/30/83-84		220,938	224,334		224,907	230,205	3,969	9,267		
6/30/84-85	176,924	1,805,135	2,182,331	1,835,625	1,835,805	2,183,546	30,670	378,411	1.038	1.234
6/30/85-86	188,662	1,676,445	2,280,889	1,699,513	1,699,741	1,990,588	23,296	314,143	0.901	1.055
6/30/86-87	212,277	2,449,231	3,304,259	2,484,853	2,485,000	3,305,000	35,769	855,769	1.171	1.557
6/30/87-88	243,118	2,237,524	2,287,497	2,286,777	2,287,000	2,288,000	49,476	50,476	0.941	0.941
6/30/88-89	248,990	2,066,531	2,129,670	2,131,161	2,130,000	2,131,000	63,469	64,469	0.855	0.856
6/30/89-90	250,404	679,355	712,055	725,000	710,890	724,463	31,535	45,108	0.284	0.289
6/30/90-91	235,170	2,718,873	2,913,083	2,911,595	2,911,000	2,913,000	192,127	194,127	1.238	1.239
6/30/91-92	235,607	2,889,550	3,384,553	3,170,310	3,170,000	3,385,000	280,450	495,450	1.345	1.437
6/30/92-93	241,161	712,440	762,040	762,214	756,696	759,317	44,256	46,877	0.314	0.315
6/30/93-94	254,321	1,183,250	1,433,237	1,314,494	1,315,000	1,433,000	131,750	249,750	0.517	0.563
6/30/94-95	256,665	1,067,175	1,202,393	1,199,621	1,078,423	1,111,476	11,248	44,301	0.420	0.433
6/30/95-96	265,739	835,707	954,110	952,614	844,425	870,865	8,718	35,158	0.318	0.328
6/30/96-97	296,336	700,394	830,779	829,840	707,847	730,726	7,453	30,332	0.239	0.247
6/30/97-98	296,982	650,997	755,541	757,757	667,000	685,000	16,003	34,003	0.225	0.231
6/30/98-99	299,530	874,780	1,046,837	1,044,941	1,045,000	1,047,000	170,220	172,220	0.349	0.350
6/30/99-00	323,627	1,560,651	1,945,214	1,924,435	1,924,000	1,945,000	363,349	384,349	0.595	0.601
6/30/00-01	338,348	1,628,300	2,055,364	2,032,800	2,033,000	2,055,000	404,700	426,700	0.601	0.607
6/30/01-02	329,555	1,152,692	1,422,030	1,416,373	1,416,000	1,422,000	263,308	269,308	0.430	0.431
6/30/02-03	329,179	982,256	1,242,987	1,239,960	1,239,000	1,244,000	256,744	261,744	0.376	0.378
6/30/03-04	344,547	414,340	545,466	559,543	546,000	559,000	131,660	144,660	0.158	0.162
6/30/04-05	325,530	897,395	1,215,263	1,201,205	1,195,000	1,221,000	297,605	323,605	0.367	0.375
6/30/05-06	403,750	639,934	895,830	1,042,975	896,000	1,043,000	256,066	403,066	0.222	0.258
6/30/06-07	420,219	619,681	946,572	1,121,492	947,000	1,122,000	327,319	502,319	0.225	0.267
6/30/07-08	425,998	718,563	1,251,130	1,398,008	1,251,000	1,398,000	532,437	679,437	0.294	0.328
6/30/08-09	420,566	1,059,779	2,200,333	2,010,769	2,010,000	2,200,000	950,221	1,140,221	0.478	0.523
6/30/09-10	433,206	493,483	1,422,502	1,653,628	1,423,000	1,653,000	929,517	1,159,517	0.328	0.382
6/30/10-11	444,673	391,840	2,344,680	1,898,036	1,898,000	2,345,000	1,506,160	1,953,160	0.427	0.527
Total	8,241,084	35,727,320	44,119,845	41,605,539	43,432,750	46,907,421	7,705,430	11,180,101		
Tot 6/30/84-10	8,241,084	33,106,302	43,666,646	41,605,539	40,421,826	43,764,981	7,315,524	10,658,680	0.490	0.531

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) - (9) = Sum of Section 5, Exhibit 1, Page 1 + Section 5, Exhibit 2, Page 1

(10) = (6) / (2) / 10

(11) = (7) / (2) / 10



**Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011**

[Summary](#)
[Exhibit 8](#)
[Page 6](#)

**University of Massachusetts (Medical Center) - Cluster 4
Total Indemnity (Including Lump Sums) + Medical**

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Pd Loss Including Lump Sum	Ult Loss - Paid Loss Method	Ult Loss - Paid BF Method	Aon Selected Ult (Low)	Aon Selected Ult (High)	Outstanding Losses (Low)	Outstanding Losses (High)	Ult Loss Cost (Low)	Ult Loss Cost (High)
All Prior Yrs		1,455,812			1,455,812	1,455,812	0	0		
6/30/82-83		327,566	329,525		327,672	335,649	106	8,083		
6/30/83-84		1,494,800	1,503,357		1,523,932	1,553,573	29,132	58,773		
6/30/84-85	116,303	1,015,470	1,022,069	1,024,513	1,033,339	1,052,834	17,869	37,364	0.888	0.905
6/30/85-86	123,981	2,733,296	2,750,927	2,754,953	2,750,432	2,757,662	17,136	24,367	2.218	2.224
6/30/86-87	139,388	3,636,499	4,248,833	3,659,791	3,659,000	3,954,330	22,501	317,832	2.625	2.837
6/30/87-88	159,499	3,218,797	3,512,692	3,250,682	3,250,000	3,381,767	31,203	162,970	2.038	2.120
6/30/88-89	180,644	3,112,432	3,157,623	3,173,932	3,167,349	3,268,054	54,917	155,622	1.753	1.809
6/30/89-90	142,494	3,797,545	3,877,784	3,906,702	3,865,186	3,987,422	67,641	189,877	2.713	2.798
6/30/90-91	143,694	1,403,520	1,439,876	1,439,636	1,427,065	1,473,696	23,545	70,176	0.993	1.026
6/30/91-92	155,170	2,187,492	2,250,003	2,249,063	2,221,204	2,296,867	33,712	109,375	1.431	1.480
6/30/92-93	163,283	1,033,363	1,066,500	1,066,020	1,048,102	1,085,031	14,739	51,668	0.642	0.665
6/30/93-94	177,184	2,470,216	2,558,434	2,555,672	2,556,000	2,558,000	85,784	87,784	1.443	1.444
6/30/94-95	188,391	937,515	959,131	959,138	959,000	959,000	21,485	21,485	0.509	0.509
6/30/95-96	201,751	874,675	895,792	896,022	886,424	913,492	11,749	38,817	0.439	0.453
6/30/96-97	231,872	617,845	628,619	630,128	628,838	647,186	10,993	29,340	0.271	0.279
6/30/97-98	232,237	1,001,049	1,043,870	1,043,386	1,017,642	1,052,656	16,592	51,607	0.438	0.453
6/30/98-99	232,075	937,666	971,258	972,180	971,000	972,000	33,334	34,334	0.418	0.419
6/30/99-00	211,819	863,968	915,432	914,588	915,000	916,000	51,032	52,032	0.432	0.432
6/30/00-01	215,099	940,502	993,670	993,462	993,000	993,000	52,498	52,498	0.462	0.462
6/30/01-02	227,797	531,042	565,664	567,917	566,000	568,000	34,958	36,958	0.248	0.249
6/30/02-03	242,008	963,475	1,057,767	1,055,857	1,055,000	1,058,000	91,525	94,525	0.436	0.437
6/30/03-04	276,758	1,259,000	1,411,847	1,410,129	1,410,000	1,428,650	151,000	169,650	0.509	0.516
6/30/04-05	260,378	341,437	391,472	474,700	392,000	485,250	50,563	143,813	0.151	0.186
6/30/05-06	317,741	1,082,863	1,278,944	1,305,942	1,278,000	1,323,950	195,137	241,087	0.402	0.417
6/30/06-07	325,922	605,124	746,402	863,376	747,000	878,250	141,876	273,126	0.229	0.269
6/30/07-08	354,130	1,737,526	2,357,481	2,254,755	2,254,000	2,387,400	516,474	649,874	0.636	0.674
6/30/08-09	362,309	588,688	991,728	1,162,567	992,000	1,181,800	403,312	593,112	0.274	0.326
6/30/09-10	383,298	611,620	1,357,754	1,523,235	1,358,000	1,545,950	746,380	934,330	0.354	0.403
6/30/10-11	394,924	411,660	1,794,184	1,763,156	1,721,000	1,868,700	1,309,340	1,457,040	0.436	0.473
Total	6,160,151	42,192,463	46,078,639	43,871,504	46,428,996	48,339,981	4,236,533	6,147,517		
Tot 6/30/84-10	6,160,151	38,914,285	44,245,757	43,871,504	43,121,580	44,994,947	4,207,295	6,080,661	0.700	0.730

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) - (9) = Sum of Section 6, Exhibit 1, Page 1 + Section 6, Exhibit 2, Page 1

(10) = (6) / (2) / 10

(11) = (7) / (2) / 10



**Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011**

[Summary](#)
[Exhibit 8](#)
[Page 7](#)

**Massachusetts Colleges & Universities - Cluster 4
Total Indemnity (Including Lump Sums) + Medical**

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Pd Loss Including Lump Sum	Ult Loss - Paid Loss Method	Ult Loss - Paid BF Method	Aon Selected Ult (Low)	Aon Selected Ult (High)	Outstanding Losses (Low)	Outstanding Losses (High)	Ult Loss Cost (Low)	Ult Loss Cost (High)
All Prior Yrs		3,259,228			4,167,188	4,671,157	907,960	1,411,929		
6/30/82-83		796,317	799,681		811,448	826,578	15,131	30,261		
6/30/83-84		945,504	949,245		963,997	982,491	18,493	36,987		
6/30/84-85	357,749	1,604,929	1,611,527	1,614,846	1,635,334	1,665,739	30,405	60,810	0.457	0.466
6/30/85-86	380,112	2,253,254	2,263,274	2,266,649	2,263,269	2,267,190	10,015	13,936	0.595	0.596
6/30/86-87	423,770	2,748,739	3,000,248	2,762,301	2,761,246	3,001,437	12,507	252,697	0.652	0.708
6/30/87-88	480,405	4,634,567	5,403,236	4,660,495	4,717,856	4,838,940	83,290	204,374	0.982	1.007
6/30/88-89	495,261	1,941,050	1,951,651	1,957,325	1,973,514	2,019,971	32,464	78,921	0.398	0.408
6/30/89-90	502,691	3,914,191	3,940,092	3,941,711	3,940,000	3,942,000	25,809	27,809	0.784	0.784
6/30/90-91	482,143	1,866,079	1,880,502	1,880,454	1,880,000	1,880,000	13,921	13,921	0.390	0.390
6/30/91-92	492,539	2,139,512	2,628,157	2,173,641	2,236,153	2,400,725	96,641	261,214	0.454	0.487
6/30/92-93	524,541	1,653,844	1,687,186	1,686,871	1,679,326	1,716,282	25,482	62,438	0.320	0.327
6/30/93-94	584,853	1,596,956	1,994,430	1,639,490	1,640,000	1,995,000	43,044	398,044	0.280	0.341
6/30/94-95	587,701	1,997,151	2,055,919	2,055,107	2,056,000	2,056,000	58,849	58,849	0.350	0.350
6/30/95-96	614,868	1,850,889	1,925,349	1,924,687	1,879,180	1,920,160	28,290	69,271	0.306	0.312
6/30/96-97	700,686	1,708,928	1,803,168	1,803,337	1,802,000	1,804,000	93,072	95,072	0.257	0.257
6/30/97-98	684,415	2,254,648	2,440,680	2,435,499	2,435,000	2,440,000	180,352	185,352	0.356	0.357
6/30/98-99	707,796	1,586,030	1,750,996	1,750,679	1,750,000	1,822,000	163,970	235,970	0.247	0.257
6/30/99-00	760,477	1,665,822	1,850,889	1,854,155	1,851,000	1,854,000	185,178	188,178	0.243	0.244
6/30/00-01	811,600	2,050,637	2,342,123	2,340,071	2,340,000	2,342,000	289,363	291,363	0.288	0.289
6/30/01-02	835,038	2,662,580	3,124,030	3,111,791	3,112,000	3,124,000	449,420	461,420	0.373	0.374
6/30/02-03	825,340	1,698,512	2,048,837	2,052,876	2,049,000	2,053,000	350,488	354,488	0.248	0.249
6/30/03-04	849,216	2,177,217	2,682,754	2,679,903	2,680,000	2,778,000	502,783	600,783	0.316	0.327
6/30/04-05	992,508	1,673,815	2,126,444	2,307,999	2,127,000	2,308,000	453,185	634,185	0.214	0.233
6/30/05-06	962,878	1,944,684	2,631,062	2,701,464	2,630,000	2,796,000	685,316	851,316	0.273	0.290
6/30/06-07	1,032,930	1,494,700	2,098,448	2,403,087	2,098,000	2,403,000	603,300	908,300	0.203	0.233
6/30/07-08	1,063,597	2,236,869	3,548,809	3,552,529	3,536,000	3,565,000	1,299,131	1,328,131	0.332	0.335
6/30/08-09	1,073,805	1,631,117	2,979,404	3,186,328	2,958,000	3,208,000	1,326,883	1,576,883	0.275	0.299
6/30/09-10	1,084,749	1,844,276	4,563,467	4,090,325	4,091,000	4,564,000	2,246,724	2,719,724	0.377	0.421
6/30/10-11	1,134,164	895,720	4,722,841	3,877,881	3,878,000	4,723,000	2,982,280	3,827,280	0.342	0.416
Total	19,445,830	60,727,766	72,804,448	68,711,499	73,941,511	77,967,671	13,213,745	17,239,905		
Tot 6/30/84-10	19,445,830	55,726,717	71,055,522	68,711,499	67,998,877	71,487,445	12,272,160	15,760,727	0.350	0.368

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) - (9) = Sum of Section 7, Exhibit 1, Page 1 + Section 7, Exhibit 2, Page 1

(10) = (6) / (2) / 10

(11) = (7) / (2) / 10



**Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011**

[Summary](#)
[Exhibit 8](#)
[Page 8](#)

**All Other - Clusters 5-17 & 95
Total Indemnity (Including Lump Sums) + Medical
Summary of Ultimate Losses**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Pd Loss Including Lump Sum	Ult Loss - Paid Loss Method	Ult Loss - Paid BF Method	Aon Selected Ult (Low)	Aon Selected Ult (High)	Outstanding Losses (Low)	Outstanding Losses (High)	Ult Loss Cost (Low)	Ult Loss Cost (High)
All Prior Yrs		44,785,262			52,027,447	57,140,450	7,242,185	12,355,188		
6/30/82-83		5,910,234	6,424,847		6,266,663	6,730,734	356,429	820,500		
6/30/83-84		8,648,621	9,503,602		9,252,115	9,945,768	603,494	1,297,147		
6/30/84-85	732,729	17,346,938	19,400,008	18,365,087	18,365,000	19,400,000	1,018,062	2,053,062	2.506	2.648
6/30/85-86	787,208	20,953,011	23,401,909	22,514,342	22,494,000	23,402,000	1,540,989	2,448,989	2.857	2.973
6/30/86-87	902,483	20,863,819	23,681,100	22,803,194	22,803,000	23,681,000	1,939,181	2,817,181	2.527	2.624
6/30/87-88	1,366,586	29,533,603	33,223,624	33,107,735	33,108,000	34,716,000	3,574,397	5,182,397	2.423	2.540
6/30/88-89	1,486,478	27,650,757	31,482,769	30,945,452	30,945,000	31,483,000	3,294,243	3,832,243	2.082	2.118
6/30/89-90	1,494,463	26,582,764	30,761,211	30,607,479	30,608,000	30,761,000	4,025,236	4,178,236	2.048	2.058
6/30/90-91	1,405,560	23,518,044	27,626,201	27,598,705	27,561,480	27,626,000	4,043,436	4,107,956	1.961	1.965
6/30/91-92	1,364,510	14,643,160	17,447,070	17,417,242	17,417,000	18,169,000	2,773,840	3,525,840	1.276	1.332
6/30/92-93	1,347,359	11,367,216	14,672,977	13,859,898	13,860,000	14,673,000	2,492,784	3,305,784	1.029	1.089
6/30/93-94	1,424,410	12,714,409	15,682,459	15,625,438	15,625,000	15,682,000	2,910,591	2,967,591	1.097	1.101
6/30/94-95	1,497,829	11,197,902	14,064,478	14,013,190	14,013,000	14,064,000	2,815,098	2,866,098	0.936	0.939
6/30/95-96	1,582,635	11,161,375	14,476,751	14,406,261	14,406,000	15,082,000	3,244,625	3,920,625	0.910	0.953
6/30/96-97	1,979,748	11,909,836	15,614,983	15,562,921	15,563,000	16,257,000	3,653,164	4,347,164	0.786	0.821
6/30/97-98	1,917,994	10,289,230	13,602,192	13,592,526	13,590,000	14,170,000	3,300,770	3,880,770	0.709	0.739
6/30/98-99	2,081,524	11,000,468	14,887,424	14,875,430	14,875,000	15,487,000	3,874,532	4,486,532	0.715	0.744
6/30/99-00	2,207,243	12,566,485	17,619,378	17,550,185	17,551,000	18,336,000	4,984,515	5,769,515	0.795	0.831
6/30/00-01	2,201,008	11,607,320	16,851,334	16,807,686	16,808,000	17,529,000	5,200,680	5,921,680	0.764	0.796
6/30/01-02	2,292,592	12,115,585	18,079,505	18,035,841	18,024,000	18,846,000	5,908,415	6,730,415	0.786	0.822
6/30/02-03	2,260,534	12,222,564	18,713,685	18,654,370	18,652,000	19,472,000	6,429,436	7,249,436	0.825	0.861
6/30/03-04	2,255,942	11,092,723	17,447,457	17,446,012	17,443,000	18,132,000	6,350,277	7,039,277	0.773	0.804
6/30/04-05	2,309,083	13,294,848	21,435,167	20,714,676	20,229,000	21,435,000	6,934,152	8,140,152	0.876	0.928
6/30/05-06	2,480,693	11,507,035	19,810,010	20,152,403	19,444,000	20,153,000	7,936,965	8,645,965	0.784	0.812
6/30/06-07	2,612,577	11,904,830	21,453,387	22,198,419	20,290,000	22,729,000	8,385,170	10,824,170	0.777	0.870
6/30/07-08	2,783,717	12,129,570	25,388,842	24,722,708	23,150,000	26,399,000	11,020,430	14,269,430	0.832	0.948
6/30/08-09	2,750,907	10,753,129	26,804,864	25,803,682	25,207,000	27,107,000	14,453,871	16,353,871	0.916	0.985
6/30/09-10	2,806,048	8,827,316	29,502,038	26,813,773	26,148,000	29,847,000	17,320,684	21,019,684	0.932	1.064
6/30/10-11	2,942,638	4,649,773	35,796,885	28,253,825	27,474,000	36,272,000	22,824,227	31,622,227	0.934	1.233
Total	51,274,496	452,747,827	594,856,157	562,448,480	623,199,705	664,726,953	170,451,877	211,979,125		
Tot 6/30/84-11	51,274,496	393,403,710	578,927,708	562,448,480	555,653,480	590,910,000	162,249,770	197,506,290	1.084	1.152

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) - (9) = Sum of Section 8, Exhibit 1, Page 1 + Section 8, Exhibit 2, Page 1

(10) = (6) / (2) / 10

(11) = (7) / (2) / 10



**Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011**

Summary
Exhibit 9

**All Clusters Combined
Total Indemnity (Including Lump Sums) + Medical
Calculation of Implied Development Factors**

(1)	(2)	(3)	(4)
Accident Year	Pd Loss Including Lump Sum	Implied Cumulative LDF	Selected Ult Loss Including Lump Sum
All Prior Yrs	96,029,571	1.252	120,235,229
6/30/82-83	17,595,774	1.087	19,128,021
6/30/83-84	25,508,347	1.118	28,530,877
6/30/84-85	37,933,407	1.077	40,851,955
6/30/85-86	51,324,719	1.083	55,574,081
6/30/86-87	56,514,730	1.070	60,456,805
6/30/87-88	81,238,003	1.100	89,347,883
6/30/88-89	80,367,566	1.094	87,922,227
6/30/89-90	77,698,377	1.086	84,417,404
6/30/90-91	64,372,112	1.134	73,020,620
6/30/91-92	43,005,920	1.124	48,335,474
6/30/92-93	29,683,922	1.138	33,779,377
6/30/93-94	31,974,700	1.147	36,685,000
6/30/94-95	29,316,879	1.163	34,097,450
6/30/95-96	27,879,724	1.186	33,069,273
6/30/96-97	28,083,739	1.214	34,099,298
6/30/97-98	30,556,654	1.217	37,182,649
6/30/98-99	28,843,086	1.256	36,220,000
6/30/99-00	32,609,611	1.286	41,926,500
6/30/00-01	37,761,283	1.300	49,077,950
6/30/01-02	33,338,173	1.342	44,726,000
6/30/02-03	32,838,124	1.374	45,121,000
6/30/03-04	32,932,043	1.397	45,997,325
6/30/04-05	33,781,595	1.430	48,311,625
6/30/05-06	28,756,594	1.557	44,787,975
6/30/06-07	26,448,426	1.682	44,481,125
6/30/07-08	26,316,269	1.925	50,652,200
6/30/08-09	22,723,137	2.304	52,354,900
6/30/09-10	17,566,288	3.141	55,173,475
6/30/10-11	9,976,549	6.439	64,235,350
Total	1,172,975,321		1,539,799,047

NOTES:

(2) From Summary Exhibit 8, Page 1, Column (3)

(3) = (4) / (2)

(4) From Summary Exhibit 8, Page 1, Average of Columns (6) and (7)



Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011

Summary
Exhibit 10
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Massachusetts Colleges & Universities - Cluster 4

Allocation Methodology

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	5 Year	Initial Loss Costs		Expected Losses				5 Year	Credibility	Distribution	CURRENT		PRIOR	
	Average							Average		of Total	Reserve Estimate		Reserve Estimate	
Cluster	Payroll	Indemnity	Medical	Indemnity	Medical	Total	Credibility	Ult Loss	Weighted	Losses	Low End	High End	Low End	High End
Berkshire Community College	12,548,374	0.2	0.1	25,097	12,548	37,645	38.6%	22,464	31,792	1.0%	133,581	174,282	183,986	237,293
Bridgewater State College	68,621,044	0.2	0.1	137,242	68,621	205,863	77.4%	245,006	236,172	7.5%	992,319	1,294,673	754,092	972,582
Bristol Community College	30,594,307	0.2	0.1	61,189	30,594	91,783	60.5%	51,191	67,237	2.1%	282,507	368,586	225,456	290,780
Bunker Hill Community College	35,430,252	0.2	0.1	70,861	35,430	106,291	41.5%	102,470	104,706	3.3%	439,941	573,989	355,022	457,885
Cape Cod Community College	17,168,814	0.2	0.1	34,338	17,169	51,506	25.6%	75,703	57,691	1.8%	242,400	316,258	269,837	348,019
Fitchburg State College	33,450,430	0.2	0.1	66,901	33,450	100,351	62.6%	226,062	179,024	5.7%	752,198	981,389	661,105	852,652
Framingham State College	32,738,629	0.2	0.1	65,477	32,739	98,216	39.6%	184,402	132,319	4.2%	555,960	725,358	538,439	694,445
Greenfield Community College	13,556,545	0.2	0.1	27,113	13,557	40,670	40.4%	7,715	27,356	0.9%	114,943	149,965	156,609	201,984
Holyoke Community College	29,642,670	0.2	0.1	59,285	29,643	88,928	59.7%	51,607	66,643	2.1%	280,012	365,330	291,908	376,485
Mass Bay Community College	20,240,074	0.2	0.1	40,480	20,240	60,720	28.8%	20,646	49,173	1.6%	206,607	269,559	225,466	290,792
Mass College of Art	24,868,226	0.2	0.1	49,736	24,868	74,605	55.4%	68,449	71,193	2.3%	299,128	390,271	272,564	351,536
Mass Maritime Academy	16,512,322	0.2	0.1	33,025	16,512	49,537	24.8%	135,198	70,803	2.3%	297,492	388,136	272,198	351,064
Massachusetts College of Liberal Arts	18,635,687	0.2	0.1	37,271	18,636	55,907	27.2%	69,793	59,677	1.9%	250,744	327,144	299,214	385,908
Massasoit Community College	29,351,413	0.2	0.1	58,703	29,351	88,054	59.5%	169,548	136,522	4.3%	573,621	748,401	480,737	620,025
Middlesex Community College	41,845,787	0.2	0.1	83,692	41,846	125,537	67.7%	15,582	51,140	1.6%	214,873	280,343	220,415	284,278
Mt Wachusett Community College	22,779,126	0.2	0.1	45,558	22,779	68,337	31.3%	55,553	64,336	2.0%	270,318	352,683	250,958	323,670
North Essex Community College	26,793,316	0.2	0.1	53,587	26,793	80,380	57.3%	25,427	48,914	1.6%	205,522	268,143	232,864	300,334
North Shore Community College	30,886,192	0.2	0.1	61,772	30,886	92,659	38.2%	51,644	76,997	2.4%	323,518	422,092	370,285	477,570
Quinsigamond Community College	30,787,324	0.2	0.1	61,575	30,787	92,362	38.1%	107,731	98,219	3.1%	412,683	538,426	478,600	617,269
Roxbury Community College	14,758,725	0.2	0.1	29,517	14,759	44,276	22.8%	79,355	52,271	1.7%	219,624	286,543	226,024	291,512
Salem State College	65,679,623	0.2	0.1	131,359	65,680	197,039	76.7%	251,725	238,960	7.6%	1,004,030	1,309,953	841,399	1,085,184
Springfield Tech Community College	29,727,456	0.2	0.1	59,455	29,727	89,182	59.8%	272,159	198,567	6.3%	834,315	1,088,527	680,578	877,768
UMass (Boston)	138,368,203	0.2	0.1	276,736	138,368	415,105	87.4%	212,235	237,855	7.6%	999,389	1,303,897	991,674	1,279,000
UMass (Dartmouth)	92,360,799	0.2	0.1	184,722	92,361	277,082	82.2%	244,998	250,709	8.0%	1,053,396	1,374,360	1,511,284	1,949,160
University of Lowell	122,940,100	0.2	0.1	245,880	122,940	368,820	86.0%	230,477	249,834	7.9%	1,049,719	1,369,563	1,427,934	1,841,661
Westfield State College	39,230,871	0.2	0.1	78,462	39,231	117,693	66.2%	226,476	189,744	6.0%	797,241	1,040,156	917,840	1,183,773
Worcester State College	34,042,624	0.2	0.1	68,085	34,043	102,128	63.0%	94,026	97,024	3.1%	407,665	531,878	382,110	492,822
Total	1,073,558,933			2,147,118	1,073,559			3,297,641	3,144,878		13,213,745	17,239,905	13,518,599	17,435,452

NOTES:

(1) Provided by Commonwealth of Massachusetts; From Summary Exhibit 10, Page 3

(2) From Section 7, Exhibit 1, Page 4

(3) From Section 7, Exhibit 2, Page 4

(4) = (1) * (2) / 100

(5) = (1) * (3) / 100

(6) = (4) + (5)

(7) = P / (P+K); where P = Column (1) and K = 20M (if CV < 1) and K = 50M (if CV > 1). CV is the Coefficient of Variation, as calculated on Summary Exhibit 10, Page 2.

(8) = The Average of Columns (2) - (6) plus The Average of Columns (8) - (12) on Summary Exhibit 10 Page 4.

(9) = (7) * (8) + [1.00 - (7)] * (6)

(10) = (9) / Total (9)

(11) = The Total from Summary Exhibit 8, Page7, Column (8), allocated according to Column (10) of this exhibit.

(12) = The Total from Summary Exhibit 8, Page7, Column (9), allocated according to Column (10) of this exhibit.

(13) & (14) From Aon analysis as of June 30, 2010



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Massachusetts Colleges & Universities - Cluster 4

Estimated Loss Costs (Indemnity and Medical Combined)

	(1)	(2)	(3)	(4)	(5)	(6)
Cluster	2011	2010	2009	2008	2007	Coefficient of Variation
Berkshire Community College	0.125	0.182	0.045	0.417	0.115	0.807
Bridgewater State College	0.465	0.422	0.155	0.492	0.237	0.422
Bristol Community College	0.214	0.329	0.222	0.009	0.039	0.829
Bunker Hill Community College	0.805	0.386	0.062	0.116	0.013	1.191
Cape Cod Community College	0.191	0.098	0.009	0.209	1.830	1.639
Fitchburg State College	1.054	0.737	0.482	0.592	0.498	0.351
Framingham State College	0.334	0.427	0.011	1.593	0.437	1.075
Greenfield Community College	0.034	0.047	0.136	0.034	0.031	0.798
Holyoke Community College	0.307	0.277	0.081	0.018	0.183	0.713
Mass Bay Community College	0.024	0.100	0.010	0.326	0.058	1.246
Mass College of Art	0.589	0.141	0.485	0.057	0.063	0.942
Mass Maritime Academy	0.380	1.016	2.283	0.046	0.381	1.083
Massachusetts College of Liberal Arts	0.010	0.883	0.934	0.036	0.005	1.308
Massasoit Community College	0.465	1.206	0.428	0.690	0.088	0.718
Middlesex Community College	0.053	0.018	0.055	0.040	0.019	0.490
Mt Wachusett Community College	0.780	0.240	0.103	0.013	0.024	1.377
North Essex Community College	0.079	0.165	0.072	0.151	0.003	0.695
North Shore Community College	0.009	0.740	0.022	0.012	0.043	1.947
Quinsigamond Community College	0.211	0.074	0.057	1.426	0.027	1.672
Roxbury Community College	0.000	1.447	0.004	1.219	0.000	1.374
Salem State College	0.803	0.106	0.234	0.133	0.633	0.828
Springfield Tech Community College	1.159	1.199	1.355	0.788	0.042	0.580
UMass (Boston)	0.214	0.177	0.176	0.041	0.147	0.437
UMass (Dartmouth)	0.262	0.384	0.149	0.306	0.222	0.333
University of Lowell	0.162	0.254	0.224	0.157	0.142	0.258
Westfield State College	0.583	0.823	0.241	0.836	0.389	0.457
Worcester State College	0.184	0.369	0.518	0.218	0.082	0.624

NOTES:

(1) - (5) - Sum of Indemnity + Medical Losses from Summary Exhibit 10, Page 4 divided by Payroll from Summary Exhibit 10, Page 3.

(6) = Std Deviation / Mean of Columns (1) - (5) Used to calculate "ballast factor" (K) on Summary Exhibit 10, Page 1, Column (7).



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Massachusetts Colleges & Universities - Cluster 4

Payroll

Cluster	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
Berkshire Community College	12,765,728	12,608,194	12,477,038	12,992,058	11,898,851	11,571,324	10,685,054	10,430,170	11,186,890	11,481,915
Bridgewater State College	73,247,587	69,620,026	68,323,197	67,652,873	64,261,538	61,047,713	56,048,979	52,294,674	50,422,782	48,907,571
Bristol Community College	33,155,586	31,455,847	30,708,796	29,632,813	28,018,495	27,162,772	26,258,267	25,747,071	25,021,598	24,564,498
Bunker Hill Community College	38,164,922	35,956,105	34,871,020	34,997,441	33,161,774	31,541,772	29,120,838	27,754,128	27,056,072	26,527,009
Cape Cod Community College	17,148,486	17,159,865	18,672,490	16,912,998	15,950,229	15,226,570	14,770,711	14,179,704	14,493,141	14,014,926
Fitchburg State College	34,204,248	33,842,950	33,451,439	33,452,473	32,301,042	31,062,131	29,328,148	28,301,935	28,935,610	28,981,260
Framingham State College	33,532,654	32,772,606	33,174,219	33,380,388	30,833,277	29,662,046	27,998,424	26,701,886	26,814,938	26,672,654
Greenfield Community College	13,421,721	13,089,560	13,957,686	14,137,583	13,176,176	12,124,207	12,506,074	11,943,329	11,255,470	11,131,263
Holyoke Community College	30,596,223	30,303,801	30,190,866	29,693,264	27,429,195	26,202,662	24,123,482	23,636,630	23,295,481	23,490,958
Mass Bay Community College	21,205,789	20,707,657	20,503,198	19,674,504	19,109,225	17,901,584	17,257,398	16,975,052	16,747,688	16,961,142
Mass College of Art	26,762,645	25,447,450	24,847,648	24,308,780	22,974,607	21,431,467	19,601,643	18,092,653	17,513,740	17,553,070
Mass Maritime Academy	17,378,246	16,347,571	16,574,691	17,178,285	15,082,818	14,253,305	14,025,416	12,099,674	12,106,501	12,226,282
Massachusetts College of Liberal Arts	18,732,309	18,675,839	18,685,437	18,454,686	18,630,165	17,120,021	15,805,473	15,185,156	15,394,795	15,499,461
Massasoit Community College	30,340,130	28,826,366	31,145,834	29,299,579	27,145,154	26,147,478	25,079,665	24,200,780	24,093,904	24,335,037
Middlesex Community College	39,162,007	38,762,758	44,276,269	46,721,418	40,306,485	39,854,733	39,229,106	37,173,144	33,867,453	32,942,466
Mt Wachusett Community College	24,563,097	22,854,199	22,358,426	22,613,805	21,506,104	20,291,041	19,252,044	18,367,140	17,882,081	17,097,705
North Essex Community College	27,447,993	26,978,801	27,092,760	26,683,224	25,763,800	24,367,949	23,275,783	22,288,453	21,487,546	22,032,480
North Shore Community College	32,328,218	31,394,592	31,025,948	30,519,208	29,162,993	27,735,649	26,225,595	25,068,353	24,699,156	24,882,276
Quinsigamond Community College	34,059,973	32,268,537	30,912,984	29,278,660	27,416,465	26,247,469	24,838,269	23,955,102	23,293,133	22,845,127
Roxbury Community College	15,402,953	15,082,812	14,798,159	14,611,682	13,898,017	13,523,360	13,022,388	12,416,191	12,949,422	12,938,946
Salem State College	69,431,901	65,990,811	66,268,106	65,262,785	61,444,512	58,062,968	52,736,558	48,839,287	48,949,454	75,176,407
Springfield Tech Community College	29,918,442	29,428,123	30,327,286	30,213,259	28,750,170	28,506,180	27,834,525	27,296,990	27,225,475	27,081,322
UMass (Boston)	152,917,036	142,970,614	134,516,405	132,813,241	128,623,720	122,484,538	106,714,813	106,122,577	102,703,700	105,718,780
UMass (Dartmouth)	98,435,825	92,935,564	90,902,061	91,166,561	88,363,987	83,231,754	68,337,324	68,244,208	63,745,097	63,042,742
University of Lowell	131,389,765	122,995,978	119,667,601	121,369,367	119,277,790	111,802,758	94,257,544	93,881,793	88,686,740	95,803,596
Westfield State College	42,505,518	41,760,360	39,918,536	36,827,031	35,142,912	33,641,879	31,400,791	29,111,114	27,553,086	28,084,234
Worcester State College	35,944,721	34,512,511	34,156,985	33,749,525	31,849,376	30,672,750	28,556,062	26,268,154	25,625,037	25,681,647
UMass (Amherst)	444,672,991	433,205,775	420,565,863	425,998,100	420,218,656	403,750,092	325,529,837	344,546,844	329,179,328	329,555,344
UMass (Medical Center)	394,924,203	383,297,750	362,308,924	354,130,286	325,921,625	317,740,675	260,378,409	276,758,408	242,008,375	227,797,436
Total	1,973,760,916	1,901,253,022	1,856,679,871	1,843,725,875	1,757,619,156	1,684,368,848	1,464,198,619	1,467,880,600	1,394,193,690	1,413,027,555



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Massachusetts Colleges & Universities - Cluster 4

Estimated Ultimate Losses

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Indemnity					Medical				
Cluster	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Berkshire Community College	3,981	20,453	134	21,444	12,817	9,726	33,664	5,470	1,459	3,169
Bridgewater State College	112,128	269,581	59,597	178,942	266,707	40,158	63,299	46,061	114,698	73,860
Bristol Community College	0	0	42,009	81,169	188	11,002	2,664	26,038	22,190	70,692
Bunker Hill Community College	0	18,692	9,940	101,709	169,570	4,223	21,748	11,572	37,122	137,776
Cape Cod Community College	222,683	6,970	0	-6,206	8,490	69,246	28,370	1,658	23,019	24,286
Fitchburg State College	139,960	174,235	84,597	173,250	303,443	21,058	23,815	76,683	76,061	57,205
Framingham State College	89,732	341,594	0	78,482	71,482	45,142	190,009	3,632	61,585	40,353
Greenfield Community College	0	532	6,571	0	0	4,133	4,215	12,428	6,142	4,556
Holyoke Community College	29,711	0	6,442	41,171	22,068	20,602	5,480	18,051	42,662	71,849
Mass Bay Community College	5,788	43,301	0	14,073	0	5,369	20,921	1,973	6,672	5,131
Mass College of Art	8,352	3,539	78,907	21,545	126,195	6,031	10,406	41,721	14,223	31,323
Mass Maritime Academy	17,210	3,922	209,901	136,466	49,935	40,269	4,056	168,553	29,632	16,046
Massachusetts College of Liberal Arts	0	0	145,918	130,423	0	848	6,673	28,650	34,513	1,937
Massasoit Community College	14,649	112,930	88,768	291,069	82,888	9,190	89,226	44,484	56,465	58,072
Middlesex Community College	-2,593	1,765	19,544	0	15,376	10,081	16,844	4,818	6,815	5,259
Mt Wachusett Community College	0	0	6,366	15,367	141,562	5,258	2,873	16,597	39,589	50,151
North Essex Community College	0	19,019	7,144	24,439	7,464	901	21,226	12,468	20,172	14,299
North Shore Community College	6,203	0	0	165,244	0	6,256	3,734	6,812	67,085	2,888
Quinsigamond Community College	4,370	363,419	8,803	15,912	47,887	3,080	54,179	8,790	8,098	24,115
Roxbury Community College	0	150,513	0	204,185	0	0	27,534	547	13,996	0
Salem State College	253,329	39,208	64,999	35,075	232,665	135,663	47,780	90,238	34,941	324,727
Springfield Tech Community College	6,434	103,568	276,005	291,187	245,577	5,641	134,367	134,960	61,736	101,323
UMass (Boston)	149,921	31,584	170,633	191,485	196,664	39,301	22,681	66,194	61,898	130,815
UMass (Dartmouth)	113,630	232,201	65,129	255,629	150,789	82,577	47,021	70,120	100,837	107,056
University of Lowell	117,698	133,666	172,227	156,083	154,172	51,208	56,497	96,010	155,713	59,109
Westfield State College	32,360	247,128	64,876	243,078	136,586	104,456	60,891	31,313	100,484	111,205
Worcester State College	12,227	53,508	142,871	54,698	20,080	13,752	20,143	34,161	72,706	45,985
Total	1,337,771	2,371,328	1,731,383	2,915,917	2,462,608	745,174	1,020,317	1,060,005	1,270,514	1,573,187
Age to Ultimate LDF's	1.539	1.685	1.980	2.729	6.150	1.191	1.230	1.401	1.638	3.801

NOTES:

(1) - (10) - Cumulative Paid Losses from Summary Exhibit 10, Page 5 multiplied by Age to Ultimate LDF's at the bottom of this exhibit.



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Massachusetts Colleges & Universities - Cluster 4

Cumulative Paid Losses as of 6/30/11

Cluster	Indemnity					Medical				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Berkshire Community College	2,587	12,137	68	7,858	2,084	8,163	27,375	3,904	891	834
Bridgewater State College	72,860	159,972	30,105	65,573	43,366	33,704	51,474	32,874	70,032	19,433
Bristol Community College	0	0	21,221	29,744	31	9,234	2,166	18,584	13,549	18,600
Bunker Hill Community College	0	11,092	5,021	37,271	27,571	3,544	17,685	8,259	22,666	36,250
Cape Cod Community College	144,698	4,136	0	-2,274	1,381	58,118	23,070	1,183	14,055	6,390
Fitchburg State College	90,945	103,393	42,733	63,487	49,339	17,674	19,366	54,729	46,441	15,051
Framingham State College	58,307	202,705	0	28,759	11,623	37,888	154,511	2,592	37,603	10,617
Greenfield Community College	0	316	3,319	0	0	3,469	3,428	8,870	3,750	1,199
Holyoke Community College	19,306	0	3,254	15,087	3,588	17,291	4,456	12,883	26,048	18,904
Mass Bay Community College	3,761	25,695	0	5,157	0	4,506	17,012	1,408	4,074	1,350
Mass College of Art	5,427	2,100	39,859	7,895	20,519	5,062	8,462	29,776	8,684	8,241
Mass Maritime Academy	11,183	2,327	106,030	50,008	8,119	33,798	3,298	120,296	18,093	4,222
Massachusetts College of Liberal Arts	0	0	73,709	47,793	0	712	5,426	20,448	21,073	510
Massasoit Community College	9,519	67,014	44,840	106,661	13,477	7,713	72,557	31,748	34,476	15,279
Middlesex Community College	-1,685	1,047	9,873	0	2,500	8,461	13,697	3,439	4,161	1,384
Mt Wachusett Community College	0	0	3,216	5,631	23,018	4,413	2,336	11,846	24,172	13,195
North Essex Community College	0	11,286	3,609	8,955	1,214	756	17,261	8,899	12,316	3,762
North Shore Community College	4,031	0	0	60,553	0	5,251	3,037	4,862	40,960	760
Quinsigamond Community College	2,840	215,656	4,447	5,831	7,786	2,585	44,057	6,274	4,944	6,345
Roxbury Community College	0	89,316	0	74,823	0	0	22,390	390	8,545	0
Salem State College	164,612	23,266	32,834	12,853	37,831	113,861	38,854	64,403	21,334	85,439
Springfield Tech Community College	4,181	61,458	139,421	106,704	39,930	4,734	109,265	96,321	37,694	26,659
UMass (Boston)	97,418	18,742	86,194	70,169	31,977	32,985	18,443	47,243	37,794	34,419
UMass (Dartmouth)	73,836	137,790	32,899	93,674	24,518	69,307	38,236	50,045	61,569	28,167
University of Lowell	76,480	79,319	86,999	57,196	25,068	42,979	45,942	68,522	95,075	15,552
Westfield State College	21,028	146,648	32,772	89,075	22,208	87,670	49,516	22,348	61,353	29,259
Worcester State College	7,945	31,752	72,170	20,044	3,265	11,542	16,380	24,381	44,393	12,099
Total	869,279	1,407,168	874,591	1,068,528	400,411	625,421	829,701	756,525	775,749	413,919



Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2011

Summary
Exhibit 10
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Massachusetts Colleges & Universities - Cluster 4

Fiscal Year 2011 Paid Losses

Cluster	Indemnity					Medical				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Berkshire Community College	0	0	0	3,155	2,084	0	0	447	597	834
Bridgewater State College	5,682	25,292	8,198	55,019	43,366	66	0	3,003	56,235	19,433
Bristol Community College	0	0	10,693	29,033	31	0	0	249	6,767	18,600
Bunker Hill Community College	0	0	0	21,974	27,571	0	611	520	15,469	36,250
Cape Cod Community College	0	0	0	-2,429	1,381	156	151	0	6,575	6,390
Fitchburg State College	707	32,661	17,230	32,355	49,339	1,343	1,266	25,635	17,841	15,051
Framingham State College	0	12,000	0	22,210	11,623	0	64,355	0	22,884	10,617
Greenfield Community College	0	0	3,000	0	0	0	0	1,283	1,274	1,199
Holyoke Community College	0	0	0	5,771	3,588	0	0	0	15,478	18,904
Mass Bay Community College	0	0	0	0	0	0	0	32	1,500	1,350
Mass College of Art	0	0	11,401	231	20,519	128	0	6,332	1,386	8,241
Mass Maritime Academy	0	0	46,774	45,780	8,119	0	94	28,468	5,918	4,222
Massachusetts College of Liberal Arts	0	0	0	21,699	0	0	0	6	1,333	510
Massasoit Community College	0	18,391	20,672	85,188	13,477	0	25,353	3,052	19,832	15,279
Middlesex Community College	0	0	7,872	0	2,500	0	0	495	3,110	1,384
Mt Wachusett Community College	0	0	-200	707	23,018	0	0	0	5,232	13,195
North Essex Community College	0	2,864	-1,859	2,979	1,214	0	0	66	1,944	3,762
North Shore Community College	0	0	0	27,238	0	0	0	0	14,617	760
Quinsigamond Community College	0	21,490	86	5,707	7,786	0	2,399	741	3,832	6,345
Roxbury Community College	0	0	0	51,056	0	0	0	0	6,015	0
Salem State College	1,750	0	0	1,668	37,831	26,852	171	7,889	8,862	85,439
Springfield Tech Community College	0	19,265	73,959	61,329	39,930	0	7,897	7,298	15,834	26,659
UMass (Boston)	0	0	0	45,153	31,977	0	0	27	31,472	34,419
UMass (Dartmouth)	230	44,578	0	29,964	24,518	0	0	0	13,021	28,167
University of Lowell	0	0	23,687	36,077	25,068	0	809	15,829	31,685	15,552
Westfield State College	0	35,916	13,615	58,817	22,208	0	2,130	4,475	23,682	29,259
Worcester State College	0	26,984	34,765	9,671	3,265	752	1,720	500	23,623	12,099
Total	8,369	239,441	269,893	650,352	400,411	29,298	106,956	106,347	356,019	413,919