Aon Risk Solutions
Global Risk Consulting
Actuarial and Analytics

Commonwealth of Massachusetts

Actuarial Estimate of Outstanding Liability

As of June 30, 2016

FINAL REPORT

Issue Date – August 30, 2016

One Federal Street
Boston, MA 02110
tel:617.457.7648 • fax: 847.953.0953 • www.aon.com

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Table of Contents

I. Narrative

II. Summary Exhibits

III. Supporting Exhibits

Section 1 *All Clusters Combined*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 2 *Department of Developmental Services - Cluster 1*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 3 *Department of Mental Health - Cluster 2*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 4 *Department of Corrections - Cluster 3*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 5 *University of Massachusetts (Amherst) - Cluster 4*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 6 *University of Massachusetts (Medical Center) - Cluster 4*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 7 *Massachusetts Colleges & Universities - Cluster 4*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 8 *All Other - Clusters 5-17 & 95*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Table of Contents

I. Introduction **4**
Purpose 4
Scope 4

II. Conditions and Limitations **6**
Inherent Uncertainty 6
Extraordinary Future Emergence 6
Data Reliance 6
Discounting 6
Use and Distribution 6

III. Executive Summary **7**
Summary of Results 7

IV. Program Description **11**

V. Data **12**
Loss 12
Exposure 12
Industry Data 12

VI. Actuarial Analysis **13**
Overview 13
Methods/Models of Estimating Unpaid Loss Estimates 13
Actuarial Assumptions 16

VII. Arrangement of Exhibits **18**

VIII. Description of Exhibits **20**

IX. Exhibits **22**

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, 2016 separately for seven clusters of agencies:

a) The Department of Developmental Services ("DDS")[1]
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 Massachusetts Department of Transportation (MassDOT).

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.

* * * * * *

[1] Formerly known as The Department of Mental Retardation ("DMR")

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

Vahan A. Mahdasian, ACAS, MAAA
Director & Actuary
+1.617.457.7648
vahan.mahdasian@aon.com

Neil J. Fenton, CRIS
Senior Actuarial Analyst
+1.617.457.768
neil.fenton@aon.com

Mujtaba Datoo, ACAS, MAAA
Actuarial Practice Leader
+1.949.470.4342
mujtaba.datoo@aon.com

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 MassDOT; excluding the former Massachusetts Turnpike Authority (MTA).

Consistent with the methodology and presentation in the prior report issued in 2015, the liability amounts in the summary tables below are provided both **Gross** (including) and **Net** (excluding) of those liabilities associated with the MassDOT (excluding MTA).

A summary table of the composition of the "All Other Departments" cluster with respect to the MassDOT (excluding MTA) and Non-MassDOT agencies is also provided.

Total Gross Reserves

Based on our review, which utilized loss and exposure data valued as of June 30, 2016, we estimate that the range of reasonable undiscounted **gross** (inclusive of MassDOT liability, excluding MTA) loss reserves for the Commonwealth's aggregate workers compensation program to be: **$311.4M to $390.2M.**

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%: **$231.6 to $293.0M** | Discounted at 6%: **$206.1M to $261.6M**

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

Cluster	Cluster	Report Section	Undiscounted	Discounted at 4%	Discounted at 6%
DDS	1	2	$24.0 - 30.9M	$19.4 - 25.2M	$17.8 - 23.2M
DMH	2	3	$23.2 - 30.4M	$17.5 - 23.3M	$15.7 - 21.0M
DOC	3	4	$44.6 - 62.0M	$33.7 - 46.7M	$30.2 - 41.8M
UMass - Amherst	4	5	$6.1 - 9.3M	$4.9 - 7.6M	$4.5 - 7.0M
UMass - Medical	4	6	$2.8 - 4.5M	$2.4 - 3.8M	$2.2 - 3.5M
Other Colleges & Universities	4	7	$17.5 - 22.6M	$14.1 - 18.3M	$12.9 - 16.7M
All Other Dept's (incl. MassDOT, excl. MTA)	5	8	$193.2 - 230.5M	$139.6 - 168.3M	$122.7 - 148.5M
Total			$311.4 - 390.2M	$231.6 - 293.0M	$206.1 - 261.6M

Total Net Reserves

Based on our review, which utilized loss and exposure data valued as of June 30, 2016 we estimate that the range of reasonable undiscounted **net** (excluding MassDOT and MTA liability) loss reserves for the Commonwealth's aggregate workers compensation program to be: **$297.1M to $373.1M.**

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%: **$221.2 - 280.5M** | Discounted at 6%: **$197.0 - 250.6M**

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

Cluster	Cluster	Report Section	Undiscounted	Discounted at 4%	Discounted at 6%
DDS	1	2	$24.0 - 30.9M	$19.4 - 25.2M	$17.8 - 23.2M
DMH	2	3	$23.2 - 30.4M	$17.5 - 23.3M	$15.7 - 21.0M
DOC	3	4	$44.6 - 62.0M	$33.7 - 46.7M	$30.2 - 41.8M
UMass - Amherst	4	5	$6.1 - 9.3M	$4.9 - 7.6M	$4.5 - 7.0M
UMass - Medical	4	6	$2.8 - 4.5M	$2.4 - 3.8M	$2.2 - 3.5M
Other Colleges & Universities	4	7	$17.5 - 22.6M	$14.1 - 18.3M	$12.9 - 16.7M
All Other Dept's (excl. MassDOT & MTA)	5	8	$178.9 - 213.3M	$129.2 - 155.7M	$113.6 - 137.4M
Total			$297.1 - 373.1M	$221.2 - 280.5M	$197.0 - 250.6M

All Other Departments – Decomposition of Departmental Liability

The total gross reserve of the All Other Departments cluster contains both MassDOT (excluding MTA) and Non-MassDOT liabilities. As shown in the table below, approximately 7.4% of the gross reserve for All Other Departments is attributed to MassDOT (excluding MTA) agencies.

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

All Other Departments	Cluster	% of Cluster	Undiscounted	Discounted at 4%	Discounted at 6%
MassDOT Agencies (excl. MTA)	5	7.4%	$14.3 - 17.1M	$10.4 - 12.5M	$9.1 - 11.0M
Non-MassDOT Agencies	5	92.6%	$178.9 - 213.3M	$129.2 - 155.7M	$113.6 - 137.4M
Total			$193.2 - 230.5M	$139.6 - 168.3M	$122.7 - 148.5M

Fiscal Year 2016 Loss Rates

The cost of the workers compensation program as measured by the estimated FY2016 loss rates (losses per $100 payroll) varied significantly by cluster.

As shown in the table below, overall rates increased by 3.0% when compared to the prior year

Cluster	Payroll (000)	Average Ult Loss	Average FY16 Loss Rate	Prior Loss Rate	% Change
DDS	316,565	5,116,050	1.616	1.553	4.1%
DMH	211,829	7,020,350	3.314	2.586	28.2%
DOC	400,013	11,016,300	2.754	2.860	-3.7%
UMass - Amherst	585,875	2,187,500	0.373	0.421	-11.4%
UMass - Medical	382,602	1,021,950	0.267	0.202	32.5%
Other Colleges & Univ's	1,454,612	5,712,435	0.393	0.387	1.4%
All Other Dept's (excl. MTA)	3,491,558	40,663,870	1.165	1.120	4.0%
Total	6,843,054	72,738,455	1.063	1.032	3.0%

All Other Departments – Fiscal Year 2016 Loss Rates

In the table below, we have estimated, the composition of the All Other Departments FY2016 loss rate as a function of both the MassDOT (excluding MTA) and Non-MassDOT departments experience and exposure:

All Other Dept's (excl. MTA)	Payroll (000)	Average Ult Loss	Average FY16 Loss Rate	Prior Loss Rate	% Change
MassDOT (excl. MTA)	226,897	2,538,971	1.119	1.038	7.8%
Non-MassDOT	3,264,661	38,124,899	1.168	1.127	3.7%
Total	3,491,558	40,663,870	1.165	1.120	4.0%

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 **$15.5M to $22.3M**.

Discounted at 4%: **$12.6M to $18.2M** | Discounted at 6%: **$11.6M to $16.8M**

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	$6.1 - 9.3M	$4.9 - 7.6M	$4.5 - 7.0M
UMass - Medical	$2.8 - 4.5M	$2.4 - 3.8M	$2.2 - 3.5M
UMass - Dartmouth	$2.4 - 3.0M	$1.9 - 2.5M	$1.7 - 2.2M
University of Lowell	$1.9 - 2.4M	$1.5 - 2.0M	$1.4 - 1.8M
UMass - Boston	$2.3 - 3.0M	$1.9 - 2.5M	$1.7 - 2.2M
Total UMass	$15.5 - 22.3M	$12.6 - 18.2M	$11.6 - 16.8M

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.

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 (MassDOT) was created. As part of the creation, various agencies ceased to be considered part of the Commonwealth and became part of the MassDOT. The agencies, previously part of the Commonwealth, that now comprise the MassDOT 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 MassDOT 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, 2016 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, 2015) to derive cumulative paid figures as of June 30, 2016 found in this report.

Exposure

Exposure information for FY2016, 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.

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 the trend and benefit level adjustments removed ("de-trended"). By considering both metrics, we attempt to balance stability and responsiveness in the selection of the initial expected pure premium.

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 sums 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 2016 implies an "open" claim and will remain open during fiscal year 2016. 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 MassDOT (excl. MTA) and Non-MassDOT 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 MassDOT (excl. MTA) 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 MassDOT (excl. MTA) 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 MassDOT (excl. MTA) 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 MassDOT (excl. MTA) 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 most recent 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 FY2016 were provided by the Commonwealth. For the FY2016 non-MTA element of the MassDOT payroll in Cluster 5, it was necessary to estimate the MTA-only payroll based upon prior values as a FY2016 figure was not available. This figure was then subtracted from the total MassDOT 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 report contains eight sections preceded by a set of summary exhibits. The summary exhibits include the following:

Summary Exhibit	Description
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 2015-16 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

The eight sections and their exhibits are organized as follows:

Section	Exhibit	Cluster
1	1	All Clusters Combined - Indemnity
1	2	All Clusters Combined - Medical
2	1	DDS - Indemnity
2	2	DDS - Medical
3	1	DMH - Indemnity
3	2	DMH - Medical
4	1	DOC - Indemnity
4	2	DOC - Medical
5	1	UMass Amherst - Indemnity
5	2	UMass Amherst - Medical
6	1	UMass Medical School - Indemnity
6	2	UMass Medical School - Medical
7	1	Other College and Universities - Indemnity
7	2	Other College and Universities - Medical
8	1	All Other - Indemnity
8	2	All Other - Medical

Within Sections 1 through 8, the worksheets are organized as follows:

Page	Description
1	Summary of Ultimate Losses
2	Paid Loss Development Method
3	Paid Bornhuetter-Ferguson Method
4	Calculation of Initial Expected Loss Rates
5	Calculation of 1982 and Prior Reserves Page 1
6	Calculation of 1982 and Prior Reserves Page 2
7	Paid Loss Triangle
8	Comparison of Ultimate Losses
9-12	Calculation of Ultimate Lump Sum Payments
13-15	Discounting Exhibits
16	Calculation of FY 2017 Payments

For the purpose of the allocation of liability to MassDOT (excl. MTA) , within Section 8 only, there are two additional worksheet pages:

Page	Description
MassDOT - FY2015	MassDOT (excl. MTA) Reserve Allocation as of 06/30/15
MassDOT - FY2016	MassDOT (excl. MTA) Reserve Allocation as of 06/30/16

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.

Pages in Exhibits 1 and 2 of Sections 1 through 8

Page 1 shows the selected ultimate losses by accident year. A high and low selection is made for each accident year based on a review of the actuarial methods presented. Outstanding losses based on the low and high estimates are also calculated. The outstanding loss estimate equals the selected ultimate loss minus paid losses to date.

Page 2 shows the application of the Paid Loss Development Method to the applicable data. The number of paid counts in the last 12 months, average outstanding claim amounts, and the average age for claimants that had an indemnity payment within the last calendar year are also shown.

Page 3 shows the application of the Paid Bornhuetter-Ferguson Method to the applicable data. The ultimate loss cost resulting from the method is also shown.

Page 4 calculates the initial expected loss rate, which is used as the a priori loss rate in the B-F method. Expected ultimate losses from the Paid Loss Development Method are divided by payroll for each accident year. The resulting loss rates are trended to the current cost and wage level and adjusted for historical changes in benefit levels. A current loss cost is then selected.

Page 5 shows the application of the methodology used to estimate ultimate losses for periods 7/1/1981-82 and prior. This methodology is described in the Actuarial Analysis section of this report.

Page 6 shows the derivation of the selected trend using the applicable data for each section. The selected trend is used in the methodology for estimating the 7/1/1981-82 and prior reserves.

Page 7 shows the paid loss development triangle and selected LDF's underlying the paid loss development and paid B-F methods.

Page 8 shows the comparison of the selected ultimate losses to the selection from the prior actuarial reserve review. The changes in ultimates are shown on an absolute and percentage change basis.

Page 9 calculates the estimated ultimate lump sum payments. Two methodologies are reviewed and an estimate of the ultimate lump sum payments by accident year is made. The two methods are described in the Actuarial Analysis section of this report. A comparison to the prior ultimate lump sum selection is also shown.

Pages 10 through 12 show various lump sum development triangles underlying the lump sum methodology on Page 9. Incremental lump sum payments (in 12 month intervals) are accumulated to derive a cumulative lump sum payment triangle (Page 10). Page 11 shows the incremental lump sum payments as a percent of ultimate indemnity loss excluding lump sum payments. Page 12 shows the selection of the LDF's for the cumulative lump sum payment triangle.

Page 13 calculates the discount factors based on the selected payout patterns from Page 7. Discount factors are calculated assuming 4% and 6% interest rates.

Pages 14 and 15 show the application of the discount factors from Page 13 to the outstanding losses from Page 1. Page 14 shows the discounted outstanding losses at 4%; Page 15 shows them at 6%.

Page 16 estimates the percentage of reserve estimates which can be considered short-term; i.e., projected payments associated with the reserves which will be made over the next calendar period

Additional MassDOT Pages in Exhibits 1 and 2 of Section 8 ONLY

Page MassDOT FY2015 shows the results of the methodology used to allocate outstanding reserve liability to the MassDOT (excl. MTA) and Non-MassDOT agencies. This methodology is discussed in the Overview section of this report. This page utilizes the results of the previous actuarial analysis performed in 2014 and based on loss data valued as of 6/30/15.

Page MassDOT FY2016 shows the results of the methodology used to allocate outstanding reserve liability to the MassDOT (excl. MTA) and Non-MassDOT agencies. This methodology is discussed in the Overview section of this report. This page utilizes the results of the current actuarial analysis, based on data valued as of 6/30/16

IX. Exhibits

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Table of Contents

I. Narrative

II. Summary Exhibits

III. Supporting Exhibits

Section 1 *All Clusters Combined*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 2 *Department of Developmental Services - Cluster 1*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 3 *Department of Mental Health - Cluster 2*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 4 *Department of Corrections - Cluster 3*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 5 *University of Massachusetts (Amherst) - Cluster 4*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 6 *University of Massachusetts (Medical Center) - Cluster 4*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 7 *Massachusetts Colleges & Universities - Cluster 4*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 8 *All Other - Clusters 5-17 & 95*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Summary of Reserve Estimates - Undiscounted

Cluster	Cluster #	Report Section	Loss Reserve Estimate Low End	Loss Reserve Estimate High End
Department of Developmental Services	1	Section 2		
Indemnity			21,200,588	25,937,925
Medical			2,838,682	4,943,223
Total			24,039,270	30,881,148
Department of Mental Health	2	Section 3		
Indemnity			19,949,431	26,319,341
Medical			3,291,603	4,097,618
Total			23,241,034	30,416,959
Department of Corrections	3	Section 4		
Indemnity			33,625,417	46,557,958
Medical			10,940,703	15,407,068
Total			44,566,120	61,965,026
UMass - Amherst	4	Section 5		
Indemnity			4,420,988	7,280,659
Medical			1,649,481	2,007,279
Total			6,070,469	9,287,939
UMass - Medical School	4	Section 6		
Indemnity			2,096,927	3,329,659
Medical			739,994	1,202,054
Total			2,836,921	4,531,713
Other Colleges & Universities	4	Section 7		
Indemnity			14,436,462	18,805,144
Medical			3,034,730	3,788,531
Total			17,471,192	22,593,675
All Others	5-17 & 95	Section 8		
Indemnity			165,587,070	195,153,113
Medical			27,628,339	35,321,128
Total			193,215,409	230,474,241
Grand Total		Section 1		
Indemnity			261,316,884	323,383,799
Medical			50,123,532	66,766,901
Total			311,440,416	390,150,701

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Summary of Reserve Estimates - Discounted at 4%

Cluster	Cluster #	Report Section	Loss Reserve Estimate Low End	Loss Reserve Estimate High End
Department of Developmental Services	1	Section 2		
Indemnity			17,051,535	21,077,790
Medical			2,355,161	4,083,268
Total			19,406,696	25,161,058
Department of Mental Health	2	Section 3		
Indemnity			14,898,565	19,979,974
Medical			2,630,319	3,283,742
Total			17,528,883	23,263,716
Department of Corrections	3	Section 4		
Indemnity			25,290,607	34,981,300
Medical			8,420,498	11,747,882
Total			33,711,104	46,729,183
UMass - Amherst	4	Section 5		
Indemnity			3,558,665	5,921,370
Medical			1,356,707	1,645,570
Total			4,915,372	7,566,940
UMass - Medical School	4	Section 6		
Indemnity			1,717,429	2,741,525
Medical			635,003	1,026,263
Total			2,352,432	3,767,788
Other Colleges & Universities	4	Section 7		
Indemnity			11,650,692	15,209,769
Medical			2,468,762	3,077,152
Total			14,119,454	18,286,921
All Others	5-17 & 95	Section 8		
Indemnity			118,530,049	141,310,054
Medical			21,068,366	26,947,290
Total			139,598,416	168,257,344
Grand Total		Section 1		
Indemnity			192,697,542	241,221,783
Medical			38,934,816	51,811,168
Total			231,632,358	293,032,951

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Summary of Reserve Estimates - Discounted at 6%

Cluster	Cluster #	Report Section	Loss Reserve Estimate Low End	Loss Reserve Estimate High End
Department of Developmental Services	1	Section 2		
Indemnity			15,644,260	19,399,359
Medical			2,187,205	3,786,559
Total			17,831,465	23,185,917
Department of Mental Health	2	Section 3		
Indemnity			13,328,935	18,000,626
Medical			2,403,364	3,003,662
Total			15,732,299	21,004,288
Department of Corrections	3	Section 4		
Indemnity			22,615,262	31,247,219
Medical			7,580,582	10,539,971
Total			30,195,844	41,787,190
UMass - Amherst	4	Section 5		
Indemnity			3,269,614	5,446,373
Medical			1,253,354	1,518,043
Total			4,522,968	6,964,416
UMass - Medical School	4	Section 6		
Indemnity			1,580,841	2,525,945
Medical			594,550	958,666
Total			2,175,390	3,484,611
Other Colleges & Universities	4	Section 7		
Indemnity			10,634,944	13,887,971
Medical			2,267,590	2,824,027
Total			12,902,534	16,711,998
All Others	5-17 & 95	Section 8		
Indemnity			103,837,303	124,314,973
Medical			18,894,511	24,165,633
Total			122,731,814	148,480,606
Grand Total		Section 1		
Indemnity			170,911,159	214,822,465
Medical			35,181,155	46,796,561
Total			206,092,314	261,619,027

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

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

Cluster	Cluster #	Report Section	Current Ult Loss Estimate less Previous Ult Loss Estimate Low End	High End
Department of Developmental Services	1	Section 2		
Indemnity			(330,325)	(849,565)
Medical			208,788	155,959
Total			(121,537)	(693,606)
Department of Mental Health	2	Section 3		
Indemnity			(292,638)	(1,051,325)
Medical			(65,148)	(167,938)
Total			(357,787)	(1,219,263)
Department of Corrections	3	Section 4		
Indemnity			(6,234,811)	(7,740,237)
Medical			(2,062,822)	(2,061,577)
Total			(8,297,634)	(9,801,814)
UMass - Amherst	4	Section 5		
Indemnity			(319,240)	(579,994)
Medical			224,522	129,730
Total			(94,718)	(450,264)
UMass - Medical School	4	Section 6		
Indemnity			(190,587)	(519,441)
Medical			39,000	(28,041)
Total			(151,587)	(547,482)
Other Colleges & Universities	4	Section 7		
Indemnity			(670,189)	(1,190,212)
Medical			(281,833)	(257,750)
Total			(952,023)	(1,447,961)
All Others	5-17 & 95	Section 8		
Indemnity			(9,256,340)	(15,088,501)
Medical			(1,861,472)	(2,495,617)
Total			(11,117,812)	(17,584,119)
Grand Total		Section 1		
Indemnity			(17,294,132)	(27,019,276)
Medical			(3,798,965)	(4,725,234)
Total			(21,093,097)	(31,744,510)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Summary of Estimates for 2015-16 Fiscal Year

Cluster	Cluster #	Report Section	Ultimate Loss Estimate Low End	Ultimate Loss Estimate High End	Average	Payroll (000)	Loss Rate
Department of Developmental Services	1	Section 2					
Indemnity			3,515,000	3,628,000			
Medical			1,349,100	1,740,000			
Total			4,864,100	5,368,000	5,116,050	316,565	1.616
Department of Mental Health	2	Section 3					
Indemnity			4,658,000	6,548,000			
Medical			1,276,800	1,557,900			
Total			5,934,800	8,105,900	7,020,350	211,829	3.314
Department of Corrections	3	Section 4					
Indemnity			7,745,000	8,580,000			
Medical			2,776,000	2,931,600			
Total			10,521,000	11,511,600	11,016,300	400,013	2.754
UMass - Amherst	4	Section 5					
Indemnity			1,435,000	1,575,000			
Medical			666,000	699,000			
Total			2,101,000	2,274,000	2,187,500	585,875	0.373
UMass - Medical School	4	Section 6					
Indemnity			522,000	660,000			
Medical			402,000	459,900			
Total			924,000	1,119,900	1,021,950	382,602	0.267
Other Colleges & Universities	4	Section 7					
Indemnity			3,997,000	4,437,000			
Medical			1,394,000	1,596,870			
Total			5,391,000	6,033,870	5,712,435	1,454,612	0.393
All Others	5-17 & 95	Section 8					
Indemnity			31,323,740	31,971,000			
Medical			8,300,000	9,733,000			
Total			39,623,740	41,704,000	40,663,870	3,491,558	1.165
Grand Total		Section 1					
Indemnity			53,195,740	57,399,000			
Medical			16,163,900	18,718,270			
Total			69,359,640	76,117,270	72,738,455	6,843,054	1.063

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Summary of Reserve Estimates by Cluster

Cluster	Cluster / Report Section	Undiscounted		Discounted at 4%		Discounted at 6%	
		Low End	High End	Low End	High End	Low End	High End
DDS	1 / 2	24,039,270	30,881,148	19,406,696	25,161,058	17,831,465	23,185,917
DMH	2 / 3	23,241,034	30,416,959	17,528,883	23,263,716	15,732,299	21,004,288
DOC	3 / 4	44,566,120	61,965,026	33,711,104	46,729,183	30,195,844	41,787,190
UMass - Amherst	4 / 5	6,070,469	9,287,939	4,915,372	7,566,940	4,522,968	6,964,416
UMass - Medical	4 / 6	2,836,921	4,531,713	2,352,432	3,767,788	2,175,390	3,484,611
Other Colleges & Universities	4 / 7	17,471,192	22,593,675	14,119,454	18,286,921	12,902,534	16,711,998
All Other Dept's (incl. MassDOT, excl. MTA)	5 / 8	193,215,409	230,474,241	139,598,416	168,257,344	122,731,814	148,480,606
Total		311,440,416	390,150,701	231,632,358	293,032,951	206,092,314	261,619,027

All Other Departments	Cluster / Report Section	Undiscounted		Discounted at 4%		Discounted at 6%	
		Low End	High End	Low End	High End	Low End	High End
MassDOT Agencies (excl. MTA)	5 / 8	14,341,742	17,144,943	10,364,108	12,517,364	9,112,624	11,046,331
Non-MassDOT Agencies	5 / 8	178,873,667	213,329,297	129,234,308	155,739,980	113,619,190	137,434,275

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Summary of Reserve Estimates by College

	Undiscounted		Discounted at 4%		Discounted at 6%	
Cluster	Low End	High End	Low End	High End	Low End	High End
Berkshire Community College	191,290	247,375	154,592	200,221	141,268	182,977
Bridgewater State College	1,269,185	1,641,305	1,025,700	1,328,443	937,297	1,214,034
Bristol Community College	221,578	286,544	179,070	231,923	163,636	211,949
Bunker Hill Community College	411,708	532,419	332,724	430,930	304,047	393,817
Cape Cod Community College	285,474	369,174	230,708	298,803	210,824	273,069
Fitchburg State College	507,890	656,801	410,454	531,603	375,078	485,820
Framingham State College	518,848	670,973	419,311	543,073	383,171	496,302
Greenfield Community College	157,755	204,008	127,490	165,120	116,502	150,899
Holyoke Community College	192,245	248,610	155,364	201,220	141,973	183,891
Mass Bay Community College	224,505	290,329	181,435	234,987	165,798	214,749
Mass College of Art	370,820	479,543	299,680	388,133	273,852	354,706
Mass Maritime Academy	298,754	386,347	241,440	312,702	220,630	285,771
Massachusetts College of Liberal Arts	203,187	262,761	164,207	212,674	150,054	194,358
Massasoit Community College	596,594	771,512	482,141	624,448	440,586	570,669
Middlesex Community College	519,501	671,817	419,838	543,757	383,653	496,927
Mt Wachusett Community College	209,970	271,532	169,688	219,773	155,063	200,846
North Essex Community College	308,987	399,581	249,710	323,413	228,188	295,560
North Shore Community College	400,412	517,811	323,595	419,107	295,705	383,012
Quinsigamond Community College	892,590	1,154,293	721,352	934,265	659,180	853,803
Roxbury Community College	256,238	331,366	207,080	268,202	189,233	245,103
Salem State College	958,082	1,238,987	774,280	1,002,814	707,547	916,449
Springfield Tech Community College	488,058	631,154	394,427	510,845	360,432	466,850
UMass (Boston)	2,348,610	3,037,213	1,898,044	2,458,267	1,734,457	2,246,554
UMass (Dartmouth)	2,350,612	3,039,802	1,899,662	2,460,362	1,735,935	2,248,468
University of Lowell	1,890,112	2,444,285	1,527,506	1,978,361	1,395,854	1,807,979
Westfield State College	766,292	990,966	619,284	802,071	565,909	732,994
Worcester State College	631,898	817,169	510,673	661,402	466,659	604,440
Total	17,471,192	22,593,675	14,119,454	18,286,921	12,902,534	16,711,998

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

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		103,697,018			117,346,181	125,565,201	13,649,164	21,868,183		
6/30/82-83		18,234,207	18,928,268		18,706,535	19,308,965	472,328	1,074,759		
6/30/83-84		26,302,101	28,099,776		27,771,640	28,769,420	1,469,539	2,467,319		
6/30/84-85	1,823,085	39,444,982	42,189,726	40,144,082	40,170,170	42,008,322	725,188	2,563,340	2.203	2.304
6/30/85-86	1,952,445	52,255,325	54,006,109	53,384,229	53,060,948	53,793,609	805,623	1,538,283	2.718	2.755
6/30/86-87	2,220,820	58,663,279	61,216,988	60,215,021	59,675,918	61,254,730	1,012,638	2,591,451	2.687	2.758
6/30/87-88	2,885,583	85,169,668	91,962,121	88,003,966	87,928,452	90,671,587	2,758,785	5,501,919	3.047	3.142
6/30/88-89	3,098,180	83,861,014	88,095,740	87,006,296	87,097,494	88,931,641	3,236,479	5,070,626	2.811	2.870
6/30/89-90	3,079,763	80,884,980	85,228,208	84,647,668	84,295,619	85,626,388	3,410,638	4,741,408	2.737	2.780
6/30/90-91	2,914,364	67,088,605	72,525,119	70,741,221	69,953,545	72,261,101	2,864,940	5,172,497	2.400	2.479
6/30/91-92	2,880,434	45,453,722	48,470,258	47,984,507	47,659,464	49,081,701	2,205,742	3,627,979	1.655	1.704
6/30/92-93	2,887,238	30,881,377	33,917,031	33,028,141	32,815,781	33,917,174	1,934,404	3,035,797	1.137	1.175
6/30/93-94	3,056,850	33,809,348	36,297,761	36,247,637	36,133,194	36,577,199	2,323,846	2,767,851	1.182	1.197
6/30/94-95	3,158,808	30,567,691	33,211,162	33,154,631	33,052,158	33,741,580	2,484,467	3,173,888	1.046	1.068
6/30/95-96	3,301,791	29,368,190	32,337,185	32,269,346	32,195,091	32,981,532	2,826,901	3,613,342	0.975	0.999
6/30/96-97	3,902,868	29,588,971	32,873,544	32,819,658	32,633,611	33,453,054	3,044,640	3,864,083	0.836	0.857
6/30/97-98	3,776,138	32,411,892	36,127,323	36,048,902	35,407,173	36,238,772	2,995,281	3,826,880	0.938	0.960
6/30/98-99	4,017,530	30,392,587	34,356,130	34,295,944	33,809,681	34,660,883	3,417,095	4,268,296	0.842	0.863
6/30/99-00	4,221,786	34,126,749	39,121,157	39,005,892	38,428,279	39,443,365	4,301,530	5,316,616	0.910	0.934
6/30/00-01	4,310,725	40,258,023	46,456,854	46,277,319	45,692,388	46,737,483	5,434,365	6,479,459	1.060	1.084
6/30/01-02	4,438,755	35,177,615	41,340,864	41,240,477	40,515,832	41,859,753	5,338,218	6,682,138	0.913	0.943
6/30/02-03	4,423,888	34,948,475	41,586,158	41,490,508	40,984,398	42,385,940	6,035,922	7,437,465	0.926	0.958
6/30/03-04	4,482,207	34,651,110	41,661,977	41,588,054	40,891,947	42,337,470	6,240,837	7,686,360	0.912	0.945
6/30/04-05	4,639,517	36,257,379	44,461,974	43,340,231	42,448,104	44,458,950	6,190,725	8,201,571	0.915	0.958
6/30/05-06	4,938,165	32,023,380	39,799,914	40,274,378	38,859,190	40,940,250	6,835,810	8,916,870	0.787	0.829
6/30/06-07	5,183,126	30,376,476	38,649,515	39,836,088	37,464,208	40,385,970	7,087,732	10,009,494	0.723	0.779
6/30/07-08	5,508,425	33,810,101	44,345,700	45,218,313	42,868,560	45,519,700	9,058,459	11,709,599	0.778	0.826
6/30/08-09	5,447,676	33,990,785	46,039,067	46,462,894	45,432,470	47,176,872	11,441,685	13,186,087	0.834	0.866
6/30/09-10	5,525,579	32,174,642	45,194,526	46,515,537	43,499,190	47,609,792	11,324,548	15,435,150	0.787	0.862
6/30/10-11	5,712,303	35,147,567	52,155,050	52,157,808	50,762,570	53,576,897	15,615,003	18,429,330	0.889	0.938
6/30/11-12	5,880,714	33,037,774	52,821,995	53,220,062	51,411,290	54,961,882	18,373,516	21,924,108	0.874	0.935
6/30/12-13	6,162,621	27,111,996	47,915,522	52,024,519	48,244,790	52,752,954	21,132,794	25,640,958	0.783	0.856
6/30/13-14	6,442,136	27,592,950	57,987,432	60,509,508	57,379,130	61,597,200	29,786,180	34,004,250	0.891	0.956
6/30/14-15	6,758,892	21,558,637	60,643,464	64,473,982	60,135,730	66,096,050	38,577,093	44,537,413	0.890	0.978
6/30/15-16	6,843,054	12,331,339	74,240,994	71,271,633	69,359,640	76,117,270	57,028,301	63,785,931	1.014	1.112
Total	135,875,464	1,412,649,955	1,644,264,614	1,594,898,451	1,724,090,372	1,802,800,656	311,440,416	390,150,701		
Tot 6/30/84-16	135,875,464	1,264,416,630	1,597,236,569	1,594,898,451	1,560,266,015	1,629,157,070	295,849,385	364,740,440	1.148	1.199

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, 2016

Department of Developmental Services - Cluster 1
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		22,541,361			26,502,345	28,260,655	3,960,985	5,719,295		
6/30/82-83		4,960,536	5,228,356		5,228,366	5,253,198	267,830	292,662		
6/30/83-84		9,806,581	11,110,615		11,117,307	11,228,839	1,310,726	1,422,259		
6/30/84-85	181,560	7,574,983	8,240,893	7,670,836	7,673,820	8,251,462	98,837	676,479	4.227	4.545
6/30/85-86	195,247	11,874,262	12,076,469	12,077,886	11,988,000	12,092,000	113,739	217,739	6.140	6.193
6/30/86-87	224,370	15,376,859	15,683,797	15,697,681	15,526,000	15,663,000	149,141	286,141	6.920	6.981
6/30/87-88	262,864	22,137,160	24,414,427	22,650,889	22,649,000	23,320,600	511,840	1,183,440	8.616	8.872
6/30/88-89	283,884	24,042,977	24,702,424	24,715,080	24,698,699	24,715,000	655,722	672,023	8.700	8.706
6/30/89-90	285,078	18,704,491	19,263,923	19,353,579	18,903,000	19,057,000	198,509	352,509	6.631	6.685
6/30/90-91	267,732	13,776,155	14,229,984	14,226,785	13,898,480	14,037,000	122,325	260,845	5.191	5.243
6/30/91-92	261,442	10,255,780	10,598,154	10,593,808	10,567,260	10,598,000	311,480	342,220	4.042	4.054
6/30/92-93	259,992	5,947,948	6,164,416	6,161,486	6,004,090	6,065,000	56,142	117,052	2.309	2.333
6/30/93-94	257,062	4,766,891	4,948,378	4,946,230	4,850,030	4,898,000	83,139	131,109	1.887	1.905
6/30/94-95	255,854	3,009,689	3,132,792	3,133,524	3,123,500	3,134,000	113,811	124,311	1.221	1.225
6/30/95-96	255,539	4,099,598	4,293,560	4,291,016	4,291,000	4,314,000	191,402	214,402	1.679	1.688
6/30/96-97	270,071	3,349,690	3,512,337	3,513,089	3,384,000	3,416,000	34,310	66,310	1.253	1.265
6/30/97-98	245,367	3,425,420	3,620,252	3,618,127	3,618,000	3,636,000	192,580	210,580	1.475	1.482
6/30/98-99	251,453	3,044,791	3,223,530	3,224,718	3,224,000	3,237,000	179,209	192,209	1.282	1.287
6/30/99-00	255,641	3,225,797	3,449,563	3,448,090	3,447,000	3,466,000	221,203	240,203	1.348	1.356
6/30/00-01	263,918	4,784,418	5,158,411	5,145,515	5,145,000	5,188,000	360,582	403,582	1.949	1.966
6/30/01-02	267,598	3,178,901	3,446,582	3,447,821	3,229,000	3,260,000	50,099	81,099	1.207	1.218
6/30/02-03	274,465	3,863,926	4,254,275	4,247,800	4,247,000	4,273,000	383,074	409,074	1.547	1.557
6/30/03-04	272,384	4,100,381	4,564,008	4,553,411	4,552,000	4,584,000	451,619	483,619	1.671	1.683
6/30/04-05	273,647	3,709,478	4,140,927	4,105,510	3,778,000	3,814,000	68,522	104,522	1.381	1.394
6/30/05-06	285,139	3,912,548	4,410,408	4,366,524	4,366,000	4,435,000	453,452	522,452	1.531	1.555
6/30/06-07	298,516	4,004,840	4,557,444	4,532,605	4,533,000	4,583,000	528,160	578,160	1.519	1.535
6/30/07-08	314,231	2,624,892	2,999,402	3,217,250	2,999,000	3,242,000	374,108	617,108	0.954	1.032
6/30/08-09	302,998	3,408,874	4,011,936	4,099,132	4,012,000	4,162,100	603,126	753,226	1.324	1.374
6/30/09-10	297,252	4,550,630	5,537,310	5,377,001	5,305,300	5,610,600	754,670	1,059,970	1.785	1.887
6/30/10-11	292,432	3,639,956	4,684,310	4,640,358	4,531,480	4,758,200	891,524	1,118,244	1.550	1.627
6/30/11-12	295,908	3,769,627	4,989,522	4,924,328	4,797,000	5,056,000	1,027,373	1,286,373	1.621	1.709
6/30/12-13	301,541	3,320,650	4,717,136	4,769,477	4,583,000	4,840,000	1,262,350	1,519,350	1.520	1.605
6/30/13-14	309,910	3,047,206	5,076,868	5,057,009	4,888,000	5,188,000	1,840,794	2,140,794	1.577	1.674
6/30/14-15	316,552	2,050,256	4,682,954	4,852,969	4,558,000	4,919,000	2,507,744	2,868,744	1.440	1.554
6/30/15-16	316,565	1,154,956	5,254,909	5,127,041	4,864,100	5,368,000	3,709,144	4,213,044	1.537	1.696
Total	8,696,212	247,042,507	250,380,272	231,786,575	271,081,777	277,923,654	24,039,270	30,881,148		
Tot 6/30/84-16	8,696,212	209,734,029	234,041,301	231,786,575	228,233,759	233,180,962	18,499,730	23,446,933	2.625	2.681

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, 2016

Department of Mental Health - Cluster 2
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		21,156,967			23,963,049	25,140,180	2,806,083	3,983,213		
6/30/82-83		2,888,774	3,075,123		3,016,427	3,091,200	127,653	202,426		
6/30/83-84		2,864,047	3,046,907		2,905,500	3,061,497	41,453	197,451		
6/30/84-85	142,561	4,773,011	5,312,218	4,889,516	4,889,000	5,220,970	115,989	447,959	3.429	3.662
6/30/85-86	153,298	4,891,866	5,096,447	5,089,378	4,940,000	5,096,000	48,134	204,134	3.222	3.324
6/30/86-87	176,136	6,911,248	7,243,562	7,255,418	6,980,000	7,255,000	68,752	343,752	3.963	4.119
6/30/87-88	206,319	13,539,847	14,807,355	14,204,864	14,205,000	14,549,000	665,153	1,009,153	6.885	7.052
6/30/88-89	222,806	14,425,669	15,303,959	15,237,705	15,276,932	15,325,810	851,263	900,141	6.857	6.879
6/30/89-90	223,751	13,748,464	14,685,927	14,625,688	14,631,000	14,712,000	882,536	963,536	6.539	6.575
6/30/90-91	210,162	9,577,273	10,251,426	10,245,978	9,768,000	9,864,276	190,727	287,004	4.648	4.694
6/30/91-92	205,241	5,520,691	5,921,081	5,915,708	5,589,000	5,698,000	68,309	177,309	2.723	2.776
6/30/92-93	176,705	4,755,475	5,143,354	5,135,075	5,135,000	5,155,460	379,525	399,985	2.906	2.918
6/30/93-94	173,075	3,154,115	3,467,782	3,460,169	3,460,000	3,468,000	305,885	313,885	1.999	2.004
6/30/94-95	178,317	3,670,301	4,046,065	4,034,461	3,971,880	3,991,450	301,579	321,149	2.227	2.238
6/30/95-96	175,996	2,729,014	2,989,945	2,983,850	2,940,980	2,955,220	211,966	226,206	1.671	1.679
6/30/96-97	190,083	2,113,342	2,314,226	2,313,407	2,278,020	2,284,640	164,678	171,298	1.198	1.202
6/30/97-98	177,278	3,418,892	3,812,267	3,796,503	3,632,700	3,653,200	213,808	234,308	2.049	2.061
6/30/98-99	189,080	2,433,758	2,703,595	2,699,770	2,661,940	2,664,900	228,182	231,142	1.408	1.409
6/30/99-00	194,494	2,916,057	3,255,838	3,247,329	3,188,420	3,203,620	272,363	287,563	1.639	1.647
6/30/00-01	201,568	4,053,774	4,575,741	4,552,705	4,544,980	4,576,000	491,206	522,226	2.255	2.270
6/30/01-02	203,105	3,225,278	3,669,892	3,656,690	3,657,000	3,676,650	431,722	451,372	1.801	1.810
6/30/02-03	202,515	2,544,558	2,859,818	2,861,582	2,850,910	2,870,100	306,352	325,542	1.408	1.417
6/30/03-04	189,588	4,587,058	5,237,777	5,206,969	5,005,250	5,176,420	418,192	589,362	2.640	2.730
6/30/04-05	186,990	3,638,408	4,159,104	4,005,352	4,005,000	4,159,000	366,592	520,592	2.142	2.224
6/30/05-06	193,254	2,691,976	3,111,138	3,127,691	3,086,000	3,152,000	394,024	460,024	1.597	1.631
6/30/06-07	203,359	2,893,235	3,461,797	3,432,128	3,298,700	3,342,520	405,465	449,285	1.622	1.644
6/30/07-08	212,083	2,305,389	2,791,278	2,930,802	2,690,000	2,822,400	384,611	517,011	1.268	1.331
6/30/08-09	204,679	2,678,085	3,322,026	3,364,074	3,311,000	3,375,000	632,915	696,915	1.618	1.649
6/30/09-10	184,688	1,750,088	2,253,666	2,469,238	2,349,000	2,469,000	598,912	718,912	1.272	1.337
6/30/10-11	169,689	2,606,769	3,453,602	3,368,626	3,369,000	3,516,000	762,231	909,231	1.985	2.072
6/30/11-12	177,399	2,164,874	2,970,666	3,067,325	2,970,000	3,126,000	805,127	961,127	1.674	1.762
6/30/12-13	189,252	2,575,581	3,846,671	3,815,152	3,791,000	3,949,000	1,215,419	1,373,419	2.003	2.087
6/30/13-14	199,876	2,688,988	4,541,564	4,410,552	4,376,000	4,670,000	1,687,012	1,981,012	2.189	2.336
6/30/14-15	213,700	2,506,612	5,200,667	4,828,851	4,829,000	5,300,000	2,322,388	2,793,388	2.260	2.480
6/30/15-16	211,829	1,859,973	8,119,449	5,874,457	5,934,800	8,105,900	4,074,827	6,245,927	2.802	3.827
Total	6,138,877	170,259,454	176,051,933	166,107,013	193,500,488	200,676,414	23,241,034	30,416,959		
Tot 6/30/84-16	6,138,877	143,349,667	169,929,903	166,107,013	163,615,512	169,383,536	20,265,845	26,033,869	2.665	2.759

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, 2016

Department of Corrections - Cluster 3
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		4,970,299			6,096,099	6,998,711	1,125,800	2,028,412		
6/30/82-83		2,912,565	2,969,649		2,939,331	2,973,382	26,766	60,817		
6/30/83-84		2,135,674	2,177,597		2,152,331	2,192,144	16,657	56,470		
6/30/84-85	115,258	4,562,224	5,055,890	4,633,973	4,626,768	4,847,000	64,543	284,776	4.014	4.205
6/30/85-86	123,937	6,962,840	7,120,526	7,094,601	6,975,817	7,043,640	12,977	80,800	5.629	5.683
6/30/86-87	142,396	4,532,327	4,638,420	4,645,682	4,562,103	4,603,180	29,776	70,853	3.204	3.233
6/30/87-88	166,792	7,243,858	7,429,257	7,448,521	7,311,923	7,377,350	68,065	133,492	4.384	4.423
6/30/88-89	180,117	8,623,465	9,231,863	8,852,085	8,852,000	9,231,000	228,535	607,535	4.915	5.125
6/30/89-90	180,883	11,206,698	11,582,394	11,578,147	11,578,000	11,582,000	371,302	375,302	6.401	6.403
6/30/90-91	169,902	12,835,169	14,710,707	13,354,423	13,354,000	14,468,140	518,831	1,632,971	7.860	8.516
6/30/91-92	165,926	6,458,761	6,741,825	6,739,734	6,740,000	6,742,000	281,239	283,239	4.062	4.063
6/30/92-93	174,198	4,516,389	4,725,247	4,724,718	4,658,568	4,692,930	142,179	176,542	2.674	2.694
6/30/93-94	185,946	6,577,197	6,937,126	6,932,127	6,932,000	6,937,000	354,803	359,803	3.728	3.731
6/30/94-95	194,051	7,486,168	8,028,316	8,016,469	8,016,000	8,029,000	529,832	542,832	4.131	4.138
6/30/95-96	205,262	6,800,296	7,417,318	7,404,340	7,404,000	7,417,000	603,704	616,704	3.607	3.613
6/30/96-97	234,073	7,855,422	8,668,610	8,648,853	8,649,000	8,669,000	793,578	813,578	3.695	3.704
6/30/97-98	221,865	10,414,662	11,621,689	11,567,754	11,129,289	11,323,790	714,627	909,129	5.016	5.104
6/30/98-99	256,071	9,535,832	10,766,523	10,716,202	10,306,825	10,488,000	770,993	952,168	4.025	4.096
6/30/99-00	268,486	10,251,543	11,636,074	11,572,877	11,136,400	11,332,890	884,857	1,081,347	4.148	4.221
6/30/00-01	279,182	13,481,494	15,488,763	15,376,571	14,818,055	15,084,770	1,336,561	1,603,276	5.308	5.403
6/30/01-02	283,070	10,833,197	12,592,538	12,514,902	12,030,707	12,592,000	1,197,510	1,758,803	4.250	4.448
6/30/02-03	289,846	11,010,637	12,941,619	12,857,583	12,380,508	12,941,000	1,369,871	1,930,364	4.271	4.465
6/30/03-04	293,771	9,931,862	11,797,602	11,729,083	11,291,877	11,798,000	1,360,015	1,866,138	3.844	4.016
6/30/04-05	291,382	10,897,622	13,099,435	12,146,891	12,074,804	13,100,000	1,177,182	2,202,378	4.144	4.496
6/30/05-06	294,709	7,947,940	9,626,598	9,266,108	8,973,650	9,627,000	1,025,710	1,679,060	3.045	3.267
6/30/06-07	289,603	6,561,371	8,069,553	7,963,781	7,646,568	8,174,450	1,085,198	1,613,079	2.640	2.823
6/30/07-08	354,668	6,292,887	7,853,847	8,126,625	7,865,000	8,225,100	1,572,113	1,932,213	2.218	2.319
6/30/08-09	332,413	5,519,887	7,044,456	7,405,033	7,112,000	7,774,500	1,592,113	2,254,613	2.140	2.339
6/30/09-10	336,338	3,393,932	4,460,902	5,503,820	4,798,000	5,778,950	1,404,068	2,385,018	1.427	1.718
6/30/10-11	333,783	4,633,572	6,332,583	7,030,226	6,513,000	7,381,350	1,879,428	2,747,778	1.951	2.211
6/30/11-12	348,187	3,392,171	4,865,526	6,231,418	5,432,000	6,543,400	2,039,829	3,151,229	1.560	1.879
6/30/12-13	368,022	3,040,299	4,764,251	6,617,196	5,526,000	6,947,750	2,485,701	3,907,451	1.502	1.888
6/30/13-14	390,528	3,131,989	5,780,431	7,939,767	6,650,000	8,336,550	3,518,011	5,204,561	1.703	2.135
6/30/14-15	402,750	3,079,001	7,576,991	9,582,919	8,374,000	10,061,950	5,294,999	6,982,949	2.079	2.498
6/30/15-16	400,013	1,832,252	10,110,493	10,947,622	10,521,000	11,511,600	8,688,748	9,679,348	2.630	2.878
Total	8,273,428	240,861,501	283,864,617	285,170,050	285,427,621	302,826,527	44,566,120	61,965,026		
Tot 6/30/84-16	8,273,428	230,842,963	278,717,371	285,170,050	274,239,861	290,662,290	43,396,898	59,819,327	3.315	3.513

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, 2016

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		2,347,516			2,729,023	2,784,876	381,507	437,360		
6/30/82-83		225,530	227,702		229,124	232,349	3,594	6,819		
6/30/83-84		220,938	223,632		224,907	230,044	3,969	9,106		
6/30/84-85	176,924	2,017,397	2,438,232	2,045,397	2,045,953	2,440,121	28,555	422,723	1.156	1.379
6/30/85-86	188,662	1,676,445	1,993,469	1,699,958	1,709,741	1,743,263	33,296	66,818	0.906	0.924
6/30/86-87	212,277	2,623,727	3,115,486	2,662,989	2,663,000	3,115,000	39,273	491,273	1.254	1.467
6/30/87-88	243,118	2,441,947	2,712,121	2,489,509	2,490,000	2,712,000	48,053	270,053	1.024	1.116
6/30/88-89	248,990	2,236,344	2,480,026	2,284,963	2,284,000	2,481,000	47,656	244,656	0.917	0.996
6/30/89-90	250,404	679,355	694,260	700,781	692,000	702,000	12,645	22,645	0.276	0.280
6/30/90-91	235,170	2,883,052	3,177,469	2,960,152	2,960,000	3,178,000	76,948	294,948	1.259	1.351
6/30/91-92	235,607	3,046,254	3,357,375	3,131,299	3,131,000	3,357,000	84,746	310,746	1.329	1.425
6/30/92-93	241,161	712,440	726,911	726,850	719,696	740,317	7,256	27,877	0.298	0.307
6/30/93-94	254,321	1,245,697	1,278,184	1,277,490	1,261,000	1,290,000	15,303	44,303	0.496	0.507
6/30/94-95	256,665	1,067,175	1,102,393	1,101,512	1,078,423	1,111,476	11,248	44,301	0.420	0.433
6/30/95-96	265,739	835,707	865,967	865,396	844,425	870,865	8,718	35,158	0.318	0.328
6/30/96-97	296,336	700,495	732,879	732,462	707,847	730,726	7,352	30,232	0.239	0.247
6/30/97-98	296,982	651,847	678,017	678,321	663,000	681,000	11,153	29,153	0.223	0.229
6/30/98-99	299,530	918,153	959,945	959,233	934,000	966,120	15,847	47,967	0.312	0.323
6/30/99-00	323,627	1,577,004	1,668,844	1,663,741	1,604,000	1,653,000	26,996	75,996	0.496	0.511
6/30/00-01	338,348	1,790,656	1,906,523	1,899,721	1,899,000	1,906,000	108,344	115,344	0.561	0.563
6/30/01-02	329,555	1,295,671	1,385,855	1,382,936	1,383,000	1,386,000	87,329	90,329	0.420	0.421
6/30/02-03	329,179	1,186,707	1,278,130	1,275,929	1,276,000	1,278,000	89,293	91,293	0.388	0.388
6/30/03-04	344,547	414,340	451,761	455,821	451,000	456,000	36,660	41,660	0.131	0.132
6/30/04-05	325,530	912,330	999,758	997,188	996,000	1,001,000	83,670	88,670	0.306	0.307
6/30/05-06	403,750	640,322	713,708	759,400	714,000	759,000	73,678	118,678	0.177	0.188
6/30/06-07	420,219	655,030	735,141	792,642	735,000	793,000	79,971	137,971	0.175	0.189
6/30/07-08	425,998	875,264	996,956	1,025,846	986,000	1,037,000	110,736	161,736	0.231	0.243
6/30/08-09	420,566	1,455,015	1,681,485	1,634,010	1,634,000	1,682,000	178,985	226,985	0.389	0.400
6/30/09-10	433,206	907,684	1,069,315	1,111,424	1,069,000	1,131,400	161,316	223,716	0.247	0.261
6/30/10-11	444,673	1,249,122	1,540,247	1,501,831	1,498,000	1,566,350	248,878	317,228	0.337	0.352
6/30/11-12	467,753	1,258,780	1,667,906	1,631,185	1,631,000	1,668,000	372,220	409,220	0.349	0.357
6/30/12-13	495,398	866,976	1,284,690	1,361,885	1,284,000	1,386,300	417,024	519,324	0.259	0.280
6/30/13-14	518,391	843,517	1,305,557	1,543,620	1,305,000	1,543,000	461,483	699,483	0.252	0.298
6/30/14-15	539,631	916,263	2,061,830	1,966,192	1,966,000	2,230,400	1,049,737	1,314,137	0.364	0.413
6/30/15-16	585,875	453,970	2,241,384	2,133,621	2,101,000	2,274,000	1,647,030	1,820,030	0.359	0.388
Total	10,848,132	43,828,668	49,753,160	47,453,308	49,899,137	53,116,606	6,070,469	9,287,939		
Tot 6/30/84-16	10,848,132	41,034,684	49,301,826	47,453,308	46,716,083	49,869,337	5,681,399	8,834,653	0.431	0.460

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, 2016

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	327,961		327,672	335,649	106	8,083		
6/30/83-84		1,494,800	1,496,515		1,523,932	1,553,573	29,132	58,773		
6/30/84-85	116,303	1,015,470	1,016,828	1,017,342	1,033,339	1,052,834	17,869	37,364	0.888	0.905
6/30/85-86	123,981	2,733,296	2,736,861	2,737,708	2,737,432	2,741,662	4,136	8,367	2.208	2.211
6/30/86-87	139,388	3,777,375	3,782,075	3,782,182	3,782,000	3,845,619	4,625	68,244	2.713	2.759
6/30/87-88	159,499	3,373,806	3,640,321	3,377,822	3,377,000	3,509,580	3,194	135,774	2.117	2.200
6/30/88-89	180,644	3,112,432	3,118,396	3,120,643	3,167,349	3,253,390	54,917	140,958	1.753	1.801
6/30/89-90	142,494	3,797,545	3,807,811	3,811,848	3,865,186	3,970,803	67,641	173,258	2.713	2.787
6/30/90-91	143,694	1,403,520	1,406,921	1,406,896	1,427,065	1,464,645	23,545	61,125	0.993	1.019
6/30/91-92	155,170	2,187,492	2,192,337	2,192,259	2,221,204	2,276,791	33,712	89,299	1.431	1.467
6/30/92-93	163,283	1,033,363	1,038,063	1,037,980	1,048,102	1,073,175	14,739	39,812	0.642	0.657
6/30/93-94	177,184	2,577,232	2,600,819	2,600,025	2,600,000	2,601,000	22,768	23,768	1.467	1.468
6/30/94-95	188,391	939,741	947,184	947,117	948,000	948,000	8,259	8,259	0.503	0.503
6/30/95-96	201,751	874,675	884,555	884,524	881,507	893,237	6,832	18,562	0.437	0.443
6/30/96-97	231,872	619,545	625,428	626,001	624,614	632,798	5,069	13,253	0.269	0.273
6/30/97-98	232,237	1,036,308	1,063,263	1,062,504	1,044,184	1,059,502	7,876	23,193	0.450	0.456
6/30/98-99	232,075	940,822	958,626	958,632	948,917	955,233	8,094	14,410	0.409	0.412
6/30/99-00	211,819	872,750	901,108	899,976	881,459	888,335	8,710	15,585	0.416	0.419
6/30/00-01	215,099	943,388	969,588	968,815	953,353	960,733	9,965	17,345	0.443	0.447
6/30/01-02	227,797	564,641	582,353	582,728	571,126	579,063	6,484	14,421	0.251	0.254
6/30/02-03	242,008	1,249,142	1,312,146	1,308,349	1,309,000	1,370,970	59,858	121,828	0.541	0.566
6/30/03-04	276,758	1,259,443	1,328,021	1,325,536	1,326,000	1,343,300	66,557	83,857	0.479	0.485
6/30/04-05	260,378	367,028	390,393	416,180	390,000	424,950	22,972	57,922	0.150	0.163
6/30/05-06	317,741	1,157,967	1,245,708	1,231,349	1,232,000	1,266,250	74,033	108,283	0.388	0.399
6/30/06-07	325,922	605,124	656,050	685,757	656,000	686,000	50,876	80,876	0.201	0.210
6/30/07-08	354,130	1,687,514	1,848,489	1,806,355	1,806,000	1,876,200	118,486	188,686	0.510	0.530
6/30/08-09	362,309	866,450	981,021	996,833	974,000	1,025,400	107,550	158,950	0.269	0.283
6/30/09-10	383,298	760,059	876,860	914,151	877,000	930,350	116,941	170,291	0.229	0.243
6/30/10-11	394,924	990,191	1,182,702	1,173,116	1,171,000	1,236,240	180,809	246,049	0.297	0.313
6/30/11-12	381,943	1,087,163	1,336,721	1,314,246	1,309,000	1,358,850	221,837	271,687	0.343	0.356
6/30/12-13	384,763	672,235	895,079	964,786	895,000	981,850	222,765	309,615	0.233	0.255
6/30/13-14	364,582	627,536	1,007,952	1,005,185	997,000	1,033,650	369,464	406,114	0.273	0.284
6/30/14-15	370,543	216,537	433,905	697,014	434,000	708,700	217,463	492,163	0.117	0.191
6/30/15-16	382,602	254,364	960,065	1,061,809	924,000	1,119,900	669,636	865,536	0.242	0.293
Total	8,044,584	46,882,331	48,552,127	46,915,671	49,719,252	51,414,044	2,836,921	4,531,713		
Tot 6/30/84-16	8,044,584	43,604,153	46,727,650	46,915,671	46,411,836	48,069,010	2,807,684	4,464,857	0.577	0.598

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, 2016

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		3,358,281			3,365,141	3,451,302	6,860	93,021		
6/30/82-83		796,317	797,357		811,448	826,578	15,131	30,261		
6/30/83-84		945,504	946,672		963,997	982,491	18,493	36,987		
6/30/84-85	357,749	1,604,929	1,606,965	1,607,996	1,635,334	1,665,739	30,405	60,810	0.457	0.466
6/30/85-86	380,112	2,253,254	2,256,267	2,257,297	2,292,554	2,331,854	39,300	78,600	0.603	0.613
6/30/86-87	423,770	3,005,715	3,274,468	3,009,871	3,010,455	3,276,651	4,740	270,936	0.710	0.773
6/30/87-88	480,405	5,068,799	5,896,779	5,075,413	5,157,779	5,509,527	88,980	440,728	1.074	1.147
6/30/88-89	495,261	1,941,224	1,944,886	1,946,909	1,972,514	2,017,971	31,290	76,746	0.398	0.407
6/30/89-90	502,691	4,397,880	4,757,610	4,421,649	4,475,432	4,591,945	77,552	194,065	0.890	0.913
6/30/90-91	482,143	1,866,079	1,876,756	1,876,711	1,876,000	1,876,000	9,921	9,921	0.389	0.389
6/30/91-92	492,539	2,194,019	2,321,119	2,207,254	2,207,000	2,321,000	12,981	126,981	0.448	0.471
6/30/92-93	524,541	1,653,844	1,671,094	1,670,949	1,679,326	1,716,282	25,482	62,438	0.320	0.327
6/30/93-94	584,853	1,801,273	1,821,746	1,821,534	1,820,164	1,865,499	18,891	64,226	0.311	0.319
6/30/94-95	587,701	2,243,753	2,280,104	2,279,606	2,272,355	2,275,163	28,603	31,410	0.387	0.387
6/30/95-96	614,868	1,850,889	1,886,705	1,886,378	1,879,180	1,920,160	28,290	69,271	0.306	0.312
6/30/96-97	700,686	1,982,659	2,029,424	2,028,827	2,033,130	2,097,410	50,471	114,751	0.290	0.299
6/30/97-98	684,415	2,631,730	2,712,273	2,709,969	2,709,000	2,717,480	77,270	85,750	0.396	0.397
6/30/98-99	707,796	1,779,998	1,858,672	1,858,106	1,858,000	1,878,770	78,002	98,772	0.263	0.265
6/30/99-00	760,477	1,668,934	1,762,967	1,764,350	1,763,000	1,764,000	94,066	95,066	0.232	0.232
6/30/00-01	811,600	2,211,564	2,384,452	2,382,065	2,382,000	2,384,000	170,436	172,436	0.293	0.294
6/30/01-02	835,038	2,948,826	3,243,482	3,234,028	3,233,000	3,244,000	284,174	295,174	0.387	0.388
6/30/02-03	825,340	1,886,518	2,119,374	2,119,413	2,105,980	2,134,000	219,462	247,482	0.255	0.259
6/30/03-04	849,216	2,181,485	2,480,413	2,479,288	2,463,820	2,497,000	282,335	315,515	0.290	0.294
6/30/04-05	992,508	1,682,922	1,939,912	2,056,163	1,924,300	2,070,000	241,378	387,078	0.194	0.209
6/30/05-06	962,878	2,189,940	2,584,164	2,599,068	2,562,540	2,689,000	372,600	499,060	0.266	0.279
6/30/06-07	1,032,930	1,635,104	1,948,903	2,131,397	1,933,940	2,132,000	298,836	496,896	0.187	0.206
6/30/07-08	1,063,597	3,372,149	4,094,306	3,994,501	3,973,560	4,094,000	601,411	721,851	0.374	0.385
6/30/08-09	1,073,805	2,783,888	3,516,392	3,477,495	3,337,970	3,517,000	554,082	733,112	0.311	0.328
6/30/09-10	1,084,749	3,877,582	5,192,870	4,781,630	4,578,090	5,193,000	700,509	1,315,419	0.422	0.479
6/30/10-11	1,134,164	3,214,638	4,512,160	4,369,543	4,187,360	4,512,000	972,722	1,297,362	0.369	0.398
6/30/11-12	1,202,674	2,978,695	4,593,984	4,391,797	4,200,490	4,598,000	1,221,795	1,619,305	0.349	0.382
6/30/12-13	1,284,741	2,249,203	3,824,939	4,035,621	3,671,990	4,035,000	1,422,787	1,785,797	0.286	0.314
6/30/13-14	1,346,902	2,319,865	4,684,353	4,691,736	4,478,360	4,771,000	2,158,495	2,451,135	0.332	0.354
6/30/14-15	1,404,093	1,585,979	4,432,742	4,599,374	4,433,000	4,772,000	2,847,021	3,186,021	0.316	0.340
6/30/15-16	1,454,612	1,004,578	6,049,565	5,390,991	5,391,000	6,033,870	4,386,422	5,029,292	0.371	0.415
Total	26,138,853	81,168,017	99,303,875	95,156,930	98,639,209	103,761,692	17,471,192	22,593,675		
Tot 6/30/84-16	26,138,853	76,067,915	97,559,847	95,156,930	93,498,623	98,501,321	17,430,708	22,433,406	0.358	0.377

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, 2016

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		47,866,782			53,234,712	57,473,665	5,367,930	9,606,883		
6/30/82-83		6,122,919	6,302,120		6,154,168	6,596,609	31,249	473,690		
6/30/83-84		8,834,558	9,097,839		8,883,666	9,520,832	49,109	686,274		
6/30/84-85	732,729	17,896,968	18,518,700	18,279,021	18,265,956	18,530,196	368,989	633,228	2.493	2.529
6/30/85-86	787,208	21,863,363	22,726,069	22,427,401	22,417,405	22,745,190	554,042	881,827	2.848	2.889
6/30/86-87	902,483	22,436,028	23,479,181	23,161,198	23,152,360	23,496,280	716,332	1,060,252	2.565	2.604
6/30/87-88	1,366,586	31,364,250	33,061,862	32,756,948	32,737,750	33,693,530	1,373,500	2,329,280	2.396	2.466
6/30/88-89	1,486,478	29,478,902	31,314,187	30,848,910	30,846,000	31,907,470	1,367,098	2,428,568	2.075	2.147
6/30/89-90	1,494,463	28,350,547	30,436,283	30,155,975	30,151,000	31,010,640	1,800,453	2,660,093	2.018	2.075
6/30/90-91	1,405,560	24,747,357	26,871,858	26,670,275	26,670,000	27,373,040	1,922,643	2,625,683	1.897	1.947
6/30/91-92	1,364,510	15,790,726	17,338,368	17,204,445	17,204,000	18,088,910	1,413,274	2,298,184	1.261	1.326
6/30/92-93	1,347,359	12,261,919	14,447,947	13,571,083	13,571,000	14,474,010	1,309,081	2,212,091	1.007	1.074
6/30/93-94	1,424,410	13,686,943	15,243,726	15,210,062	15,210,000	15,517,700	1,523,057	1,830,757	1.068	1.089
6/30/94-95	1,497,829	12,150,866	13,674,309	13,641,942	13,642,000	14,252,490	1,491,134	2,101,624	0.911	0.952
6/30/95-96	1,582,635	12,178,011	13,999,135	13,953,842	13,954,000	14,611,050	1,775,989	2,433,039	0.882	0.923
6/30/96-97	1,979,748	12,967,818	14,990,640	14,957,018	14,957,000	15,622,480	1,989,182	2,654,662	0.756	0.789
6/30/97-98	1,917,994	10,833,033	12,619,562	12,615,724	12,611,000	13,167,800	1,777,967	2,334,767	0.658	0.687
6/30/98-99	2,081,524	11,739,233	13,885,238	13,879,284	13,876,000	14,470,860	2,136,767	2,731,627	0.667	0.695
6/30/99-00	2,207,243	13,614,664	16,446,763	16,409,529	16,408,000	17,135,520	2,793,336	3,520,856	0.743	0.776
6/30/00-01	2,201,008	12,992,730	15,973,376	15,951,925	15,950,000	16,637,980	2,957,270	3,645,250	0.725	0.756
6/30/01-02	2,292,592	13,131,100	16,420,162	16,421,371	16,412,000	17,122,040	3,280,900	3,990,940	0.716	0.747
6/30/02-03	2,260,534	13,206,989	16,820,796	16,819,852	16,815,000	17,518,870	3,608,011	4,311,881	0.744	0.775
6/30/03-04	2,255,942	12,176,541	15,802,395	15,837,945	15,802,000	16,482,750	3,625,459	4,306,209	0.700	0.731
6/30/04-05	2,309,083	15,049,591	19,732,443	19,612,946	19,280,000	19,890,000	4,230,409	4,840,409	0.835	0.861
6/30/05-06	2,480,693	13,482,687	18,108,189	18,924,238	17,925,000	19,012,000	4,442,313	5,529,313	0.723	0.766
6/30/06-07	2,612,577	14,021,772	19,220,626	20,297,778	18,661,000	20,675,000	4,639,228	6,653,228	0.714	0.791
6/30/07-08	2,783,717	16,652,007	23,761,422	24,116,934	22,549,000	24,223,000	5,896,993	7,570,993	0.810	0.870
6/30/08-09	2,750,907	17,278,586	25,481,751	25,486,316	25,051,500	25,640,872	7,772,914	8,362,286	0.911	0.932
6/30/09-10	2,806,048	16,934,668	25,803,603	26,358,273	24,522,800	26,496,492	7,588,132	9,561,824	0.874	0.944
6/30/10-11	2,942,638	18,813,318	30,449,446	30,074,107	29,492,730	30,606,757	10,679,412	11,793,439	1.002	1.040
6/30/11-12	3,006,849	18,386,464	32,397,669	31,659,763	31,071,800	32,611,632	12,685,336	14,225,168	1.033	1.085
6/30/12-13	3,138,905	14,387,054	28,582,756	30,460,402	28,493,800	30,613,054	14,106,746	16,226,000	0.908	0.975
6/30/13-14	3,311,947	14,933,850	35,590,706	35,861,639	34,684,770	36,055,000	19,750,920	21,121,150	1.047	1.089
6/30/14-15	3,511,622	11,203,989	36,254,376	37,946,663	35,541,730	38,104,000	24,337,741	26,900,011	1.012	1.085
6/30/15-16	3,491,558	5,771,246	41,505,129	40,736,093	39,623,740	41,704,000	33,852,494	35,932,754	1.135	1.194
Total	67,735,377	582,607,478	736,358,631	722,308,904	775,822,888	813,081,719	193,215,409	230,474,241		
Tot 6/30/84-16	67,735,377	519,783,220	720,958,672	722,308,904	707,550,341	739,490,613	187,767,122	219,707,393	1.045	1.092

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, 2016

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	103,697,018	1.171	121,455,691
6/30/82-83	18,234,207	1.042	19,007,750
6/30/83-84	26,302,101	1.075	28,270,530
6/30/84-85	39,444,982	1.042	41,089,246
6/30/85-86	52,255,325	1.022	53,427,278
6/30/86-87	58,663,279	1.031	60,465,324
6/30/87-88	85,169,668	1.048	89,300,020
6/30/88-89	83,861,014	1.050	88,014,567
6/30/89-90	80,884,980	1.050	84,961,003
6/30/90-91	67,088,605	1.060	71,107,323
6/30/91-92	45,453,722	1.064	48,370,582
6/30/92-93	30,881,377	1.080	33,366,478
6/30/93-94	33,809,348	1.075	36,355,197
6/30/94-95	30,567,691	1.093	33,396,869
6/30/95-96	29,368,190	1.110	32,588,312
6/30/96-97	29,588,971	1.117	33,043,332
6/30/97-98	32,411,892	1.105	35,822,972
6/30/98-99	30,392,587	1.126	34,235,282
6/30/99-00	34,126,749	1.141	38,935,822
6/30/00-01	40,258,023	1.148	46,214,935
6/30/01-02	35,177,615	1.171	41,187,793
6/30/02-03	34,948,475	1.193	41,685,169
6/30/03-04	34,651,110	1.201	41,614,709
6/30/04-05	36,257,379	1.198	43,453,527
6/30/05-06	32,023,380	1.246	39,899,720
6/30/06-07	30,376,476	1.281	38,925,089
6/30/07-08	33,810,101	1.307	44,194,130
6/30/08-09	33,990,785	1.362	46,304,671
6/30/09-10	32,174,642	1.416	45,554,491
6/30/10-11	35,147,567	1.484	52,169,734
6/30/11-12	33,037,774	1.610	53,186,586
6/30/12-13	27,111,996	1.863	50,498,872
6/30/13-14	27,592,950	2.156	59,488,165
6/30/14-15	21,558,637	2.928	63,115,890
6/30/15-16	12,331,339	5.899	72,738,455
Total	1,412,649,955		1,763,445,514

NOTES:

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

(3) = (4) / (2)

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Massachusetts Colleges & Universities - Cluster 4

Allocation Methodology

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	5 Year							5 Year	Credibility	Distribution	CURRENT		PRIOR	
	Average	Initial Loss Costs		Expected Losses				Average	Weighted	of Total	Reserve Estimate		Reserve Estimate	
Cluster	Payroll	Indemnity	Medical	Indemnity	Medical	Total	Credibility	Ult Loss	Ult Loss	Losses	Low End	High End	Low End	High End
Berkshire Community College	13,816,384	0.22	0.09	30,396	12,435	42,831	21.7%	62,114	47,006	1.1%	191,290	247,375	186,178	240,498
Bridgewater State College	87,715,711	0.22	0.09	192,975	78,944	271,919	81.4%	320,988	311,877	7.3%	1,269,185	1,641,305	1,262,438	1,630,773
Bristol Community College	39,635,599	0.22	0.09	87,198	35,672	122,870	66.5%	19,923	54,448	1.3%	221,578	286,544	242,073	312,702
Bunker Hill Community College	47,465,996	0.22	0.09	104,425	42,719	147,145	48.7%	52,739	101,169	2.4%	411,708	532,419	516,139	666,731
Cape Cod Community College	18,673,155	0.22	0.09	41,081	16,806	57,887	27.2%	102,985	70,150	1.6%	285,474	369,174	290,470	375,219
Fitchburg State College	40,240,233	0.22	0.09	88,529	36,216	124,745	66.8%	124,833	124,804	2.9%	507,890	656,801	584,996	755,678
Framingham State College	42,840,072	0.22	0.09	94,248	38,556	132,804	46.1%	121,302	127,497	3.0%	518,848	670,973	460,497	594,854
Greenfield Community College	14,735,262	0.22	0.09	32,418	13,262	45,679	22.8%	15,303	38,765	0.9%	157,755	204,008	162,051	209,332
Holyoke Community College	33,344,977	0.22	0.09	73,359	30,010	103,369	62.5%	13,575	47,240	1.1%	192,245	248,610	311,136	401,914
Mass Bay Community College	23,514,807	0.22	0.09	51,733	21,163	72,896	32.0%	17,472	55,168	1.3%	224,505	290,329	159,295	205,771
Mass College of Art	30,849,803	0.22	0.09	67,870	27,765	95,634	60.7%	88,196	91,122	2.1%	370,820	479,543	417,253	538,993
Mass Maritime Academy	21,230,632	0.22	0.09	46,707	19,108	65,815	51.5%	80,570	73,413	1.7%	298,754	386,347	255,845	330,492
Massachusetts College of Liberal Arts	21,612,144	0.22	0.09	47,547	19,451	66,998	51.9%	34,134	49,929	1.2%	203,187	262,761	224,030	289,394
Massasoit Community College	35,272,539	0.22	0.09	77,600	31,745	109,345	41.4%	199,413	146,601	3.4%	596,594	771,512	535,809	692,139
Middlesex Community College	44,486,985	0.22	0.09	97,871	40,038	137,910	69.0%	123,048	127,657	3.0%	519,501	671,817	496,906	641,886
Mt Wachusett Community College	27,679,878	0.22	0.09	60,896	24,912	85,808	58.1%	26,876	51,596	1.2%	209,970	271,532	306,834	396,358
North Essex Community College	31,964,213	0.22	0.09	70,321	28,768	99,089	39.0%	39,697	75,927	1.8%	308,987	399,581	189,298	244,529
North Shore Community College	34,940,089	0.22	0.09	76,868	31,446	108,314	41.1%	84,196	98,393	2.3%	400,412	517,811	285,904	369,320
Quinsigamond Community College	40,544,898	0.22	0.09	89,199	36,490	125,689	44.8%	334,822	219,336	5.1%	892,590	1,154,293	889,214	1,148,656
Roxbury Community College	16,112,934	0.22	0.09	35,448	14,502	49,950	24.4%	103,353	62,965	1.5%	256,238	331,366	260,989	337,136
Salem State College	81,459,903	0.22	0.09	179,212	73,314	252,526	80.3%	231,232	235,430	5.5%	958,082	1,238,987	1,176,844	1,520,207
Springfield Tech Community College	33,265,596	0.22	0.09	73,184	29,939	103,123	62.5%	130,035	119,931	2.8%	488,058	631,154	613,942	793,068
UMass (Boston)	187,204,132	0.22	0.09	411,849	168,484	580,333	90.3%	576,782	577,125	13.4%	2,348,610	3,037,213	2,030,798	2,623,314
UMass (Dartmouth)	107,681,000	0.22	0.09	236,898	96,913	333,811	84.3%	622,899	577,616	13.5%	2,350,612	3,039,802	1,653,874	2,136,417
University of Lowell	168,361,559	0.22	0.09	370,395	151,525	521,921	89.4%	457,631	464,458	10.8%	1,890,112	2,444,285	1,913,539	2,471,843
Westfield State College	50,093,616	0.22	0.09	110,206	45,084	155,290	71.5%	201,481	188,301	4.4%	766,292	990,966	909,969	1,175,467
Worcester State College	43,862,435	0.22	0.09	96,497	39,476	135,974	46.7%	177,281	155,277	3.6%	631,898	817,169	716,957	926,140
Total	1,338,604,553			2,944,930	1,204,744			4,362,881	4,293,200		17,471,192	22,593,675	17,053,280	22,028,832

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 prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Massachusetts Colleges & Universities - Cluster 4

Estimated Loss Costs (Indemnity and Medical Combined)

	(1)	(2)	(3)	(4)	(5)	(6)
Cluster	2016	2015	2014	2013	2012	Coefficient of Variation
Berkshire Community College	0.057	0.449	0.033	0.021	1.787	1.615
Bridgewater State College	0.687	0.268	0.392	0.176	0.253	0.566
Bristol Community College	0.066	0.046	0.066	0.040	0.030	0.321
Bunker Hill Community College	0.004	0.344	0.028	0.050	0.127	1.253
Cape Cod Community College	1.504	0.217	0.625	0.190	0.172	1.052
Fitchburg State College	0.232	0.248	0.610	0.326	0.127	0.593
Framingham State College	0.067	0.435	0.025	0.765	0.144	1.084
Greenfield Community College	0.026	0.143	0.270	0.017	0.062	1.021
Holyoke Community College	0.014	0.049	0.105	0.027	0.007	0.974
Mass Bay Community College	0.211	0.018	0.034	0.018	0.092	1.103
Mass College of Art	0.287	0.644	0.067	0.223	0.178	0.782
Mass Maritime Academy	0.755	0.182	0.037	0.741	0.147	0.932
Massachusetts College of Liberal Arts	0.336	0.287	0.099	0.013	0.024	0.992
Massasoit Community College	0.959	0.102	0.046	0.171	1.641	1.196
Middlesex Community College	0.067	0.085	0.290	0.249	0.758	0.965
Mt Wachusett Community College	0.201	0.044	0.073	0.060	0.108	0.642
North Essex Community College	0.407	0.000	0.042	0.081	0.075	1.344
North Shore Community College	0.696	0.066	0.247	0.077	0.119	1.097
Quinsigamond Community College	0.119	1.768	0.327	1.686	0.196	1.016
Roxbury Community College	0.087	0.016	0.428	2.598	0.000	1.783
Salem State College	0.237	0.314	0.300	0.213	0.364	0.214
Springfield Tech Community College	0.117	0.198	0.834	0.136	0.695	0.862
UMass (Boston)	0.221	0.298	0.415	0.217	0.409	0.310
UMass (Dartmouth)	1.300	0.161	0.362	0.312	0.733	0.797
University of Lowell	0.287	0.183	0.466	0.113	0.310	0.496
Westfield State College	0.173	0.495	0.221	0.089	1.103	0.991
Worcester State College	0.003	0.240	0.886	0.862	0.058	1.057

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).

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Massachusetts Colleges & Universities - Cluster 4

Payroll

Cluster	2016	2015	2014	2013	2012	2011	2010	2009
Berkshire Community College	14,456,120	14,062,716	14,035,091	13,566,121	12,961,874	12,765,728	12,608,194	12,477,038
Bridgewater State College	97,128,570	94,066,876	88,447,650	81,947,985	76,987,472	73,247,587	69,620,026	68,323,197
Bristol Community College	42,104,373	42,552,559	40,293,728	37,759,083	35,468,250	33,155,586	31,455,847	30,708,796
Bunker Hill Community College	51,343,817	50,270,901	49,127,405	45,382,743	41,205,115	38,164,922	35,956,105	34,871,020
Cape Cod Community College	19,144,217	19,623,257	19,227,444	17,989,520	17,381,338	17,148,486	17,159,865	18,672,490
Fitchburg State College	44,309,826	42,608,839	40,308,199	37,998,115	35,976,187	34,204,248	33,842,950	33,451,439
Framingham State College	47,747,768	45,795,557	42,758,657	40,576,899	37,321,481	33,532,654	32,772,606	33,174,219
Greenfield Community College	15,235,538	14,856,970	14,819,125	14,413,590	14,351,088	13,421,721	13,089,560	13,957,686
Holyoke Community College	35,011,610	34,474,656	33,322,195	32,555,311	31,361,111	30,596,223	30,303,801	30,190,866
Mass Bay Community College	23,795,629	23,744,806	24,272,772	23,421,254	22,339,575	21,205,789	20,707,657	20,503,198
Mass College of Art	33,494,988	32,310,647	30,582,891	29,531,509	28,328,979	26,762,645	25,447,450	24,847,648
Mass Maritime Academy	23,527,846	22,757,480	21,228,253	20,061,575	18,578,003	17,378,246	16,347,571	16,574,691
Massachusetts College of Liberal Arts	22,994,917	22,519,342	21,509,329	21,001,880	20,035,251	18,732,309	18,675,839	18,685,437
Massasoit Community College	38,340,014	37,682,345	35,408,559	33,406,357	31,525,419	30,340,130	28,826,366	31,145,834
Middlesex Community College	46,520,224	47,127,301	45,414,002	43,177,441	40,195,957	39,162,007	38,762,758	44,276,269
Mt Wachusett Community College	28,286,480	28,917,680	28,439,714	26,759,891	25,995,624	24,563,097	22,854,199	22,358,426
North Essex Community College	33,817,735	33,365,552	32,472,002	31,238,577	28,927,197	27,447,993	26,978,801	27,092,760
North Shore Community College	34,773,439	35,917,163	36,047,728	34,642,152	33,319,965	32,328,218	31,394,592	31,025,948
Quinsigamond Community College	43,077,361	42,878,790	41,344,370	39,013,977	36,409,993	34,059,973	32,268,537	30,912,984
Roxbury Community College	15,833,427	15,813,967	16,430,288	16,551,154	15,935,833	15,402,953	15,082,812	14,798,159
Salem State College	89,125,627	85,785,305	81,595,315	77,905,236	72,888,033	69,431,901	65,990,811	66,268,106
Springfield Tech Community College	34,472,989	35,199,500	33,888,963	31,913,074	30,853,455	29,918,442	29,428,123	30,327,286
UMass (Boston)	212,382,851	195,408,787	186,646,267	178,091,389	163,491,368	152,917,036	142,970,614	134,516,405
UMass (Dartmouth)	112,337,308	107,919,804	107,144,202	108,031,901	102,971,786	98,435,825	92,935,564	90,902,061
University of Lowell	192,533,065	178,925,071	167,623,882	158,366,477	144,359,303	131,389,765	122,995,978	119,667,601
Westfield State College	54,526,913	52,770,682	50,355,432	47,718,557	45,096,498	42,505,518	41,760,360	39,918,536
Worcester State College	48,289,827	46,736,625	44,158,114	41,719,450	38,408,159	35,944,721	34,512,511	34,156,985
UMass (Amherst)	585,875,165	539,631,010	518,390,972	495,397,824	467,753,393	444,672,991	433,205,775	420,565,863
UMass (Medical Center)	382,602,152	370,542,936	364,582,039	384,762,790	381,942,827	394,924,203	383,297,750	362,308,924
Total	2,423,089,795	2,314,267,125	2,229,874,589	2,164,901,832	2,052,370,532	1,973,760,916	1,901,253,022	1,856,679,871

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Massachusetts Colleges & Universities - Cluster 4

Estimated Ultimate Losses

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			Indemnity					Medical		
Cluster	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
Berkshire Community College	203,587	0	0	26,366	0	28,101	2,799	4,690	36,743	8,285
Bridgewater State College	147,482	73,715	177,853	147,735	476,606	46,987	70,502	169,245	104,265	190,551
Bristol Community College	313	2,799	8,019	11,610	5,205	10,258	12,457	18,450	7,999	22,505
Bunker Hill Community College	30,499	9,408	6,726	118,427	0	21,690	13,393	6,979	54,680	1,895
Cape Cod Community College	16,470	18,102	83,695	23,779	242,834	13,431	16,039	36,549	18,843	45,182
Fitchburg State College	17,695	88,613	204,274	31,178	56,870	27,936	35,410	41,805	74,606	45,780
Framingham State College	22,503	274,778	1,724	148,010	7,265	31,317	35,770	8,950	51,247	24,947
Greenfield Community College	4,815	0	10,937	18,966	0	4,114	2,409	29,119	2,248	3,909
Holyoke Community College	1,265	0	14,969	5,938	0	819	8,943	19,958	10,970	5,011
Mass Bay Community College	15,777	2,941	7,676	0	38,122	4,715	1,205	511	4,317	12,093
Mass College of Art	23,857	27,819	11,687	202,803	84,852	26,533	38,172	8,713	5,200	11,345
Mass Maritime Academy	11,424	138,702	0	28,872	129,830	15,901	10,037	7,794	12,597	47,696
Massachusetts College of Liberal Arts	0	0	8,649	42,113	703	4,762	2,790	12,578	22,493	76,582
Massasoit Community College	423,688	34,978	7,821	15,837	233,778	93,572	22,032	8,611	22,666	134,082
Middlesex Community College	210,325	40,892	73,197	18,387	8,164	94,522	66,594	58,422	21,761	22,977
Mt Wachusett Community College	8,067	6,244	0	0	45,954	19,966	9,868	20,691	12,805	10,787
North Essex Community College	3,810	15,659	4,459	0	102,604	17,743	9,798	9,330	162	34,921
North Shore Community College	4,103	17,242	75,898	19,880	192,398	35,633	9,285	13,208	3,782	49,551
Quinsigamond Community College	46,251	556,377	92,013	642,138	36,375	25,284	101,433	43,214	116,079	14,947
Roxbury Community College	0	404,045	57,151	0	13,771	0	26,036	13,219	2,543	0
Salem State College	218,509	93,132	163,778	211,264	150,868	46,787	72,629	81,024	58,177	59,994
Springfield Tech Community College	168,951	24,922	235,033	50,359	30,217	45,365	18,478	47,469	19,160	10,223
UMass (Boston)	619,452	236,343	631,533	412,085	309,248	49,840	150,911	143,480	170,093	160,922
UMass (Dartmouth)	616,680	247,724	299,202	126,209	1,053,175	138,521	89,869	89,190	47,088	406,838
University of Lowell	372,643	132,490	561,366	241,648	383,815	74,529	46,827	220,562	85,018	169,259
Westfield State College	328,807	15,125	51,328	185,320	53,340	168,674	27,483	60,189	76,088	41,051
Worcester State College	6,794	305,029	318,547	88,777	0	15,588	54,426	72,806	23,190	1,247
Total	3,523,769	2,767,076	3,107,535	2,817,699	3,655,994	1,062,586	955,594	1,246,755	1,064,816	1,612,583
Age to Ultimate LDF's	1.656	1.830	2.187	3.013	6.621	1.248	1.296	1.387	1.637	3.564

NOTES:

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Massachusetts Colleges & Universities - Cluster 4

Cumulative Paid Losses as of 6/30/16

	Indemnity					Medical				
Cluster	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
Berkshire Community College	122,906	0	0	8,752	0	22,516	2,159	3,382	22,452	2,324
Bridgewater State College	89,035	40,278	81,322	49,040	71,982	37,648	54,394	122,034	63,712	53,459
Bristol Community College	189	1,529	3,667	3,854	786	8,219	9,611	13,303	4,888	6,314
Bunker Hill Community College	18,412	5,141	3,075	39,311	0	17,379	10,333	5,032	33,412	532
Cape Cod Community College	9,943	9,891	38,269	7,893	36,676	10,762	12,375	26,354	11,514	12,676
Fitchburg State College	10,683	48,418	93,403	10,349	8,589	22,384	27,320	30,143	45,588	12,843
Framingham State College	13,585	150,140	788	49,131	1,097	25,092	27,597	6,453	31,315	6,999
Greenfield Community College	2,907	0	5,001	6,296	0	3,296	1,859	20,996	1,374	1,097
Holyoke Community College	764	0	6,845	1,971	0	656	6,900	14,391	6,703	1,406
Mass Bay Community College	9,525	1,607	3,510	0	5,758	3,778	930	369	2,638	3,393
Mass College of Art	14,403	15,200	5,344	67,319	12,815	21,260	29,450	6,283	3,177	3,183
Mass Maritime Academy	6,896	75,787	0	9,584	19,608	12,741	7,743	5,620	7,698	13,381
Massachusetts College of Liberal Arts	0	0	3,955	13,979	106	3,815	2,153	9,069	13,744	21,485
Massasoit Community College	255,781	19,112	3,576	5,257	35,308	74,975	16,998	6,209	13,851	37,616
Middlesex Community College	126,973	22,343	33,469	6,103	1,233	75,735	51,379	42,125	13,297	6,446
Mt Wachusett Community College	4,870	3,412	0	0	6,940	15,998	7,613	14,919	7,825	3,026
North Essex Community College	2,300	8,556	2,039	0	15,496	14,216	7,560	6,727	99	9,797
North Shore Community College	2,477	9,421	34,704	6,599	29,058	28,551	7,164	9,524	2,311	13,902
Quinsigamond Community College	27,922	304,006	42,072	213,153	5,494	20,258	78,258	31,159	70,931	4,193
Roxbury Community College	0	220,772	26,132	0	2,080	0	20,088	9,531	1,554	0
Salem State College	131,914	50,888	74,886	70,127	22,786	37,488	56,035	58,422	35,549	16,831
Springfield Tech Community College	101,996	13,617	107,467	16,716	4,564	36,349	14,256	34,228	11,708	2,868
UMass (Boston)	373,963	129,139	288,763	136,789	46,706	39,934	116,431	103,456	103,937	45,147
UMass (Dartmouth)	372,289	135,358	136,807	41,894	159,063	110,990	69,336	64,311	28,773	114,138
University of Lowell	224,965	72,393	256,680	80,213	57,968	59,716	36,128	159,036	51,951	47,486
Westfield State College	198,501	8,264	23,469	61,516	8,056	135,150	21,203	43,399	46,494	11,517
Worcester State College	4,101	166,669	145,653	29,469	0	12,490	41,991	52,497	14,170	350
Total	2,127,299	1,511,941	1,420,894	935,315	552,170	851,396	737,262	898,971	650,664	452,409

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Massachusetts Colleges & Universities - Cluster 4

Fiscal Year 2016 Paid Losses

	Indemnity					Medical				
Cluster	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
Berkshire Community College	28,973	0	0	8,447	0	0	0	2,049	18,755	2,324
Bridgewater State College	0	5,899	13,842	3,944	71,982	0	1,770	6,796	7,477	53,459
Bristol Community College	0	0	0	0	786	0	0	0	0	6,314
Bunker Hill Community College	0	0	0	5,173	0	0	647	0	8,474	532
Cape Cod Community College	0	0	0	4,843	36,676	0	0	233	3,942	12,676
Fitchburg State College	0	5,128	38,688	651	8,589	0	0	3,398	28,147	12,843
Framingham State College	0	51,827	0	45,902	1,097	0	1,389	849	19,532	6,999
Greenfield Community College	0	0	0	0	0	131	0	0	964	1,097
Holyoke Community College	0	0	0	0	0	0	0	0	827	1,406
Mass Bay Community College	0	0	0	0	5,758	0	0	0	255	3,393
Mass College of Art	0	0	0	62,997	12,815	0	0	0	1,028	3,183
Mass Maritime Academy	0	0	0	227	19,608	0	0	0	2,085	13,381
Massachusetts College of Liberal Arts	0	0	0	1,209	106	0	0	0	4,715	21,485
Massasoit Community College	39,861	0	0	4,461	35,308	481	176	1,441	4,360	37,616
Middlesex Community College	46,713	13,606	0	2,545	1,233	6,255	13,543	1,582	9,157	6,446
Mt Wachusett Community College	0	0	0	0	6,940	0	0	1,405	721	3,026
North Essex Community College	0	0	774	0	15,496	0	0	1,528	0	9,797
North Shore Community College	0	0	0	0	29,058	1,653	0	0	564	13,902
Quinsigamond Community College	0	67,992	297	105,417	5,494	0	18,911	2,130	31,007	4,193
Roxbury Community College	0	20,000	6,678	0	2,080	0	942	1,660	0	0
Salem State College	0	0	45,540	43,277	22,786	278	424	7,613	9,045	16,831
Springfield Tech Community College	22,548	0	29,133	3,791	4,564	277	0	3,962	8,147	2,868
UMass (Boston)	109,948	72,465	112,501	62,002	46,706	102	31,936	35,525	34,060	45,147
UMass (Dartmouth)	6,000	27,452	0	9,263	159,063	100	1,491	2,425	3,954	114,138
University of Lowell	29,751	23,803	100,627	19,837	57,968	604	2,599	18,404	9,840	47,486
Westfield State College	0	0	-28,672	30,899	8,056	0	393	3,011	12,149	11,517
Worcester State College	0	42,696	31,998	7,015	0	66	247	4,378	5,740	350
Total	283,793	330,868	351,407	421,899	552,170	9,947	74,468	98,387	224,945	452,409

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2016

Table of Contents

I. Narrative

II. Summary Exhibits

III. Supporting Exhibits

Section 1 *All Clusters Combined*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 2 *Department of Developmental Services - Cluster 1*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 3 *Department of Mental Health - Cluster 2*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 4 *Department of Corrections - Cluster 3*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 5 *University of Massachusetts (Amherst) - Cluster 4*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 6 *University of Massachusetts (Medical Center) - Cluster 4*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 7 *Massachusetts Colleges & Universities - Cluster 4*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Section 8 *All Other - Clusters 5-17 & 95*
- Exhibit 1 - Indemnity
- Exhibit 2 - Medical

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

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		97,169,491			110,209,194	117,927,388	13,039,703	20,757,897		
6/30/82-83		16,991,512	17,677,665		17,461,544	18,046,689	470,032	1,055,178		
6/30/83-84		23,046,028	24,817,374		24,499,071	25,440,302	1,453,043	2,394,274		
6/30/84-85	1,823,085	36,192,183	38,906,273	36,863,814	36,899,446	38,692,574	707,263	2,500,391	2.024	2.122
6/30/85-86	1,952,445	47,288,309	48,987,419	48,366,250	48,052,102	48,747,303	763,793	1,458,994	2.461	2.497
6/30/86-87	2,220,820	52,881,185	55,368,041	54,363,872	53,836,103	55,384,799	954,918	2,503,614	2.424	2.494
6/30/87-88	2,885,583	75,249,325	81,902,945	77,941,645	77,890,702	80,572,057	2,641,377	5,322,732	2.699	2.792
6/30/88-89	3,098,180	71,818,232	75,859,188	74,765,897	74,864,565	76,623,799	3,046,333	4,805,567	2.416	2.473
6/30/89-90	3,079,763	68,288,640	72,382,993	71,791,184	71,441,887	72,694,707	3,153,247	4,406,067	2.320	2.360
6/30/90-91	2,914,364	55,181,932	60,330,223	58,548,139	57,789,859	60,006,520	2,607,928	4,824,589	1.983	2.059
6/30/91-92	2,880,434	34,670,538	37,415,286	36,932,556	36,635,670	37,977,219	1,965,132	3,306,681	1.272	1.318
6/30/92-93	2,887,238	22,990,066	25,789,244	24,903,323	24,708,944	25,739,876	1,718,878	2,749,811	0.856	0.892
6/30/93-94	3,056,850	25,540,278	27,752,009	27,706,353	27,608,000	27,999,105	2,067,722	2,458,828	0.903	0.916
6/30/94-95	3,158,808	23,654,521	26,018,140	25,965,468	25,880,880	26,516,660	2,226,359	2,862,139	0.819	0.839
6/30/95-96	3,301,791	22,795,871	25,444,932	25,380,874	25,319,048	26,037,937	2,523,177	3,242,065	0.767	0.789
6/30/96-97	3,902,868	22,393,405	25,233,432	25,185,435	24,997,634	25,747,988	2,604,229	3,354,583	0.640	0.660
6/30/97-98	3,776,138	25,847,707	29,096,227	29,023,724	28,387,173	29,146,332	2,539,466	3,298,625	0.752	0.772
6/30/98-99	4,017,530	23,612,343	27,031,865	26,977,282	26,495,681	27,283,133	2,883,339	3,670,790	0.660	0.679
6/30/99-00	4,221,786	26,540,401	30,845,163	30,741,137	30,172,639	31,115,845	3,632,238	4,575,444	0.715	0.737
6/30/00-01	4,310,725	30,887,624	36,110,336	35,958,055	35,383,408	36,324,503	4,495,784	5,436,879	0.821	0.843
6/30/01-02	4,438,755	27,666,019	32,935,985	32,837,771	32,123,832	33,382,543	4,457,814	5,716,524	0.724	0.752
6/30/02-03	4,423,888	26,787,252	32,298,465	32,215,858	31,737,508	33,025,550	4,950,256	6,238,298	0.717	0.747
6/30/03-04	4,482,207	26,171,702	31,914,431	31,850,558	31,194,777	32,495,700	5,023,075	6,323,998	0.696	0.725
6/30/04-05	4,639,517	26,136,222	32,551,242	31,878,961	31,243,804	32,391,000	5,107,581	6,254,778	0.673	0.698
6/30/05-06	4,938,165	23,002,400	29,122,832	29,679,970	28,626,650	30,019,000	5,624,250	7,016,600	0.580	0.608
6/30/06-07	5,183,126	20,764,684	26,957,315	28,420,057	26,449,268	28,384,200	5,684,584	7,619,516	0.510	0.548
6/30/07-08	5,508,425	24,658,842	33,154,114	33,893,037	32,123,000	33,893,400	7,464,158	9,234,558	0.583	0.615
6/30/08-09	5,447,676	24,389,576	34,081,333	34,526,073	33,883,050	34,863,872	9,493,474	10,474,296	0.622	0.640
6/30/09-10	5,525,579	23,547,613	34,165,732	35,169,913	32,960,350	35,910,492	9,412,737	12,362,879	0.597	0.650
6/30/10-11	5,712,303	25,744,353	39,696,226	39,628,258	38,976,630	40,595,797	13,232,277	14,851,444	0.682	0.711
6/30/11-12	5,880,714	24,239,465	40,739,411	40,788,225	39,791,550	42,195,632	15,552,085	17,956,167	0.677	0.718
6/30/12-13	6,162,621	19,439,034	36,833,780	39,944,713	37,106,350	40,346,054	17,667,316	20,907,020	0.602	0.655
6/30/13-14	6,442,136	19,714,733	45,468,093	47,004,006	44,947,870	47,758,000	25,233,137	28,043,267	0.698	0.741
6/30/14-15	6,758,892	14,558,727	46,824,220	49,605,898	46,421,730	50,697,600	31,863,003	36,138,873	0.687	0.750
6/30/15-16	6,843,054	8,138,563	55,718,409	54,520,286	53,195,740	57,399,000	45,057,177	49,260,437	0.777	0.839
Total	135,875,464	1,137,998,776	1,319,430,344	1,273,378,590	1,399,315,660	1,461,382,575	261,316,884	323,383,799		
Tot 6/30/84-16	135,875,464	1,000,791,746	1,276,935,305	1,273,378,590	1,247,145,852	1,299,968,196	246,354,106	299,176,451	0.918	0.957

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) Sum of Section 1, Exhibit 1, Page 2, Column 3 and Section 1, Exhibit 1, Page 9, Column 8

(4) From Section 1, Exhibit 1, Page 2, Column 8

(5) From Section 1, Exhibit 1, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Accident Year	Payroll (000's)	Paid Loss Excluding Lump Sum	Implied Paid LDF	Adjstmnt for Extra Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim	Average Age
All Prior Yrs		93,227,809							35	30		81
6/30/82-83		16,220,281	1.042	N/A	16,906,074	771,591	17,677,665		2	1	685,793	89
6/30/83-84		21,253,389	1.083	N/A	23,021,703	1,795,672	24,817,374		4	4	442,078	69
6/30/84-85	1,823,085	33,400,919	1.081	N/A	36,110,450	2,795,823	38,906,273	2.134	5	4	677,383	79
6/30/85-86	1,952,445	43,984,709	1.038	N/A	45,677,407	3,310,012	48,987,419	2.509	3	3	564,233	79
6/30/86-87	2,220,820	47,433,435	1.052	N/A	49,911,443	5,456,598	55,368,041	2.493	8	8	309,751	75
6/30/87-88	2,885,583	67,192,308	1.099	N/A	73,833,044	8,069,902	81,902,945	2.838	16	15	442,716	72
6/30/88-89	3,098,180	61,991,993	1.065	N/A	66,006,256	9,852,932	75,859,188	2.449	16	15	267,617	76
6/30/89-90	3,079,763	58,209,342	1.070	N/A	62,275,518	10,107,475	72,382,993	2.350	11	10	406,618	71
6/30/90-91	2,914,364	46,460,492	1.110	N/A	51,581,444	8,748,778	60,330,223	2.070	13	10	512,095	72
6/30/91-92	2,880,434	29,250,064	1.093	N/A	31,974,892	5,440,393	37,415,286	1.299	10	10	272,483	68
6/30/92-93	2,887,238	18,889,448	1.147	N/A	21,664,590	4,124,654	25,789,244	0.893	5	4	693,786	71
6/30/93-94	3,056,850	21,363,244	1.102	N/A	23,543,026	4,208,983	27,752,009	0.908	13	12	181,648	66
6/30/94-95	3,158,808	19,603,661	1.118	N/A	21,920,993	4,097,147	26,018,140	0.824	7	6	386,222	71
6/30/95-96	3,301,791	18,936,140	1.137	N/A	21,532,810	3,912,122	25,444,932	0.771	6	7	370,953	65
6/30/96-97	3,902,868	17,892,253	1.155	N/A	20,662,850	4,570,582	25,233,432	0.647	7	5	554,120	63
6/30/97-98	3,776,138	21,160,830	1.149	N/A	24,304,433	4,791,795	29,096,227	0.771	6	7	449,086	66
6/30/98-99	4,017,530	19,525,405	1.169	N/A	22,826,261	4,205,605	27,031,865	0.673	6	7	471,551	60
6/30/99-00	4,221,786	22,633,033	1.184	N/A	26,798,704	4,046,460	30,845,163	0.731	6	5	833,134	65
6/30/00-01	4,310,725	27,072,761	1.187	N/A	32,143,771	3,966,564	36,110,336	0.838	14	13	390,078	58
6/30/01-02	4,438,755	23,833,350	1.213	N/A	28,910,944	4,025,041	32,935,985	0.742	11	6	846,266	58
6/30/02-03	4,423,888	23,267,338	1.228	N/A	28,570,526	3,727,939	32,298,465	0.730	14	11	482,108	57
6/30/03-04	4,482,207	22,578,182	1.244	N/A	28,080,446	3,833,985	31,914,431	0.712	10	9	611,363	57
6/30/04-05	4,639,517	22,106,069	1.276	N/A	28,204,729	4,346,514	32,551,242	0.702	10	10	609,866	57
6/30/05-06	4,938,165	18,961,972	1.304	N/A	24,723,855	4,398,978	29,122,832	0.590	13	11	523,808	57
6/30/06-07	5,183,126	17,399,867	1.333	N/A	23,192,995	3,764,320	26,957,315	0.520	15	8	724,141	56
6/30/07-08	5,508,425	19,964,151	1.397	N/A	27,896,030	5,258,083	33,154,114	0.602	27	13	610,145	58
6/30/08-09	5,447,676	20,414,941	1.440	N/A	29,397,342	4,683,990	34,081,333	0.626	42	32	280,700	56
6/30/09-10	5,525,579	19,213,928	1.497	N/A	28,767,364	5,398,368	34,165,732	0.618	57	44	217,124	54
6/30/10-11	5,712,303	21,620,084	1.564	N/A	33,820,897	5,875,328	39,696,226	0.695	89	61	200,013	54
6/30/11-12	5,880,714	20,565,799	1.692	N/A	34,794,667	5,944,744	40,739,411	0.693	139	87	163,550	52
6/30/12-13	6,162,621	16,921,102	1.855	N/A	31,394,610	5,439,170	36,833,780	0.598	182	124	116,722	51
6/30/13-14	6,442,136	17,741,202	2.170	N/A	38,499,014	6,969,080	45,468,093	0.706	503	207	100,279	51
6/30/14-15	6,758,892	14,180,886	2.876	N/A	40,786,956	6,037,264	46,824,220	0.693	1,423	491	54,188	47
6/30/15-16	6,843,054	8,117,063	5.917	N/A	48,024,636	7,693,773	55,718,409	0.814		1,349	29,583	45
Total	135,875,464	992,587,448			1,147,760,677	171,669,667	1,319,430,344		2,728	2,639		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 1, Exhibit 1, Page 7

(4) = (6) / (5) / (3). For this All Clusters Combined exhibit only, this column includes the impact of the "Additional Tail consideration".

(5) Based on information from the MA WCRIB. For this All Clusters Combined exhibit only, impacts shown here are for Escalation of Benefits only.

(6) = (3) x (4) x (5)

(7) From Section 1, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

(13) Calculated for claimants that had an indemnity payment within the last calendar year.

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss Excluding Lump Sum	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	1,823,085	2.991	33,400,919	1.081	34,067,991	2,795,823	36,863,814	2.022	1.869
6/30/85-86	1,952,445	3.712	43,984,709	1.038	45,056,237	3,310,012	48,366,250	2.477	2.308
6/30/86-87	2,220,820	3.485	47,433,435	1.052	48,907,274	5,456,598	54,363,872	2.448	2.202
6/30/87-88	2,885,583	3.526	67,192,308	1.099	69,871,743	8,069,902	77,941,645	2.701	2.421
6/30/88-89	3,098,180	2.963	61,991,993	1.065	64,912,965	9,852,932	74,765,897	2.413	2.095
6/30/89-90	3,079,763	2.802	58,209,342	1.070	61,683,709	10,107,475	71,791,184	2.331	2.003
6/30/90-91	2,914,364	1.758	46,460,492	1.110	49,799,360	8,748,778	58,548,139	2.009	1.709
6/30/91-92	2,880,434	1.099	29,250,064	1.093	31,492,162	5,440,393	36,932,556	1.282	1.093
6/30/92-93	2,887,238	0.742	18,889,448	1.147	20,778,669	4,124,654	24,903,323	0.863	0.720
6/30/93-94	3,056,850	0.759	21,363,244	1.102	23,497,371	4,208,983	27,706,353	0.906	0.769
6/30/94-95	3,158,808	0.684	19,603,661	1.118	21,868,320	4,097,147	25,965,468	0.822	0.692
6/30/95-96	3,301,791	0.643	18,936,140	1.137	21,468,751	3,912,122	25,380,874	0.769	0.650
6/30/96-97	3,902,868	0.528	17,892,253	1.155	20,614,853	4,570,582	25,185,435	0.645	0.528
6/30/97-98	3,776,138	0.633	21,160,830	1.149	24,231,930	4,791,795	29,023,724	0.769	0.642
6/30/98-99	4,017,530	0.564	19,525,405	1.169	22,771,677	4,205,605	26,977,282	0.671	0.567
6/30/99-00	4,221,786	0.624	22,633,033	1.184	26,694,677	4,046,460	30,741,137	0.728	0.632
6/30/00-01	4,310,725	0.725	27,072,761	1.187	31,991,490	3,966,564	35,958,055	0.834	0.742
6/30/01-02	4,438,755	0.641	23,833,350	1.213	28,812,730	4,025,041	32,837,771	0.740	0.649
6/30/02-03	4,423,888	0.636	23,267,338	1.228	28,487,919	3,727,939	32,215,858	0.728	0.644
6/30/03-04	4,482,207	0.619	22,578,182	1.244	28,016,573	3,833,985	31,850,558	0.711	0.625
6/30/04-05	4,639,517	0.556	22,106,069	1.276	27,532,447	4,346,514	31,878,961	0.687	0.593
6/30/05-06	4,938,165	0.561	18,961,972	1.304	25,280,992	4,398,978	29,679,970	0.601	0.512
6/30/06-07	5,183,126	0.568	17,399,867	1.333	24,655,737	3,764,320	28,420,057	0.548	0.476
6/30/07-08	5,508,425	0.574	19,964,151	1.397	28,634,954	5,258,083	33,893,037	0.615	0.520
6/30/08-09	5,447,676	0.581	20,414,941	1.440	29,842,082	4,683,990	34,526,073	0.634	0.548
6/30/09-10	5,525,579	0.583	19,213,928	1.497	29,771,544	5,398,368	35,169,913	0.636	0.539
6/30/10-11	5,712,303	0.582	21,620,084	1.564	33,752,929	5,875,328	39,628,258	0.694	0.591
6/30/11-12	5,880,714	0.586	20,565,799	1.692	34,843,480	5,944,744	40,788,225	0.694	0.593
6/30/12-13	6,162,621	0.591	16,921,102	1.855	34,505,543	5,439,170	39,944,713	0.648	0.560
6/30/13-14	6,442,136	0.594	17,741,202	2.170	40,034,927	6,969,080	47,004,006	0.730	0.621
6/30/14-15	6,758,892	0.596	14,180,886	2.876	43,568,633	6,037,264	49,605,898	0.734	0.645
6/30/15-16	6,843,054	0.600	8,117,063	5.917	46,826,512	7,693,773	54,520,286	0.797	0.684
Total	135,875,464		861,885,970		1,104,276,186	169,102,404	1,273,378,590		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 1, Exhibit 1, Page 4, Column 11

(4) From Section 1, Exhibit 1, Page 2, Column 3

(5) From Section 1, Exhibit 1, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) From Section 1, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Exp Ult Loss Excluding Lump Sum	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									2.991	2.991
6/30/85-86									3.712	3.712
6/30/86-87									3.485	3.485
6/30/87-88									3.526	3.526
6/30/88-89									2.963	2.963
6/30/89-90									2.802	2.802
6/30/90-91	2,914,364	51,581,444	1.770	0.969	1.714	1.000	1.714	0.619	1.770	1.758
6/30/91-92	2,880,434	31,974,892	1.110	1.063	1.180	1.000	1.180	0.565	1.103	1.099
6/30/92-93	2,887,238	21,664,590	0.750	1.239	0.930	1.000	0.930	0.484	0.749	0.742
6/30/93-94	3,056,850	23,543,026	0.770	1.223	0.942	1.000	0.942	0.490	0.763	0.759
6/30/94-95	3,158,808	21,920,993	0.694	1.212	0.841	1.000	0.841	0.495	0.692	0.684
6/30/95-96	3,301,791	21,532,810	0.652	1.202	0.784	1.000	0.784	0.499	0.649	0.643
6/30/96-97	3,902,868	20,662,850	0.529	1.190	0.630	1.000	0.630	0.504	0.535	0.528
6/30/97-98	3,776,138	24,304,433	0.644	1.175	0.756	1.000	0.756	0.511	0.637	0.633
6/30/98-99	4,017,530	22,826,261	0.568	1.160	0.659	1.000	0.659	0.517	0.568	0.564
6/30/99-00	4,221,786	26,798,704	0.635	1.141	0.724	1.000	0.724	0.526	0.632	0.624
6/30/00-01	4,310,725	32,143,771	0.746	1.112	0.829	1.000	0.829	0.540	0.734	0.725
6/30/01-02	4,438,755	28,910,944	0.651	1.090	0.710	1.000	0.710	0.550	0.655	0.641
6/30/02-03	4,423,888	28,570,526	0.646	1.086	0.702	1.000	0.702	0.552	0.648	0.636
6/30/03-04	4,482,207	28,080,446	0.626	1.086	0.681	1.000	0.681	0.552	0.629	0.619
6/30/04-05	4,639,517	28,204,729	0.608	1.080	0.656	1.000	0.656	0.556	0.559	0.556
6/30/05-06	4,938,165	24,723,855	0.501	1.069	0.535	1.000	0.535	0.561	0.565	0.561
6/30/06-07	5,183,126	23,192,995	0.447	1.057	0.473	1.000	0.473	0.568	0.571	0.568
6/30/07-08	5,508,425	27,896,030	0.506	1.045	0.529	1.000	0.529	0.574	0.577	0.574
6/30/08-09	5,447,676	29,397,342	0.540	1.033	0.558	1.000	0.558	0.581	0.584	0.581
6/30/09-10	5,525,579	28,767,364	0.521	1.029	0.536	1.000	0.536	0.583	0.586	0.583
6/30/10-11	5,712,303	33,820,897	0.592	1.031	0.610	1.000	0.610	0.582	0.586	0.582
6/30/11-12	5,880,714	34,794,667	0.592	1.024	0.606	1.000	0.606	0.586	0.590	0.586
6/30/12-13	6,162,621	31,394,610	0.509	1.015	0.517	1.000	0.517	0.591	0.595	0.591
6/30/13-14	6,442,136	38,499,014	0.598	1.011	0.604	1.000	0.604	0.594	0.597	0.594
6/30/14-15	6,758,892	40,786,956	0.603	1.006	0.607	1.000	0.607	0.596	0.600	0.596
6/30/15-16	6,843,054	48,024,636	0.702	1.000	0.702	1.000	0.702	0.600		0.600
Total	120,815,589	774,018,784								

Trend Last 4 (ex 15-16):	1.6%	Avg 3 (ex 15-16):	0.576
Trend Last 8 (ex 15-16):	1.5%	Avg 5 (ex 15-16):	0.589
Trend Last 12 (ex 15-16):	-0.2%	Avg 10 (ex 15-16):	0.557
Prior Selected Trend:	0.0%	Prior Sel Avg:	0.600
Selected Trend:	0.0%	Sel. Loss Cost:	0.600

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 1, Exhibit 1, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCRIB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.960
(2)	Credibility		89%
(3)	Average Pmt Trend Statewide		0.960
(4)	Credibility Weighted Trend		0.960
		(Low)	(High)
(5)	Selected Range	0.940	0.970
(6)	Incremental Paid for 2016	1,160,574	1,160,574
(7)	Estimated Reserve	18,182,319	37,525,211
(8)	Paid to Date (82 & Prior)	93,227,809	93,227,809
(9)	Est Ult Paid for 1982 & Prior	111,410,128	130,753,020

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	1,388,723	1,464,772
(11)	Projected Number of Years	2	2
(12)	Estimated Reserve	2,777,445	2,929,545
(13)	Paid to Date (82 & Prior)	93,227,809	92,067,235
(14)	Est Ult Paid for 1982 & Prior	96,005,254	94,996,780
(14a)	Paid Counts During Fiscal Year	30	35
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	103,707,691	112,874,900
(16)	Lump Sum Ultimates	3,950,982	3,950,982
(17)	Ult Loss Including Lump Sums	**107,658,672**	**116,825,882**
(18)	Implied Tail	1.112	1.211
(19)	Ult Loss Inc Lump Sums @ 6/15	108,670,822	119,896,592

NOTES:

(1) From Section 1, Exhibit 1, Page 6
(2) = (Average of Section 1, Exhibit 1, Page 6, Column 3 / 3,000,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 1, Exhibit 1, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 1, Exhibit 1, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) From Section 1, Exhibit 1, Page 9, Column 13
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	3,761,035	15.140			
1993	2	3,748,741	15.137	0.997		
1994	3	3,655,655	15.112	0.975		
1995	4	3,194,135	14.977	0.874		
1996	5	3,058,848	14.934	0.958		
1997	6	3,023,014	14.922	0.988		
1998	7	3,014,756	14.919	0.997		
1999	8	2,756,848	14.830	0.914		
2000	9	2,909,790	14.884	1.055	n =	25
2001	10	2,865,446	14.868	0.985	S(x) =	50,100
2002	11	2,547,239	14.751	0.889	S(x-sq) =	100,401,700
2003	12	2,422,167	14.700	0.951	S(xy) =	733,137
2004	13	2,289,077	14.644	0.945	S(y) =	366
2005	14	2,336,964	14.664	1.021	D =	32,500
2006	15	2,051,702	14.534	0.878	slope =	-0.045
2007	16	2,039,778	14.528	0.994	Avg Trend =	0.955
2008	17	1,799,337	14.403	0.882		
2009	18	1,743,820	14.372	0.969		
2010	19	1,812,753	14.410	1.040		
2011	20	1,656,071	14.320	0.914		
2012	21	1,565,889	14.264	0.946		
2013	22	1,527,315	14.239	0.975		
2014	23	1,439,828	14.180	0.943		
2015	24	1,427,174	14.171	0.991		
2016	25	1,160,574	13.964	0.813		
					Selected Trend:	**0.960**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 0.813 = 1160574 / 1427174

Commonwealth of Massachusetts Workers Compensation
All Clusters Combined
INDEMNITY
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	858,552	2,079,063	3,017,221	3,810,750	4,609,642	5,393,851	6,194,575	7,153,066	7,958,008	8,806,991	9,470,978	10,033,054	10,617,896	11,118,585	11,511,440	11,832,357	12,136,396	12,447,391	12,810,499	13,089,144	13,380,298	13,654,129	13,942,380	14,231,914	14,539,406	14,849,146	15,118,643	15,379,653	15,594,288	15,766,236	15,942,952	16,094,979	16,155,821	16,220,281
June-84	1,522,536	3,686,963	5,350,672	6,757,899	8,148,886	9,608,045	10,911,357	12,126,179	13,057,188	13,815,581	14,430,389	14,959,403	15,419,688	15,772,255	16,197,151	16,639,612	17,122,286	17,516,764	17,977,580	18,438,292	18,803,484	19,139,323	19,459,619	19,718,217	19,937,128	20,149,887	20,327,863	20,472,356	20,620,991	20,774,456	20,930,657	21,089,748	21,253,389	
June-85	2,512,722	6,084,789	8,830,495	11,054,439	13,342,359	15,590,069	17,427,365	18,998,017	20,498,944	21,563,372	22,525,232	23,442,205	24,219,603	25,046,022	25,818,487	26,459,414	27,121,279	27,778,658	28,406,491	28,976,876	29,543,002	30,030,413	30,523,992	30,983,182	31,363,675	31,712,251	32,055,755	32,412,266	32,782,016	33,018,728	33,237,460	33,400,919		
June-86	3,828,307	9,270,600	13,395,875	16,854,774	20,186,912	22,858,610	24,903,526	26,819,536	28,134,649	29,661,018	30,865,387	32,219,696	33,488,982	34,570,174	35,702,155	36,866,038	37,770,882	38,520,460	39,153,946	39,794,497	40,432,599	41,063,216	41,644,745	42,241,569	42,712,869	43,097,941	43,312,360	43,486,990	43,647,976	43,812,752	43,984,709			
June-87	4,540,457	10,913,697	15,583,325	19,957,432	23,712,974	26,356,678	28,401,253	30,259,862	31,823,542	33,295,483	34,562,410	35,908,967	37,317,032	38,375,710	39,392,496	40,287,844	41,070,876	41,703,092	42,193,153	42,715,548	43,489,344	43,946,144	44,426,128	44,966,121	45,385,703	45,816,061	46,262,977	46,658,728	47,038,292	47,433,435				
June-88	6,620,154	15,480,715	23,458,326	30,204,560	36,116,026	39,838,569	42,256,230	44,503,212	46,313,785	47,917,629	49,366,750	50,785,172	52,214,314	53,499,831	54,758,162	56,029,186	57,216,310	58,242,797	59,272,196	60,251,502	61,225,020	62,100,854	62,859,543	63,676,981	64,434,879	65,136,208	65,842,992	66,547,037	67,192,308					
June-89	6,105,502	16,819,476	24,950,175	31,278,437	35,945,703	38,915,779	41,415,130	43,490,698	45,072,501	46,555,926	47,860,013	49,040,632	50,166,177	51,242,940	52,234,068	53,147,033	54,016,738	54,832,591	55,632,016	56,403,282	57,157,649	57,924,017	58,698,403	59,460,012	60,103,365	60,736,487	61,369,722	61,991,993						
June-90	8,325,393	19,198,639	27,299,181	32,979,315	36,467,113	39,225,080	41,403,021	43,119,245	44,619,978	46,178,291	47,478,622	48,500,081	49,380,975	50,215,035	50,970,670	51,700,073	52,443,554	53,046,968	53,676,223	54,272,144	54,832,428	55,362,682	55,910,367	56,499,344	57,103,580	57,669,285	58,209,342							
June-91	6,727,038	15,771,999	21,820,901	25,665,833	28,606,961	30,755,665	32,249,710	33,434,382	34,630,923	35,639,652	36,661,638	37,733,064	38,765,183	39,734,589	40,612,815	41,479,663	42,275,974	42,925,167	43,635,680	44,069,182	44,462,411	44,863,611	45,327,198	45,737,838	46,124,346	46,460,492								
June-92	5,529,696	11,010,530	14,154,478	16,707,353	18,010,508	19,080,293	19,981,070	20,663,423	21,458,872	22,141,168	22,851,311	23,533,251	24,097,364	24,573,283	25,143,387	25,744,950	26,283,250	26,767,829	27,207,194	27,587,356	27,962,307	28,341,430	28,639,184	28,939,814	29,250,064									
June-93	3,873,223	8,389,572	10,824,326	12,579,041	13,682,345	14,650,572	14,980,197	15,299,706	15,652,059	15,960,508	16,198,969	16,437,335	16,647,751	16,845,525	17,057,906	17,261,464	17,446,939	17,667,638	17,927,011	18,169,867	18,397,903	18,582,538	18,741,996	18,889,448										
June-94	3,781,238	7,763,240	10,451,304	12,041,730	13,184,654	14,033,719	14,780,593	15,679,180	16,229,340	16,777,362	17,232,935	17,804,861	18,235,433	18,616,699	18,971,484	19,309,314	19,603,806	19,888,097	20,167,726	20,466,005	20,764,911	21,069,099	21,363,244											
June-95	4,117,530	8,085,099	10,658,744	12,524,501	13,540,049	14,383,050	15,205,770	15,840,120	16,337,357	16,680,320	17,024,333	17,347,955	17,691,046	17,980,888	18,198,811	18,406,575	18,613,590	18,839,234	19,049,825	19,261,206	19,432,796	19,603,661												
June-96	3,925,641	7,606,581	10,157,406	11,265,946	12,618,021	13,573,564	14,313,197	14,989,243	15,617,069	16,021,237	16,346,275	16,663,225	16,942,675	17,212,063	17,486,480	17,759,866	18,012,627	18,213,137	18,448,007	18,735,501	18,936,140													
June-97	3,802,186	7,776,567	9,916,724	11,863,394	13,377,068	14,556,289	15,406,967	15,928,071	16,176,008	16,397,842	16,558,081	16,798,807	16,939,079	17,083,096	17,228,429	17,411,092	17,558,775	17,699,497	17,796,045	17,892,253														
June-98	3,999,102	8,090,389	11,057,251	13,063,666	14,725,657	15,964,487	16,892,108	17,479,286	18,004,896	18,445,861	18,841,212	19,225,160	19,574,481	19,929,478	20,239,681	20,466,987	20,696,672	20,925,824	21,160,830															
June-99	3,807,499	8,152,795	11,043,621	13,229,580	14,782,416	15,710,384	16,521,760	17,074,054	17,452,452	17,884,931	18,180,175	18,422,658	18,600,387	18,768,162	18,941,104	19,104,918	19,315,841	19,525,405																
June-00	4,950,740	10,538,860	14,135,679	16,504,973	18,268,102	19,419,784	20,242,086	20,650,338	21,022,134	21,259,984	21,435,910	21,642,301	21,850,101	22,046,094	22,243,202	22,435,849	22,633,033																	
June-01	5,803,207	12,402,263	16,670,356	19,654,595	21,577,531	22,938,517	23,908,952	24,600,463	24,859,220	25,164,944	25,501,251	25,878,042	26,218,857	26,521,603	26,803,745	27,072,761																		
June-02	5,765,203	12,277,793	16,238,526	18,865,437	20,310,007	21,368,596	21,931,812	22,319,683	22,695,839	22,992,294	23,221,272	23,431,357	23,602,864	23,742,912	23,833,350																			
June-03	6,502,533	13,090,711	16,966,298	18,968,477	20,360,493	21,059,553	21,569,956	21,885,146	22,172,772	22,423,326	22,650,331	22,839,648	23,075,202	23,267,338																				
June-04	5,782,322	12,048,196	15,821,995	18,335,339	19,734,152	20,590,574	21,163,829	21,542,100	21,767,551	21,965,260	22,174,954	22,374,675	22,578,182																					
June-05	5,772,533	11,867,294	15,701,108	18,020,724	19,113,731	19,972,058	20,719,729	21,201,896	21,449,586	21,670,607	21,920,513	22,106,069																						
June-06	4,757,322	10,205,384	13,459,435	15,194,558	16,291,664	17,297,747	17,913,398	18,224,087	18,407,895	18,771,968	18,961,972																							
June-07	4,763,872	9,431,881	11,584,810	13,586,119	15,001,635	15,786,760	16,403,895	16,782,459	17,158,453	17,399,867																								
June-08	4,973,425	10,276,897	13,437,601	15,869,686	17,473,101	18,454,471	19,096,705	19,591,508	19,964,151																									
June-09	4,815,871	10,151,475	13,666,751	16,148,288	17,821,067	19,248,559	19,973,479	20,414,941																										
June-10	5,243,901	10,948,444	14,508,772	16,517,571	17,830,710	18,623,670	19,213,928																											
June-11	6,252,011	12,542,403	16,418,085	18,781,010	20,600,606	21,620,084																												
June-12	5,840,358	12,172,326	16,214,542	18,988,063	20,565,799																													
June-13	5,964,573	11,594,933	14,963,475	16,921,102																														
June-14	6,327,324	13,568,028	17,741,202																															
June-15	7,233,041	14,180,886																																
June-16	8,117,063																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.422	1.451	1.263	1.210	1.170	1.148	1.155	1.113	1.107	1.075	1.059	1.058	1.047	1.035	1.028	1.026	1.026	1.029	1.022	1.022	1.020	1.021	1.021	1.022	1.021	1.018	1.017	1.014	1.011	1.011	1.010	1.004	1.004
June-84	2.422	1.451	1.263	1.206	1.179	1.136	1.111	1.077	1.058	1.045	1.037	1.031	1.023	1.027	1.027	1.029	1.023	1.026	1.026	1.020	1.018	1.017	1.013	1.011	1.011	1.009	1.007	1.007	1.007	1.008	1.008	1.008	
June-85	2.422	1.451	1.252	1.207	1.168	1.118	1.090	1.079	1.052	1.045	1.041	1.033	1.034	1.031	1.025	1.025	1.024	1.023	1.020	1.020	1.016	1.016	1.015	1.012	1.011	1.011	1.011	1.011	1.007	1.007	1.005		
June-86	2.422	1.445	1.258	1.198	1.132	1.089	1.077	1.049	1.054	1.041	1.044	1.039	1.032	1.033	1.033	1.025	1.020	1.016	1.016	1.016	1.016	1.014	1.014	1.011	1.009	1.005	1.004	1.004	1.004	1.004			
June-87	2.404	1.428	1.281	1.188	1.111	1.078	1.065	1.052	1.046	1.038	1.039	1.039	1.028	1.026	1.023	1.019	1.015	1.012	1.012	1.018	1.011	1.011	1.012	1.009	1.009	1.010	1.009	1.008	1.008				
June-88	2.338	1.515	1.288	1.196	1.103	1.061	1.053	1.041	1.035	1.030	1.029	1.028	1.025	1.024	1.023	1.021	1.018	1.018	1.017	1.016	1.014	1.012	1.013	1.012	1.011	1.011	1.011	1.010					
June-89	2.755	1.483	1.254	1.149	1.083	1.064	1.050	1.036	1.033	1.028	1.025	1.023	1.021	1.019	1.017	1.016	1.015	1.015	1.014	1.013	1.013	1.013	1.013	1.011	1.011	1.010	1.010						
June-90	2.306	1.422	1.208	1.106	1.076	1.056	1.041	1.035	1.035	1.028	1.022	1.018	1.017	1.015	1.014	1.014	1.012	1.012	1.011	1.010	1.010	1.010	1.011	1.011	1.010	1.009							
June-91	2.345	1.384	1.176	1.115	1.075	1.049	1.037	1.036	1.029	1.029	1.029	1.027	1.025	1.022	1.021	1.019	1.015	1.017	1.010	1.009	1.009	1.010	1.009	1.008	1.007								
June-92	1.991	1.286	1.180	1.078	1.059	1.047	1.034	1.038	1.032	1.032	1.030	1.024	1.020	1.023	1.024	1.021	1.018	1.016	1.014	1.014	1.014	1.011	1.010	1.011									
June-93	2.166	1.290	1.162	1.088	1.071	1.022	1.021	1.023	1.020	1.015	1.015	1.013	1.012	1.013	1.012	1.011	1.013	1.015	1.014	1.013	1.010	1.009	1.008										
June-94	2.053	1.346	1.152	1.095	1.064	1.053	1.061	1.035	1.034	1.027	1.033	1.024	1.021	1.019	1.018	1.015	1.015	1.014	1.015	1.015	1.015	1.014											
June-95	1.964	1.318	1.175	1.081	1.062	1.057	1.042	1.031	1.021	1.021	1.019	1.020	1.016	1.012	1.011	1.011	1.012	1.011	1.011	1.009	1.009												
June-96	1.938	1.335	1.109	1.120	1.076	1.054	1.047	1.042	1.026	1.020	1.019	1.017	1.016	1.016	1.016	1.014	1.011	1.013	1.016	1.011													
June-97	2.045	1.275	1.196	1.128	1.088	1.058	1.034	1.016	1.014	1.010	1.015	1.008	1.009	1.009	1.011	1.008	1.008	1.005	1.005														
June-98	2.023	1.367	1.181	1.127	1.084	1.058	1.035	1.030	1.024	1.021	1.020	1.018	1.018	1.016	1.011	1.011	1.011	1.011															
June-99	2.141	1.355	1.198	1.117	1.063	1.052	1.033	1.022	1.025	1.017	1.013	1.010	1.009	1.009	1.009	1.011	1.011																
June-00	2.129	1.341	1.168	1.107	1.063	1.042	1.020	1.018	1.011	1.008	1.010	1.010	1.009	1.009	1.009	1.009																	
June-01	2.137	1.344	1.179	1.098	1.063	1.042	1.029	1.011	1.012	1.013	1.015	1.013	1.012	1.011	1.010																		
June-02	2.130	1.323	1.162	1.077	1.052	1.026	1.018	1.017	1.013	1.010	1.009	1.007	1.006	1.004																			
June-03	2.013	1.296	1.118	1.073	1.034	1.024	1.015	1.013	1.011	1.010	1.008	1.010	1.008																				
June-04	2.084	1.313	1.159	1.076	1.043	1.028	1.018	1.010	1.009	1.010	1.009	1.009																					
June-05	2.056	1.323	1.148	1.061	1.045	1.037	1.023	1.012	1.010	1.012	1.008																						
June-06	2.145	1.319	1.129	1.072	1.062	1.036	1.017	1.010	1.020	1.010																							
June-07	1.980	1.228	1.173	1.104	1.052	1.039	1.023	1.022	1.014																								
June-08	2.066	1.308	1.181	1.101	1.056	1.035	1.026	1.019																									
June-09	2.108	1.346	1.182	1.104	1.080	1.038	1.022																										
June-10	2.088	1.325	1.138	1.079	1.044	1.032																											
June-11	2.006	1.309	1.144	1.097	1.049																												
June-12	2.084	1.332	1.171	1.083																													
June-13	1.944	1.291	1.131																														
June-14	2.144	1.308																															
June-15	1.961																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.158	1.353	1.186	1.118	1.080	1.056	1.044	1.034	1.030	1.025	1.024	1.022	1.019	1.019	1.018	1.017	1.016	1.016	1.015	1.015	1.013	1.013	1.013	1.012	1.011	1.010	1.010	1.009	1.008	1.007	1.007	1.006	1.004	
Latest 5	2.028	1.313	1.153	1.093	1.057	1.036	1.022	1.015	1.013	1.010	1.010	1.010	1.009	1.010	1.010	1.011	1.011	1.011	1.012	1.012	1.011	1.011	1.010	1.011	1.010	1.009	1.009	1.008	1.008					
Latest 3	2.016	1.310	1.149	1.086	1.058	1.035	1.024	1.017	1.015	1.010	1.009	1.009	1.009	1.008	1.009	1.010	1.010	1.010	1.011	1.011	1.011	1.011	1.009	1.010	1.009	1.010	1.010	1.007	1.006	1.006	1.006			
Volume Wtd																																		
All Yrs	2.147	1.354	1.187	1.116	1.076	1.053	1.041	1.033	1.029	1.025	1.024	1.022	1.020	1.019	1.019	1.018	1.016	1.015	1.014	1.014	1.013	1.013	1.012	1.011	1.010	1.010	1.009	1.009	1.007	1.006	1.007	1.006	1.004	
Latest 5	2.026	1.313	1.153	1.093	1.056	1.036	1.022	1.014	1.013	1.010	1.010	1.010	1.009	1.009	1.010	1.011	1.011	1.011	1.012	1.012	1.011	1.010	1.011	1.011	1.010	1.009	1.009	1.008	1.007					
Latest 3	2.015	1.310	1.149	1.087	1.058	1.035	1.024	1.017	1.014	1.010	1.009	1.009	1.009	1.008	1.009	1.010	1.010	1.010	1.011	1.011	1.011	1.011	1.009	1.010	1.009	1.010	1.010	1.008	1.006	1.006	1.007			

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	111,257,723	119,818,253	110,209,194	117,927,388	(1,048,529)	-0.9%	(1,890,865)	-1.6%
6/30/82-83	17,429,230	18,042,778	17,461,544	18,046,689	32,314	0.2%	3,912	0.0%
6/30/83-84	24,427,134	25,481,608	24,499,071	25,440,302	71,938	0.3%	(41,307)	-0.2%
6/30/84-85	37,002,774	38,847,574	36,899,446	38,692,574	(103,327)	-0.3%	(155,000)	-0.4%
6/30/85-86	48,195,471	48,964,953	48,052,102	48,747,303	(143,369)	-0.3%	(217,650)	-0.4%
6/30/86-87	53,788,350	55,387,529	53,836,103	55,384,799	47,753	0.1%	(2,730)	0.0%
6/30/87-88	77,997,510	80,860,217	77,890,702	80,572,057	(106,808)	-0.1%	(288,160)	-0.4%
6/30/88-89	74,876,829	76,873,799	74,864,565	76,623,799	(12,264)	0.0%	(250,000)	-0.3%
6/30/89-90	71,495,887	72,909,707	71,441,887	72,694,707	(54,000)	-0.1%	(215,000)	-0.3%
6/30/90-91	57,844,859	60,172,440	57,789,859	60,006,520	(55,000)	-0.1%	(165,920)	-0.3%
6/30/91-92	36,753,670	38,113,219	36,635,670	37,977,219	(118,000)	-0.3%	(136,000)	-0.4%
6/30/92-93	24,872,376	26,498,476	24,708,944	25,739,876	(163,432)	-0.7%	(758,600)	-2.9%
6/30/93-94	27,703,000	28,473,851	27,608,000	27,999,105	(95,000)	-0.3%	(474,746)	-1.7%
6/30/94-95	26,137,720	26,793,520	25,880,880	26,516,660	(256,840)	-1.0%	(276,860)	-1.0%
6/30/95-96	25,390,985	26,130,791	25,319,048	26,037,937	(71,937)	-0.3%	(92,854)	-0.4%
6/30/96-97	25,292,858	26,077,936	24,997,634	25,747,988	(295,224)	-1.2%	(329,948)	-1.3%
6/30/97-98	28,574,047	29,365,406	28,387,173	29,146,332	(186,874)	-0.7%	(219,075)	-0.7%
6/30/98-99	26,673,704	27,495,705	26,495,681	27,283,133	(178,023)	-0.7%	(212,572)	-0.8%
6/30/99-00	30,521,970	31,513,187	30,172,639	31,115,845	(349,330)	-1.1%	(397,342)	-1.3%
6/30/00-01	35,794,488	36,787,272	35,383,408	36,324,503	(411,080)	-1.1%	(462,769)	-1.3%
6/30/01-02	32,755,325	34,086,377	32,123,832	33,382,543	(631,492)	-1.9%	(703,834)	-2.1%
6/30/02-03	32,282,753	33,604,000	31,737,508	33,025,550	(545,245)	-1.7%	(578,450)	-1.7%
6/30/03-04	31,736,521	33,102,320	31,194,777	32,495,700	(541,744)	-1.7%	(606,620)	-1.8%
6/30/04-05	31,812,000	32,993,000	31,243,804	32,391,000	(568,196)	-1.8%	(602,000)	-1.8%
6/30/05-06	29,464,000	30,299,000	28,626,650	30,019,000	(837,350)	-2.8%	(280,000)	-0.9%
6/30/06-07	27,341,100	28,888,450	26,449,268	28,384,200	(891,832)	-3.3%	(504,250)	-1.7%
6/30/07-08	32,901,350	34,639,200	32,123,000	33,893,400	(778,350)	-2.4%	(745,800)	-2.2%
6/30/08-09	34,421,170	36,004,668	33,883,050	34,863,872	(538,120)	-1.6%	(1,140,796)	-3.2%
6/30/09-10	34,037,050	36,912,951	32,960,350	35,910,492	(1,076,700)	-3.2%	(1,002,459)	-2.7%
6/30/10-11	40,231,630	42,557,651	38,976,630	40,595,797	(1,255,000)	-3.1%	(1,961,854)	-4.6%
6/30/11-12	41,261,270	44,482,148	39,791,550	42,195,632	(1,469,720)	-3.6%	(2,286,516)	-5.1%
6/30/12-13	37,844,800	42,368,768	37,106,350	40,346,054	(738,450)	-2.0%	(2,022,714)	-4.8%
6/30/13-14	45,537,250	50,064,268	44,947,870	47,758,000	(589,380)	-1.3%	(2,306,268)	-4.6%
6/30/14-15	49,757,250	56,391,828	46,421,730	50,697,600	(3,335,520)	-6.7%	(5,694,228)	-10.1%
6/30/15-16								
Total	1,363,414,052	1,431,002,851	1,346,119,920	1,403,983,575	(17,294,132)	-1.3%	(27,019,276)	-1.9%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 1, Exhibit 1, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Calculation of Ultimate Lump Sum Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Accident Year	Paid Loss Excluding Lump Sum	Implied Cumulative LDF	Ult Loss Excluding Lump Sum	Selected Incr Lump Sum % Outstdg	Cumulative Lump Sum % Outstdg	Total Lump Sum Outstdg	Paid Lump Sum to Date	Est Ult Lump Sum - Incr Method	Ultimate Lump Sum Percentage	Lump Sum LDF	Est Ult Lump Sum - Paid Method	Selected Est Ultimate Lump Sums	Prior Est Ultimate Lump Sums
All Prior Yrs	93,227,809	1.162	108,291,295	0.0%	0.0%	0	3,941,682	3,941,682	3.6%	1.005	3,960,281	3,950,982	3,959,283
6/30/82-83	16,220,281	1.042	16,906,074	0.0%	0.0%	0	771,231	771,231	4.6%	1.001	771,951	771,591	771,810
6/30/83-84	21,253,389	1.083	23,021,703	0.0%	0.0%	0	1,792,639	1,792,639	7.8%	1.003	1,798,705	1,795,672	1,798,090
6/30/84-85	33,400,919	1.081	36,110,450	0.0%	0.0%	0	2,791,264	2,791,264	7.7%	1.003	2,800,382	2,795,823	2,799,556
6/30/85-86	43,984,709	1.038	45,677,407	0.0%	0.0%	0	3,303,601	3,303,601	7.2%	1.004	3,316,424	3,310,012	3,315,545
6/30/86-87	47,433,435	1.052	49,911,443	0.0%	0.0%	0	5,447,750	5,447,750	10.9%	1.003	5,465,446	5,456,598	5,464,197
6/30/87-88	67,192,308	1.099	73,833,044	0.0%	0.0%	0	8,057,017	8,057,017	10.9%	1.003	8,082,786	8,069,902	8,087,248
6/30/88-89	61,991,993	1.065	66,006,256	0.0%	0.0%	0	9,826,239	9,826,239	14.9%	1.005	9,879,626	9,852,932	9,870,885
6/30/89-90	58,209,342	1.070	62,275,518	0.0%	0.0%	0	10,079,298	10,079,298	16.2%	1.006	10,135,652	10,107,475	10,125,179
6/30/90-91	46,460,492	1.110	51,581,444	0.0%	0.0%	0	8,721,440	8,721,440	16.9%	1.006	8,776,117	8,748,778	8,530,248
6/30/91-92	29,250,064	1.093	31,974,892	0.0%	0.0%	0	5,420,474	5,420,474	17.0%	1.007	5,460,313	5,440,393	5,458,621
6/30/92-93	18,889,448	1.147	21,664,590	0.0%	0.0%	997	4,100,618	4,101,615	18.9%	1.011	4,147,693	4,124,654	4,139,001
6/30/93-94	21,363,244	1.102	23,543,026	0.0%	0.1%	11,855	4,177,034	4,188,889	17.8%	1.012	4,229,076	4,208,983	4,225,124
6/30/94-95	19,603,661	1.118	21,920,993	0.0%	0.1%	20,256	4,050,860	4,071,116	18.6%	1.018	4,123,178	4,097,147	4,112,928
6/30/95-96	18,936,140	1.137	21,532,810	0.0%	0.1%	29,149	3,859,732	3,888,880	18.1%	1.020	3,935,364	3,912,122	3,794,033
6/30/96-97	17,892,253	1.155	20,662,850	0.1%	0.2%	38,327	4,501,152	4,539,479	22.0%	1.022	4,601,685	4,570,582	4,580,369
6/30/97-98	21,160,830	1.149	24,304,433	0.0%	0.2%	48,999	4,686,877	4,735,876	19.5%	1.034	4,847,713	4,791,795	4,833,963
6/30/98-99	19,525,405	1.169	22,826,261	0.1%	0.3%	72,094	4,086,938	4,159,032	18.2%	1.040	4,252,177	4,205,605	4,229,919
6/30/99-00	22,633,033	1.184	26,798,704	0.1%	0.4%	110,798	3,907,368	4,018,167	15.0%	1.043	4,074,753	4,046,460	4,072,365
6/30/00-01	27,072,761	1.187	32,143,771	0.1%	0.5%	149,106	3,814,863	3,963,969	12.3%	1.040	3,969,160	3,966,564	4,008,326
6/30/01-02	23,833,350	1.213	28,910,944	0.2%	0.6%	178,020	3,832,669	4,010,689	13.9%	1.054	4,039,392	4,025,041	4,074,980
6/30/02-03	23,267,338	1.228	28,570,526	0.2%	0.8%	219,910	3,519,914	3,739,824	13.1%	1.056	3,716,054	3,727,939	3,784,930
6/30/03-04	22,578,182	1.244	28,080,446	0.1%	0.9%	250,647	3,593,520	3,844,167	13.7%	1.064	3,823,802	3,833,985	3,891,672
6/30/04-05	22,106,069	1.276	28,204,729	0.2%	1.1%	302,753	4,030,153	4,332,906	15.4%	1.082	4,360,121	4,346,514	4,419,413
6/30/05-06	18,961,972	1.304	24,723,855	0.2%	1.3%	310,936	4,040,429	4,351,365	17.6%	1.101	4,446,591	4,398,978	4,290,519
6/30/06-07	17,399,867	1.333	23,192,995	0.2%	1.4%	335,155	3,364,817	3,699,972	16.0%	1.125	3,786,482	3,764,320	3,746,954
6/30/07-08	19,964,151	1.397	27,896,030	0.2%	1.6%	453,722	4,694,691	5,148,413	18.5%	1.134	5,323,360	5,258,083	5,263,713
6/30/08-09	20,414,941	1.440	29,397,342	0.5%	2.1%	620,734	3,974,635	4,595,369	15.6%	1.191	4,732,730	4,683,990	4,582,028
6/30/09-10	19,213,928	1.497	28,767,364	1.1%	3.2%	929,887	4,333,685	5,263,572	18.3%	1.283	5,561,946	5,398,368	5,334,365
6/30/10-11	21,620,084	1.564	33,820,897	1.2%	4.4%	1,497,743	4,124,269	5,622,012	16.6%	1.445	5,957,927	5,875,328	6,202,461
6/30/11-12	20,565,799	1.692	34,794,667	1.8%	6.2%	2,154,862	3,673,666	5,828,528	16.8%	1.690	6,208,041	5,944,744	6,178,610
6/30/12-13	16,921,102	1.855	31,394,610	2.8%	9.0%	2,814,324	2,517,932	5,332,256	17.0%	2.342	5,895,768	5,439,170	4,907,039
6/30/13-14	17,741,202	2.170	38,499,014	3.4%	12.4%	4,772,817	1,973,530	6,746,348	17.5%	4.546	8,971,316	6,969,080	6,232,422
6/30/14-15	14,180,886	2.876	40,786,956	2.4%	14.8%	6,030,869	377,841	6,408,709	15.7%	12.726	4,808,539	6,037,264	6,956,390
6/30/15-16	8,117,063	5.917	48,024,636	1.6%	16.3%	7,849,134	21,500	7,870,634	16.4%	55.312	1,189,200	7,693,773	
Total	992,587,448		1,256,051,972			29,203,094	145,411,328	174,614,422	13.9%		171,449,751	175,620,648	168,042,185

NOTES:

(2) From Section 1, Exhibit 1, Page 2, Column 3
(3) = (4) / (2)
(4) From Section 1, Exhibit 1, Page 2, Column 6
(5) From Section 1, Exhibit 1, Page 11
(6) Downward sum of (5)
(7) = (6) x (4)
(8) From Section 1, Exhibit 1, Page 10
(9) = (7) + (8)
(10) = (9) / (4)
(11) From Section 1, Exhibit 1, Page 12
(12) = (8) x (11)
(13) Selected based on (9) and (12)
(14) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts Workers Compensation
All Clusters Combined
INDEMNITY
Lump Sum Development
Incremental Lump Sum Payments

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0	0	0	0	0	0	12,000	46,500	31,000	20,000	184,000	115,000	138,000	550,984	594,000	318,784	155,500	30,000	362,833	369,668	354,998	72,250	145,500	201,500	118,040	28,000	78,125	0	0	7,500	7,500	0	0	0	0
Jun-83	0	0	0	0	0	20,000	0	32,500	37,500	80,000	153,481	90,750	77,000	110,000	160,000	0	10,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Jun-84	0	0	0	0	25,750	32,500	110,600	178,437	119,500	233,650	204,200	246,501	48,000	102,001	50,000	30,000	37,500	85,000	45,000	0	0	84,000	0	10,000	0	0	150,000	0	0	0	0	0	0		
Jun-85	0	0	0	98,476	35,500	126,500	146,555	201,250	383,400	565,833	337,200	193,500	294,550	40,000	0	133,500	120,000	30,000	35,000	25,000	0	0	0	0	0	0	0	0	25,000	0	0	0			
Jun-86	0	0	58,000	116,759	213,100	146,344	336,928	826,899	586,995	10,000	147,000	20,000	86,000	37,500	0	0	0	30,000	55,000	64,000	16,000	45,000	58,275	237,801	0	198,000	2,000	12,000	0	0	0				
Jun-87	0	81,440	184,322	246,666	253,462	621,607	1,050,537	509,001	398,456	184,806	186,424	102,671	334,859	406,500	240,000	239,999	50,000	132,000	80,000	10,000	0	0	0	135,000	0	0	0	0	0	0					
Jun-88	0	106,671	200,428	418,500	836,484	1,573,442	1,192,500	711,383	849,000	373,400	305,326	241,507	328,463	0	59,910	0	191,667	65,000	85,333	100,001	90,000	150,001	0	58,001	62,000	58,000	0	0	0						
Jun-89	0	239,195	381,000	997,744	1,789,441	1,630,950	1,022,995	995,502	531,500	332,500	603,811	258,100	276,500	92,500	25,000	18,500	63,500	218,333	116,383	160,284	62,500	0	0	10,000	0	1	0	0							
Jun-90	0	254,094	1,205,138	1,809,296	1,317,952	1,060,755	985,550	993,000	409,534	438,300	365,512	408,833	40,833	46,000	31,000	25,000	106,000	110,125	129,876	27,500	33,333	33,333	33,333	0	184,500	30,500	0								
Jun-91	13,500	438,707	1,994,750	1,433,327	920,426	1,217,840	758,000	203,289	232,000	140,000	100,001	54,000	0	0	70,000	178,100	102,500	280,000	130,000	0	0	0	60,000	0	158,000	237,000									
Jun-92	66,000	830,673	583,116	753,497	838,750	535,501	294,500	221,500	181,500	178,000	202,683	31,250	13,500	122,268	33,368	20,867	326,500	107,000	80,001	0	0	0	0	0	0										
Jun-93	62,000	654,058	665,328	971,951	408,250	415,801	286,729	103,000	190,000	85,000	12,000	55,000	0	0	0	0	50,000	58,000	35,000	35,000	0	0	13,500	1											
Jun-94	90,000	679,356	863,226	715,524	525,377	333,501	199,500	201,500	47,500	40,050	0	234,500	71,000	25,000	25,000	120,000	6,000	0	0	0	0	0	0												
Jun-95	219,963	888,102	977,200	797,324	399,770	225,600	67,000	10,000	70,625	134,875	58,400	35,000	0	112,000	42,500	12,500	0	0	0	0	0	1													
Jun-96	80,500	705,230	1,049,356	656,831	319,451	110,001	89,167	158,833	123,000	131,001	103,000	62,500	0	18,400	16,600	0	0	0	71,725	32,069	132,068														
Jun-97	134,365	1,184,751	1,074,000	820,183	422,500	172,251	16,000	140,600	106,501	109,001	167,000	17,000	0	0	40,000	40,000	0	0	30,000	27,000															
Jun-98	408,337	890,613	1,162,675	665,000	431,091	264,909	110,335	161,166	29,000	8,001	10,000	227,750	130,000	119,000	69,000	0	0	0	0																
Jun-99	251,500	439,250	1,042,681	765,621	367,556	218,197	270,076	179,055	73,001	180,000	52,000	73,001	0	0	65,000	110,000	0	0																	
Jun-00	135,731	994,493	726,541	532,050	394,551	264,499	364,884	198,118	118,001	76,000	31,500	34,000	25,000	12,000	0	0	0																		
Jun-01	108,490	517,820	838,510	515,804	486,170	523,565	239,504	370,500	134,000	18,000	0	0	62,500	0	0	0																			
Jun-02	48,000	251,595	619,400	692,914	768,087	556,815	356,721	325,000	45,136	69,000	53,000	42,000	0	5,000	1																				
Jun-03	20,000	243,617	973,654	830,735	554,982	452,423	125,001	80,000	6,000	96,000	77,500	60,000	1	1																					
Jun-04	47,500	153,200	552,463	917,102	829,753	553,000	162,000	241,501	100,000	0	1,001	36,000	0																						
Jun-05	6,157	171,103	840,367	1,359,602	649,723	301,000	271,000	217,001	194,200	0	0	20,000																							
Jun-06	0	307,301	772,454	1,353,001	484,173	445,500	363,000	103,000	19,700	15,300	177,000																								
Jun-07	36,000	451,583	914,752	703,751	416,002	193,002	149,442	275,002	148,783	76,500																									
Jun-08	17,730	728,501	774,649	979,000	795,250	372,462	679,872	198,334	148,893																										
Jun-09	285,000	362,500	783,767	808,001	522,676	524,500	314,501	373,691																											
Jun-10	0	601,092	797,379	946,609	922,799	554,305	511,501																												
Jun-11	315,691	461,993	1,026,227	799,329	1,115,029	406,000																													
Jun-12	0	441,786	742,328	1,621,090	868,462																														
Jun-13	113,000	371,012	696,259	1,337,661																															
Jun-14	102,000	301,628	1,569,902																																
Jun-15	0	377,841																																	
Jun-16	21,500																																		

Cumulative Lump Sum Payments

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	12,000	58,500	89,500	109,500	293,500	408,500	546,500	1,097,484	1,691,484	2,010,268	2,165,768	2,195,768	2,558,601	2,928,269	3,283,267	3,355,517	3,501,017	3,702,517	3,820,557	3,848,557	3,926,682	3,926,682	3,926,682	3,934,182	3,941,682	3,941,682	3,941,682	3,941,682	3,941,682
Jun-83	0	0	0	0	0	20,000	20,000	52,500	90,000	170,000	323,481	414,231	491,231	601,231	761,231	761,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231		
Jun-84	0	0	0	0	25,750	58,250	168,850	347,287	466,787	700,437	904,637	1,151,138	1,199,138	1,301,139	1,351,139	1,381,139	1,418,639	1,503,639	1,548,639	1,548,639	1,548,639	1,632,639	1,632,639	1,642,639	1,642,639	1,642,639	1,792,639	1,792,639	1,792,639	1,792,639	1,792,639	1,792,639	1,792,639	1,792,639		
Jun-85	0	0	0	98,476	133,976	260,476	407,031	608,281	991,681	1,557,514	1,894,714	2,088,214	2,382,764	2,422,764	2,422,764	2,556,264	2,676,264	2,706,264	2,741,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,791,264	2,791,264	2,791,264	2,791,264				
Jun-86	0	0	58,000	174,759	387,859	534,203	871,131	1,698,030	2,285,025	2,295,025	2,442,025	2,462,025	2,548,025	2,585,525	2,585,525	2,585,525	2,585,525	2,615,525	2,670,525	2,734,525	2,750,525	2,795,525	2,853,800	3,091,601	3,091,601	3,289,601	3,291,601	3,303,601	3,303,601	3,303,601	3,303,601					
Jun-87	0	81,440	265,762	512,428	765,890	1,387,497	2,438,034	2,947,035	3,345,491	3,530,297	3,716,721	3,819,392	4,154,251	4,560,751	4,800,751	5,040,750	5,090,750	5,222,750	5,302,750	5,312,750	5,312,750	5,312,750	5,312,750	5,447,750	5,447,750	5,447,750	5,447,750	5,447,750	5,447,750	5,447,750						
Jun-88	0	106,671	307,099	725,599	1,562,083	3,135,525	4,328,025	5,039,408	5,888,408	6,261,808	6,567,134	6,808,641	7,137,104	7,137,104	7,197,014	7,197,014	7,388,681	7,453,681	7,539,014	7,639,015	7,729,015	7,879,016	7,879,016	7,937,017	7,999,017	8,057,017	8,057,017	8,057,017	8,057,017							
Jun-89	0	239,195	620,195	1,617,939	3,407,380	5,038,330	6,061,325	7,056,827	7,588,327	7,920,827	8,524,638	8,782,738	9,059,238	9,151,738	9,176,738	9,195,238	9,258,738	9,477,071	9,593,454	9,753,738	9,816,238	9,816,238	9,816,238	9,826,238	9,826,238	9,826,239	9,826,239	9,826,239							
Jun-90	0	254,094	1,459,232	3,268,528	4,586,480	5,647,235	6,632,785	7,625,785	8,035,319	8,473,619	8,839,131	9,247,964	9,288,797	9,334,797	9,365,797	9,390,797	9,496,797	9,606,922	9,736,798	9,764,298	9,797,631	9,830,965	9,864,298	9,864,298	10,048,798	10,079,298	10,079,298								
Jun-91	13,500	452,207	2,446,957	3,880,284	4,800,710	6,018,550	6,776,550	6,979,839	7,211,839	7,351,839	7,451,840	7,505,840	7,505,840	7,505,840	7,575,840	7,753,940	7,856,440	8,136,440	8,266,440	8,266,440	8,266,440	8,266,440	8,326,440	8,326,440	8,484,440	8,721,440									
Jun-92	66,000	896,673	1,479,789	2,233,286	3,072,036	3,607,537	3,902,037	4,123,537	4,305,037	4,483,037	4,685,720	4,716,970	4,730,470	4,852,738	4,886,106	4,906,973	5,233,473	5,340,473	5,420,474	5,420,474	5,420,474	5,420,474	5,420,474	5,420,474	5,420,474											
Jun-93	62,000	716,058	1,381,386	2,353,337	2,761,587	3,177,388	3,464,117	3,567,117	3,757,117	3,842,117	3,854,117	3,909,117	3,909,117	3,909,117	3,909,117	3,909,117	3,959,117	4,017,117	4,052,117	4,087,117	4,087,117	4,087,117	4,100,617	4,100,618												
Jun-94	90,000	769,356	1,632,582	2,348,106	2,873,483	3,206,984	3,406,484	3,607,984	3,655,484	3,695,534	3,695,534	3,930,034	4,001,034	4,026,034	4,051,034	4,171,034	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034													
Jun-95	219,963	1,108,065	2,085,265	2,882,589	3,282,359	3,507,959	3,574,959	3,584,959	3,655,584	3,790,459	3,848,859	3,883,859	3,883,859	3,995,859	4,038,359	4,050,859	4,050,859	4,050,859	4,050,859	4,050,859	4,050,859	4,050,860													
Jun-96	80,500	785,730	1,835,086	2,491,917	2,811,368	2,921,369	3,010,536	3,169,369	3,292,369	3,423,370	3,526,370	3,588,870	3,588,870	3,607,270	3,623,870	3,623,870	3,623,870	3,623,870	3,695,595	3,727,664	3,859,732														
Jun-97	134,365	1,319,116	2,393,116	3,213,299	3,635,799	3,808,050	3,824,050	3,964,650	4,071,151	4,180,152	4,347,152	4,364,152	4,364,152	4,364,152	4,404,152	4,444,152	4,444,152	4,444,152	4,474,152	4,501,152															
Jun-98	408,337	1,298,950	2,461,625	3,126,625	3,557,716	3,822,625	3,932,960	4,094,126	4,123,126	4,131,127	4,141,127	4,368,877	4,498,877	4,617,877	4,686,877	4,686,877	4,686,877	4,686,877	4,686,877																
Jun-99	251,500	690,750	1,733,431	2,499,052	2,866,608	3,084,805	3,354,881	3,533,936	3,606,937	3,786,937	3,838,937	3,911,938	3,911,938	3,911,938	3,976,938	4,086,938	4,086,938	4,086,938	4,086,938																	
Jun-00	135,731	1,130,224	1,856,765	2,388,815	2,783,366	3,047,865	3,412,749	3,610,867	3,728,868	3,804,868	3,836,368	3,870,368	3,895,368	3,907,368	3,907,368	3,907,368	3,907,368																			
Jun-01	108,490	626,310	1,464,820	1,980,624	2,466,794	2,990,359	3,229,863	3,600,363	3,734,363	3,752,363	3,752,363	3,752,363	3,814,863	3,814,863	3,814,863	3,814,863																			
Jun-02	48,000	299,595	918,995	1,611,909	2,379,996	2,936,811	3,293,532	3,618,532	3,663,668	3,732,668	3,785,668	3,827,668	3,827,668	3,832,668	3,832,669																					
Jun-03	20,000	263,617	1,237,271	2,068,006	2,622,988	3,075,411	3,200,412	3,280,412	3,286,412	3,382,412	3,459,912	3,519,912	3,519,913	3,519,914																					
Jun-04	47,500	200,700	753,163	1,670,265	2,500,018	3,053,018	3,215,018	3,456,519	3,556,519	3,556,519	3,557,520	3,593,520	3,593,520																						
Jun-05	6,157	177,260	1,017,627	2,377,229	3,026,952	3,327,952	3,598,952	3,815,953	4,010,153	4,010,153	4,010,153	4,030,153																							
Jun-06	0	307,301	1,079,755	2,432,756	2,916,929	3,362,429	3,725,429	3,828,429	3,848,129	3,863,429	4,040,429																								
Jun-07	36,000	487,583	1,402,335	2,106,086	2,522,088	2,715,090	2,864,532	3,139,534	3,288,317	3,364,817																									
Jun-08	17,730	746,231	1,520,880	2,499,880	3,295,130	3,667,592	4,347,463	4,545,798	4,694,691																										
Jun-09	285,000	647,500	1,431,267	2,239,268	2,761,944	3,286,444	3,600,945	3,974,635																											
Jun-10	0	601,092	1,398,471	2,345,079	3,267,878	3,822,184	4,333,685																												
Jun-11	315,691	777,684	1,803,911	2,603,240	3,718,269	4,124,269																													
Jun-12	0	441,786	1,184,114	2,805,204	3,673,666																														
Jun-13	113,000	484,012	1,180,271	2,517,932																															
Jun-14	102,000	403,628	1,973,530																																
Jun-15	0	377,841																																	
Jun-16	21,500																																		

Commonwealth of Massachusetts Workers Compensation
All Clusters Combined
INDEMNITY
Lump Sum Development
Incremental Lump Sums as a % of Ultimate Losses Excluding Lump Sums

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.001	0.001	0.005	0.005	0.003	0.001	0.000	0.003	0.003	0.003	0.001	0.001	0.002	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Jun-83	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.002	0.002	0.005	0.009	0.005	0.005	0.007	0.009	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-84	0.000	0.000	0.000	0.000	0.001	0.001	0.005	0.008	0.005	0.010	0.009	0.011	0.002	0.004	0.002	0.001	0.002	0.004	0.002	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-85	0.000	0.000	0.000	0.003	0.001	0.004	0.004	0.006	0.011	0.016	0.009	0.005	0.008	0.001	0.000	0.004	0.003	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.001	0.003	0.005	0.003	0.007	0.018	0.013	0.000	0.003	0.000	0.002	0.001	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.001	0.001	0.005	0.000	0.004	0.000	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.002	0.004	0.005	0.005	0.012	0.021	0.010	0.008	0.004	0.004	0.002	0.007	0.008	0.005	0.005	0.001	0.003	0.002	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.001	0.003	0.006	0.011	0.021	0.016	0.010	0.011	0.005	0.004	0.003	0.004	0.000	0.001	0.000	0.003	0.001	0.001	0.001	0.001	0.002	0.000	0.001	0.001	0.001	0.000	0.000	0.000						
Jun-89	0.000	0.004	0.006	0.015	0.027	0.025	0.015	0.015	0.008	0.005	0.009	0.004	0.004	0.001	0.000	0.000	0.001	0.003	0.002	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.004	0.019	0.029	0.021	0.017	0.016	0.016	0.007	0.007	0.006	0.007	0.001	0.001	0.000	0.000	0.002	0.002	0.002	0.000	0.001	0.001	0.001	0.000	0.003	0.000	0.000								
Jun-91	0.000	0.009	0.039	0.028	0.018	0.024	0.015	0.004	0.004	0.003	0.002	0.001	0.000	0.000	0.001	0.003	0.002	0.005	0.003	0.000	0.000	0.000	0.001	0.000	0.003	0.005									
Jun-92	0.002	0.026	0.018	0.024	0.026	0.017	0.009	0.007	0.006	0.006	0.006	0.001	0.000	0.004	0.001	0.001	0.010	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.003	0.030	0.031	0.045	0.019	0.019	0.013	0.005	0.009	0.004	0.001	0.003	0.000	0.000	0.000	0.000	0.002	0.003	0.002	0.002	0.000	0.000	0.001	0.000											
Jun-94	0.004	0.029	0.037	0.030	0.022	0.014	0.008	0.009	0.002	0.002	0.000	0.010	0.003	0.001	0.001	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000												
Jun-95	0.010	0.041	0.045	0.036	0.018	0.010	0.003	0.000	0.003	0.006	0.003	0.002	0.000	0.005	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.004	0.033	0.049	0.031	0.015	0.005	0.004	0.007	0.006	0.006	0.005	0.003	0.000	0.001	0.001	0.000	0.000	0.000	0.003	0.001	0.006														
Jun-97	0.007	0.057	0.052	0.040	0.020	0.008	0.001	0.007	0.005	0.005	0.008	0.001	0.000	0.000	0.002	0.002	0.000	0.000	0.001	0.001															
Jun-98	0.017	0.037	0.048	0.027	0.018	0.011	0.005	0.007	0.001	0.000	0.000	0.009	0.005	0.005	0.003	0.000	0.000	0.000	0.000																
Jun-99	0.011	0.019	0.046	0.034	0.016	0.010	0.012	0.008	0.003	0.008	0.002	0.003	0.000	0.000	0.003	0.005	0.000	0.000																	
Jun-00	0.005	0.037	0.027	0.020	0.015	0.010	0.014	0.007	0.004	0.003	0.001	0.001	0.001	0.000	0.000	0.000	0.000																		
Jun-01	0.003	0.016	0.026	0.016	0.015	0.016	0.007	0.012	0.004	0.001	0.000	0.000	0.002	0.000	0.000	0.000																			
Jun-02	0.002	0.009	0.021	0.024	0.027	0.019	0.012	0.011	0.002	0.002	0.002	0.001	0.000	0.000	0.000																				
Jun-03	0.001	0.009	0.034	0.029	0.019	0.016	0.004	0.003	0.000	0.003	0.003	0.002	0.000	0.000																					
Jun-04	0.002	0.005	0.020	0.033	0.030	0.020	0.006	0.009	0.004	0.000	0.000	0.001	0.000																						
Jun-05	0.000	0.006	0.030	0.048	0.023	0.011	0.010	0.008	0.007	0.000	0.000	0.001																							
Jun-06	0.000	0.012	0.031	0.055	0.020	0.018	0.015	0.004	0.001	0.001	0.007																								
Jun-07	0.002	0.019	0.039	0.030	0.018	0.008	0.006	0.012	0.006	0.003																									
Jun-08	0.001	0.026	0.028	0.035	0.029	0.013	0.024	0.007	0.005																										
Jun-09	0.010	0.012	0.027	0.027	0.018	0.018	0.011	0.013																											
Jun-10	0.000	0.021	0.028	0.033	0.032	0.019	0.018																												
Jun-11	0.009	0.014	0.030	0.024	0.033	0.012																													
Jun-12	0.000	0.013	0.021	0.047	0.025																														
Jun-13	0.004	0.012	0.022	0.043																															
Jun-14	0.003	0.008	0.041																																
Jun-15																																			
Jun-16	0.000																																		

Averages		*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
Simple Avg																																			
All Yrs (ex P)	0.003	0.016	0.026	0.026	0.018	0.013	0.010	0.008	0.005	0.004	0.004	0.003	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	#DIV/0!	
Latest 5	0.002	0.012	0.028	0.035	0.027	0.014	0.015	0.009	0.005	0.001	0.002	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000					
Latest 3	0.002	0.010	0.028	0.038	0.030	0.016	0.018	0.011	0.004	0.001	0.002	0.001	0.000	0.000	0.000	0.002	0.000	0.000	0.002	0.001	0.002	0.000	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000			
Olympic Avg																																			
All Yrs (ex P)	0.003	0.015	0.026	0.026	0.018	0.013	0.010	0.008	0.005	0.004	0.004	0.003	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000			
Latest 10	0.003	0.015	0.029	0.037	0.024	0.016	0.011	0.009	0.004	0.002	0.002	0.002	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.000										
Latest 5	0.002	0.012	0.027	0.034	0.029	0.014	0.014	0.009	0.005	0.001	0.002	0.001	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000					

Commonwealth of Massachusetts Workers Compensation
All Clusters Combined
INDEMNITY
Paid Loss Development
Paid Loss - Lump Sum only

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	12,000	58,500	89,500	109,500	293,500	408,500	546,500	1,097,484	1,691,484	2,010,268	2,165,768	2,195,768	2,558,601	2,928,269	3,283,267	3,355,517	3,501,017	3,702,517	3,820,557	3,848,557	3,926,682	3,926,682	3,926,682	3,934,182	3,941,682	3,941,682	3,941,682	3,941,682	3,941,682
Jun-83	0	0	0	0	0	20,000	20,000	52,500	90,000	170,000	323,481	414,231	491,231	601,231	761,231	761,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	771,231	
Jun-84	0	0	0	0	25,750	58,250	168,850	347,287	466,787	700,437	904,637	1,151,138	1,199,138	1,301,139	1,351,139	1,381,139	1,418,639	1,503,639	1,548,639	1,548,639	1,548,639	1,632,639	1,632,639	1,642,639	1,642,639	1,642,639	1,792,639	1,792,639	1,792,639	1,792,639	1,792,639	1,792,639	1,792,639	1,792,639	
Jun-85	0	0	0	98,476	133,976	260,476	407,031	608,281	991,681	1,557,514	1,894,714	2,088,214	2,382,764	2,422,764	2,422,764	2,556,264	2,676,264	2,706,264	2,741,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,766,264	2,791,264	2,791,264	2,791,264	2,791,264		
Jun-86	0	0	58,000	174,759	387,859	534,203	871,131	1,698,030	2,285,025	2,295,025	2,442,025	2,462,025	2,548,025	2,585,525	2,585,525	2,585,525	2,585,525	2,615,525	2,670,525	2,734,525	2,750,525	2,795,525	2,853,800	3,091,601	3,091,601	3,289,601	3,291,601	3,303,601	3,303,601	3,303,601	3,303,601				
Jun-87	0	81,440	265,762	512,428	765,890	1,387,497	2,438,034	2,947,035	3,345,491	3,530,297	3,716,721	3,819,392	4,154,251	4,560,751	4,800,751	5,040,750	5,090,750	5,222,750	5,302,750	5,312,750	5,312,750	5,312,750	5,312,750	5,312,750	5,447,750	5,447,750	5,447,750	5,447,750	5,447,750	5,447,750	5,447,750					
Jun-88	0	106,671	307,099	725,599	1,562,083	3,135,525	4,328,025	5,039,408	5,888,408	6,261,808	6,567,134	6,808,641	7,137,104	7,137,104	7,197,014	7,197,014	7,388,681	7,453,681	7,539,014	7,639,015	7,729,015	7,879,016	7,879,016	7,937,017	7,999,017	8,057,017	8,057,017	8,057,017	8,057,017						
Jun-89	0	239,195	620,195	1,617,939	3,407,380	5,038,330	6,061,325	7,056,827	7,588,327	7,920,827	8,524,638	8,782,738	9,059,238	9,151,738	9,176,738	9,195,238	9,258,738	9,477,071	9,593,454	9,753,738	9,816,238	9,816,238	9,816,238	9,826,238	9,826,238	9,826,239	9,826,239	9,826,239							
Jun-90	0	254,094	1,459,232	3,268,528	4,586,480	5,647,235	6,632,785	7,625,785	8,035,319	8,473,619	8,839,131	9,247,964	9,288,797	9,334,797	9,365,797	9,390,797	9,496,797	9,606,922	9,736,798	9,764,298	9,797,631	9,830,965	9,864,298	9,864,298	10,048,798	10,079,298	10,079,298								
Jun-91	13,500	452,207	2,446,957	3,880,284	4,800,710	6,018,550	6,776,550	6,979,839	7,211,839	7,351,839	7,451,840	7,505,840	7,505,840	7,505,840	7,575,840	7,753,940	7,856,440	8,136,440	8,266,440	8,266,440	8,266,440	8,266,440	8,326,440	8,326,440	8,484,440	8,721,440									
Jun-92	66,000	896,673	1,479,789	2,233,286	3,072,036	3,607,537	3,902,037	4,123,537	4,305,037	4,483,037	4,685,720	4,716,970	4,730,470	4,852,738	4,886,106	4,906,973	5,233,473	5,340,473	5,420,474	5,420,474	5,420,474	5,420,474	5,420,474	5,420,474	5,420,474										
Jun-93	62,000	716,058	1,381,386	2,353,337	2,761,587	3,177,388	3,464,117	3,567,117	3,757,117	3,842,117	3,854,117	3,909,117	3,909,117	3,909,117	3,909,117	3,909,117	3,959,117	4,017,117	4,052,117	4,087,117	4,087,117	4,087,117	4,087,117	4,100,617	4,100,618										
Jun-94	90,000	769,356	1,632,582	2,348,106	2,873,483	3,206,984	3,406,484	3,607,984	3,655,484	3,695,534	3,695,534	3,930,034	4,001,034	4,026,034	4,051,034	4,171,034	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034											
Jun-95	219,963	1,108,065	2,085,265	2,882,589	3,282,359	3,507,959	3,574,959	3,584,959	3,655,584	3,790,459	3,848,859	3,883,859	3,883,859	3,883,859	3,995,859	4,038,359	4,050,859	4,050,859	4,050,859	4,050,859	4,050,859	4,050,859	4,050,860												
Jun-96	80,500	785,730	1,835,086	2,491,917	2,811,368	2,921,369	3,010,536	3,169,369	3,292,369	3,423,370	3,526,370	3,588,870	3,588,870	3,607,270	3,623,870	3,623,870	3,623,870	3,623,870	3,695,595	3,727,664	3,859,732														
Jun-97	134,365	1,319,116	2,393,116	3,213,299	3,635,799	3,808,050	3,824,050	3,964,650	4,071,151	4,180,152	4,347,152	4,364,152	4,364,152	4,364,152	4,404,152	4,444,152	4,444,152	4,444,152	4,474,152	4,501,152															
Jun-98	408,337	1,298,950	2,461,625	3,126,625	3,557,716	3,822,625	3,932,960	4,094,126	4,123,126	4,131,127	4,141,127	4,368,877	4,498,877	4,617,877	4,686,877	4,686,877	4,686,877	4,686,877	4,686,877																
Jun-99	251,500	690,750	1,733,431	2,499,052	2,866,608	3,084,805	3,354,881	3,533,936	3,606,937	3,786,937	3,838,937	3,911,938	3,911,938	3,911,938	3,976,938	4,086,938	4,086,938	4,086,938																	
Jun-00	135,731	1,130,224	1,856,765	2,388,815	2,783,366	3,047,865	3,412,749	3,610,867	3,728,868	3,804,868	3,836,368	3,870,368	3,895,368	3,907,368	3,907,368	3,907,368	3,907,368																		
Jun-01	108,490	626,310	1,464,820	1,980,624	2,466,794	2,990,359	3,229,863	3,600,363	3,734,363	3,752,363	3,752,363	3,752,363	3,814,863	3,814,863	3,814,863	3,814,863																			
Jun-02	48,000	299,595	918,995	1,611,909	2,379,996	2,936,811	3,293,532	3,618,532	3,663,668	3,732,668	3,785,668	3,827,668	3,827,668	3,832,668	3,832,669																				
Jun-03	20,000	263,617	1,237,271	2,068,006	2,622,988	3,075,411	3,200,412	3,280,412	3,286,412	3,382,412	3,459,912	3,519,912	3,519,913	3,519,914																					
Jun-04	47,500	200,700	753,163	1,670,265	2,500,018	3,053,018	3,215,018	3,456,519	3,556,519	3,556,519	3,557,520	3,593,520	3,593,520																						
Jun-05	6,157	177,260	1,017,627	2,377,229	3,026,952	3,327,952	3,598,952	3,815,953	4,010,153	4,010,153	4,010,153	4,030,153																							
Jun-06	0	307,301	1,079,755	2,432,756	2,916,929	3,362,429	3,725,429	3,828,429	3,848,129	3,863,429	4,040,429																								
Jun-07	36,000	487,583	1,402,335	2,106,086	2,522,088	2,715,090	2,864,532	3,139,534	3,288,317	3,364,817																									
Jun-08	17,730	746,231	1,520,880	2,499,880	3,295,130	3,667,592	4,347,463	4,545,798	4,694,691																										
Jun-09	285,000	647,500	1,431,267	2,239,268	2,761,944	3,286,444	3,600,945	3,974,635																											
Jun-10	0	601,092	1,398,471	2,345,079	3,267,878	3,822,184	4,333,685																												
Jun-11	315,691	777,684	1,803,911	2,603,240	3,718,269	4,124,269																													
Jun-12	0	441,786	1,184,114	2,805,204	3,673,666																														
Jun-13	113,000	484,012	1,180,271	2,517,932																															
Jun-14	102,000	403,628	1,973,530																																
Jun-15	0	377,841																																	
Jun-16	21,500																																		

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
All Prior Yrs							4.875	1.530	1.223	2.680	1.392	1.338	2.008	1.541	1.188	1.077	1.014	1.165	1.144	1.121	1.022	1.043	1.058	1.032	1.007	1.020	1.000	1.000	1.002	1.002	1.000	1.000	1.000	1.000	
Jun-83						1.000	2.625	1.714	1.889	1.903	1.281	1.186	1.224	1.266	1.000	1.013	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Jun-84					2.262	2.899	2.057	1.344	1.501	1.292	1.272	1.042	1.085	1.038	1.022	1.027	1.060	1.030	1.000	1.000	1.054	1.000	1.006	1.000	1.000	1.091	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-85				1.360	1.944	1.563	1.494	1.630	1.571	1.216	1.102	1.141	1.017	1.000	1.055	1.047	1.011	1.013	1.009	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.009	1.000	1.000	1.000				
Jun-86			3.013	2.219	1.377	1.631	1.949	1.346	1.004	1.064	1.008	1.035	1.015	1.000	1.000	1.000	1.012	1.021	1.024	1.006	1.016	1.021	1.083	1.000	1.064	1.001	1.004	1.000	1.000	1.000					
Jun-87		3.263	1.928	1.495	1.812	1.757	1.209	1.135	1.055	1.053	1.028	1.088	1.098	1.053	1.050	1.010	1.026	1.015	1.002	1.000	1.000	1.000	1.025	1.000	1.000	1.000	1.000	1.000	1.000						
Jun-88		2.879	2.363	2.153	2.007	1.380	1.164	1.168	1.063	1.049	1.037	1.048	1.000	1.008	1.000	1.027	1.009	1.011	1.013	1.012	1.019	1.000	1.007	1.008	1.007	1.000	1.000	1.000							
Jun-89			2.609	2.106	1.479	1.203	1.164	1.075	1.044	1.076	1.030	1.031	1.010	1.003	1.002	1.007	1.024	1.012	1.017	1.006	1.000	1.000	1.001	1.000	1.000	1.000	1.000								
Jun-90		5.743	2.240	1.403	1.231	1.175	1.150	1.054	1.055	1.043	1.046	1.004	1.005	1.003	1.003	1.011	1.012	1.014	1.003	1.003	1.003	1.003	1.000	1.019	1.003	1.000									
Jun-91	33.497	5.411	1.586	1.237	1.254	1.126	1.030	1.033	1.019	1.014	1.007	1.000	1.000	1.009	1.024	1.013	1.036	1.016	1.000	1.000	1.000	1.007	1.000	1.019	1.028										
Jun-92	13.586	1.650	1.509	1.376	1.174	1.082	1.057	1.044	1.041	1.045	1.007	1.003	1.026	1.007	1.004	1.067	1.020	1.015	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93	11.549	1.929	1.704	1.173	1.151	1.090	1.030	1.053	1.023	1.003	1.014	1.000	1.000	1.000	1.000	1.013	1.015	1.009	1.009	1.000	1.000	1.003	1.000												
Jun-94	8.548	2.122	1.438	1.224	1.116	1.062	1.059	1.013	1.011	1.000	1.063	1.018	1.006	1.006	1.030	1.001	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95	5.038	1.882	1.382	1.139	1.069	1.019	1.003	1.020	1.037	1.015	1.009	1.000	1.029	1.011	1.003	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	9.761	2.336	1.358	1.128	1.039	1.031	1.053	1.039	1.040	1.030	1.018	1.000	1.005	1.005	1.000	1.000	1.000	1.020	1.009	1.035															
Jun-97	9.817	1.814	1.343	1.131	1.047	1.004	1.037	1.027	1.027	1.040	1.004	1.000	1.000	1.009	1.009	1.000	1.000	1.007	1.006																
Jun-98	3.181	1.895	1.270	1.138	1.074	1.029	1.041	1.007	1.002	1.002	1.055	1.030	1.026	1.015	1.000	1.000	1.000	1.000																	
Jun-99	2.747	2.509	1.442	1.147	1.076	1.088	1.053	1.021	1.050	1.014	1.019	1.000	1.000	1.017	1.028	1.000	1.000																		
Jun-00	8.327	1.643	1.287	1.165	1.095	1.120	1.058	1.033	1.020	1.008	1.009	1.006	1.003	1.000	1.000	1.000																			
Jun-01	5.773	2.339	1.352	1.245	1.212	1.080	1.115	1.037	1.005	1.000	1.000	1.017	1.000	1.000	1.000																				
Jun-02	6.242	3.067	1.754	1.477	1.234	1.121	1.099	1.012	1.019	1.014	1.011	1.000	1.001	1.000																					
Jun-03	13.181	4.693	1.671	1.268	1.172	1.041	1.025	1.002	1.029	1.023	1.017	1.000	1.000																						
Jun-04	4.225	3.753	2.218	1.497	1.221	1.053	1.075	1.029	1.000	1.000	1.010	1.000																							
Jun-05	28.790	5.741	2.336	1.273	1.099	1.081	1.060	1.051	1.000	1.000	1.005																								
Jun-06		3.514	2.253	1.199	1.153	1.108	1.028	1.005	1.004	1.046																									
Jun-07	13.544	2.876	1.502	1.198	1.077	1.055	1.096	1.047	1.023																										
Jun-08	42.089	2.038	1.644	1.318	1.113	1.185	1.046	1.033																											
Jun-09	2.272	2.210	1.565	1.233	1.190	1.096	1.104																												
Jun-10		2.327	1.677	1.394	1.170	1.134																													
Jun-11	2.463	2.320	1.443	1.428	1.109																														
Jun-12		2.680	2.369	1.310																															
Jun-13	4.283	2.439	2.133																																
Jun-14	3.957	4.889																																	
Jun-15																																			

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Simple Avg																																			
All Yrs (ex P)	11.089	2.948	1.800	1.373	1.284	1.222	1.218	1.114	1.101	1.081	1.046	1.030	1.026	1.022	1.012	1.013	1.013	1.011	1.006	1.004	1.007	1.003	1.011	1.005	1.011	1.011	1.001	1.002	1.000	1.000	1.000	1.000	1.000		
Latest 5	3.568	2.931	1.837	1.337	1.132	1.116	1.067	1.033	1.011	1.017	1.009	1.005	1.001	1.006	1.007	1.000	1.000	1.005	1.005	1.007	1.000	1.003	1.000	1.009	1.008	1.000	1.001	1.002	1.000						
Latest 3	4.120	3.336	1.982	1.377	1.156	1.138	1.082	1.028	1.009	1.015	1.011	1.000	1.000	1.000	1.009	1.000	1.000	1.009	1.005	1.012	1.000	1.001	1.000	1.013	1.010	1.000	1.000	1.000	1.000	1.000	1.000				
Volume Wtd																																			
All Yrs (ex P)	6.516	2.476	1.642	1.296	1.185	1.124	1.091	1.056	1.037	1.035	1.027	1.019	1.014	1.010	1.011	1.013	1.014	1.011	1.006	1.005	1.005	1.003	1.008	1.007	1.010	1.004	1.000	1.001	1.000	1.000	1.000	1.000	1.000		
Latest 5	4.682	2.784	1.788	1.338	1.132	1.120	1.064	1.033	1.010	1.017	1.009	1.005	1.001	1.007	1.007	1.000	1.000	1.005	1.005	1.006	1.000	1.003	1.000	1.010	1.008	1.000	1.000	1.001	1.000	1.000					
Latest 3	5.886	3.263	1.902	1.375	1.152	1.140	1.078	1.028	1.008	1.016	1.011	1.000	1.000	1.000	1.009	1.000	1.000	1.008	1.005	1.011	1.000	1.001	1.000	1.015	1.009	1.000	1.000	1.000	1.000	1.000	1.000				

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	4.1%	0.0%	1.0%	0.5%	1.000	1.000
408	95.9%	3.6%	4.1%	1.0%	0.5%	0.981	0.971
396	92.3%	-0.2%	7.7%	0.0%	0.0%	0.961	0.942
384	92.5%	-3.8%	7.5%	-1.1%	-0.6%	0.922	0.887
372	96.3%	1.3%	3.7%	0.4%	0.2%	0.791	0.699
360	95.0%	4.0%	5.0%	1.3%	0.7%	0.816	0.738
348	91.0%	-2.9%	9.0%	-1.0%	-0.6%	0.873	0.820
336	93.9%	0.4%	6.1%	0.2%	0.1%	0.771	0.678
324	93.5%	3.4%	6.5%	1.2%	0.7%	0.758	0.663
312	90.1%	-1.4%	9.9%	-0.5%	-0.3%	0.815	0.744
300	91.5%	4.3%	8.5%	1.6%	1.0%	0.751	0.657
288	87.2%	-3.6%	12.8%	-1.4%	-0.9%	0.809	0.738
276	90.7%	1.3%	9.3%	0.5%	0.4%	0.700	0.590
264	89.4%	1.5%	10.6%	0.6%	0.4%	0.711	0.608
252	87.9%	1.3%	12.1%	0.6%	0.4%	0.720	0.623
240	86.6%	-0.5%	13.4%	-0.2%	-0.2%	0.722	0.626
228	87.1%	1.5%	12.9%	0.7%	0.5%	0.683	0.577
216	85.5%	1.1%	14.5%	0.5%	0.4%	0.691	0.589
204	84.5%	0.2%	15.5%	0.1%	0.1%	0.687	0.585
192	84.2%	1.8%	15.8%	1.0%	0.7%	0.665	0.558
180	82.4%	1.0%	17.6%	0.6%	0.4%	0.674	0.572
168	81.4%	1.0%	18.6%	0.6%	0.5%	0.666	0.562
156	80.4%	2.0%	19.6%	1.2%	1.0%	0.658	0.554
144	78.4%	1.7%	21.6%	1.1%	0.9%	0.666	0.565
132	76.7%	1.7%	23.3%	1.1%	0.9%	0.665	0.564
120	75.0%	3.5%	25.0%	2.4%	2.0%	0.662	0.562
108	71.6%	2.1%	28.4%	1.5%	1.3%	0.678	0.584
96	69.4%	2.7%	30.6%	2.0%	1.7%	0.675	0.580
84	66.8%	2.9%	33.2%	2.2%	2.0%	0.676	0.581
72	63.9%	4.8%	36.1%	3.9%	3.5%	0.676	0.582
60	59.1%	5.2%	40.9%	4.4%	4.0%	0.689	0.598
48	53.9%	7.8%	46.1%	6.8%	6.4%	0.698	0.611
36	46.1%	11.3%	53.9%	10.3%	9.8%	0.716	0.633
24	34.8%	17.9%	65.2%	16.8%	16.4%	0.739	0.662
12	16.9%	16.9%	83.1%	16.6%	16.4%	0.769	0.699
Total		100.0%					

NOTES:

(2) = 1 / Section 1, Exhibit 1, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	13,039,703	20,757,897		11,457,275	18,249,740
6/30/82-83	470,032	1,055,178	0.981	460,904	1,034,687
6/30/83-84	1,453,043	2,394,274	0.961	1,378,059	2,270,139
6/30/84-85	707,263	2,500,391	0.922	651,236	2,303,337
6/30/85-86	763,793	1,458,994	0.791	688,480	1,315,370
6/30/86-87	954,918	2,503,614	0.816	848,297	2,201,326
6/30/87-88	2,641,377	5,322,732	0.873	2,310,119	4,621,477
6/30/88-89	3,046,333	4,805,567	0.771	2,631,755	4,137,300
6/30/89-90	3,153,247	4,406,067	0.758	2,692,735	3,778,615
6/30/90-91	2,607,928	4,824,589	0.815	2,191,526	4,008,817
6/30/91-92	1,965,132	3,306,681	0.751	1,629,428	2,742,908
6/30/92-93	1,718,878	2,749,811	0.809	1,412,198	2,266,229
6/30/93-94	2,067,722	2,458,828	0.700	1,674,580	1,992,726
6/30/94-95	2,226,359	2,862,139	0.711	1,782,772	2,293,975
6/30/95-96	2,523,177	3,242,065	0.720	2,002,694	2,575,370
6/30/96-97	2,604,229	3,354,583	0.722	2,052,061	2,644,486
6/30/97-98	2,539,466	3,298,625	0.683	1,958,796	2,547,710
6/30/98-99	2,883,339	3,670,790	0.691	2,182,565	2,783,090
6/30/99-00	3,632,238	4,575,444	0.687	2,691,289	3,393,001
6/30/00-01	4,495,784	5,436,879	0.665	3,267,463	3,955,519
6/30/01-02	4,457,814	5,716,524	0.674	3,221,093	4,130,418
6/30/02-03	4,950,256	6,238,298	0.666	3,526,123	4,447,992
6/30/03-04	5,023,075	6,323,998	0.658	3,525,945	4,425,441
6/30/04-05	5,107,581	6,254,778	0.666	3,522,891	4,320,058
6/30/05-06	5,624,250	7,016,600	0.665	3,861,193	4,821,910
6/30/06-07	5,684,584	7,619,516	0.662	3,850,123	5,177,857
6/30/07-08	7,464,158	9,234,558	0.678	5,043,407	6,236,770
6/30/08-09	9,493,474	10,474,296	0.675	6,342,418	7,011,777
6/30/09-10	9,412,737	12,362,879	0.676	6,298,627	8,323,762
6/30/10-11	13,232,277	14,851,444	0.676	8,874,470	9,990,128
6/30/11-12	15,552,085	17,956,167	0.689	10,550,227	12,216,179
6/30/12-13	17,667,316	20,907,020	0.698	12,215,662	14,486,564
6/30/13-14	25,233,137	28,043,267	0.716	17,891,723	19,954,025
6/30/14-15	31,863,003	36,138,873	0.739	23,444,445	26,650,295
6/30/15-16	45,057,177	49,260,437	0.769	34,564,963	37,912,785
Total	261,316,884	323,383,799		192,697,542	241,221,783
			(7) Total Discount Factor:	0.737	0.746

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	13,039,703	20,757,897
(9) Projected Number of Years:	N/A	N/A
(10) Projected Paid Loss per Year:	0	0
(11) Discounted Value at 4%:	35	35

NOTES:
(2), (3) From Section 1, Exhibit 1, Page 1, Columns 8, 9
(4) From Section 1, Exhibit 1, Page 13, Column 7
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Indemnity

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	13,039,703	20,757,897		10,784,716	17,183,462
6/30/82-83	470,032	1,055,178	0.981	456,535	1,024,879
6/30/83-84	1,453,043	2,394,274	0.961	1,343,145	2,212,345
6/30/84-85	707,263	2,500,391	0.922	625,836	2,213,969
6/30/85-86	763,793	1,458,994	0.791	655,165	1,251,815
6/30/86-87	954,918	2,503,614	0.816	802,106	2,070,815
6/30/87-88	2,641,377	5,322,732	0.873	2,169,249	4,324,424
6/30/88-89	3,046,333	4,805,567	0.771	2,458,674	3,859,311
6/30/89-90	3,153,247	4,406,067	0.758	2,503,886	3,521,113
6/30/90-91	2,607,928	4,824,589	0.815	2,024,007	3,683,123
6/30/91-92	1,965,132	3,306,681	0.751	1,496,157	2,519,089
6/30/92-93	1,718,878	2,749,811	0.809	1,291,856	2,076,199
6/30/93-94	2,067,722	2,458,828	0.700	1,523,044	1,812,888
6/30/94-95	2,226,359	2,862,139	0.711	1,614,562	2,078,180
6/30/95-96	2,523,177	3,242,065	0.720	1,807,724	2,325,167
6/30/96-97	2,604,229	3,354,583	0.722	1,847,540	2,381,119
6/30/97-98	2,539,466	3,298,625	0.683	1,747,233	2,273,904
6/30/98-99	2,883,339	3,670,790	0.691	1,930,830	2,463,891
6/30/99-00	3,632,238	4,575,444	0.687	2,358,752	2,974,825
6/30/00-01	4,495,784	5,436,879	0.665	2,842,065	3,441,821
6/30/01-02	4,457,814	5,716,524	0.674	2,797,462	3,586,833
6/30/02-03	4,950,256	6,238,298	0.666	3,046,066	3,843,560
6/30/03-04	5,023,075	6,323,998	0.658	3,029,663	3,796,969
6/30/04-05	5,107,581	6,254,778	0.666	3,005,442	3,688,251
6/30/05-06	5,624,250	7,016,600	0.665	3,293,324	4,114,230
6/30/06-07	5,684,584	7,619,516	0.662	3,268,850	4,401,791
6/30/07-08	7,464,158	9,234,558	0.678	4,282,397	5,295,542
6/30/08-09	9,493,474	10,474,296	0.675	5,370,006	5,942,223
6/30/09-10	9,412,737	12,362,879	0.676	5,347,232	7,083,765
6/30/10-11	13,232,277	14,851,444	0.676	7,556,897	8,518,117
6/30/11-12	15,552,085	17,956,167	0.689	9,049,272	10,490,916
6/30/12-13	17,667,316	20,907,020	0.698	10,590,193	12,569,824
6/30/13-14	25,233,137	28,043,267	0.716	15,703,187	17,540,322
6/30/14-15	31,863,003	36,138,873	0.739	20,918,162	23,800,820
6/30/15-16	45,057,177	49,260,437	0.769	31,369,925	34,456,964
Total	261,316,884	323,383,799		170,911,159	214,822,465
			(7) Total Discount Factor:	0.654	0.664

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	13,039,703	20,757,897
(9) Projected Number of Years:	N/A	N/A
(10) Projected Paid Loss per Year:	0	0
(11) Discounted Value at 6%:	35	35

NOTES:
(2), (3) From Section 1, Exhibit 1, Page 1, Columns 8, 9
(4) From Section 1, Exhibit 1, Page 13, Column 8
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Total Indemnity (Including Lump Sums) + Medical

Calculation of Fiscal Year 7/01/16 - 17 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/16 - 06/30/17	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/16 - 06/30/17		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	119,853,717	128,127,026	105,825,919	14,027,798	22,301,107				1,112,565	1,223,821	7.9%	5.5%
6/30/82-83	18,753,411	19,356,616	18,277,489	475,922	1,079,127	95.9%	1.0%	24.5%	88,923	288,621	18.7%	26.7%
6/30/83-84	27,930,733	28,931,376	26,457,225	1,473,508	2,474,151	93.1%	1.0%	14.4%	148,093	440,174	10.1%	17.8%
6/30/84-85	42,064,217	44,294,202	41,311,978	752,239	2,982,224	95.7%	1.0%	23.1%	259,724	636,161	34.5%	21.3%
6/30/85-86	54,665,208	55,430,346	53,827,333	837,874	1,603,012	97.8%	1.0%	45.1%	391,653	732,056	46.7%	45.7%
6/30/86-87	61,936,918	63,967,730	60,886,995	1,049,923	3,080,735	96.7%	1.0%	30.5%	433,440	865,266	41.3%	28.1%
6/30/87-88	89,950,452	92,915,587	87,147,681	2,802,772	5,767,906	95.3%	1.0%	21.3%	641,579	1,328,127	22.9%	23.0%
6/30/88-89	88,783,494	90,812,641	85,504,499	3,278,995	5,308,142	95.2%	1.0%	20.9%	742,990	1,172,065	22.7%	22.1%
6/30/89-90	84,669,619	86,010,388	81,249,701	3,419,917	4,760,687	95.2%	1.0%	20.9%	753,552	1,121,630	22.0%	23.6%
6/30/90-91	71,885,545	74,411,101	68,955,735	2,929,810	5,455,366	94.3%	1.0%	17.4%	473,882	876,319	16.2%	16.1%
6/30/91-92	49,674,464	51,322,701	47,397,170	2,277,294	3,925,531	93.9%	2.0%	32.6%	492,190	782,279	21.6%	19.9%
6/30/92-93	33,006,086	34,122,858	31,069,667	1,936,419	3,053,190	92.6%	2.0%	26.9%	301,535	490,513	15.6%	16.1%
6/30/93-94	36,310,194	36,781,199	33,985,518	2,324,676	2,795,681	93.0%	2.0%	28.5%	371,460	461,370	16.0%	16.5%
6/30/94-95	33,513,735	34,230,103	31,024,128	2,489,607	3,205,975	91.6%	2.0%	23.8%	344,070	434,018	13.8%	13.5%
6/30/95-96	32,546,667	33,354,668	29,715,927	2,830,739	3,638,740	90.2%	2.0%	20.4%	341,106	448,532	12.1%	12.3%
6/30/96-97	32,961,764	33,800,328	29,913,532	3,048,232	3,886,796	89.6%	2.0%	19.3%	214,388	295,512	7.0%	7.6%
6/30/97-98	35,682,173	36,531,772	32,687,653	2,994,520	3,844,119	90.5%	2.0%	21.1%	299,462	380,392	10.0%	9.9%
6/30/98-99	34,231,681	35,104,763	30,815,772	3,415,909	4,288,990	88.9%	1.6%	14.8%	344,780	434,608	10.1%	10.1%
6/30/99-00	39,282,279	40,344,365	34,982,045	4,300,234	5,362,320	87.9%	1.0%	8.4%	453,469	565,749	10.5%	10.6%
6/30/00-01	46,763,388	47,813,483	41,255,419	5,507,970	6,558,064	87.2%	0.6%	4.9%	552,400	645,719	10.0%	9.8%
6/30/01-02	40,802,832	42,145,753	35,432,640	5,370,192	6,713,113	85.4%	1.8%	12.4%	614,268	753,435	11.4%	11.2%
6/30/02-03	41,626,398	43,027,940	35,541,009	6,085,388	7,486,931	84.0%	1.5%	9.1%	533,541	651,461	8.8%	8.7%
6/30/03-04	41,026,947	42,475,470	34,773,359	6,253,588	7,702,111	83.3%	0.7%	4.1%	549,555	681,056	8.8%	8.8%
6/30/04-05	42,820,104	44,827,950	36,594,459	6,225,645	8,233,491	83.5%	-0.2%	-1.3%	628,384	836,852	10.1%	10.2%
6/30/05-06	38,935,190	41,055,250	32,089,113	6,846,077	8,966,137	80.2%	3.3%	16.5%	637,715	828,603	9.3%	9.2%
6/30/06-07	37,723,208	40,672,970	30,606,985	7,116,223	10,065,985	78.1%	2.1%	9.8%	561,265	775,577	7.9%	7.7%
6/30/07-08	42,886,560	45,566,700	33,805,822	9,080,738	11,760,878	76.4%	1.6%	7.0%	445,781	591,254	4.9%	5.0%
6/30/08-09	45,834,470	47,564,872	34,317,730	11,516,740	13,247,142	73.5%	3.0%	11.1%	1,437,475	1,694,765	12.5%	12.8%
6/30/09-10	43,762,190	47,884,392	32,395,863	11,366,327	15,488,529	70.7%	2.8%	9.5%	1,032,399	1,482,041	9.1%	9.6%
6/30/10-11	51,374,570	54,204,547	35,666,726	15,707,844	18,537,821	67.6%	3.1%	9.7%	2,098,767	2,531,517	13.4%	13.7%
6/30/11-12	51,924,290	55,481,882	33,396,900	18,527,390	22,084,982	62.2%	5.4%	14.2%	2,407,073	2,883,305	13.0%	13.1%
6/30/12-13	48,600,790	53,118,654	27,280,984	21,319,806	25,837,670	53.6%	8.5%	18.4%	3,766,115	4,550,124	17.7%	17.6%
6/30/13-14	57,646,130	62,050,200	27,764,164	29,881,966	34,286,036	46.4%	7.2%	13.5%	3,968,957	4,606,844	13.3%	13.4%
6/30/14-15	60,701,730	66,738,850	21,670,788	39,030,942	45,068,062	34.0%	12.4%	18.8%	7,020,942	8,062,087	18.0%	17.9%
6/30/15-16	70,128,640	76,993,270	12,419,941	57,708,699	64,573,329	16.9%	17.1%	20.6%	11,153,116	12,696,298	19.3%	19.7%
Total	1,750,259,793	1,831,471,950	1,436,047,870	314,211,924	395,424,080				45,616,615	57,248,150	14.5%	14.5%

NOTES:

(2) Exhibit 1, Page 1, Column (4) + Exhibit 2, Page 1, Column (4)
(3) Exhibit 1, Page 1, Column (5) + Exhibit 2, Page 1, Column (5)
(4) Exhibit 1, Page 1, Column (2) + Exhibit 2, Page 1, Column (2)
(5) = (2) - (4)
(6) = (3) - (4)
(7) = (4) / Average of Columns (2), (3)
(8) = (7) - Prior Year's (7)
(9) = (8) / (1.00 - (7))
(10), (11) Sum of Columns (10), (11) for all clusters
(12) = (10) / (5)
(13) = (11) / (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Paid Loss	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		6,527,527			7,136,987	7,637,813	609,461	1,110,286		
6/30/82-83		1,242,695	1,250,604		1,244,992	1,262,276	2,297	19,581		
6/30/83-84		3,256,073	3,282,402		3,272,569	3,329,118	16,495	73,045		
6/30/84-85	1,823,085	3,252,799	3,283,453	3,280,268	3,270,724	3,315,748	17,925	62,949	0.179	0.182
6/30/85-86	1,952,445	4,967,016	5,018,690	5,017,979	5,008,846	5,046,305	41,830	79,289	0.257	0.258
6/30/86-87	2,220,820	5,782,095	5,848,947	5,851,149	5,839,815	5,869,931	57,720	87,836	0.263	0.264
6/30/87-88	2,885,583	9,920,342	10,059,176	10,062,321	10,037,750	10,099,530	117,408	179,188	0.348	0.350
6/30/88-89	3,098,180	12,042,782	12,236,552	12,240,399	12,232,929	12,307,842	190,147	265,060	0.395	0.397
6/30/89-90	3,079,763	12,596,340	12,845,216	12,856,484	12,853,732	12,931,681	257,391	335,341	0.417	0.420
6/30/90-91	2,914,364	11,906,673	12,194,896	12,193,082	12,163,685	12,254,581	257,012	347,908	0.417	0.420
6/30/91-92	2,880,434	10,783,184	11,054,972	11,051,952	11,023,794	11,104,482	240,610	321,298	0.383	0.386
6/30/92-93	2,887,238	7,891,312	8,127,787	8,124,818	8,106,837	8,177,298	215,526	285,986	0.281	0.283
6/30/93-94	3,056,850	8,269,070	8,545,752	8,541,283	8,525,194	8,578,094	256,124	309,024	0.279	0.281
6/30/94-95	3,158,808	6,913,170	7,193,022	7,189,163	7,171,278	7,224,920	258,108	311,750	0.227	0.229
6/30/95-96	3,301,791	6,572,319	6,892,253	6,888,472	6,876,043	6,943,596	303,724	371,277	0.208	0.210
6/30/96-97	3,902,868	7,195,566	7,640,112	7,634,223	7,635,977	7,705,066	440,410	509,500	0.196	0.197
6/30/97-98	3,776,138	6,564,185	7,031,095	7,025,178	7,020,000	7,092,440	455,815	528,255	0.186	0.188
6/30/98-99	4,017,530	6,780,244	7,324,264	7,318,662	7,314,000	7,377,750	533,756	597,506	0.182	0.184
6/30/99-00	4,221,786	7,586,347	8,275,994	8,264,755	8,255,640	8,327,520	669,293	741,173	0.196	0.197
6/30/00-01	4,310,725	9,370,399	10,346,518	10,319,264	10,308,980	10,412,980	938,581	1,042,581	0.239	0.242
6/30/01-02	4,438,755	7,511,596	8,404,879	8,402,706	8,392,000	8,477,210	880,404	965,614	0.189	0.191
6/30/02-03	4,423,888	8,161,223	9,287,693	9,274,650	9,246,890	9,360,390	1,085,667	1,199,167	0.209	0.212
6/30/03-04	4,482,207	8,479,408	9,747,547	9,737,496	9,697,170	9,841,770	1,217,762	1,362,362	0.216	0.220
6/30/04-05	4,639,517	10,121,156	11,910,732	11,461,270	11,204,300	12,067,950	1,083,144	1,946,794	0.241	0.260
6/30/05-06	4,938,165	9,020,980	10,677,082	10,594,408	10,232,540	10,921,250	1,211,560	1,900,270	0.207	0.221
6/30/06-07	5,183,126	9,611,791	11,692,199	11,416,031	11,014,940	12,001,770	1,403,149	2,389,979	0.213	0.232
6/30/07-08	5,508,425	9,151,259	11,191,587	11,325,276	10,745,560	11,626,300	1,594,301	2,475,041	0.195	0.211
6/30/08-09	5,447,676	9,601,209	11,957,735	11,936,821	11,549,420	12,313,000	1,948,211	2,711,791	0.212	0.226
6/30/09-10	5,525,579	8,627,030	11,028,794	11,345,624	10,538,840	11,699,300	1,911,810	3,072,270	0.191	0.212
6/30/10-11	5,712,303	9,403,213	12,458,825	12,529,551	11,785,940	12,981,100	2,382,727	3,577,887	0.206	0.227
6/30/11-12	5,880,714	8,798,309	12,082,584	12,431,837	11,619,740	12,766,250	2,821,431	3,967,941	0.198	0.217
6/30/12-13	6,162,621	7,672,962	11,081,742	12,079,806	11,138,440	12,406,900	3,465,478	4,733,938	0.181	0.201
6/30/13-14	6,442,136	7,878,217	12,519,339	13,505,502	12,431,260	13,839,200	4,553,043	5,960,983	0.193	0.215
6/30/14-15	6,758,892	6,999,911	13,819,244	14,868,085	13,714,000	15,398,450	6,714,089	8,398,539	0.203	0.228
6/30/15-16	6,843,054	4,192,776	18,522,585	16,751,347	16,163,900	18,718,270	11,971,124	14,525,494	0.236	0.274
Total	135,875,464	274,651,180	324,834,270	321,519,861	324,774,712	341,418,081	50,123,532	66,766,901		
Tot 6/30/84-16	135,875,464	263,624,884	320,301,265	321,519,861	313,120,164	329,188,873	49,495,279	65,563,989	0.230	0.242

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 1, Exhibit 2, Page 2, Column 3

(4) From Section 1, Exhibit 2, Page 2, Column 8

(5) From Section 1, Exhibit 2, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Accident Year	Payroll (000's)	Paid Loss	Paid LDF	Adjustment for Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim
All Prior Yrs		6,527,527							8	9	
6/30/82-83		1,242,695	1.006	N/A	1,250,604	N/A	1,250,604		1	1	7,909
6/30/83-84		3,256,073	1.008	N/A	3,282,402	N/A	3,282,402		2	1	26,329
6/30/84-85	1,823,085	3,252,799	1.009	N/A	3,283,453	N/A	3,283,453	0.180	4	6	5,109
6/30/85-86	1,952,445	4,967,016	1.010	N/A	5,018,690	N/A	5,018,690	0.257	1	1	51,674
6/30/86-87	2,220,820	5,782,095	1.012	N/A	5,848,947	N/A	5,848,947	0.263	3	4	16,713
6/30/87-88	2,885,583	9,920,342	1.014	N/A	10,059,176	N/A	10,059,176	0.349	13	10	13,883
6/30/88-89	3,098,180	12,042,782	1.016	N/A	12,236,552	N/A	12,236,552	0.395	11	13	14,905
6/30/89-90	3,079,763	12,596,340	1.020	N/A	12,845,216	N/A	12,845,216	0.417	10	11	22,625
6/30/90-91	2,914,364	11,906,673	1.024	N/A	12,194,896	N/A	12,194,896	0.418	14	14	20,587
6/30/91-92	2,880,434	10,783,184	1.025	N/A	11,054,972	N/A	11,054,972	0.384	10	9	30,199
6/30/92-93	2,887,238	7,891,312	1.030	N/A	8,127,787	N/A	8,127,787	0.282	11	8	29,559
6/30/93-94	3,056,850	8,269,070	1.033	N/A	8,545,752	N/A	8,545,752	0.280	16	17	16,275
6/30/94-95	3,158,808	6,913,170	1.040	N/A	7,193,022	N/A	7,193,022	0.228	16	11	25,441
6/30/95-96	3,301,791	6,572,319	1.049	N/A	6,892,253	N/A	6,892,253	0.209	8	6	53,322
6/30/96-97	3,902,868	7,195,566	1.062	N/A	7,640,112	N/A	7,640,112	0.196	16	14	31,753
6/30/97-98	3,776,138	6,564,185	1.071	N/A	7,031,095	N/A	7,031,095	0.186	14	12	38,909
6/30/98-99	4,017,530	6,780,244	1.080	N/A	7,324,264	N/A	7,324,264	0.182	18	13	41,848
6/30/99-00	4,221,786	7,586,347	1.091	N/A	8,275,994	N/A	8,275,994	0.196	18	15	45,976
6/30/00-01	4,310,725	9,370,399	1.104	N/A	10,346,518	N/A	10,346,518	0.240	25	26	37,543
6/30/01-02	4,438,755	7,511,596	1.119	N/A	8,404,879	N/A	8,404,879	0.189	27	24	37,220
6/30/02-03	4,423,888	8,161,223	1.138	N/A	9,287,693	N/A	9,287,693	0.210	34	27	41,721
6/30/03-04	4,482,207	8,479,408	1.150	N/A	9,747,547	N/A	9,747,547	0.217	33	33	38,428
6/30/04-05	4,639,517	10,121,156	1.177	N/A	11,910,732	N/A	11,910,732	0.257	32	34	52,635
6/30/05-06	4,938,165	9,020,980	1.184	N/A	10,677,082	N/A	10,677,082	0.216	41	33	50,185
6/30/06-07	5,183,126	9,611,791	1.216	N/A	11,692,199	N/A	11,692,199	0.226	46	41	50,742
6/30/07-08	5,508,425	9,151,259	1.223	N/A	11,191,587	N/A	11,191,587	0.203	53	41	49,764
6/30/08-09	5,447,676	9,601,209	1.245	N/A	11,957,735	N/A	11,957,735	0.220	74	57	41,343
6/30/09-10	5,525,579	8,627,030	1.278	N/A	11,028,794	N/A	11,028,794	0.200	93	76	31,602
6/30/10-11	5,712,303	9,403,213	1.325	N/A	12,458,825	N/A	12,458,825	0.218	131	87	35,122
6/30/11-12	5,880,714	8,798,309	1.373	N/A	12,082,584	N/A	12,082,584	0.205	207	115	28,559
6/30/12-13	6,162,621	7,672,962	1.444	N/A	11,081,742	N/A	11,081,742	0.180	401	179	19,043
6/30/13-14	6,442,136	7,878,217	1.589	N/A	12,519,339	N/A	12,519,339	0.194	1,554	374	12,409
6/30/14-15	6,758,892	6,999,911	1.974	N/A	13,819,244	N/A	13,819,244	0.204	2,489	1,384	4,927
6/30/15-16	6,843,054	4,192,776	4.418	N/A	18,522,585	N/A	18,522,585	0.271		2,392	5,991
Total	135,875,464	274,651,180			324,834,270		324,834,270		5,434	5,098	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 4/1/14 filing. Consideration for development beyond 252 months made in selection of LDF's.

(6) = (3) x (4) x (5)

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	1,823,085	0.198	3,252,799	1.009	3,280,268	N/A	3,280,268	0.180	0.180
6/30/85-86	1,952,445	0.298	4,967,016	1.010	5,017,979	N/A	5,017,979	0.257	0.257
6/30/86-87	2,220,820	0.308	5,782,095	1.012	5,851,149	N/A	5,851,149	0.263	0.263
6/30/87-88	2,885,583	0.387	9,920,342	1.014	10,062,321	N/A	10,062,321	0.349	0.349
6/30/88-89	3,098,180	0.448	12,042,782	1.016	12,240,399	N/A	12,240,399	0.395	0.395
6/30/89-90	3,079,763	0.489	12,596,340	1.020	12,856,484	N/A	12,856,484	0.417	0.417
6/30/90-91	2,914,364	0.416	11,906,673	1.024	12,193,082	N/A	12,193,082	0.418	0.418
6/30/91-92	2,880,434	0.379	10,783,184	1.025	11,051,952	N/A	11,051,952	0.384	0.384
6/30/92-93	2,887,238	0.278	7,891,312	1.030	8,124,818	N/A	8,124,818	0.281	0.281
6/30/93-94	3,056,850	0.275	8,269,070	1.033	8,541,283	N/A	8,541,283	0.279	0.279
6/30/94-95	3,158,808	0.225	6,913,170	1.040	7,189,163	N/A	7,189,163	0.228	0.228
6/30/95-96	3,301,791	0.207	6,572,319	1.049	6,888,472	N/A	6,888,472	0.209	0.209
6/30/96-97	3,902,868	0.195	7,195,566	1.062	7,634,223	N/A	7,634,223	0.196	0.196
6/30/97-98	3,776,138	0.186	6,564,185	1.071	7,025,178	N/A	7,025,178	0.186	0.186
6/30/98-99	4,017,530	0.182	6,780,244	1.080	7,318,662	N/A	7,318,662	0.182	0.182
6/30/99-00	4,221,786	0.195	7,586,347	1.091	8,264,755	N/A	8,264,755	0.196	0.196
6/30/00-01	4,310,725	0.235	9,370,399	1.104	10,319,264	N/A	10,319,264	0.239	0.239
6/30/01-02	4,438,755	0.189	7,511,596	1.119	8,402,706	N/A	8,402,706	0.189	0.189
6/30/02-03	4,423,888	0.209	8,161,223	1.138	9,274,650	N/A	9,274,650	0.210	0.210
6/30/03-04	4,482,207	0.216	8,479,408	1.150	9,737,496	N/A	9,737,496	0.217	0.217
6/30/04-05	4,639,517	0.205	10,121,156	1.177	11,461,270	N/A	11,461,270	0.247	0.247
6/30/05-06	4,938,165	0.206	9,020,980	1.184	10,594,408	N/A	10,594,408	0.215	0.215
6/30/06-07	5,183,126	0.207	9,611,791	1.216	11,416,031	N/A	11,416,031	0.220	0.220
6/30/07-08	5,508,425	0.208	9,151,259	1.223	11,325,276	N/A	11,325,276	0.206	0.206
6/30/08-09	5,447,676	0.211	9,601,209	1.245	11,936,821	N/A	11,936,821	0.219	0.219
6/30/09-10	5,525,579	0.217	8,627,030	1.278	11,345,624	N/A	11,345,624	0.205	0.205
6/30/10-11	5,712,303	0.218	9,403,213	1.325	12,529,551	N/A	12,529,551	0.219	0.219
6/30/11-12	5,880,714	0.219	8,798,309	1.373	12,431,837	N/A	12,431,837	0.211	0.211
6/30/12-13	6,162,621	0.221	7,672,962	1.444	12,079,806	N/A	12,079,806	0.196	0.196
6/30/13-14	6,442,136	0.222	7,878,217	1.589	13,505,502	N/A	13,505,502	0.210	0.210
6/30/14-15	6,758,892	0.223	6,999,911	1.974	14,868,085	N/A	14,868,085	0.220	0.220
6/30/15-16	6,843,054	0.224	4,192,776	4.418	16,751,347	N/A	16,751,347	0.245	0.245
Total	135,875,464		263,624,884		321,519,861		321,519,861		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 1, Exhibit 2, Page 4, Column 11

(4) From Section 1, Exhibit 2, Page 2, Column 3

(5) From Section 1, Exhibit 2, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Expected Ult Loss	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.198	0.198
6/30/85-86									0.298	0.298
6/30/86-87									0.308	0.308
6/30/87-88									0.387	0.387
6/30/88-89									0.448	0.448
6/30/89-90									0.489	0.489
6/30/90-91	2,914,364	12,194,896	0.418	1.194	0.500	1.138	0.569	0.166	0.417	0.416
6/30/91-92	2,880,434	11,054,972	0.384	1.189	0.456	1.133	0.517	0.167	0.378	0.379
6/30/92-93	2,887,238	8,127,787	0.282	1.189	0.335	1.127	0.377	0.168	0.277	0.278
6/30/93-94	3,056,850	8,545,752	0.280	1.178	0.329	1.122	0.369	0.170	0.272	0.275
6/30/94-95	3,158,808	7,193,022	0.228	1.170	0.266	1.116	0.297	0.172	0.224	0.225
6/30/95-96	3,301,791	6,892,253	0.209	1.155	0.241	1.110	0.268	0.175	0.206	0.207
6/30/96-97	3,902,868	7,640,112	0.196	1.137	0.223	1.105	0.246	0.179	0.193	0.195
6/30/97-98	3,776,138	7,031,095	0.186	1.135	0.211	1.099	0.232	0.180	0.183	0.186
6/30/98-99	4,017,530	7,324,264	0.182	1.135	0.207	1.094	0.226	0.181	0.180	0.182
6/30/99-00	4,221,786	8,275,994	0.196	1.135	0.222	1.088	0.242	0.182	0.193	0.195
6/30/00-01	4,310,725	10,346,518	0.240	1.109	0.266	1.083	0.288	0.187	0.230	0.235
6/30/01-02	4,438,755	8,404,879	0.189	1.101	0.208	1.078	0.225	0.190	0.185	0.189
6/30/02-03	4,423,888	9,287,693	0.210	1.073	0.225	1.072	0.242	0.196	0.205	0.209
6/30/03-04	4,482,207	9,747,547	0.217	1.046	0.228	1.067	0.243	0.202	0.214	0.216
6/30/04-05	4,639,517	11,910,732	0.257	1.036	0.266	1.062	0.282	0.205	0.184	0.205
6/30/05-06	4,938,165	10,677,082	0.216	1.032	0.223	1.056	0.236	0.206	0.188	0.206
6/30/06-07	5,183,126	11,692,199	0.226	1.032	0.233	1.051	0.245	0.207	0.191	0.207
6/30/07-08	5,508,425	11,191,587	0.203	1.032	0.210	1.046	0.219	0.208	0.194	0.208
6/30/08-09	5,447,676	11,957,735	0.220	1.027	0.225	1.041	0.234	0.211	0.197	0.211
6/30/09-10	5,525,579	11,028,794	0.200	1.000	0.200	1.036	0.207	0.217	0.206	0.217
6/30/10-11	5,712,303	12,458,825	0.218	1.000	0.218	1.030	0.225	0.218	0.209	0.218
6/30/11-12	5,880,714	12,082,584	0.205	1.000	0.205	1.025	0.211	0.219	0.212	0.219
6/30/12-13	6,162,621	11,081,742	0.180	1.000	0.180	1.020	0.183	0.221	0.215	0.221
6/30/13-14	6,442,136	12,519,339	0.194	1.000	0.194	1.015	0.197	0.222	0.218	0.222
6/30/14-15	6,758,892	13,819,244	0.204	1.000	0.204	1.010	0.207	0.223	0.222	0.223
6/30/15-16	6,843,054	18,522,585	0.271	1.000	0.271	1.005	0.272	0.224		0.224
Total	120,815,589	271,009,230								

Trend Last 4 (ex 15-16):	0.6%	Avg 3 (ex 15-16):	0.196
Trend Last 8 (ex 15-16):	-1.5%	Avg 5 (ex 15-16):	0.205
Trend Last 12 (ex 15-16):	-2.1%	Avg 10 (ex 15-16):	0.216
Prior Selected Trend:	1.5%	Prior Sel Avg:	0.225
Selected Trend:	0.5%	Sel. Loss Cost:	0.225

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 1, Exhibit 2, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCIRB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.950	
(2)	Credibility		88%	
(3)	Average Pmt Trend Statewide		0.950	
(4)	Credibility Weighted Trend		0.950	
		(Low)		(High)
(5)	Selected Range	0.920		0.960
(6)	Incremental Paid for 2016	86,803		86,803
(7)	Estimated Reserve	998,235		2,083,273
(8)	Paid to Date (82 & Prior)	6,527,527		6,527,527
(9)	Est Ult Paid for 1982 & Prior	7,525,762		8,610,800

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	107,782	114,368
(11)	Projected Number of Years	3	3
(12)	Estimated Reserve	323,346	343,105
(13)	Paid to Date (82 & Prior)	6,527,527	6,440,724
(14)	Est Ult Paid for 1982 & Prior	6,850,873	6,783,829
(14a)	Paid Counts During Fiscal Year	9	8

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	7,188,317	8,610,800
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**7,188,317**	**8,610,800**
(18)	Implied Tail	1.101	1.319
(19)	Ult Loss Inc Lump Sums @ 6/15	7,305,959	9,336,093

NOTES:

(1) From Section 1, Exhibit 2, Page 6
(2) = (Average of Section 1, Exhibit 2, Page 6, Column 3 / 175,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 1, Exhibit 2, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 1, Exhibit 2, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) Lump Sums are considered in Indemnity analysis (Section 1)
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	401,487	12.903			
1993	2	281,130	12.547	0.700		
1994	3	275,063	12.525	0.978		
1995	4	195,978	12.186	0.712		
1996	5	235,244	12.368	1.200		
1997	6	119,211	11.689	0.507		
1998	7	74,969	11.225	0.629		
1999	8	167,971	12.032	2.241		
2000	9	112,165	11.628	0.668	n =	25
2001	10	83,644	11.334	0.746	S(x) =	50,100
2002	11	54,441	10.905	0.651	S(x-sq) =	100,401,700
2003	12	53,298	10.884	0.979	S(xy) =	585,061
2004	13	73,810	11.209	1.385	S(y) =	292
2005	14	86,676	11.370	1.174	D =	32,500
2006	15	71,904	11.183	0.830	slope =	-0.034
2007	16	66,960	11.112	0.931	Avg Trend =	0.966
2008	17	71,871	11.183	1.073		
2009	18	156,441	11.960	2.177		
2010	19	168,137	12.033	1.075		
2011	20	139,603	11.847	0.830		
2012	21	102,690	11.539	0.736		
2013	22	106,562	11.576	1.038		
2014	23	115,903	11.661	1.088		
2015	24	120,640	11.701	1.041		
2016	25	86,803	11.371	0.720		
					Selected Trend:	**0.950**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 0.72 = 86803 / 120640

Commonwealth of Massachusetts Workers Compensation
All Clusters Combined
MEDICAL
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	80,157	194,108	281,698	355,785	430,372	505,456	583,349	673,674	790,768	861,582	915,134	975,815	1,007,922	1,082,827	1,139,603	1,141,641	1,147,008	1,150,280	1,152,153	1,152,412	1,154,034	1,170,882	1,177,268	1,193,197	1,205,857	1,216,414	1,222,393	1,225,876	1,230,254	1,233,433	1,237,128	1,241,152	1,241,812	1,242,695
June-84	278,846	675,251	979,952	1,237,679	1,497,148	1,692,853	1,965,008	2,259,281	2,488,041	2,658,528	2,815,940	2,906,236	2,927,914	2,961,604	2,990,903	3,026,971	3,061,107	3,088,013	3,103,364	3,110,882	3,148,274	3,167,361	3,181,238	3,187,495	3,198,788	3,205,196	3,216,959	3,243,352	3,245,106	3,246,544	3,252,369	3,255,405	3,256,073	
June-85	281,180	680,904	988,156	1,248,041	1,524,376	1,767,225	2,056,915	2,259,407	2,404,861	2,595,178	2,656,702	2,691,247	2,723,491	2,743,570	2,791,601	2,825,986	2,858,120	2,885,590	2,909,085	2,936,115	2,962,423	2,989,438	3,016,883	3,039,299	3,063,056	3,088,322	3,111,388	3,139,070	3,181,218	3,200,244	3,226,838	3,252,799		
June-86	525,630	1,272,862	1,847,229	2,295,762	2,801,909	3,261,873	3,656,708	3,915,488	4,146,092	4,242,208	4,302,418	4,368,117	4,405,703	4,495,556	4,540,345	4,569,414	4,631,690	4,679,159	4,717,866	4,751,566	4,788,347	4,826,166	4,848,695	4,868,351	4,898,350	4,937,177	4,944,321	4,952,720	4,957,299	4,962,311	4,967,016			
June-87	679,622	1,645,768	2,495,914	3,175,646	3,758,601	4,235,026	4,616,701	4,839,601	4,982,646	5,092,983	5,194,073	5,273,395	5,401,744	5,450,543	5,483,690	5,500,132	5,518,035	5,536,163	5,551,275	5,565,383	5,582,877	5,601,832	5,621,525	5,656,386	5,681,277	5,707,463	5,726,299	5,745,711	5,758,976	5,782,095				
June-88	1,191,827	3,330,054	5,139,009	6,298,489	7,138,465	7,736,797	8,238,504	8,487,549	8,654,240	8,771,119	8,871,380	8,936,796	8,998,468	9,039,583	9,080,840	9,108,289	9,182,392	9,269,235	9,323,809	9,379,358	9,460,451	9,506,848	9,566,385	9,624,005	9,677,988	9,708,186	9,746,800	9,886,893	9,920,342					
June-89	1,301,800	4,749,050	6,698,392	8,042,212	9,005,556	9,741,252	10,145,151	10,401,975	10,588,606	10,754,116	10,897,219	11,056,485	11,133,041	11,233,906	11,311,779	11,394,541	11,460,208	11,520,998	11,631,220	11,709,730	11,752,400	11,801,214	11,852,925	11,887,968	11,930,739	11,975,978	12,009,867	12,042,782						
June-90	1,971,011	6,207,955	8,378,887	9,502,646	10,377,079	10,866,795	11,178,293	11,460,398	11,654,311	11,744,612	11,853,219	11,929,544	12,013,692	12,102,616	12,193,641	12,288,370	12,363,890	12,414,703	12,454,464	12,472,674	12,492,856	12,504,730	12,520,503	12,538,576	12,563,968	12,583,220	12,596,340							
June-91	2,079,021	6,481,845	8,128,761	9,129,342	9,569,888	9,922,223	10,074,064	10,149,765	10,198,433	10,318,761	10,419,870	10,494,642	10,576,694	10,667,922	10,767,927	10,925,448	11,031,802	11,209,381	11,429,660	11,537,541	11,643,261	11,766,239	11,823,905	11,860,583	11,883,680	11,906,673								
June-92	2,582,717	6,069,511	7,466,854	8,202,774	8,503,875	8,669,993	8,827,343	9,030,623	9,135,160	9,257,875	9,372,582	9,437,134	9,514,021	9,594,979	9,639,410	9,684,641	9,729,562	9,777,992	9,843,570	9,998,090	10,162,177	10,366,472	10,602,914	10,713,579	10,783,184									
June-93	1,951,667	5,170,869	6,081,502	6,489,487	6,751,595	6,861,506	6,914,496	6,958,865	7,037,255	7,082,866	7,132,331	7,201,081	7,259,683	7,329,612	7,401,491	7,505,162	7,578,974	7,640,635	7,679,794	7,714,728	7,755,902	7,826,543	7,862,414	7,891,312										
June-94	2,254,109	4,622,918	5,401,604	5,967,695	6,235,895	6,548,173	6,736,695	6,864,534	6,987,145	7,147,202	7,266,001	7,394,198	7,524,153	7,640,660	7,736,000	7,790,584	7,842,474	7,909,569	7,974,641	8,037,509	8,101,818	8,151,347	8,269,070											
June-95	2,029,019	3,973,539	4,748,104	5,104,898	5,297,904	5,458,376	5,592,474	5,756,438	5,903,503	6,059,664	6,161,322	6,276,889	6,428,588	6,491,856	6,546,028	6,596,908	6,642,430	6,764,444	6,797,406	6,837,368	6,873,333	6,913,170												
June-96	1,766,253	4,182,294	4,865,024	5,174,865	5,452,218	5,598,854	5,739,120	5,855,214	5,980,868	6,100,238	6,209,752	6,290,753	6,361,945	6,411,788	6,464,381	6,495,988	6,521,070	6,537,735	6,548,588	6,563,090	6,572,319													
June-97	1,766,725	3,725,485	4,494,601	4,941,702	5,201,917	5,412,606	5,536,117	5,694,640	5,852,834	5,984,835	6,131,050	6,244,244	6,315,764	6,399,332	6,491,158	6,664,852	6,857,883	7,062,337	7,148,622	7,195,566														
June-98	1,434,653	3,363,240	4,046,082	4,435,465	4,731,267	4,919,954	5,122,526	5,375,830	5,487,330	5,608,858	5,703,803	5,850,033	5,931,380	6,078,298	6,191,362	6,271,642	6,360,866	6,472,141	6,564,185															
June-99	1,427,577	3,215,372	3,912,893	4,351,301	4,694,328	4,986,960	5,249,952	5,556,545	5,746,199	5,876,662	5,994,567	6,154,782	6,268,261	6,402,584	6,478,357	6,567,127	6,706,225	6,780,244																
June-00	1,919,617	4,021,129	4,792,481	5,313,057	5,734,824	6,105,211	6,329,799	6,555,866	6,681,932	6,813,975	6,898,518	6,996,942	7,138,790	7,262,102	7,372,673	7,504,980	7,586,347																	
June-01	1,955,272	4,077,952	5,089,014	5,933,836	6,650,457	7,105,631	7,471,084	7,767,438	8,000,937	8,307,585	8,507,669	8,703,774	8,845,415	9,003,056	9,140,745	9,370,399																		
June-02	1,477,425	3,509,146	4,573,760	5,338,916	5,731,628	5,955,713	6,085,017	6,292,071	6,517,249	6,663,212	6,917,679	7,073,118	7,209,384	7,329,953	7,511,596																			
June-03	969,154	3,818,930	5,475,517	6,135,434	6,529,665	6,778,078	6,990,986	7,205,533	7,374,939	7,547,463	7,650,965	7,822,367	7,992,803	8,161,223																				
June-04	1,457,859	4,815,053	6,241,371	6,962,594	7,265,206	7,595,768	7,812,538	7,975,825	8,092,945	8,180,931	8,285,856	8,395,996	8,479,408																				
June-05	2,296,467	6,044,403	7,443,461	8,222,874	8,698,237	9,004,663	9,337,914	9,544,673	9,739,666	9,917,957	10,021,865	10,121,156																					
June-06	2,480,251	5,605,314	6,838,991	7,488,958	7,923,458	8,230,916	8,500,027	8,685,758	8,828,551	8,921,703	9,020,980																						
June-07	2,697,227	6,287,742	7,783,576	8,319,615	8,708,706	8,952,407	9,197,087	9,352,229	9,474,608	9,611,791																							
June-08	3,229,281	6,460,123	7,505,731	8,076,203	8,364,088	8,613,325	8,799,265	9,008,163	9,151,259																								
June-09	3,247,133	6,451,648	7,766,520	8,400,468	8,775,739	9,090,669	9,368,582	9,601,209																									
June-10	3,060,289	6,279,753	7,213,128	7,731,312	8,124,749	8,370,005	8,627,030																										
June-11	3,709,038	7,016,744	8,085,690	8,709,130	9,137,711	9,403,213																											
June-12	3,189,372	6,711,576	7,783,683	8,387,093	8,798,309																												
June-13	2,903,130	6,057,463	7,167,331	7,672,962																													
June-14	2,931,171	6,504,914	7,878,217																														
June-15	3,735,022	6,999,911																															
June-16	4,192,776																																

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.422	1.451	1.263	1.210	1.174	1.154	1.155	1.174	1.090	1.062	1.066	1.033	1.074	1.052	1.002	1.005	1.003	1.002	1.000	1.001	1.015	1.005	1.014	1.011	1.009	1.005	1.003	1.004	1.003	1.003	1.003	1.001	1.001
June-84	2.422	1.451	1.263	1.210	1.131	1.161	1.150	1.101	1.069	1.059	1.032	1.007	1.012	1.010	1.012	1.011	1.009	1.005	1.002	1.012	1.006	1.004	1.002	1.004	1.002	1.004	1.008	1.001	1.000	1.002	1.001	1.000	
June-85	2.422	1.451	1.263	1.221	1.159	1.164	1.098	1.064	1.079	1.024	1.013	1.012	1.007	1.018	1.012	1.011	1.010	1.008	1.009	1.009	1.009	1.009	1.007	1.008	1.008	1.007	1.009	1.013	1.006	1.008	1.008		
June-86	2.422	1.451	1.243	1.220	1.164	1.121	1.071	1.059	1.023	1.014	1.015	1.009	1.020	1.010	1.006	1.014	1.010	1.008	1.007	1.008	1.008	1.005	1.004	1.006	1.008	1.001	1.002	1.001	1.001	1.001			
June-87	2.422	1.517	1.272	1.184	1.127	1.090	1.048	1.030	1.022	1.020	1.015	1.024	1.009	1.006	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.004	1.006	1.004	1.005	1.003	1.003	1.002	1.004				
June-88	2.794	1.543	1.226	1.133	1.084	1.065	1.030	1.020	1.014	1.011	1.007	1.007	1.005	1.005	1.003	1.008	1.009	1.006	1.006	1.009	1.005	1.006	1.006	1.006	1.003	1.004	1.014	1.003					
June-89	3.648	1.410	1.201	1.120	1.082	1.041	1.025	1.018	1.016	1.013	1.015	1.007	1.009	1.007	1.007	1.006	1.005	1.010	1.007	1.004	1.004	1.004	1.003	1.004	1.004	1.003	1.003						
June-90	3.150	1.350	1.134	1.092	1.047	1.029	1.025	1.017	1.008	1.009	1.006	1.007	1.007	1.008	1.008	1.006	1.004	1.003	1.001	1.002	1.001	1.001	1.001	1.002	1.002	1.001							
June-91	3.118	1.254	1.123	1.048	1.037	1.015	1.008	1.005	1.012	1.010	1.007	1.008	1.009	1.009	1.015	1.010	1.016	1.020	1.009	1.009	1.011	1.005	1.003	1.002	1.002								
June-92	2.350	1.230	1.099	1.037	1.020	1.018	1.023	1.012	1.013	1.012	1.007	1.008	1.009	1.005	1.005	1.005	1.005	1.007	1.016	1.016	1.020	1.023	1.010	1.006									
June-93	2.649	1.176	1.067	1.040	1.016	1.008	1.006	1.011	1.006	1.007	1.010	1.008	1.010	1.010	1.014	1.010	1.008	1.005	1.005	1.005	1.009	1.005	1.004										
June-94	2.051	1.168	1.105	1.045	1.050	1.029	1.019	1.018	1.023	1.017	1.018	1.018	1.015	1.012	1.007	1.007	1.009	1.008	1.008	1.008	1.006	1.014											
June-95	1.958	1.195	1.075	1.038	1.030	1.025	1.029	1.026	1.026	1.017	1.019	1.024	1.010	1.008	1.008	1.007	1.018	1.005	1.006	1.005	1.006												
June-96	2.368	1.163	1.064	1.054	1.027	1.025	1.020	1.021	1.020	1.018	1.013	1.011	1.008	1.008	1.005	1.004	1.003	1.002	1.002	1.001													
June-97	2.109	1.206	1.099	1.053	1.041	1.023	1.029	1.028	1.023	1.024	1.018	1.011	1.013	1.014	1.027	1.029	1.030	1.012	1.007														
June-98	2.344	1.203	1.096	1.067	1.040	1.041	1.049	1.021	1.022	1.017	1.026	1.014	1.025	1.019	1.013	1.014	1.017	1.014															
June-99	2.252	1.217	1.112	1.079	1.062	1.053	1.058	1.034	1.023	1.020	1.027	1.018	1.021	1.012	1.014	1.021	1.011																
June-00	2.095	1.192	1.109	1.079	1.065	1.037	1.036	1.019	1.020	1.012	1.014	1.020	1.017	1.015	1.018	1.011																	
June-01	2.086	1.248	1.166	1.121	1.068	1.051	1.040	1.030	1.038	1.024	1.023	1.016	1.018	1.015	1.025																		
June-02	2.375	1.303	1.167	1.074	1.039	1.022	1.034	1.036	1.022	1.038	1.022	1.019	1.017	1.025																			
June-03	3.940	1.434	1.121	1.064	1.038	1.031	1.031	1.024	1.023	1.014	1.022	1.022	1.021																				
June-04	3.303	1.296	1.116	1.043	1.045	1.029	1.021	1.015	1.011	1.013	1.013	1.010																					
June-05	2.632	1.231	1.105	1.058	1.035	1.037	1.022	1.020	1.018	1.010	1.010																						
June-06	2.260	1.220	1.095	1.058	1.039	1.033	1.022	1.016	1.011	1.011																							
June-07	2.331	1.238	1.069	1.047	1.028	1.027	1.017	1.013	1.014																								
June-08	2.000	1.162	1.076	1.036	1.030	1.022	1.024	1.016																									
June-09	1.987	1.204	1.082	1.045	1.036	1.031	1.025																										
June-10	2.052	1.149	1.072	1.051	1.030	1.031																											
June-11	1.892	1.152	1.077	1.049	1.029																												
June-12	2.104	1.160	1.078	1.049																													
June-13	2.087	1.183	1.071																														
June-14	2.219	1.211																															
June-15	1.874																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.428	1.276	1.132	1.087	1.061	1.050	1.041	1.033	1.026	1.020	1.018	1.014	1.016	1.013	1.011	1.010	1.010	1.007	1.006	1.007	1.008	1.007	1.006	1.005	1.005	1.004	1.006	1.004	1.003	1.004	1.004	1.000	1.001	
Latest 5	2.035	1.171	1.076	1.046	1.031	1.029	1.022	1.016	1.016	1.017	1.018	1.018	1.019	1.017	1.019	1.016	1.016	1.008	1.005	1.007	1.010	1.010	1.004	1.004	1.003	1.003	1.006	1.004	1.003					
Latest 3	2.060	1.185	1.075	1.050	1.032	1.028	1.022	1.015	1.014	1.011	1.015	1.017	1.019	1.018	1.019	1.015	1.019	1.009	1.005	1.005	1.007	1.014	1.006	1.003	1.002	1.003	1.007	1.002	1.004	1.004	1.004			
Volume Wtd																																		
All Yrs	2.316	1.240	1.112	1.069	1.048	1.037	1.030	1.022	1.020	1.016	1.015	1.013	1.013	1.011	1.011	1.010	1.010	1.008	1.006	1.007	1.007	1.007	1.005	1.004	1.004	1.003	1.006	1.004	1.003	1.003	1.004	1.001		
Latest 5	2.022	1.171	1.076	1.046	1.031	1.029	1.022	1.016	1.015	1.016	1.018	1.017	1.019	1.017	1.020	1.016	1.016	1.008	1.006	1.008	1.011	1.009	1.004	1.004	1.003	1.002	1.006	1.004	1.003					
Latest 3	2.044	1.184	1.075	1.050	1.032	1.028	1.022	1.015	1.015	1.011	1.015	1.017	1.019	1.018	1.020	1.015	1.020	1.009	1.005	1.005	1.007	1.015	1.006	1.003	1.002	1.002	1.007	1.002	1.003	1.003	1.004			

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	7,292,911	8,106,420	7,136,987	7,637,813	(155,923)	-2.1%	(468,607)	-5.8%
6/30/82-83	1,245,515	1,264,500	1,244,992	1,262,276	(523)	0.0%	(2,224)	-0.2%
6/30/83-84	3,271,894	3,332,006	3,272,569	3,329,118	675	0.0%	(2,887)	-0.1%
6/30/84-85	3,246,432	3,296,074	3,270,724	3,315,748	24,292	0.7%	19,674	0.6%
6/30/85-86	5,016,831	5,054,335	5,008,846	5,046,305	(7,985)	-0.2%	(8,030)	-0.2%
6/30/86-87	5,832,661	5,863,607	5,839,815	5,869,931	7,153	0.1%	6,324	0.1%
6/30/87-88	10,036,785	10,098,460	10,037,750	10,099,530	965	0.0%	1,070	0.0%
6/30/88-89	12,238,266	12,305,222	12,232,929	12,307,842	(5,338)	0.0%	2,620	0.0%
6/30/89-90	12,886,732	12,965,831	12,853,732	12,931,681	(33,000)	-0.3%	(34,150)	-0.3%
6/30/90-91	12,193,645	12,264,901	12,163,685	12,254,581	(29,960)	-0.2%	(10,320)	-0.1%
6/30/91-92	10,992,004	11,072,632	11,023,794	11,104,482	31,790	0.3%	31,850	0.3%
6/30/92-93	8,113,777	8,182,238	8,106,837	8,177,298	(6,940)	-0.1%	(4,940)	-0.1%
6/30/93-94	8,454,990	8,502,680	8,525,194	8,578,094	70,204	0.8%	75,414	0.9%
6/30/94-95	7,194,903	7,236,916	7,171,278	7,224,920	(23,625)	-0.3%	(11,997)	-0.2%
6/30/95-96	6,928,043	6,992,737	6,876,043	6,943,596	(52,000)	-0.8%	(49,141)	-0.7%
6/30/96-97	7,651,867	7,719,026	7,635,977	7,705,066	(15,890)	-0.2%	(13,960)	-0.2%
6/30/97-98	6,985,000	7,056,420	7,020,000	7,092,440	35,000	0.5%	36,020	0.5%
6/30/98-99	7,318,000	7,374,870	7,314,000	7,377,750	(4,000)	-0.1%	2,880	0.0%
6/30/99-00	8,289,570	8,360,660	8,255,640	8,327,520	(33,930)	-0.4%	(33,140)	-0.4%
6/30/00-01	10,200,890	10,304,000	10,308,980	10,412,980	108,090	1.1%	108,980	1.1%
6/30/01-02	8,276,000	8,351,960	8,392,000	8,477,210	116,000	1.4%	125,250	1.5%
6/30/02-03	9,200,010	9,297,760	9,246,890	9,360,390	46,880	0.5%	62,630	0.7%
6/30/03-04	9,745,530	9,873,070	9,697,170	9,841,770	(48,360)	-0.5%	(31,300)	-0.3%
6/30/04-05	11,469,950	12,128,050	11,204,300	12,067,950	(265,650)	-2.3%	(60,100)	-0.5%
6/30/05-06	10,402,780	10,992,700	10,232,540	10,921,250	(170,240)	-1.6%	(71,450)	-0.6%
6/30/06-07	11,021,550	11,957,250	11,014,940	12,001,770	(6,610)	-0.1%	44,520	0.4%
6/30/07-08	10,915,460	11,676,330	10,745,560	11,626,300	(169,900)	-1.6%	(50,030)	-0.4%
6/30/08-09	11,601,880	12,342,500	11,549,420	12,313,000	(52,460)	-0.5%	(29,500)	-0.2%
6/30/09-10	10,735,420	11,793,490	10,538,840	11,699,300	(196,580)	-1.8%	(94,190)	-0.8%
6/30/10-11	12,003,840	13,205,740	11,785,940	12,981,100	(217,900)	-1.8%	(224,640)	-1.7%
6/30/11-12	11,745,500	13,072,170	11,619,740	12,766,250	(125,760)	-1.1%	(305,920)	-2.3%
6/30/12-13	11,495,880	13,032,970	11,138,440	12,406,900	(357,440)	-3.1%	(626,070)	-4.8%
6/30/13-14	12,806,160	14,573,770	12,431,260	13,839,200	(374,900)	-2.9%	(734,570)	-5.0%
6/30/14-15	15,599,100	17,773,750	13,714,000	15,398,450	(1,885,100)	-12.1%	(2,375,300)	-13.4%
6/30/15-16								
Total	312,409,777	327,425,045	308,610,812	322,699,811	(3,798,965)	-1.2%	(4,725,234)	-1.4%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 1, Exhibit 2, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	0.6%	0.0%	0.2%	0.1%	1.000	1.000
408	99.4%	0.2%	0.6%	0.0%	0.0%	0.981	0.971
396	99.2%	0.1%	0.8%	0.0%	0.0%	0.951	0.928
384	99.1%	0.1%	0.9%	0.0%	0.0%	0.924	0.889
372	99.0%	0.1%	1.0%	0.0%	0.0%	0.897	0.851
360	98.9%	0.2%	1.1%	0.1%	0.0%	0.874	0.820
348	98.6%	0.2%	1.4%	0.1%	0.0%	0.864	0.807
336	98.4%	0.4%	1.6%	0.1%	0.1%	0.850	0.788
324	98.1%	0.4%	1.9%	0.2%	0.1%	0.847	0.785
312	97.6%	0.1%	2.4%	0.0%	0.0%	0.845	0.782
300	97.5%	0.5%	2.5%	0.2%	0.1%	0.819	0.747
288	97.1%	0.3%	2.9%	0.1%	0.1%	0.817	0.746
276	96.8%	0.7%	3.2%	0.3%	0.2%	0.806	0.731
264	96.1%	0.8%	3.9%	0.3%	0.2%	0.809	0.737
252	95.4%	1.2%	4.6%	0.5%	0.4%	0.811	0.740
240	94.2%	0.8%	5.8%	0.4%	0.3%	0.820	0.753
228	93.4%	0.8%	6.6%	0.4%	0.3%	0.812	0.743
216	92.6%	0.9%	7.4%	0.5%	0.3%	0.802	0.730
204	91.7%	1.1%	8.3%	0.6%	0.4%	0.794	0.719
192	90.6%	1.2%	9.4%	0.7%	0.5%	0.789	0.712
180	89.4%	1.5%	10.6%	0.8%	0.6%	0.784	0.706
168	87.9%	0.9%	12.1%	0.5%	0.4%	0.782	0.704
156	87.0%	2.0%	13.0%	1.2%	1.0%	0.767	0.685
144	85.0%	0.5%	15.0%	0.3%	0.2%	0.770	0.689
132	84.5%	2.3%	15.5%	1.5%	1.2%	0.748	0.661
120	82.2%	0.4%	17.8%	0.3%	0.3%	0.753	0.668
108	81.8%	1.5%	18.2%	1.1%	0.9%	0.730	0.638
96	80.3%	2.1%	19.7%	1.5%	1.3%	0.723	0.630
84	78.2%	2.7%	21.8%	2.1%	1.9%	0.722	0.630
72	75.5%	2.7%	24.5%	2.1%	1.9%	0.726	0.637
60	72.8%	3.6%	27.2%	3.0%	2.8%	0.726	0.637
48	69.2%	6.3%	30.8%	5.5%	5.1%	0.731	0.644
36	62.9%	12.3%	37.1%	11.1%	10.6%	0.750	0.669
24	50.7%	28.0%	49.3%	26.4%	25.7%	0.786	0.716
12	22.6%	22.6%	77.4%	22.2%	22.0%	0.837	0.783
Total		100.0%					

NOTES:

(2) = 1 / Section 1, Exhibit 2, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	609,461	1,110,286		569,417	1,037,534
6/30/82-83	2,297	19,581	0.981	2,259	19,219
6/30/83-84	16,495	73,045	0.951	15,694	69,379
6/30/84-85	17,925	62,949	0.924	16,619	58,601
6/30/85-86	41,830	79,289	0.897	38,092	72,695
6/30/86-87	57,720	87,836	0.874	51,132	78,186
6/30/87-88	117,408	179,188	0.864	101,677	155,698
6/30/88-89	190,147	265,060	0.850	162,380	225,848
6/30/89-90	257,391	335,341	0.847	217,342	282,517
6/30/90-91	257,012	347,908	0.845	214,302	290,049
6/30/91-92	240,610	321,298	0.819	197,577	263,057
6/30/92-93	215,526	285,986	0.817	175,197	231,963
6/30/93-94	256,124	309,024	0.806	205,533	248,429
6/30/94-95	258,108	311,750	0.809	205,795	248,774
6/30/95-96	303,724	371,277	0.811	243,313	296,870
6/30/96-97	440,410	509,500	0.820	354,083	408,440
6/30/97-98	455,815	528,255	0.812	362,810	419,788
6/30/98-99	533,756	597,506	0.802	418,231	467,549
6/30/99-00	669,293	741,173	0.794	519,683	574,042
6/30/00-01	938,581	1,042,581	0.789	727,930	807,145
6/30/01-02	880,404	965,614	0.784	685,934	751,830
6/30/02-03	1,085,667	1,199,167	0.782	834,295	921,725
6/30/03-04	1,217,762	1,362,362	0.767	930,681	1,043,190
6/30/04-05	1,083,144	1,946,794	0.770	817,175	1,473,941
6/30/05-06	1,211,560	1,900,270	0.748	910,804	1,428,095
6/30/06-07	1,403,149	2,389,979	0.753	1,042,369	1,776,469
6/30/07-08	1,594,301	2,475,041	0.730	1,176,324	1,825,497
6/30/08-09	1,948,211	2,711,791	0.723	1,421,157	1,975,811
6/30/09-10	1,911,810	3,072,270	0.722	1,393,322	2,236,924
6/30/10-11	2,382,727	3,577,887	0.726	1,726,879	2,598,718
6/30/11-12	2,821,431	3,967,941	0.726	2,043,491	2,882,079
6/30/12-13	3,465,478	4,733,938	0.731	2,529,680	3,469,404
6/30/13-14	4,553,043	5,960,983	0.750	3,398,510	4,463,802
6/30/14-15	6,714,089	8,398,539	0.786	5,235,695	6,569,826
6/30/15-16	11,971,124	14,525,494	0.837	9,989,435	12,138,074
Total	50,123,532	66,766,901		38,934,816	51,811,168
			(7) Total Discount Factor:	0.777	0.776

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	609,461	1,110,286
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	203,154	370,095
(11) Discounted Value at 4%:	575,045	1,047,589

NOTES:
(2), (3) From Section 1, Exhibit 2, Page 1, Columns 8, 9
(4) From Section 1, Exhibit 2, Page 9, Column 7
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Clusters Combined
Medical

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	609,461	1,110,286		551,386	1,004,759
6/30/82-83	2,297	19,581	0.971	2,241	19,046
6/30/83-84	16,495	73,045	0.928	15,320	67,671
6/30/84-85	17,925	62,949	0.889	16,027	56,626
6/30/85-86	41,830	79,289	0.851	36,434	69,765
6/30/86-87	57,720	87,836	0.820	48,279	73,997
6/30/87-88	117,408	179,188	0.807	95,012	145,724
6/30/88-89	190,147	265,060	0.788	150,844	209,571
6/30/89-90	257,391	335,341	0.785	201,017	261,008
6/30/90-91	257,012	347,908	0.782	197,196	266,880
6/30/91-92	240,610	321,298	0.747	180,640	240,187
6/30/92-93	215,526	285,986	0.746	159,541	211,040
6/30/93-94	256,124	309,024	0.731	186,173	225,217
6/30/94-95	258,108	311,750	0.737	186,061	225,002
6/30/95-96	303,724	371,277	0.740	220,817	269,194
6/30/96-97	440,410	509,500	0.753	322,097	371,034
6/30/97-98	455,815	528,255	0.743	328,705	380,062
6/30/98-99	533,756	597,506	0.730	376,318	420,432
6/30/99-00	669,293	741,173	0.719	465,934	514,099
6/30/00-01	938,581	1,042,581	0.712	652,924	723,473
6/30/01-02	880,404	965,614	0.706	617,231	676,404
6/30/02-03	1,085,667	1,199,167	0.704	746,171	824,476
6/30/03-04	1,217,762	1,362,362	0.685	830,847	932,181
6/30/04-05	1,083,144	1,946,794	0.689	725,438	1,310,741
6/30/05-06	1,211,560	1,900,270	0.661	807,710	1,266,338
6/30/06-07	1,403,149	2,389,979	0.668	919,926	1,568,167
6/30/07-08	1,594,301	2,475,041	0.638	1,035,461	1,606,642
6/30/08-09	1,948,211	2,711,791	0.630	1,245,203	1,730,361
6/30/09-10	1,911,810	3,072,270	0.630	1,221,153	1,960,994
6/30/10-11	2,382,727	3,577,887	0.637	1,511,254	2,277,723
6/30/11-12	2,821,431	3,967,941	0.637	1,789,929	2,529,085
6/30/12-13	3,465,478	4,733,938	0.644	2,226,760	3,060,559
6/30/13-14	4,553,043	5,960,983	0.669	3,025,517	3,980,756
6/30/14-15	6,714,089	8,398,539	0.716	4,755,842	5,975,365
6/30/15-16	11,971,124	14,525,494	0.783	9,329,745	11,341,981
Total	50,123,532	66,766,901		35,181,155	46,796,561
			(7) Total Discount Factor:	0.702	0.701

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	609,461	1,110,286
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	203,154	370,095
(11) Discounted Value at 6%:	559,323	1,018,947

NOTES:
(2), (3) From Section 1, Exhibit 2, Page 1, Columns 8, 9
(4) From Section 1, Exhibit 2, Page 9, Column 8
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

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		21,328,743			25,284,792	27,036,306	3,956,049	5,707,563		
6/30/82-83		4,699,567	4,966,366		4,966,366	4,991,198	266,799	291,631		
6/30/83-84		8,392,416	9,689,496		9,689,000	9,786,391	1,296,584	1,393,975		
6/30/84-85	181,560	6,810,805	7,472,189	6,901,901	6,902,000	7,472,000	91,195	661,195	3.801	4.115
6/30/85-86	195,247	10,272,096	10,463,203	10,464,194	10,375,000	10,478,000	102,904	205,904	5.314	5.367
6/30/86-87	224,370	13,480,506	13,772,396	13,785,060	13,615,000	13,750,000	134,494	269,494	6.068	6.128
6/30/87-88	262,864	19,652,936	21,907,986	20,142,573	20,143,000	20,812,600	490,064	1,159,664	7.663	7.918
6/30/88-89	283,884	20,097,731	20,713,933	20,726,220	20,714,000	20,726,000	616,269	628,269	7.297	7.301
6/30/89-90	285,078	15,018,718	15,530,297	15,615,375	15,169,000	15,319,000	150,282	300,282	5.321	5.374
6/30/90-91	267,732	10,867,057	11,277,223	11,274,330	10,976,000	11,084,000	108,943	216,943	4.100	4.140
6/30/91-92	261,442	7,625,799	7,923,361	7,919,619	7,920,000	7,923,000	294,201	297,201	3.029	3.031
6/30/92-93	259,992	4,189,576	4,372,506	4,370,093	4,231,000	4,273,000	41,424	83,424	1.627	1.644
6/30/93-94	257,062	3,496,223	3,650,885	3,649,086	3,566,000	3,601,000	69,777	104,777	1.387	1.401
6/30/94-95	255,854	2,081,529	2,183,142	2,183,951	2,183,000	2,184,000	101,471	102,471	0.853	0.854
6/30/95-96	255,539	3,095,575	3,264,237	3,261,889	3,262,000	3,264,000	166,425	168,425	1.277	1.277
6/30/96-97	270,071	2,467,027	2,606,898	2,607,540	2,479,000	2,492,000	11,973	24,973	0.918	0.923
6/30/97-98	245,367	2,649,264	2,823,327	2,821,020	2,821,000	2,823,000	171,736	173,736	1.150	1.151
6/30/98-99	251,453	2,410,298	2,569,881	2,570,389	2,570,000	2,570,000	159,702	159,702	1.022	1.022
6/30/99-00	255,641	2,412,735	2,611,129	2,609,375	2,609,000	2,611,000	196,265	198,265	1.021	1.021
6/30/00-01	263,918	3,322,017	3,640,411	3,629,454	3,629,000	3,640,000	306,983	317,983	1.375	1.379
6/30/01-02	267,598	2,229,481	2,458,373	2,459,506	2,241,000	2,252,000	11,519	22,519	0.837	0.842
6/30/02-03	274,465	3,002,429	3,353,995	3,346,773	3,347,000	3,354,000	344,571	351,571	1.219	1.222
6/30/03-04	272,384	3,214,518	3,634,561	3,623,174	3,623,000	3,635,000	408,482	420,482	1.330	1.335
6/30/04-05	273,647	2,658,617	3,035,251	2,999,123	2,672,000	2,685,000	13,383	26,383	0.976	0.981
6/30/05-06	285,139	2,731,972	3,163,283	3,123,142	3,123,000	3,163,000	391,028	431,028	1.095	1.109
6/30/06-07	298,516	2,841,762	3,323,888	3,298,775	3,299,000	3,324,000	457,238	482,238	1.105	1.114
6/30/07-08	314,231	1,491,274	1,781,122	1,992,592	1,781,000	1,993,000	289,726	501,726	0.567	0.634
6/30/08-09	302,998	2,247,036	2,750,842	2,836,840	2,751,000	2,837,000	503,964	589,964	0.908	0.936
6/30/09-10	297,252	3,259,376	4,085,587	3,942,962	3,943,000	4,086,000	683,624	826,624	1.326	1.375
6/30/10-11	292,432	2,636,385	3,515,461	3,456,196	3,456,000	3,515,000	819,615	878,615	1.182	1.202
6/30/11-12	295,908	2,669,830	3,660,552	3,600,561	3,601,000	3,661,000	931,170	991,170	1.217	1.237
6/30/12-13	301,541	2,250,465	3,370,808	3,426,471	3,371,000	3,426,000	1,120,535	1,175,535	1.118	1.136
6/30/13-14	309,910	2,192,410	3,868,264	3,800,021	3,800,000	3,868,000	1,607,590	1,675,590	1.226	1.248
6/30/14-15	316,552	1,346,264	3,428,584	3,530,162	3,429,000	3,530,000	2,082,736	2,183,736	1.083	1.115
6/30/15-16	316,565	713,131	3,515,091	3,627,722	3,515,000	3,628,000	2,801,869	2,914,869	1.110	1.146
Total	8,696,212	199,855,570	200,384,527	183,596,090	221,056,158	225,793,495	21,200,588	25,937,925		
Tot 6/30/84-16	8,696,212	165,434,844	185,728,665	183,596,090	181,116,000	183,979,600	15,681,156	18,544,756	2.083	2.116

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) Sum of Section 2, Exhibit 1, Page 2, Column 3 and Section 2, Exhibit 1, Page 9, Column 8

(4) From Section 2, Exhibit 1, Page 2, Column 8

(5) From Section 2, Exhibit 1, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Accident Year	Payroll (000's)	Paid Loss Excluding Lump Sum	Paid LDF	Adjstmnt for Extra Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim	Average Age
All Prior Yrs		20,063,245							9	8		79
6/30/82-83		4,309,167	1.011	1.050	4,575,966	390,400	4,966,366		0	0		
6/30/83-84		7,843,266	1.013	1.150	9,140,346	549,150	9,689,496		3	3	432,360	69
6/30/84-85	181,560	5,655,954	1.015	1.100	6,317,338	1,154,851	7,472,189	4.116	1	0		
6/30/85-86	195,247	9,334,452	1.020	1.000	9,525,559	937,644	10,463,203	5.359	0	0		
6/30/86-87	224,370	11,412,789	1.026	1.000	11,704,679	2,067,717	13,772,396	6.138	0	0		
6/30/87-88	262,864	16,857,172	1.031	1.100	19,112,222	2,795,764	21,907,986	8.334	3	3	751,683	72
6/30/88-89	283,884	16,458,118	1.037	1.000	17,065,222	3,648,712	20,713,933	7.297	2	2	303,552	85
6/30/89-90	285,078	11,631,137	1.043	1.000	12,132,544	3,397,752	15,530,297	5.448	0	0		
6/30/90-91	267,732	8,301,627	1.048	1.000	8,702,800	2,574,423	11,277,223	4.212	1	1	401,173	83
6/30/91-92	261,442	5,819,387	1.050	1.000	6,109,707	1,813,654	7,923,361	3.031	2	2	145,160	64
6/30/92-93	259,992	3,210,473	1.056	1.000	3,388,985	983,522	4,372,506	1.682	0	0		
6/30/93-94	257,062	2,527,522	1.059	1.000	2,677,324	973,561	3,650,885	1.420	0	0		
6/30/94-95	255,854	1,526,329	1.065	1.000	1,624,876	558,266	2,183,142	0.853	0	0		
6/30/95-96	255,539	2,348,935	1.070	1.000	2,513,096	751,141	3,264,237	1.277	1	1	164,161	59
6/30/96-97	270,071	1,787,477	1.076	1.000	1,922,907	683,990	2,606,898	0.965	0	0		
6/30/97-98	245,367	2,116,101	1.080	1.000	2,286,410	536,917	2,823,327	1.151	1	1	170,310	55
6/30/98-99	251,453	1,758,227	1.087	1.000	1,911,933	657,949	2,569,881	1.022	0	0		
6/30/99-00	255,641	2,070,234	1.093	1.000	2,263,605	347,524	2,611,129	1.021	1	1	193,372	71
6/30/00-01	263,918	3,070,914	1.101	1.000	3,382,085	258,326	3,640,411	1.379	4	4	77,793	58
6/30/01-02	267,598	1,946,268	1.112	1.000	2,165,204	293,169	2,458,373	0.919	0	0		
6/30/02-03	274,465	2,674,405	1.125	1.000	3,007,644	346,351	3,353,995	1.222	1	2	166,619	64
6/30/03-04	272,384	2,904,693	1.136	1.000	3,300,083	334,477	3,634,561	1.334	2	2	197,695	61
6/30/04-05	273,647	2,315,265	1.150	1.000	2,663,648	371,603	3,035,251	1.109	0	0		
6/30/05-06	285,139	2,415,470	1.164	1.000	2,811,150	352,133	3,163,283	1.109	2	2	197,840	58
6/30/06-07	298,516	2,422,230	1.178	1.000	2,853,184	470,704	3,323,888	1.113	4	1	430,954	68
6/30/07-08	314,231	1,325,773	1.197	1.000	1,586,338	194,785	1,781,122	0.567	2	1	260,564	55
6/30/08-09	302,998	1,918,036	1.223	1.000	2,345,846	404,996	2,750,842	0.908	3	3	142,603	58
6/30/09-10	297,252	2,771,498	1.258	1.000	3,485,256	600,331	4,085,587	1.374	15	10	71,376	52
6/30/10-11	292,432	2,332,885	1.293	1.000	3,015,461	500,000	3,515,461	1.202	13	11	62,052	54
6/30/11-12	295,908	2,233,894	1.363	1.000	3,044,313	616,238	3,660,552	1.237	14	10	81,042	55
6/30/12-13	301,541	1,855,465	1.477	1.000	2,740,592	630,216	3,370,808	1.118	22	15	59,009	54
6/30/13-14	309,910	1,895,910	1.682	1.000	3,189,063	679,201	3,868,264	1.248	76	30	43,105	50
6/30/14-15	316,552	1,336,264	2.192	1.000	2,928,584	500,000	3,428,584	1.083	218	64	24,880	48
6/30/15-16	316,565	713,131	4.210	1.000	3,002,177	512,913	3,515,091	1.110		201	11,388	46
Total	8,696,212	169,163,713			168,496,147	31,888,380	200,384,527		400	378		

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCIRB

(6) = (3) x (4) x (5)

(7) From Section 2, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

(13) Calculated for claimants that had an indemnity payment within the last calendar year.

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss Excluding Lump Sum	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	181,560	3.309	5,655,954	1.015	5,747,050	1,154,851	6,901,901	3.801	3.165
6/30/85-86	195,247	4.904	9,334,452	1.020	9,526,550	937,644	10,464,194	5.359	4.879
6/30/86-87	224,370	5.443	11,412,789	1.026	11,717,343	2,067,717	13,785,060	6.144	5.222
6/30/87-88	262,864	6.253	16,857,172	1.031	17,346,809	2,795,764	20,142,573	7.663	6.599
6/30/88-89	283,884	6.133	16,458,118	1.037	17,077,508	3,648,712	20,726,220	7.301	6.016
6/30/89-90	285,078	4.978	11,631,137	1.043	12,217,623	3,397,752	15,615,375	5.478	4.286
6/30/90-91	267,732	3.227	8,301,627	1.048	8,699,907	2,574,423	11,274,330	4.211	3.249
6/30/91-92	261,442	2.307	5,819,387	1.050	6,105,965	1,813,654	7,919,619	3.029	2.335
6/30/92-93	259,992	1.286	3,210,473	1.056	3,386,571	983,522	4,370,093	1.681	1.303
6/30/93-94	257,062	1.029	2,527,522	1.059	2,675,525	973,561	3,649,086	1.420	1.041
6/30/94-95	255,854	0.640	1,526,329	1.065	1,625,685	558,266	2,183,951	0.854	0.635
6/30/95-96	255,539	0.969	2,348,935	1.070	2,510,748	751,141	3,261,889	1.276	0.983
6/30/96-97	270,071	0.715	1,787,477	1.076	1,923,550	683,990	2,607,540	0.966	0.712
6/30/97-98	245,367	0.919	2,116,101	1.080	2,284,103	536,917	2,821,020	1.150	0.931
6/30/98-99	251,453	0.763	1,758,227	1.087	1,912,440	657,949	2,570,389	1.022	0.761
6/30/99-00	255,641	0.877	2,070,234	1.093	2,261,851	347,524	2,609,375	1.021	0.885
6/30/00-01	263,918	1.236	3,070,914	1.101	3,371,128	258,326	3,629,454	1.375	1.277
6/30/01-02	267,598	0.813	1,946,268	1.112	2,166,337	293,169	2,459,506	0.919	0.810
6/30/02-03	274,465	1.072	2,674,405	1.125	3,000,422	346,351	3,346,773	1.219	1.093
6/30/03-04	272,384	1.177	2,904,693	1.136	3,288,696	334,477	3,623,174	1.330	1.207
6/30/04-05	273,647	0.872	2,315,265	1.150	2,627,520	371,603	2,999,123	1.096	0.960
6/30/05-06	285,139	0.886	2,415,470	1.164	2,771,010	352,133	3,123,142	1.095	0.972
6/30/06-07	298,516	0.900	2,422,230	1.178	2,828,072	470,704	3,298,775	1.105	0.947
6/30/07-08	314,231	0.915	1,325,773	1.197	1,797,808	194,785	1,992,592	0.634	0.572
6/30/08-09	302,998	0.930	1,918,036	1.223	2,431,844	404,996	2,836,840	0.936	0.803
6/30/09-10	297,252	0.938	2,771,498	1.258	3,342,631	600,331	3,942,962	1.326	1.125
6/30/10-11	292,432	0.942	2,332,885	1.293	2,956,196	500,000	3,456,196	1.182	1.011
6/30/11-12	295,908	0.953	2,233,894	1.363	2,984,323	616,238	3,600,561	1.217	1.009
6/30/12-13	301,541	0.966	1,855,465	1.477	2,796,255	630,216	3,426,471	1.136	0.927
6/30/13-14	309,910	0.975	1,895,910	1.682	3,120,820	679,201	3,800,021	1.226	1.007
6/30/14-15	316,552	0.984	1,336,264	2.192	3,030,162	500,000	3,530,162	1.115	0.957
6/30/15-16	316,565	0.995	713,131	4.210	3,114,809	512,913	3,627,722	1.146	0.984
Total	8,696,212		136,948,036		152,647,260	30,948,830	183,596,090		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 2, Exhibit 1, Page 4, Column 11

(4) From Section 2, Exhibit 1, Page 2, Column 3

(5) From Section 2, Exhibit 1, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) From Section 2, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Exp Ult Loss Excluding Lump Sum	Unadjusted Loss Cost	Benefit Level Factor	Benefit Adjusted Loss Cost	Loss Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									3.309	3.309
6/30/85-86									4.904	4.904
6/30/86-87									5.443	5.443
6/30/87-88									6.253	6.253
6/30/88-89									6.133	6.133
6/30/89-90									4.978	4.978
6/30/90-91	267,732	8,702,800	3.251	0.969	3.149	1.138	3.585	0.907	3.245	3.227
6/30/91-92	261,442	6,109,707	2.337	1.063	2.483	1.133	2.813	0.831	2.309	2.307
6/30/92-93	259,992	3,388,985	1.303	1.239	1.615	1.127	1.821	0.716	1.297	1.286
6/30/93-94	257,062	2,677,324	1.042	1.223	1.274	1.122	1.429	0.729	1.040	1.029
6/30/94-95	255,854	1,624,876	0.635	1.212	0.770	1.116	0.859	0.739	0.648	0.640
6/30/95-96	255,539	2,513,096	0.983	1.202	1.182	1.110	1.313	0.749	0.968	0.969
6/30/96-97	270,071	1,922,907	0.712	1.190	0.848	1.105	0.937	0.760	0.724	0.715
6/30/97-98	245,367	2,286,410	0.932	1.175	1.095	1.099	1.204	0.774	0.920	0.919
6/30/98-99	251,453	1,911,933	0.760	1.160	0.882	1.094	0.965	0.788	0.771	0.763
6/30/99-00	255,641	2,263,605	0.885	1.141	1.010	1.088	1.100	0.805	0.874	0.877
6/30/00-01	263,918	3,382,085	1.281	1.112	1.425	1.083	1.544	0.830	1.232	1.236
6/30/01-02	267,598	2,165,204	0.809	1.090	0.882	1.078	0.951	0.851	0.826	0.813
6/30/02-03	274,465	3,007,644	1.096	1.086	1.191	1.072	1.277	0.858	1.079	1.072
6/30/03-04	272,384	3,300,083	1.212	1.086	1.316	1.067	1.404	0.863	1.170	1.177
6/30/04-05	273,647	2,663,648	0.973	1.080	1.051	1.062	1.116	0.872	0.917	0.872
6/30/05-06	285,139	2,811,150	0.986	1.069	1.053	1.056	1.113	0.886	0.931	0.886
6/30/06-07	298,516	2,853,184	0.956	1.057	1.010	1.051	1.062	0.900	0.946	0.900
6/30/07-08	314,231	1,586,338	0.505	1.045	0.528	1.046	0.552	0.915	0.962	0.915
6/30/08-09	302,998	2,345,846	0.774	1.033	0.800	1.041	0.833	0.930	0.978	0.930
6/30/09-10	297,252	3,485,256	1.172	1.029	1.207	1.036	1.250	0.938	0.986	0.938
6/30/10-11	292,432	3,015,461	1.031	1.031	1.063	1.030	1.095	0.942	0.990	0.942
6/30/11-12	295,908	3,044,313	1.029	1.024	1.053	1.025	1.080	0.953	1.002	0.953
6/30/12-13	301,541	2,740,592	0.909	1.015	0.922	1.020	0.941	0.966	1.016	0.966
6/30/13-14	309,910	3,189,063	1.029	1.011	1.040	1.015	1.056	0.975	1.025	0.975
6/30/14-15	316,552	2,928,584	0.925	1.006	0.931	1.010	0.940	0.984	1.035	0.984
6/30/15-16	316,565	3,002,177	0.948	1.000	0.948	1.005	0.953	0.995		0.995
Total	7,263,209	78,922,270								

Trend Last 4 (ex 15-16):	-2.5%	Avg 3 (ex 15-16):	0.979
Trend Last 8 (ex 15-16):	5.5%	Avg 5 (ex 15-16):	1.022
Trend Last 12 (ex 15-16):	-0.7%	Avg 10 (ex 15-16):	0.992
Prior Selected Trend:	0.5%	Prior Sel Avg:	1.040
Selected Trend:	0.5%	Sel. Loss Cost:	1.000

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 2, Exhibit 1, Page 2, Column 6

(4) = (3) / (2) / 10

(5) Based on information from the MA WCRIB

(6) = (4) x (5)

(7) Based on Selected Trend from (6)

(8) = (6) x (7)

(9) = Sel. Loss Cost / [(5) * (7)]

(10) From prior Aon analysis as of June 30, 2015

(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.960	
(2)	Credibility		41%	
(3)	Average Pmt Trend Statewide		0.960	
(4)	Credibility Weighted Trend		0.960	
		(Low)		(High)
(5)	Selected Range	0.950		0.965
(6)	Incremental Paid for 2016	290,691		290,691
(7)	Estimated Reserve	5,523,123		7,967,567
(8)	Paid to Date (82 & Prior)	20,063,245		20,063,245
(9)	Est Ult Paid for 1982 & Prior	25,586,368		28,030,812

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	341,282	372,607
(11)	Projected Number of Years	7	7
(12)	Estimated Reserve	2,388,976	2,608,247
(13)	Paid to Date (82 & Prior)	20,063,245	19,772,554
(14)	Est Ult Paid for 1982 & Prior	22,452,221	22,380,802
(14a)	Paid Counts During Fiscal Year	8	9

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	24,019,294	25,770,808
(16)	Lump Sum Ultimates	1,265,498	1,265,498
(17)	Ult Loss Including Lump Sums	**25,284,792**	**27,036,306**
(18)	Implied Tail	1.197	1.284
(19)	Ult Loss Inc Lump Sums @ 6/15	25,695,282	27,763,024

NOTES:

(1) From Section 2, Exhibit 1, Page 6
(2) = (Average of Section 2, Exhibit 1, Page 6, Column 3 / 3,000,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 2, Exhibit 1, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 2, Exhibit 1, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) From Section 2, Exhibit 1, Page 9, Column 13
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	689,918	13.444			
1993	2	793,381	13.584	1.150		
1994	3	677,152	13.426	0.854		
1995	4	616,229	13.331	0.910		
1996	5	581,038	13.273	0.943		
1997	6	667,765	13.412	1.149		
1998	7	676,041	13.424	1.012		
1999	8	626,143	13.347	0.926		
2000	9	638,144	13.366	1.019	n =	25
2001	10	586,837	13.283	0.920	S(x) =	50,100
2002	11	551,859	13.221	0.940	S(x-sq) =	100,401,700
2003	12	510,510	13.143	0.925	S(xy) =	656,953
2004	13	475,438	13.072	0.931	S(y) =	328
2005	14	461,151	13.041	0.970	D =	32,500
2006	15	476,801	13.075	1.034	slope =	-0.035
2007	16	429,059	12.969	0.900	Avg Trend =	0.965
2008	17	388,693	12.871	0.906		
2009	18	397,505	12.893	1.023		
2010	19	401,537	12.903	1.010		
2011	20	390,154	12.874	0.972		
2012	21	372,558	12.828	0.955		
2013	22	384,664	12.860	1.032		
2014	23	380,197	12.848	0.988		
2015	24	352,959	12.774	0.928		
2016	25	290,691	12.580	0.824		
					Selected Trend:	**0.960**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 0.824 = 290691 / 352959

Commonwealth of Massachusetts Workers Compensation
Department of Developmental Services - Cluster 1
INDEMNITY
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Accident Yr End	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	303,088	716,212	1,018,528	1,273,160	1,522,276	1,772,634	2,026,466	2,293,172	2,479,591	2,709,942	2,878,245	2,989,792	3,133,165	3,273,307	3,334,466	3,383,940	3,420,864	3,471,952	3,531,863	3,593,426	3,656,287	3,718,769	3,782,583	3,849,168	3,918,660	3,991,417	4,067,350	4,144,239	4,190,906	4,231,391	4,273,198	4,309,167	4,309,167	4,309,167
June-84	588,752	1,391,250	1,978,503	2,473,129	2,957,038	3,430,512	3,850,638	4,248,292	4,569,012	4,852,567	5,084,077	5,325,765	5,500,225	5,591,777	5,716,071	5,844,905	5,981,927	6,097,750	6,217,962	6,335,407	6,446,404	6,561,447	6,682,092	6,807,737	6,918,835	7,027,806	7,138,148	7,248,169	7,362,291	7,479,325	7,598,225	7,719,150	7,843,266	
June-85	722,238	1,706,685	2,427,085	3,021,356	3,575,162	4,153,362	4,555,210	4,859,145	5,067,185	5,195,242	5,289,258	5,335,046	5,422,572	5,464,010	5,505,997	5,522,923	5,523,036	5,580,502	5,609,877	5,639,252	5,659,166	5,650,202	5,650,202	5,650,202	5,650,202	5,650,202	5,650,202	5,652,195	5,655,860	5,655,860	5,655,954	5,655,954		
June-86	1,095,655	2,589,088	3,658,454	4,589,190	5,452,112	6,125,447	6,630,963	7,055,749	7,268,651	7,575,650	7,835,016	8,089,718	8,284,822	8,452,458	8,677,431	8,856,536	8,960,945	9,024,666	9,066,019	9,108,290	9,147,296	9,188,006	9,230,664	9,275,183	9,320,262	9,334,452	9,334,452	9,334,452	9,334,452	9,334,452	9,334,452	9,334,452		
June-87	1,432,565	3,348,783	4,705,173	6,001,822	7,077,490	7,800,986	8,402,000	9,027,460	9,393,871	9,735,307	10,048,389	10,319,413	10,602,871	10,771,580	10,933,614	11,088,267	11,148,911	11,204,986	11,255,712	11,281,293	11,313,500	11,347,192	11,382,355	11,412,789	11,412,789	11,412,789	11,412,789	11,412,789	11,412,789	11,412,789	11,412,789			
June-88	2,142,725	4,931,624	7,312,968	9,157,962	10,751,119	11,652,385	12,239,990	12,826,004	13,145,803	13,410,989	13,647,380	13,914,189	14,176,053	14,393,869	14,564,189	14,732,219	14,899,699	15,069,301	15,232,127	15,401,826	15,590,731	15,776,168	15,939,935	16,091,855	16,248,755	16,410,714	16,574,836	16,739,445	16,857,172					
June-89	2,139,859	5,737,843	8,345,508	10,235,005	11,538,085	12,380,476	13,056,104	13,607,875	13,950,193	14,223,676	14,460,790	14,677,503	14,820,152	14,959,611	15,088,991	15,215,644	15,354,762	15,504,713	15,612,328	15,710,703	15,815,015	15,923,590	16,033,593	16,140,651	16,239,237	16,310,241	16,382,887	16,458,118						
June-90	2,678,119	5,989,136	8,059,169	9,355,215	10,163,757	10,729,296	11,079,915	11,298,239	11,383,933	11,541,269	11,650,902	11,599,979	11,605,663	11,609,714	11,609,714	11,609,714	11,609,714	11,609,714	11,610,392	11,610,392	11,612,790	11,614,053	11,614,400	11,617,685	11,631,137	11,631,137	11,631,137							
June-91	2,055,995	4,525,519	5,956,270	6,809,892	7,377,934	7,700,162	7,848,119	7,941,980	8,070,661	8,111,443	8,150,308	8,195,730	8,243,748	8,275,457	8,287,806	8,289,633	8,289,633	8,289,927	8,295,115	8,296,069	8,296,953	8,297,667	8,298,631	8,299,673	8,300,774	8,301,627								
June-92	1,556,680	2,907,997	3,613,911	4,262,894	4,511,682	4,736,540	4,868,155	4,962,680	5,049,867	5,098,658	5,131,848	5,177,939	5,259,492	5,311,896	5,373,855	5,435,773	5,480,341	5,518,481	5,558,121	5,598,760	5,641,750	5,685,342	5,729,682	5,774,150	5,819,387									
June-93	931,603	1,916,981	2,439,817	2,755,036	2,906,872	3,136,998	3,162,217	3,209,301	3,219,019	3,198,001	3,197,828	3,197,728	3,197,728	3,197,728	3,204,287	3,210,473	3,210,473	3,210,473	3,210,473	3,210,473	3,210,473	3,210,473	3,210,473	3,210,473										
June-94	923,316	1,598,259	1,935,049	2,093,050	2,066,940	2,146,254	2,134,209	2,198,365	2,247,827	2,310,431	2,340,041	2,380,852	2,417,221	2,452,624	2,487,353	2,524,486	2,527,522	2,527,522	2,527,522	2,527,522	2,527,522	2,527,522	2,527,522											
June-95	684,696	1,108,550	1,371,127	1,495,864	1,512,391	1,513,346	1,516,782	1,516,872	1,519,087	1,525,732	1,525,732	1,526,329	1,526,329	1,526,329	1,526,329	1,526,329	1,526,329	1,526,329	1,526,329	1,526,329	1,526,329	1,526,329												
June-96	662,860	1,328,147	1,644,584	1,839,246	1,990,102	2,077,055	2,112,857	2,140,474	2,201,270	2,201,845	2,202,890	2,202,890	2,182,890	2,187,427	2,194,160	2,208,436	2,231,248	2,258,374	2,287,650	2,319,312	2,348,935													
June-97	698,135	1,214,849	1,461,845	1,657,511	1,722,983	1,773,677	1,788,438	1,787,621	1,785,332	1,785,117	1,785,270	1,787,627	1,787,477	1,787,477	1,787,477	1,787,477	1,787,477	1,787,477	1,787,477	1,787,477														
June-98	573,338	1,086,539	1,414,459	1,559,175	1,673,532	1,729,564	1,772,059	1,810,392	1,842,420	1,881,278	1,926,278	1,959,704	1,981,242	2,002,689	2,024,867	2,047,330	2,069,948	2,092,836	2,116,101															
June-99	474,980	1,002,186	1,286,380	1,461,855	1,602,851	1,676,266	1,728,806	1,734,926	1,734,926	1,735,176	1,735,217	1,735,938	1,735,938	1,745,975	1,758,227	1,758,227	1,758,227	1,758,227																
June-00	554,623	1,006,163	1,264,666	1,446,800	1,556,201	1,579,597	1,684,607	1,741,958	1,774,284	1,814,835	1,849,313	1,888,484	1,924,733	1,960,546	1,996,627	2,033,129	2,070,234																	
June-01	727,441	1,320,455	1,784,558	2,038,666	2,257,429	2,391,407	2,505,985	2,630,995	2,692,967	2,745,367	2,798,403	2,855,751	2,911,077	2,965,792	3,017,890	3,070,914																		
June-02	660,993	1,170,323	1,474,134	1,719,436	1,840,352	1,925,268	1,929,260	1,934,317	1,935,028	1,938,322	1,946,247	1,946,268	1,946,268	1,946,268	1,946,268																			
June-03	681,649	1,386,238	1,930,433	2,233,645	2,345,508	2,434,780	2,476,294	2,514,232	2,549,374	2,574,011	2,599,103	2,623,851	2,648,895	2,674,405																				
June-04	615,642	1,250,196	1,708,083	2,040,603	2,220,200	2,394,408	2,518,890	2,590,854	2,651,972	2,714,242	2,777,430	2,840,573	2,904,693																				
June-05	629,880	1,271,294	1,746,413	2,055,018	2,203,801	2,285,267	2,302,225	2,315,265	2,315,265	2,315,265	2,315,265	2,315,265																						
June-06	562,846	1,157,132	1,564,874	1,794,067	1,951,884	2,062,228	2,165,020	2,239,388	2,319,829	2,390,156	2,415,470																							
June-07	526,806	1,054,827	1,513,205	1,806,536	2,009,359	2,144,089	2,257,101	2,357,734	2,399,788	2,422,230																								
June-08	492,006	840,226	1,027,421	1,150,550	1,226,279	1,259,770	1,289,567	1,309,318	1,325,773																									
June-09	609,589	1,045,186	1,367,431	1,598,834	1,731,424	1,807,061	1,866,572	1,918,036																										
June-10	611,726	1,437,135	2,071,218	2,345,985	2,542,928	2,700,053	2,771,498																											
June-11	714,837	1,318,901	1,664,634	1,948,510	2,176,832	2,332,885																												
June-12	737,468	1,470,092	1,872,540	2,089,074	2,233,894																													
June-13	748,452	1,316,963	1,677,597	1,855,465																														
June-14	693,795	1,434,737	1,895,910																															
June-15	685,778	1,336,264																																
June-16	713,131																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.363	1.422	1.250	1.196	1.164	1.143	1.132	1.081	1.093	1.062	1.039	1.048	1.045	1.019	1.015	1.011	1.015	1.017	1.017	1.017	1.017	1.017	1.018	1.018	1.019	1.019	1.019	1.011	1.010	1.010	1.008	1.000	1.000
June-84	2.363	1.422	1.250	1.196	1.160	1.122	1.103	1.075	1.062	1.048	1.048	1.033	1.017	1.022	1.023	1.023	1.019	1.020	1.019	1.018	1.018	1.018	1.019	1.016	1.016	1.016	1.015	1.016	1.016	1.016	1.016	1.016	
June-85	2.363	1.422	1.245	1.183	1.162	1.097	1.067	1.043	1.025	1.018	1.009	1.016	1.008	1.008	1.003	1.000	1.010	1.005	1.005	1.004	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.000		
June-86	2.363	1.413	1.254	1.188	1.123	1.083	1.064	1.030	1.042	1.034	1.033	1.024	1.020	1.027	1.021	1.012	1.007	1.005	1.005	1.004	1.004	1.005	1.005	1.005	1.002	1.000	1.000	1.000	1.000	1.000			
June-87	2.338	1.405	1.276	1.179	1.102	1.077	1.074	1.041	1.036	1.032	1.027	1.027	1.016	1.015	1.014	1.005	1.005	1.005	1.002	1.003	1.003	1.003	1.003	1.000	1.000	1.000	1.000	1.000	1.000				
June-88	2.302	1.483	1.252	1.174	1.084	1.050	1.048	1.025	1.020	1.018	1.020	1.019	1.015	1.012	1.012	1.011	1.011	1.011	1.011	1.012	1.012	1.010	1.010	1.010	1.010	1.010	1.010	1.007					
June-89	2.681	1.454	1.226	1.127	1.073	1.055	1.042	1.025	1.020	1.017	1.015	1.010	1.009	1.009	1.008	1.009	1.010	1.007	1.006	1.007	1.007	1.007	1.007	1.006	1.004	1.004	1.005						
June-90	2.236	1.346	1.161	1.086	1.056	1.033	1.020	1.008	1.014	1.009	0.996	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000							
June-91	2.201	1.316	1.143	1.083	1.044	1.019	1.012	1.016	1.005	1.005	1.006	1.006	1.004	1.001	1.000	1.000	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
June-92	1.868	1.243	1.180	1.058	1.050	1.028	1.019	1.018	1.010	1.007	1.009	1.016	1.010	1.012	1.012	1.008	1.007	1.007	1.007	1.008	1.008	1.008	1.008	1.008									
June-93	2.058	1.273	1.129	1.055	1.079	1.008	1.015	1.003	0.993	1.000	1.000	1.000	1.000	1.002	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	1.731	1.211	1.082	0.988	1.038	0.994	1.030	1.022	1.028	1.013	1.017	1.015	1.015	1.014	1.015	1.001	1.000	1.000	1.000	1.000	1.000	1.000											
June-95	1.619	1.237	1.091	1.011	1.001	1.002	1.000	1.001	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
June-96	2.004	1.238	1.118	1.082	1.044	1.017	1.013	1.028	1.000	1.000	1.000	0.991	1.002	1.003	1.007	1.010	1.012	1.013	1.014	1.013													
June-97	1.740	1.203	1.134	1.040	1.029	1.008	1.000	0.999	1.000	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
June-98	1.895	1.302	1.102	1.073	1.033	1.025	1.022	1.018	1.021	1.024	1.017	1.011	1.011	1.011	1.011	1.011	1.011	1.011															
June-99	2.110	1.284	1.136	1.096	1.046	1.031	1.004	1.000	1.000	1.000	1.000	1.000	1.006	1.007	1.000	1.000	1.000																
June-00	1.814	1.257	1.144	1.076	1.015	1.066	1.034	1.019	1.023	1.019	1.021	1.019	1.019	1.018	1.018	1.018																	
June-01	1.815	1.351	1.142	1.107	1.059	1.048	1.050	1.024	1.019	1.019	1.020	1.019	1.019	1.018	1.018																		
June-02	1.771	1.260	1.166	1.070	1.046	1.002	1.003	1.000	1.002	1.004	1.000	1.000	1.000	1.000																			
June-03	2.034	1.393	1.157	1.050	1.038	1.017	1.015	1.014	1.010	1.010	1.010	1.010	1.010																				
June-04	2.031	1.366	1.195	1.088	1.078	1.052	1.029	1.024	1.023	1.023	1.023	1.023																					
June-05	2.018	1.374	1.177	1.072	1.037	1.007	1.006	1.000	1.000	1.000	1.000																						
June-06	2.056	1.352	1.146	1.088	1.057	1.050	1.034	1.036	1.030	1.011																							
June-07	2.002	1.435	1.194	1.112	1.067	1.053	1.045	1.018	1.009																								
June-08	1.708	1.223	1.120	1.066	1.027	1.024	1.015	1.013																									
June-09	1.715	1.308	1.169	1.083	1.044	1.033	1.028																										
June-10	2.349	1.441	1.133	1.084	1.062	1.026																											
June-11	1.845	1.262	1.171	1.117	1.072																												
June-12	1.993	1.274	1.116	1.069																													
June-13	1.760	1.274	1.106																														
June-14	2.068	1.321																															
June-15	1.949																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.035	1.330	1.167	1.097	1.065	1.042	1.034	1.022	1.020	1.016	1.013	1.013	1.011	1.010	1.009	1.007	1.006	1.006	1.006	1.006	1.005	1.006	1.006	1.006	1.006	1.006	1.007	1.006	1.005	1.006	1.008	1.008	1.000	
Latest 5	1.923	1.314	1.139	1.084	1.054	1.037	1.025	1.018	1.015	1.010	1.011	1.014	1.011	1.011	1.009	1.008	1.005	1.005	1.003	1.004	1.002	1.002	1.003	1.005	1.003	1.003	1.003	1.005	1.005					
Latest 3	1.925	1.290	1.131	1.090	1.059	1.028	1.029	1.022	1.013	1.011	1.011	1.011	1.009	1.012	1.012	1.010	1.004	1.008	1.005	1.004	1.000	1.003	1.003	1.003	1.001	1.005	1.005	1.002	1.000	1.005	1.008			
Volume Wtd																																		
All Yrs	2.103	1.351	1.183	1.110	1.072	1.047	1.039	1.024	1.021	1.018	1.015	1.015	1.011	1.011	1.010	1.007	1.007	1.006	1.006	1.006	1.006	1.006	1.006	1.006	1.005	1.005	1.006	1.005	1.004	1.006	1.009	1.010	1.000	
Latest 5	1.921	1.316	1.137	1.085	1.058	1.038	1.026	1.019	1.015	1.010	1.012	1.015	1.011	1.012	1.011	1.008	1.005	1.005	1.003	1.005	1.002	1.001	1.003	1.005	1.004	1.004	1.004	1.005	1.004					
Latest 3	1.921	1.290	1.130	1.089	1.060	1.028	1.032	1.024	1.013	1.012	1.011	1.012	1.011	1.013	1.013	1.010	1.004	1.009	1.006	1.005	1.000	1.004	1.003	1.002	1.002	1.005	1.005	1.003	1.000	1.005	1.009			

Dev Factor Selection																																		
Industry 1	2.869	1.531	1.210	1.100	1.034	1.024	1.017	1.007	1.008	1.005	1.005	1.013	1.002	1.003	1.004	1.004	1.003	1.003																
Industry 2		1.813	1.291	1.118	1.066	1.025	1.021	1.011	1.007	1.003	1.008	1.005	1.005	1.003	1.003	1.004	1.006	1.002	1.004	1.004														
Prior	*1.963*	*1.292*	*1.142*	*1.092*	*1.051*	*1.039*	*1.028*	*1.020*	*1.017*	*1.013*	*1.013*	*1.011*	*1.011*	*1.012*	*1.008*	*1.007*	*1.006*	*1.003*	*1.005*	*1.004*	*1.005*	*1.005*	*1.005*	*1.004*	*1.005*	*1.005*	*1.006*	*1.006*	*1.006*	*1.005*	*1.005*	*1.005*	*1.002*	*1.014*
Selected	1.921	1.303	1.139	1.084	1.054	1.028	1.028	1.022	1.016	1.012	1.012	1.013	1.010	1.011	1.010	1.007	1.006	1.006	1.004	1.005	1.005	1.005	1.003	1.005	1.001	1.005	1.006	1.006	1.005	1.005	1.005	1.002	1.002	1.011
FacToUlt	4.210	2.192	1.682	1.477	1.363	1.293	1.258	1.223	1.197	1.178	1.164	1.150	1.136	1.125	1.112	1.101	1.093	1.087	1.080	1.076	1.070	1.065	1.059	1.056	1.050	1.048	1.043	1.037	1.031	1.026	1.020	1.015	1.013	1.011
Percent of Ult	23.8%	45.6%	59.5%	67.7%	73.4%	77.4%	79.5%	81.8%	83.6%	84.9%	85.9%	86.9%	88.0%	88.9%	89.9%	90.8%	91.5%	92.0%	92.6%	93.0%	93.5%	93.9%	94.4%	94.7%	95.2%	95.4%	95.9%	96.4%	97.0%	97.5%	98.0%	98.5%	98.7%	98.9%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	25,695,282	27,763,024	25,284,792	27,036,306	(410,490)	-1.6%	(726,719)	-2.6%
6/30/82-83	4,979,201	5,004,097	4,966,366	4,991,198	(12,835)	-0.3%	(12,899)	-0.3%
6/30/83-84	9,570,000	9,761,488	9,689,000	9,786,391	119,000	1.2%	24,903	0.3%
6/30/84-85	6,936,000	7,509,000	6,902,000	7,472,000	(34,000)	-0.5%	(37,000)	-0.5%
6/30/85-86	10,375,000	10,478,000	10,375,000	10,478,000	0	0.0%	0	0.0%
6/30/86-87	13,615,000	13,750,000	13,615,000	13,750,000	0	0.0%	0	0.0%
6/30/87-88	20,140,000	20,815,450	20,143,000	20,812,600	3,000	0.0%	(2,850)	0.0%
6/30/88-89	20,753,000	20,766,000	20,714,000	20,726,000	(39,000)	-0.2%	(40,000)	-0.2%
6/30/89-90	15,169,000	15,319,000	15,169,000	15,319,000	0	0.0%	0	0.0%
6/30/90-91	10,975,000	11,084,000	10,976,000	11,084,000	1,000	0.0%	0	0.0%
6/30/91-92	7,923,000	7,927,000	7,920,000	7,923,000	(3,000)	0.0%	(4,000)	-0.1%
6/30/92-93	4,231,000	4,273,000	4,231,000	4,273,000	0	0.0%	0	0.0%
6/30/93-94	3,566,000	3,601,000	3,566,000	3,601,000	0	0.0%	0	0.0%
6/30/94-95	2,199,000	2,201,000	2,183,000	2,184,000	(16,000)	-0.7%	(17,000)	-0.8%
6/30/95-96	3,253,000	3,255,000	3,262,000	3,264,000	9,000	0.3%	9,000	0.3%
6/30/96-97	2,479,000	2,492,000	2,479,000	2,492,000	0	0.0%	0	0.0%
6/30/97-98	2,816,000	2,817,000	2,821,000	2,823,000	5,000	0.2%	6,000	0.2%
6/30/98-99	2,585,000	2,586,000	2,570,000	2,570,000	(15,000)	-0.6%	(16,000)	-0.6%
6/30/99-00	2,590,000	2,591,000	2,609,000	2,611,000	19,000	0.7%	20,000	0.8%
6/30/00-01	3,610,000	3,620,000	3,629,000	3,640,000	19,000	0.5%	20,000	0.6%
6/30/01-02	2,241,000	2,252,000	2,241,000	2,252,000	0	0.0%	0	0.0%
6/30/02-03	3,360,000	3,367,000	3,347,000	3,354,000	(13,000)	-0.4%	(13,000)	-0.4%
6/30/03-04	3,597,000	3,607,000	3,623,000	3,635,000	26,000	0.7%	28,000	0.8%
6/30/04-05	2,672,000	2,685,000	2,672,000	2,685,000	0	0.0%	0	0.0%
6/30/05-06	3,119,000	3,144,000	3,123,000	3,163,000	4,000	0.1%	19,000	0.6%
6/30/06-07	3,341,000	3,350,000	3,299,000	3,324,000	(42,000)	-1.3%	(26,000)	-0.8%
6/30/07-08	1,813,000	2,073,000	1,781,000	1,993,000	(32,000)	-1.8%	(80,000)	-3.9%
6/30/08-09	2,715,000	2,841,000	2,751,000	2,837,000	36,000	1.3%	(4,000)	-0.1%
6/30/09-10	3,917,000	4,058,000	3,943,000	4,086,000	26,000	0.7%	28,000	0.7%
6/30/10-11	3,466,000	3,493,000	3,456,000	3,515,000	(10,000)	-0.3%	22,000	0.6%
6/30/11-12	3,634,000	3,692,000	3,601,000	3,661,000	(33,000)	-0.9%	(31,000)	-0.8%
6/30/12-13	3,377,000	3,454,000	3,371,000	3,426,000	(6,000)	-0.2%	(28,000)	-0.8%
6/30/13-14	3,677,000	3,678,000	3,800,000	3,868,000	123,000	3.3%	190,000	5.2%
6/30/14-15	3,483,000	3,708,000	3,429,000	3,530,000	(54,000)	-1.6%	(178,000)	-4.8%
6/30/15-16								
Total	217,871,483	223,015,060	217,541,158	222,165,495	(330,325)	-0.2%	(849,565)	-0.4%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 2, Exhibit 1, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Calculation of Ultimate Lump Sum Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Accident Year	Paid Loss Excluding Lump Sum	Implied Cumulative LDF	Ult Loss Excluding Lump Sum	Selected Incr Lump Sum % Outstdg	Cumulative Lump Sum % Outstdg	Total Lump Sum Outstdg	Paid Lump Sum to Date	Est Ult Lump Sum - Incr Method	Ultimate Lump Sum Percentage	Lump Sum LDF	Est Ult Lump Sum - Paid Method	Selected Est Ultimate Lump Sums	Prior Est Ultimate Lump Sums
All Prior Yrs	20,063,245	1.241	24,895,051	0.0%	0.0%	0	1,265,498	1,265,498	5.1%	1.000	1,265,498	1,265,498	1,265,498
6/30/82-83	4,309,167	1.062	4,575,966	0.0%	0.0%	0	390,400	390,400	8.5%	1.000	390,400	390,400	390,400
6/30/83-84	7,843,266	1.165	9,140,346	0.0%	0.0%	0	549,150	549,150	6.0%	1.000	549,150	549,150	549,150
6/30/84-85	5,655,954	1.117	6,317,338	0.0%	0.0%	0	1,154,851	1,154,851	18.3%	1.000	1,154,851	1,154,851	1,154,851
6/30/85-86	9,334,452	1.020	9,525,559	0.0%	0.0%	0	937,644	937,644	9.8%	1.000	937,644	937,644	937,644
6/30/86-87	11,412,789	1.026	11,704,679	0.0%	0.0%	0	2,067,717	2,067,717	17.7%	1.000	2,067,717	2,067,717	2,067,717
6/30/87-88	16,857,172	1.134	19,112,222	0.0%	0.0%	0	2,795,764	2,795,764	14.6%	1.000	2,795,764	2,795,764	2,802,753
6/30/88-89	16,458,118	1.037	17,065,222	0.0%	0.0%	0	3,639,613	3,639,613	21.3%	1.005	3,657,811	3,648,712	3,650,541
6/30/89-90	11,631,137	1.043	12,132,544	0.0%	0.0%	0	3,387,581	3,387,581	27.9%	1.006	3,407,923	3,397,752	3,399,456
6/30/90-91	8,301,627	1.048	8,702,800	0.0%	0.0%	0	2,565,430	2,565,430	29.5%	1.007	2,583,416	2,574,423	2,575,715
6/30/91-92	5,819,387	1.050	6,109,707	0.0%	0.0%	0	1,806,412	1,806,412	29.6%	1.008	1,820,896	1,813,654	1,814,564
6/30/92-93	3,210,473	1.056	3,388,985	0.0%	0.0%	0	979,103	979,103	28.9%	1.009	987,940	983,522	984,016
6/30/93-94	2,527,522	1.059	2,677,324	0.0%	0.0%	0	968,701	968,701	36.2%	1.010	978,422	973,561	974,051
6/30/94-95	1,526,329	1.065	1,624,876	0.0%	0.0%	0	555,200	555,200	34.2%	1.011	561,332	558,266	558,547
6/30/95-96	2,348,935	1.070	2,513,096	0.0%	0.0%	0	746,640	746,640	29.7%	1.012	755,642	751,141	751,519
6/30/96-97	1,787,477	1.076	1,922,907	0.0%	0.0%	0	679,550	679,550	35.3%	1.013	688,430	683,990	684,334
6/30/97-98	2,116,101	1.080	2,286,410	0.0%	0.0%	0	533,163	533,163	23.3%	1.014	540,671	536,917	538,327
6/30/98-99	1,758,227	1.087	1,911,933	0.1%	0.1%	1,912	652,071	653,983	34.2%	1.015	661,914	657,949	659,249
6/30/99-00	2,070,234	1.093	2,263,605	0.1%	0.2%	4,527	342,501	347,028	15.3%	1.016	348,019	347,524	348,797
6/30/00-01	3,070,914	1.101	3,382,085	0.1%	0.3%	10,146	251,103	261,249	7.7%	1.017	255,404	258,326	263,522
6/30/01-02	1,946,268	1.112	2,165,204	0.2%	0.5%	10,826	283,214	294,040	13.6%	1.032	292,299	293,169	297,615
6/30/02-03	2,674,405	1.125	3,007,644	0.2%	0.7%	21,054	328,024	349,077	11.6%	1.048	343,625	346,351	351,968
6/30/03-04	2,904,693	1.136	3,300,083	0.2%	0.9%	29,701	309,825	339,526	10.3%	1.063	329,429	334,477	340,068
6/30/04-05	2,315,265	1.150	2,663,648	0.2%	1.1%	29,300	343,352	372,652	14.0%	1.079	370,553	371,603	379,547
6/30/05-06	2,415,470	1.164	2,811,150	0.3%	1.4%	39,356	316,502	355,858	12.7%	1.101	348,408	352,133	323,542
6/30/06-07	2,422,230	1.178	2,853,184	0.3%	1.7%	48,504	419,533	468,037	16.4%	1.128	473,371	470,704	469,925
6/30/07-08	1,325,773	1.197	1,586,338	0.3%	2.0%	31,727	165,501	197,228	12.4%	1.162	192,342	194,785	209,233
6/30/08-09	1,918,036	1.223	2,345,846	0.6%	2.6%	60,400	329,000	389,400	16.6%	1.278	420,592	404,996	365,332
6/30/09-10	2,771,498	1.258	3,485,256	0.7%	3.2%	112,453	487,879	600,331	17.2%	1.342	654,887	600,331	526,715
6/30/10-11	2,332,885	1.293	3,015,461	1.0%	4.2%	126,152	303,500	429,652	14.2%	1.409	427,762	500,000	500,000
6/30/11-12	2,233,894	1.363	3,044,313	1.7%	5.9%	180,302	435,936	616,238	20.2%	1.754	764,419	616,238	554,404
6/30/12-13	1,855,465	1.477	2,740,592	2.7%	8.6%	235,216	395,000	630,216	23.0%	2.467	974,496	630,216	500,000
6/30/13-14	1,895,910	1.682	3,189,063	3.4%	12.0%	382,701	296,500	679,201	21.3%	4.670	1,384,655	679,201	500,000
6/30/14-15	1,336,264	2.192	2,928,584	2.9%	14.9%	437,615	10,000	447,615	15.3%	12.673	126,735	500,000	500,000
6/30/15-16	713,131	4.210	3,002,177	2.1%	17.1%	512,913	0	512,913	17.1%	69.704	0	512,913	
Total	169,163,713		193,391,198			2,274,805	30,691,856	32,966,662	17.0%		33,512,415	33,153,878	32,188,999

NOTES:

(2) From Section 2, Exhibit 1, Page 2, Column 3
(3) = (4) / (2)
(4) From Section 2, Exhibit 1, Page 2, Column 6
(5) From Section 2, Exhibit 1, Page 11
(6) Downward sum of (5)
(7) = (6) x (4)
(8) From Section 2, Exhibit 1, Page 10
(9) = (7) + (8)
(10) = (9) / (4)
(11) From Section 2, Exhibit 1, Page 12
(12) = (8) x (11)
(13) Selected based on (9) and (12)
(14) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts Workers Compensation
Department of Developmental Services - Cluster 1
INDEMNITY
Lump Sum Development
Incremental Lump Sum Payments

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0	0	0	0	0	0	12,000	24,000	9,000	0	0	40,000	0	172,000	110,000	50,000	70,500	30,000	208,333	116,667	324,998	0	60,000	35,000	0	3,000	0	0	0	0	0	0	0	0	0
Jun-83	0	0	0	0	0	0	0	0	25,500	25,000	52,900	7,000	30,000	95,000	145,000	0	10,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	0	0	0	0	0	32,500	19,000	0	45,000	108,650	69,000	145,000	0	45,000	0	30,000	10,000	0	45,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Jun-85	0	0	0	12,500	32,500	24,500	92,001	128,250	196,400	182,000	70,000	48,500	205,700	0	0	30,000	52,500	30,000	0	25,000	0	0	0	0	0	0	0	0	25,000	0	0	0			
Jun-86	0	0	23,500	19,200	19,100	93,844	174,500	476,000	95,500	0	0	0	36,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Jun-87	0	36,440	6,089	107,500	67,961	393,241	517,987	205,500	149,499	10,000	92,500	15,000	146,000	125,000	120,000	75,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Jun-88	0	9,000	98,700	314,201	299,750	663,711	365,000	263,001	345,000	230,400	71,500	91,500	40,000	0	0	0	0	0	0	0	0	1	0	0	4,000	0	0	0	0						
Jun-89	0	51,500	107,000	525,918	831,350	467,250	201,495	468,000	227,500	96,000	182,000	228,100	128,500	0	0	0	0	33,333	45,833	45,834	0	0	0	0	0	0	0	0							
Jun-90	0	83,875	561,509	740,856	246,000	295,600	525,500	290,000	127,241	77,000	235,834	135,833	33,333	0	0	0	0	0	0	0	0	0	0	0	4,500	30,500	0								
Jun-91	10,000	315,052	866,050	279,500	174,700	509,340	313,000	57,788	15,000	25,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Jun-92	54,000	344,161	128,250	87,501	545,500	236,500	52,500	15,000	30,000	60,000	88,000	0	0	0	0	0	165,000	0	0	0	0	0	0	0	0										
Jun-93	33,000	174,000	164,503	395,750	49,500	66,500	75,850	0	20,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
Jun-94	20,500	90,701	289,500	222,500	110,000	82,500	118,000	0	35,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
Jun-95	4,000	156,500	207,200	162,500	15,000	0	0	10,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Jun-96	52,000	212,180	221,000	48,960	42,000	0	48,667	18,833	43,000	35,000	25,000	0	0	0	0	0	0	0	0	0	0														
Jun-97	36,500	178,250	214,000	155,300	85,500	10,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0															
Jun-98	10,000	108,163	240,000	120,000	30,000	0	0	0	0	0	0	25,000	0	0	0	0	0	0	0																
Jun-99	0	182,500	192,000	113,220	1,824	7,437	11,035	14,055	0	0	0	0	0	0	65,000	65,000	0	0																	
Jun-00	12,500	57,501	82,000	36,500	38,500	8,500	10,500	27,500	10,000	0	0	34,000	25,000	0	0	0	0																		
Jun-01	17,500	22,844	43,510	37,903	34,170	41,676	38,500	15,000	0	0	0	0	0	0	0	0																			
Jun-02	0	800	23,940	52,775	72,135	32,564	76,000	25,000	0	0	0	0	0	0	0																				
Jun-03	0	0	48,352	99,400	91,822	48,450	10,000	0	0	30,000	0	0	0	0																					
Jun-04	0	0	88,974	64,100	121,250	0	0	5,501	0	0	0	30,000	0																						
Jun-05	0	7,500	39,052	104,600	42,000	94,000	20,000	0	36,200	0	0	0																							
Jun-06	0	14,800	50,202	87,500	46,500	30,000	3,500	14,000	19,700	15,300	35,000																								
Jun-07	0	8,500	85,000	83,750	78,000	6,000	6,000	20,000	120,783	11,500																									
Jun-08	0	37,000	17,501	25,000	45,000	30,000	3,000	8,000	0																										
Jun-09	0	24,000	55,000	41,000	35,500	90,500	34,500	48,500																											
Jun-10	0	12,500	57,878	128,398	138,602	52,001	98,500																												
Jun-11	0	27,523	53,478	75,263	75,237	72,000																													
Jun-12	0	35,436	120,064	151,936	128,500																														
Jun-13	0	101,200	70,600	223,200																															
Jun-14	0	35,000	261,500																																
Jun-15	0	10,000																																	
Jun-16	0																																		

Cumulative Lump Sum Payments

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	12,000	36,000	45,000	45,000	45,000	85,000	85,000	257,000	367,000	417,000	487,500	517,500	725,833	842,500	1,167,498	1,167,498	1,227,498	1,262,498	1,262,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498
Jun-83	0	0	0	0	0	0	0	0	25,500	50,500	103,400	110,400	140,400	235,400	380,400	380,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	
Jun-84	0	0	0	0	0	32,500	51,500	51,500	96,500	205,150	274,150	419,150	419,150	464,150	464,150	494,150	504,150	504,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150		
Jun-85	0	0	0	12,500	45,000	69,500	161,501	289,751	486,151	668,151	738,151	786,651	992,351	992,351	992,351	1,022,351	1,074,851	1,104,851	1,104,851	1,129,851	1,129,851	1,129,851	1,129,851	1,129,851	1,129,851	1,129,851	1,129,851	1,129,851	1,154,851	1,154,851	1,154,851	1,154,851			
Jun-86	0	0	23,500	42,700	61,800	155,644	330,144	806,144	901,644	901,644	901,644	901,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644					
Jun-87	0	36,440	42,529	150,029	217,990	611,231	1,129,218	1,334,718	1,484,217	1,494,217	1,586,717	1,601,717	1,747,717	1,872,717	1,992,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717				
Jun-88	0	9,000	107,700	421,901	721,651	1,385,362	1,750,362	2,013,363	2,358,363	2,588,763	2,660,263	2,751,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,764	2,791,764	2,791,764	2,795,764	2,795,764	2,795,764	2,795,764	2,795,764							
Jun-89	0	51,500	158,500	684,418	1,515,768	1,983,018	2,184,513	2,652,513	2,880,013	2,976,013	3,158,013	3,386,113	3,514,613	3,514,613	3,514,613	3,514,613	3,514,613	3,514,613	3,514,613	3,514,613	3,514,613	3,547,946	3,593,779	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	
Jun-90	0	83,875	645,384	1,386,240	1,632,240	1,927,840	2,453,340	2,743,340	2,870,581	2,947,581	3,183,415	3,319,248	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,357,081	3,387,581	3,387,581			
Jun-91	10,000	325,052	1,191,102	1,470,602	1,645,302	2,154,642	2,467,642	2,525,430	2,540,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430				
Jun-92	54,000	398,161	526,411	613,912	1,159,412	1,395,912	1,448,412	1,463,412	1,493,412	1,553,412	1,641,412	1,641,412	1,641,412	1,641,412	1,641,412	1,641,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412									
Jun-93	33,000	207,000	371,503	767,253	816,753	883,253	959,103	959,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103										
Jun-94	20,500	111,201	400,701	623,201	733,201	815,701	933,701	933,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701											
Jun-95	4,000	160,500	367,700	530,200	545,200	545,200	545,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200												
Jun-96	52,000	264,180	485,180	534,140	576,140	576,140	624,807	643,640	686,640	721,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640														
Jun-97	36,500	214,750	428,750	584,050	669,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550															
Jun-98	10,000	118,163	358,163	478,163	508,163	508,163	508,163	508,163	508,163	508,163	508,163	533,163	533,163	533,163	533,163	533,163	533,163	533,163	533,163																
Jun-99	0	182,500	374,500	487,720	489,544	496,981	508,016	522,071	522,071	522,071	522,071	522,071	522,071	522,071	587,071	652,071	652,071	652,071																	
Jun-00	12,500	70,001	152,001	188,501	227,001	235,501	246,001	273,501	283,501	283,501	283,501	317,501	342,501	342,501	342,501	342,501	342,501																		
Jun-01	17,500	40,344	83,854	121,757	155,927	197,603	236,103	251,103	251,103	251,103	251,103	251,103	251,103	251,103	251,103	251,103																			
Jun-02	0	800	24,740	77,515	149,650	182,214	258,214	283,214	283,214	283,214	283,214	283,214	283,214	283,214	283,214																				
Jun-03	0	0	48,352	147,752	239,574	288,024	298,024	298,024	298,024	328,024	328,024	328,024	328,024	328,024																					
Jun-04	0	0	88,974	153,074	274,324	274,324	274,324	279,825	279,825	279,825	279,825	279,825	309,825	309,825																					
Jun-05	0	7,500	46,552	151,152	193,152	287,152	307,152	307,152	343,352	343,352	343,352	343,352																							
Jun-06	0	14,800	65,002	152,502	199,002	229,002	232,502	246,502	266,202	281,502	316,502																								
Jun-07	0	8,500	93,500	177,250	255,250	261,250	267,250	287,250	408,033	419,533																									
Jun-08	0	37,000	54,501	79,501	124,501	154,501	157,501	165,501	165,501																										
Jun-09	0	24,000	79,000	120,000	155,500	246,000	280,500	329,000																											
Jun-10	0	12,500	70,378	198,776	337,378	389,379	487,879																												
Jun-11	0	27,523	81,000	156,263	231,500	303,500																													
Jun-12	0	35,436	155,500	307,436	435,936																														
Jun-13	0	101,200	171,800	395,000																															
Jun-14	0	35,000	296,500																																
Jun-15	0	10,000																																	
Jun-16	0																																		

Commonwealth of Massachusetts Workers Compensation
Department of Developmental Services - Cluster 1
INDEMNITY
Lump Sum Development
Incremental Lump Sums as a % of Ultimate Losses Excluding Lump Sums

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.002	0.000	0.007	0.004	0.002	0.003	0.001	0.008	0.005	0.013	0.000	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-83	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.005	0.012	0.002	0.007	0.021	0.032	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-84	0.000	0.000	0.000	0.000	0.000	0.004	0.002	0.000	0.005	0.012	0.008	0.016	0.000	0.005	0.000	0.003	0.001	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-85	0.000	0.000	0.000	0.002	0.005	0.004	0.015	0.020	0.031	0.029	0.011	0.008	0.033	0.000	0.000	0.005	0.008	0.005	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.002	0.002	0.002	0.010	0.018	0.050	0.010	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.003	0.001	0.009	0.006	0.034	0.044	0.018	0.013	0.001	0.008	0.001	0.012	0.011	0.010	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.000	0.005	0.016	0.016	0.035	0.019	0.014	0.018	0.012	0.004	0.005	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
Jun-89	0.000	0.003	0.006	0.031	0.049	0.027	0.012	0.027	0.013	0.006	0.011	0.013	0.008	0.000	0.000	0.000	0.000	0.002	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.007	0.046	0.061	0.020	0.024	0.043	0.024	0.010	0.006	0.019	0.011	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000								
Jun-91	0.001	0.036	0.100	0.032	0.020	0.059	0.036	0.007	0.002	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000									
Jun-92	0.009	0.056	0.021	0.014	0.089	0.039	0.009	0.002	0.005	0.010	0.014	0.000	0.000	0.000	0.000	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.010	0.051	0.049	0.117	0.015	0.020	0.022	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000											
Jun-94	0.008	0.034	0.108	0.083	0.041	0.031	0.044	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000												
Jun-95	0.002	0.096	0.128	0.100	0.009	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.021	0.084	0.088	0.019	0.017	0.000	0.019	0.007	0.017	0.014	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
Jun-97	0.019	0.093	0.111	0.081	0.044	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000															
Jun-98	0.004	0.047	0.105	0.052	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.095	0.100	0.059	0.001	0.004	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.034	0.000	0.000																	
Jun-00	0.006	0.025	0.036	0.016	0.017	0.004	0.005	0.012	0.004	0.000	0.000	0.015	0.011	0.000	0.000	0.000	0.000																		
Jun-01	0.005	0.007	0.013	0.011	0.010	0.012	0.011	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																			
Jun-02	0.000	0.000	0.011	0.024	0.033	0.015	0.035	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000																				
Jun-03	0.000	0.000	0.016	0.033	0.031	0.016	0.003	0.000	0.000	0.010	0.000	0.000	0.000	0.000																					
Jun-04	0.000	0.000	0.027	0.019	0.037	0.000	0.000	0.002	0.000	0.000	0.000	0.009	0.000																						
Jun-05	0.000	0.003	0.015	0.039	0.016	0.035	0.008	0.000	0.014	0.000	0.000	0.000																							
Jun-06	0.000	0.005	0.018	0.031	0.017	0.011	0.001	0.005	0.007	0.005	0.012																								
Jun-07	0.000	0.003	0.030	0.029	0.027	0.002	0.002	0.007	0.042	0.004																									
Jun-08	0.000	0.023	0.011	0.016	0.028	0.019	0.002	0.005	0.000																										
Jun-09	0.000	0.010	0.023	0.017	0.015	0.039	0.015	0.021																											
Jun-10	0.000	0.004	0.017	0.037	0.040	0.015	0.028																												
Jun-11	0.000	0.009	0.018	0.025	0.025	0.024																													
Jun-12	0.000	0.012	0.039	0.050	0.042																														
Jun-13	0.000	0.037	0.026	0.081																															
Jun-14	0.000	0.011	0.082																																
Jun-15	0.000	0.003																																	
Jun-16	0.000																																		

Averages		*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
Simple Avg																																			
All Yrs (ex P)	0.002	0.023	0.039	0.036	0.023	0.017	0.014	0.009	0.008	0.005	0.005	0.004	0.004	0.002	0.004	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000		
Latest 5	0.000	0.014	0.036	0.042	0.030	0.020	0.010	0.008	0.013	0.004	0.002	0.002	0.002	0.000	0.007	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000					
Latest 3	0.000	0.017	0.049	0.052	0.036	0.026	0.015	0.011	0.016	0.003	0.004	0.003	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000			
Olympic Avg																																			
All Yrs (ex P)	0.002	0.021	0.037	0.034	0.021	0.016	0.014	0.008	0.007	0.004	0.004	0.004	0.002	0.001	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Latest 10	0.000	0.010	0.023	0.031	0.028	0.017	0.009	0.006	0.003	0.001	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.011	0.028	0.037	0.031	0.019	0.006	0.006	0.007	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000						

Dev Factor Selection																																			
Prior	*NA*	*0.022*	*0.026*	*0.029*	*0.025*	*0.015*	*0.008*	*0.006*	*0.006*	*0.003*	*0.003*	*0.003*	*0.002*	*0.002*	*0.002*	*0.002*	*0.001*	*0.001*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	
Selected	NA	0.021	0.029	0.034	0.027	0.017	0.010	0.007	0.006	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FacToUlt	NA	0.171	0.149	0.120	0.086	0.059	0.042	0.032	0.026	0.020	0.017	0.014	0.011	0.009	0.007	0.005	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Commonwealth of Massachusetts Workers Compensation
Department of Developmental Services - Cluster 1
INDEMNITY
Paid Loss Development
Paid Loss - Lump Sum only

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	12,000	36,000	45,000	45,000	45,000	85,000	85,000	257,000	367,000	417,000	487,500	517,500	725,833	842,500	1,167,498	1,167,498	1,227,498	1,262,498	1,262,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498	1,265,498
Jun-83	0	0	0	0	0	0	0	0	25,500	50,500	103,400	110,400	140,400	235,400	380,400	380,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	390,400	
Jun-84	0	0	0	0	0	32,500	51,500	51,500	96,500	205,150	274,150	419,150	419,150	464,150	464,150	494,150	504,150	504,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150	549,150		
Jun-85	0	0	0	12,500	45,000	69,500	161,501	289,751	486,151	668,151	738,151	786,651	992,351	992,351	992,351	1,022,351	1,074,851	1,104,851	1,104,851	1,129,851	1,129,851	1,129,851	1,129,851	1,129,851	1,129,851	1,129,851	1,129,851	1,154,851	1,154,851	1,154,851	1,154,851				
Jun-86	0	0	23,500	42,700	61,800	155,644	330,144	806,144	901,644	901,644	901,644	901,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644	937,644				
Jun-87	0	36,440	42,529	150,029	217,990	611,231	1,129,218	1,334,718	1,484,217	1,494,217	1,586,717	1,601,717	1,747,717	1,872,717	1,992,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717	2,067,717						
Jun-88	0	9,000	107,700	421,901	721,651	1,385,362	1,750,362	2,013,363	2,358,363	2,588,763	2,660,263	2,751,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,763	2,791,764	2,791,764	2,791,764	2,795,764	2,795,764	2,795,764	2,795,764	2,795,764							
Jun-89	0	51,500	158,500	684,418	1,515,768	1,983,018	2,184,513	2,652,513	2,880,013	2,976,013	3,158,013	3,386,113	3,514,613	3,514,613	3,514,613	3,514,613	3,514,613	3,514,613	3,547,946	3,593,779	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613	3,639,613							
Jun-90	0	83,875	645,384	1,386,240	1,632,240	1,927,840	2,453,340	2,743,340	2,870,581	2,947,581	3,183,415	3,319,248	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,352,581	3,357,081	3,387,581	3,387,581									
Jun-91	10,000	325,052	1,191,102	1,470,602	1,645,302	2,154,642	2,467,642	2,525,430	2,540,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430	2,565,430									
Jun-92	54,000	398,161	526,411	613,912	1,159,412	1,395,912	1,448,412	1,463,412	1,493,412	1,553,412	1,641,412	1,641,412	1,641,412	1,641,412	1,641,412	1,641,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412	1,806,412										
Jun-93	33,000	207,000	371,503	767,253	816,753	883,253	959,103	959,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103											
Jun-94	20,500	111,201	400,701	623,201	733,201	815,701	933,701	933,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701	968,701												
Jun-95	4,000	160,500	367,700	530,200	545,200	545,200	545,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200	555,200													
Jun-96	52,000	264,180	485,180	534,140	576,140	576,140	624,807	643,640	686,640	721,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640	746,640														
Jun-97	36,500	214,750	428,750	584,050	669,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550	679,550															
Jun-98	10,000	118,163	358,163	478,163	508,163	508,163	508,163	508,163	508,163	508,163	508,163	533,163	533,163	533,163	533,163	533,163	533,163	533,163	533,163																
Jun-99	0	182,500	374,500	487,720	489,544	496,981	508,016	522,071	522,071	522,071	522,071	522,071	522,071	522,071	587,071	652,071	652,071	652,071																	
Jun-00	12,500	70,001	152,001	188,501	227,001	235,501	246,001	273,501	283,501	283,501	283,501	283,501	317,501	342,501	342,501	342,501	342,501																		
Jun-01	17,500	40,344	83,854	121,757	155,927	197,603	236,103	251,103	251,103	251,103	251,103	251,103	251,103	251,103	251,103	251,103																			
Jun-02	0	800	24,740	77,515	149,650	182,214	258,214	283,214	283,214	283,214	283,214	283,214	283,214	283,214	283,214																				
Jun-03	0	0	48,352	147,752	239,574	288,024	298,024	298,024	298,024	328,024	328,024	328,024	328,024	328,024																					
Jun-04	0	0	88,974	153,074	274,324	274,324	274,324	279,825	279,825	279,825	279,825	309,825	309,825																						
Jun-05	0	7,500	46,552	151,152	193,152	287,152	307,152	307,152	343,352	343,352	343,352	343,352																							
Jun-06	0	14,800	65,002	152,502	199,002	229,002	232,502	246,502	266,202	281,502	316,502																								
Jun-07	0	8,500	93,500	177,250	255,250	261,250	267,250	287,250	408,033	419,533																									
Jun-08	0	37,000	54,501	79,501	124,501	154,501	157,501	165,501	165,501																										
Jun-09	0	24,000	79,000	120,000	155,500	246,000	280,500	329,000																											
Jun-10	0	12,500	70,378	198,776	337,378	389,379	487,879																												
Jun-11	0	27,523	81,000	156,263	231,500	303,500																													
Jun-12	0	35,436	155,500	307,436	435,936																														
Jun-13	0	101,200	171,800	395,000																															
Jun-14	0	35,000	296,500																																
Jun-15	0	10,000																																	
Jun-16	0																																		

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
All Prior Yrs							3.000	1.250	1.000	1.000	1.889	1.000	3.024	1.428	1.136	1.169	1.062	1.403	1.161	1.386	1.000	1.051	1.029	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-83									1.980	2.048	1.068	1.272	1.677	1.616	1.000	1.026	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-84						1.585	1.000	1.874	2.126	1.336	1.529	1.000	1.107	1.000	1.065	1.020	1.000	1.089	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-85				3.600	1.544	2.324	1.794	1.678	1.374	1.105	1.066	1.261	1.000	1.000	1.030	1.051	1.028	1.000	1.023	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.022	1.000	1.000	1.000					
Jun-86			1.817	1.447	2.519	2.121	2.442	1.118	1.000	1.000	1.000	1.040	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Jun-87		1.167	3.528	1.453	2.804	1.847	1.182	1.112	1.007	1.062	1.009	1.091	1.072	1.064	1.038	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Jun-88		11.967	3.917	1.710	1.920	1.263	1.150	1.171	1.098	1.028	1.034	1.015	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.000	1.000								
Jun-89		3.078	4.318	2.215	1.308	1.102	1.214	1.086	1.033	1.061	1.072	1.038	1.000	1.000	1.000	1.000	1.009	1.013	1.013	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
Jun-90		7.695	2.148	1.177	1.181	1.273	1.118	1.046	1.027	1.080	1.043	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.009	1.000									
Jun-91	32.505	3.664	1.235	1.119	1.310	1.145	1.023	1.006	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
Jun-92	7.373	1.322	1.166	1.889	1.204	1.038	1.010	1.021	1.040	1.057	1.000	1.000	1.000	1.000	1.000	1.101	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93	6.273	1.795	2.065	1.065	1.081	1.086	1.000	1.021	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
Jun-94	5.424	3.603	1.555	1.177	1.113	1.145	1.000	1.037	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95	40.125	2.291	1.442	1.028	1.000	1.000	1.018	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	5.080	1.837	1.101	1.079	1.000	1.084	1.030	1.067	1.051	1.035	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000															
Jun-97	5.884	1.997	1.362	1.146	1.015	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																
Jun-98	11.816	3.031	1.335	1.063	1.000	1.000	1.000	1.000	1.000	1.000	1.049	1.000	1.000	1.000	1.000	1.000	1.000	1.000																	
Jun-99		2.052	1.302	1.004	1.015	1.022	1.028	1.000	1.000	1.000	1.000	1.000	1.000	1.125	1.111	1.000	1.000																		
Jun-00	5.600	2.171	1.240	1.204	1.037	1.045	1.112	1.037	1.000	1.000	1.120	1.079	1.000	1.000	1.000	1.000																			
Jun-01	2.305	2.078	1.452	1.281	1.267	1.195	1.064	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																				
Jun-02		30.925	3.133	1.931	1.218	1.417	1.097	1.000	1.000	1.000	1.000	1.000	1.000	1.000																					
Jun-03			3.056	1.621	1.202	1.035	1.000	1.000	1.101	1.000	1.000	1.000	1.000																						
Jun-04			1.720	1.792	1.000	1.000	1.020	1.000	1.000	1.000	1.107	1.000																							
Jun-05		6.207	3.247	1.278	1.487	1.070	1.000	1.118	1.000	1.000	1.000																								
Jun-06		4.392	2.346	1.305	1.151	1.015	1.060	1.080	1.057	1.124																									
Jun-07		11.000	1.896	1.440	1.024	1.023	1.075	1.420	1.028																										
Jun-08		1.473	1.459	1.566	1.241	1.019	1.051	1.000																											
Jun-09		3.292	1.519	1.296	1.582	1.140	1.173																												
Jun-10		5.630	2.824	1.697	1.154	1.253																													
Jun-11		2.943	1.929	1.481	1.311																														
Jun-12		4.388	1.977	1.418																															
Jun-13		1.698	2.299																																
Jun-14		8.471																																	
Jun-15																																			

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Simple Avg																																			
All Yrs (ex P)	12.239	5.006	2.085	1.481	1.322	1.231	1.141	1.116	1.117	1.081	1.048	1.037	1.041	1.040	1.013	1.011	1.002	1.006	1.002	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.004	1.000	1.000	1.000	1.000			
Latest 5		4.626	2.110	1.492	1.262	1.090	1.072	1.124	1.037	1.025	1.021	1.016	1.000	1.025	1.022	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.002	1.000	1.000	1.004	1.000						
Latest 3		4.852	2.068	1.532	1.349	1.138	1.100	1.167	1.029	1.041	1.036	1.000	1.000	1.000	1.037	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.003	1.000	1.000	1.000	1.000	1.000	1.000				
Volume Wtd																																			
All Yrs (ex P)		2.714	1.674	1.323	1.244	1.166	1.109	1.073	1.040	1.040	1.032	1.027	1.011	1.014	1.008	1.010	1.003	1.004	1.003	1.000	1.000	1.000	1.000	1.000	1.002	1.000	1.000	1.003	1.000	1.000	1.000	1.000	1.000		
Latest 5		3.662	2.111	1.491	1.227	1.114	1.073	1.137	1.036	1.023	1.020	1.017	1.000	1.034	1.027	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.002	1.000	1.000	1.003	1.000	1.000					
Latest 3		3.634	2.103	1.517	1.296	1.172	1.108	1.201	1.026	1.039	1.032	1.000	1.000	1.000	1.055	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.003	1.000	1.000	1.000	1.000	1.000	1.000				

Dev Factor Selection	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Prior	*5.500*	*2.634*	*1.808*	*1.415*	*1.239*	*1.050*	*1.050*	*1.100*	*1.030*	*1.025*	*1.020*	*1.015*	*1.015*	*1.015*	*1.015*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.005*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Selected	5.500	2.714	1.893	1.407	1.244	1.050	1.050	1.100	1.030	1.025	1.020	1.015	1.015	1.015	1.015	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.005	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FacToUlt	69.704	12.673	4.670	2.467	1.754	1.409	1.342	1.278	1.162	1.128	1.101	1.079	1.063	1.048	1.032	1.017	1.016	1.015	1.014	1.013	1.012	1.011	1.010	1.009	1.008	1.007	1.006	1.005	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Percent of Ult	1.4%	7.9%	21.4%	40.5%	57.0%	71.0%	74.5%	78.2%	86.0%	88.6%	90.8%	92.7%	94.0%	95.5%	96.9%	98.3%	98.4%	98.5%	98.6%	98.7%	98.8%	98.9%	99.0%	99.1%	99.2%	99.3%	99.4%	99.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	1.1%	0.0%	0.3%	0.2%	1.000	1.000
408	98.9%	0.2%	1.1%	0.1%	0.0%	0.981	0.971
396	98.7%	0.2%	1.3%	0.1%	0.0%	0.949	0.925
384	98.5%	0.5%	1.5%	0.1%	0.1%	0.921	0.885
372	98.0%	0.5%	2.0%	0.1%	0.1%	0.909	0.868
360	97.5%	0.5%	2.5%	0.2%	0.1%	0.895	0.849
348	97.0%	0.6%	3.0%	0.2%	0.1%	0.880	0.829
336	96.4%	0.6%	3.6%	0.2%	0.1%	0.868	0.813
324	95.9%	0.5%	4.1%	0.2%	0.1%	0.855	0.795
312	95.4%	0.1%	4.6%	0.1%	0.0%	0.838	0.773
300	95.2%	0.5%	4.8%	0.2%	0.1%	0.811	0.736
288	94.7%	0.3%	5.3%	0.1%	0.1%	0.800	0.722
276	94.4%	0.5%	5.6%	0.2%	0.1%	0.781	0.698
264	93.9%	0.5%	6.1%	0.2%	0.1%	0.769	0.683
252	93.5%	0.5%	6.5%	0.2%	0.2%	0.757	0.667
240	93.0%	0.4%	7.0%	0.2%	0.1%	0.746	0.654
228	92.6%	0.6%	7.4%	0.3%	0.2%	0.732	0.637
216	92.0%	0.5%	8.0%	0.3%	0.2%	0.724	0.628
204	91.5%	0.7%	8.5%	0.3%	0.3%	0.713	0.615
192	90.8%	0.9%	9.2%	0.5%	0.4%	0.706	0.608
180	89.9%	1.0%	10.1%	0.5%	0.4%	0.706	0.609
168	88.9%	0.9%	11.1%	0.5%	0.4%	0.706	0.609
156	88.0%	1.1%	12.0%	0.7%	0.5%	0.701	0.605
144	86.9%	1.0%	13.1%	0.6%	0.5%	0.700	0.604
132	85.9%	1.0%	14.1%	0.7%	0.6%	0.695	0.598
120	84.9%	1.3%	15.1%	0.9%	0.8%	0.689	0.592
108	83.6%	1.8%	16.4%	1.3%	1.1%	0.688	0.592
96	81.8%	2.2%	18.2%	1.7%	1.4%	0.694	0.599
84	79.5%	2.2%	20.5%	1.7%	1.5%	0.701	0.610
72	77.4%	4.0%	22.6%	3.2%	2.9%	0.703	0.613
60	73.4%	5.7%	26.6%	4.8%	4.4%	0.722	0.637
48	67.7%	8.3%	32.3%	7.2%	6.7%	0.745	0.666
36	59.5%	13.8%	40.5%	12.5%	11.9%	0.770	0.698
24	45.6%	21.9%	54.4%	20.6%	20.0%	0.801	0.738
12	23.8%	23.8%	76.2%	23.3%	23.1%	0.831	0.775
Total		100.0%					

NOTES:

(2) = 1 / Section 2, Exhibit 1, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Total Indemnity (Including Lump Sums) + Medical

Calculation of Fiscal Year 7/01/16 - 17 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/16 - 06/30/17	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/16 - 06/30/17		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	26,502,345	28,260,655	22,541,361	3,960,985	5,719,295				279,063	306,969	7.0%	5.4%
6/30/82-83	5,228,366	5,253,198	4,960,536	267,830	292,662	94.7%	1.0%	18.7%	50,086	54,730	18.7%	18.7%
6/30/83-84	11,117,307	11,228,839	9,806,581	1,310,726	1,422,259	87.8%	1.0%	8.2%	107,171	116,290	8.2%	8.2%
6/30/84-85	7,673,820	8,251,462	7,574,983	98,837	676,479	95.1%	1.0%	20.5%	20,302	138,951	20.5%	20.5%
6/30/85-86	11,988,000	12,092,000	11,874,262	113,739	217,739	98.6%	1.0%	72.6%	82,625	158,175	72.6%	72.6%
6/30/86-87	15,526,000	15,663,000	15,376,859	149,141	286,141	98.6%	1.0%	71.7%	106,863	205,027	71.7%	71.7%
6/30/87-88	22,649,000	23,320,600	22,137,160	511,840	1,183,440	96.3%	1.0%	27.1%	138,792	320,904	27.1%	27.1%
6/30/88-89	24,698,699	24,715,000	24,042,977	655,722	672,023	97.3%	1.0%	37.2%	244,035	250,102	37.2%	37.2%
6/30/89-90	18,903,000	19,057,000	18,704,491	198,509	352,509	98.5%	1.0%	68.9%	136,754	242,846	68.9%	68.9%
6/30/90-91	13,898,480	14,037,000	13,776,155	122,325	260,845	98.6%	1.0%	72.9%	89,183	190,172	72.9%	72.9%
6/30/91-92	10,567,260	10,598,000	10,255,780	311,480	342,220	96.9%	1.0%	32.4%	100,850	110,803	32.4%	32.4%
6/30/92-93	6,004,090	6,065,000	5,947,948	56,142	117,052	98.6%	1.0%	69.7%	39,123	81,568	69.7%	69.7%
6/30/93-94	4,850,030	4,898,000	4,766,891	83,139	131,109	97.8%	1.0%	45.5%	37,827	59,653	45.5%	45.5%
6/30/94-95	3,123,500	3,134,000	3,009,689	113,811	124,311	96.2%	1.0%	26.3%	29,908	32,667	26.3%	26.3%
6/30/95-96	4,291,000	4,314,000	4,099,598	191,402	214,402	95.3%	1.0%	21.2%	40,586	45,464	21.2%	21.2%
6/30/96-97	3,384,000	3,416,000	3,349,690	34,310	66,310	98.5%	1.0%	67.6%	23,187	44,813	67.6%	67.6%
6/30/97-98	3,618,000	3,636,000	3,425,420	192,580	210,580	94.4%	1.0%	18.0%	34,651	37,889	18.0%	18.0%
6/30/98-99	3,224,000	3,237,000	3,044,791	179,209	192,209	94.3%	1.0%	17.4%	31,174	33,436	17.4%	17.4%
6/30/99-00	3,447,000	3,466,000	3,225,797	221,203	240,203	93.3%	0.9%	13.9%	30,684	33,320	13.9%	13.9%
6/30/00-01	5,145,000	5,188,000	4,784,418	360,582	403,582	92.6%	0.7%	9.7%	35,150	39,342	9.7%	9.7%
6/30/01-02	3,229,000	3,260,000	3,178,901	50,099	81,099	98.0%	1.0%	49.5%	24,779	40,111	49.5%	49.5%
6/30/02-03	4,247,000	4,273,000	3,863,926	383,074	409,074	90.7%	1.0%	10.8%	41,202	43,998	10.8%	10.8%
6/30/03-04	4,552,000	4,584,000	4,100,381	451,619	483,619	89.8%	0.9%	9.2%	41,440	44,376	9.2%	9.2%
6/30/04-05	3,778,000	3,814,000	3,709,478	68,522	104,522	97.7%	1.0%	43.9%	30,063	45,857	43.9%	43.9%
6/30/05-06	4,366,000	4,435,000	3,912,548	453,452	522,452	88.9%	2.0%	18.0%	81,787	94,233	18.0%	18.0%
6/30/06-07	4,533,000	4,583,000	4,004,840	528,160	578,160	87.9%	2.0%	16.5%	87,040	95,280	16.5%	16.5%
6/30/07-08	2,999,000	3,242,000	2,624,892	374,108	617,108	84.1%	2.0%	12.6%	47,110	77,710	12.6%	12.6%
6/30/08-09	4,012,000	4,162,100	3,408,874	603,126	753,226	83.4%	2.0%	12.1%	72,695	90,787	12.1%	12.1%
6/30/09-10	5,305,300	5,610,600	4,550,630	754,670	1,059,970	83.4%	2.0%	12.0%	90,794	127,524	12.0%	12.0%
6/30/10-11	4,531,480	4,758,200	3,639,956	891,524	1,118,244	78.4%	5.0%	23.2%	206,479	258,988	23.2%	23.2%
6/30/11-12	4,797,000	5,056,000	3,769,627	1,027,373	1,286,373	76.5%	5.0%	21.3%	218,751	273,899	21.3%	21.3%
6/30/12-13	4,583,000	4,840,000	3,320,650	1,262,350	1,519,350	70.5%	6.0%	20.5%	258,184	310,747	20.5%	20.5%
6/30/13-14	4,888,000	5,188,000	3,047,206	1,840,794	2,140,794	60.5%	10.0%	25.3%	465,618	541,501	25.3%	25.3%
6/30/14-15	4,558,000	4,919,000	2,050,256	2,507,744	2,868,744	43.3%	17.2%	30.3%	761,023	870,576	30.3%	30.3%
6/30/15-16	4,864,100	5,368,000	1,154,956	3,709,144	4,213,044	22.6%	20.7%	26.7%	991,321	1,125,995	26.7%	26.7%
Total	271,081,777	277,923,654	247,042,507	24,039,270	30,881,148				5,076,300	6,544,703	21.1%	21.2%

NOTES:

(2) Exhibit 1, Page 1, Column (4) + Exhibit 2, Page 1, Column (4)
(3) Exhibit 1, Page 1, Column (5) + Exhibit 2, Page 1, Column (5)
(4) Exhibit 1, Page 1, Column (2) + Exhibit 2, Page 1, Column (2)
(5) = (2) - (4)
(6) = (3) - (4)
(7) = (4) / Average of Columns (2), (3)
(8) = (7) - Prior Year's (7)
(9) = (8) / (1.00 - (7))
(10) = (5) * (9)
(11) = (6) * (9)
(12) = (10) / (5)
(13) = (11) / (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	3,956,049	5,707,563		3,459,902	4,991,749
6/30/82-83	266,799	291,631	0.981	261,618	285,967
6/30/83-84	1,296,584	1,393,975	0.949	1,229,820	1,322,197
6/30/84-85	91,195	661,195	0.921	83,985	608,916
6/30/85-86	102,904	205,904	0.909	93,512	187,111
6/30/86-87	134,494	269,494	0.895	120,326	241,105
6/30/87-88	490,064	1,159,664	0.880	431,180	1,020,323
6/30/88-89	616,269	628,269	0.868	534,856	545,271
6/30/89-90	150,282	300,282	0.855	128,468	256,694
6/30/90-91	108,943	216,943	0.838	91,336	181,880
6/30/91-92	294,201	297,201	0.811	238,699	241,133
6/30/92-93	41,424	83,424	0.800	33,129	66,719
6/30/93-94	69,777	104,777	0.781	54,523	81,872
6/30/94-95	101,471	102,471	0.769	78,041	78,810
6/30/95-96	166,425	168,425	0.757	125,944	127,457
6/30/96-97	11,973	24,973	0.746	8,932	18,630
6/30/97-98	171,736	173,736	0.732	125,651	127,114
6/30/98-99	159,702	159,702	0.724	115,602	115,602
6/30/99-00	196,265	198,265	0.713	139,895	141,321
6/30/00-01	306,983	317,983	0.706	216,878	224,649
6/30/01-02	11,519	22,519	0.706	8,137	15,908
6/30/02-03	344,571	351,571	0.706	243,132	248,072
6/30/03-04	408,482	420,482	0.701	286,429	294,843
6/30/04-05	13,383	26,383	0.700	9,367	18,466
6/30/05-06	391,028	431,028	0.695	271,684	299,476
6/30/06-07	457,238	482,238	0.689	315,202	332,436
6/30/07-08	289,726	501,726	0.688	199,448	345,390
6/30/08-09	503,964	589,964	0.694	349,539	409,186
6/30/09-10	683,624	826,624	0.701	479,391	579,669
6/30/10-11	819,615	878,615	0.703	576,566	618,071
6/30/11-12	931,170	991,170	0.722	672,245	715,561
6/30/12-13	1,120,535	1,175,535	0.745	834,245	875,193
6/30/13-14	1,607,590	1,675,590	0.770	1,237,434	1,289,777
6/30/14-15	2,082,736	2,183,736	0.801	1,668,819	1,749,746
6/30/15-16	2,801,869	2,914,869	0.831	2,327,601	2,421,474
Total	21,200,588	25,937,925		17,051,535	21,077,790
			(7) Total Discount Factor:	0.804	0.813

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	3,956,049	5,707,563
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	565,150	815,366
(11) Discounted Value at 4%:	3,459,902	4,991,749

NOTES:

(2), (3) From Section 2, Exhibit 1, Page 1, Columns 8, 9

(4) From Section 2, Exhibit 1, Page 13, Column 7

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Indemnity

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	3,956,049	5,707,563		3,249,529	4,688,235
6/30/82-83	266,799	291,631	0.971	259,138	283,257
6/30/83-84	1,296,584	1,393,975	0.925	1,198,733	1,288,775
6/30/84-85	91,195	661,195	0.885	80,714	585,205
6/30/85-86	102,904	205,904	0.868	89,348	178,779
6/30/86-87	134,494	269,494	0.849	114,167	228,764
6/30/87-88	490,064	1,159,664	0.829	406,056	960,871
6/30/88-89	616,269	628,269	0.813	500,729	510,479
6/30/89-90	150,282	300,282	0.795	119,478	238,732
6/30/90-91	108,943	216,943	0.773	84,204	167,679
6/30/91-92	294,201	297,201	0.736	216,651	218,860
6/30/92-93	41,424	83,424	0.722	29,900	60,215
6/30/93-94	69,777	104,777	0.698	48,701	73,129
6/30/94-95	101,471	102,471	0.683	69,271	69,954
6/30/95-96	166,425	168,425	0.667	111,079	112,413
6/30/96-97	11,973	24,973	0.654	7,835	16,343
6/30/97-98	171,736	173,736	0.637	109,340	110,613
6/30/98-99	159,702	159,702	0.628	100,270	100,270
6/30/99-00	196,265	198,265	0.615	120,635	121,864
6/30/00-01	306,983	317,983	0.608	186,599	193,285
6/30/01-02	11,519	22,519	0.609	7,018	13,720
6/30/02-03	344,571	351,571	0.609	209,997	214,263
6/30/03-04	408,482	420,482	0.605	247,038	254,295
6/30/04-05	13,383	26,383	0.604	8,085	15,940
6/30/05-06	391,028	431,028	0.598	233,984	257,919
6/30/06-07	457,238	482,238	0.592	270,786	285,592
6/30/07-08	289,726	501,726	0.592	171,485	296,965
6/30/08-09	503,964	589,964	0.599	302,074	353,622
6/30/09-10	683,624	826,624	0.610	416,945	504,161
6/30/10-11	819,615	878,615	0.613	502,505	538,678
6/30/11-12	931,170	991,170	0.637	593,348	631,581
6/30/12-13	1,120,535	1,175,535	0.666	746,492	783,132
6/30/13-14	1,607,590	1,675,590	0.698	1,122,500	1,169,981
6/30/14-15	2,082,736	2,183,736	0.738	1,537,442	1,611,998
6/30/15-16	2,801,869	2,914,869	0.775	2,172,185	2,259,790
Total	21,200,588	25,937,925		15,644,260	19,399,359
			(7) Total Discount Factor:	0.738	0.748

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	3,956,049	5,707,563
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	565,150	815,366
(11) Discounted Value at 6%:	3,249,529	4,688,235

NOTES:
(2), (3) From Section 2, Exhibit 1, Page 1, Columns 8, 9
(4) From Section 2, Exhibit 1, Page 13, Column 8
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Paid Loss	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		1,212,617			1,217,553	1,224,349	4,936	11,732		
6/30/82-83		260,969	261,990		262,000	262,000	1,031	1,031		
6/30/83-84		1,414,165	1,421,119		1,428,307	1,442,449	14,142	28,283		
6/30/84-85	181,560	764,179	768,704	768,935	771,820	779,462	7,642	15,284	0.425	0.429
6/30/85-86	195,247	1,602,166	1,613,266	1,613,692	1,613,000	1,614,000	10,835	11,835	0.826	0.827
6/30/86-87	224,370	1,896,353	1,911,401	1,912,621	1,911,000	1,913,000	14,647	16,647	0.852	0.853
6/30/87-88	262,864	2,484,224	2,506,441	2,508,316	2,506,000	2,508,000	21,776	23,776	0.953	0.954
6/30/88-89	283,884	3,945,246	3,988,490	3,988,860	3,984,699	3,989,000	39,452	43,754	1.404	1.405
6/30/89-90	285,078	3,685,774	3,733,626	3,738,205	3,734,000	3,738,000	48,226	52,226	1.310	1.311
6/30/90-91	267,732	2,909,098	2,952,761	2,952,455	2,922,480	2,953,000	13,382	43,902	1.092	1.103
6/30/91-92	261,442	2,629,981	2,674,793	2,674,189	2,647,260	2,675,000	17,279	45,019	1.013	1.023
6/30/92-93	259,992	1,758,372	1,791,909	1,791,393	1,773,090	1,792,000	14,718	33,628	0.682	0.689
6/30/93-94	257,062	1,270,668	1,297,493	1,297,144	1,284,030	1,297,000	13,362	26,332	0.500	0.505
6/30/94-95	255,854	928,160	949,650	949,573	940,500	950,000	12,340	21,840	0.368	0.371
6/30/95-96	255,539	1,004,022	1,029,323	1,029,127	1,029,000	1,050,000	24,978	45,978	0.403	0.411
6/30/96-97	270,071	882,663	905,439	905,549	905,000	924,000	22,337	41,337	0.335	0.342
6/30/97-98	245,367	776,156	796,924	797,108	797,000	813,000	20,844	36,844	0.325	0.331
6/30/98-99	251,453	634,493	653,649	654,329	654,000	667,000	19,507	32,507	0.260	0.265
6/30/99-00	255,641	813,062	838,435	838,715	838,000	855,000	24,938	41,938	0.328	0.334
6/30/00-01	263,918	1,462,400	1,518,000	1,516,061	1,516,000	1,548,000	53,600	85,600	0.574	0.587
6/30/01-02	267,598	949,420	988,209	988,315	988,000	1,008,000	38,580	58,580	0.369	0.377
6/30/02-03	274,465	861,497	900,281	901,027	900,000	919,000	38,503	57,503	0.328	0.335
6/30/03-04	272,384	885,864	929,448	930,237	929,000	949,000	43,136	63,136	0.341	0.348
6/30/04-05	273,647	1,050,861	1,105,676	1,106,388	1,106,000	1,129,000	55,139	78,139	0.404	0.413
6/30/05-06	285,139	1,180,575	1,247,126	1,243,382	1,243,000	1,272,000	62,425	91,425	0.436	0.446
6/30/06-07	298,516	1,163,078	1,233,556	1,233,830	1,234,000	1,259,000	70,922	95,922	0.413	0.422
6/30/07-08	314,231	1,133,617	1,218,280	1,224,657	1,218,000	1,249,000	84,383	115,383	0.388	0.397
6/30/08-09	302,998	1,161,838	1,261,095	1,262,292	1,261,000	1,325,100	99,162	163,262	0.416	0.437
6/30/09-10	297,252	1,291,253	1,451,722	1,434,038	1,362,300	1,524,600	71,047	233,347	0.458	0.513
6/30/10-11	292,432	1,003,572	1,168,849	1,184,162	1,075,480	1,243,200	71,908	239,628	0.368	0.425
6/30/11-12	295,908	1,099,797	1,328,971	1,323,767	1,196,000	1,395,000	96,203	295,203	0.404	0.471
6/30/12-13	301,541	1,070,185	1,346,328	1,343,006	1,212,000	1,414,000	141,815	343,815	0.402	0.469
6/30/13-14	309,910	854,796	1,208,604	1,256,988	1,088,000	1,320,000	233,204	465,204	0.351	0.426
6/30/14-15	316,552	703,991	1,254,370	1,322,807	1,129,000	1,389,000	425,009	685,009	0.357	0.439
6/30/15-16	316,565	441,825	1,739,819	1,499,318	1,349,100	1,740,000	907,275	1,298,175	0.426	0.550
Total	8,696,212	47,186,937	49,995,746	48,190,485	50,025,619	52,130,160	2,838,682	4,943,223		
Tot 6/30/84-16	8,696,212	44,299,185	48,312,636	48,190,485	47,117,759	49,201,362	2,818,574	4,902,177	0.542	0.566

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 2, Exhibit 2, Page 2, Column 3

(4) From Section 2, Exhibit 2, Page 2, Column 8

(5) From Section 2, Exhibit 2, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Accident Year	Payroll (000's)	Paid Loss	Paid LDF	Adjustment for Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim
All Prior Yrs		1,212,617							2	2	
6/30/82-83		260,969	1.004	1.000	261,990	N/A	261,990		0	0	
6/30/83-84		1,414,165	1.005	1.000	1,421,119	N/A	1,421,119		2	1	6,954
6/30/84-85	181,560	764,179	1.006	1.000	768,704	N/A	768,704	0.423	1	1	4,526
6/30/85-86	195,247	1,602,166	1.007	1.000	1,613,266	N/A	1,613,266	0.826	0	0	
6/30/86-87	224,370	1,896,353	1.008	1.000	1,911,401	N/A	1,911,401	0.852	0	0	
6/30/87-88	262,864	2,484,224	1.009	1.000	2,506,441	N/A	2,506,441	0.954	1	1	22,217
6/30/88-89	283,884	3,945,246	1.011	1.000	3,988,490	N/A	3,988,490	1.405	3	4	10,811
6/30/89-90	285,078	3,685,774	1.013	1.000	3,733,626	N/A	3,733,626	1.310	1	1	47,852
6/30/90-91	267,732	2,909,098	1.015	1.000	2,952,761	N/A	2,952,761	1.103	1	1	43,663
6/30/91-92	261,442	2,629,981	1.017	1.000	2,674,793	N/A	2,674,793	1.023	2	3	14,937
6/30/92-93	259,992	1,758,372	1.019	1.000	1,791,909	N/A	1,791,909	0.689	1	1	33,537
6/30/93-94	257,062	1,270,668	1.021	1.000	1,297,493	N/A	1,297,493	0.505	3	2	13,413
6/30/94-95	255,854	928,160	1.023	1.000	949,650	N/A	949,650	0.371	0	0	
6/30/95-96	255,539	1,004,022	1.025	1.000	1,029,323	N/A	1,029,323	0.403	0	0	
6/30/96-97	270,071	882,663	1.026	1.000	905,439	N/A	905,439	0.335	0	0	
6/30/97-98	245,367	776,156	1.027	1.000	796,924	N/A	796,924	0.325	1	2	10,384
6/30/98-99	251,453	634,493	1.030	1.000	653,649	N/A	653,649	0.260	0	0	
6/30/99-00	255,641	813,062	1.031	1.000	838,435	N/A	838,435	0.328	1	1	25,372
6/30/00-01	263,918	1,462,400	1.038	1.000	1,518,000	N/A	1,518,000	0.575	7	6	9,267
6/30/01-02	267,598	949,420	1.041	1.000	988,209	N/A	988,209	0.369	3	3	12,930
6/30/02-03	274,465	861,497	1.045	1.000	900,281	N/A	900,281	0.328	4	4	9,696
6/30/03-04	272,384	885,864	1.049	1.000	929,448	N/A	929,448	0.341	3	3	14,528
6/30/04-05	273,647	1,050,861	1.052	1.000	1,105,676	N/A	1,105,676	0.404	2	2	27,408
6/30/05-06	285,139	1,180,575	1.056	1.000	1,247,126	N/A	1,247,126	0.437	3	2	33,275
6/30/06-07	298,516	1,163,078	1.061	1.000	1,233,556	N/A	1,233,556	0.413	6	5	14,096
6/30/07-08	314,231	1,133,617	1.075	1.000	1,218,280	N/A	1,218,280	0.388	6	3	28,221
6/30/08-09	302,998	1,161,838	1.085	1.000	1,261,095	N/A	1,261,095	0.416	7	7	14,179
6/30/09-10	297,252	1,291,253	1.124	1.000	1,451,722	N/A	1,451,722	0.488	18	12	13,372
6/30/10-11	292,432	1,003,572	1.165	1.000	1,168,849	N/A	1,168,849	0.400	16	11	15,025
6/30/11-12	295,908	1,099,797	1.208	1.000	1,328,971	N/A	1,328,971	0.449	24	15	15,278
6/30/12-13	301,541	1,070,185	1.258	1.000	1,346,328	N/A	1,346,328	0.446	47	24	11,506
6/30/13-14	309,910	854,796	1.414	1.000	1,208,604	N/A	1,208,604	0.390	179	37	9,562
6/30/14-15	316,552	703,991	1.782	1.000	1,254,370	N/A	1,254,370	0.396	256	150	3,669
6/30/15-16	316,565	441,825	3.938	1.000	1,739,819	N/A	1,739,819	0.550		274	4,737
Total	8,696,212	47,186,937			49,995,746		49,995,746		600	578	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 4/1/14 filing. Consideration for development beyond 252 months made in selection of LDF's.

(6) = (3) x (4) x (5)

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	181,560	0.445	764,179	1.006	768,935	N/A	768,935	0.424	0.424
6/30/85-86	195,247	0.858	1,602,166	1.007	1,613,692	N/A	1,613,692	0.826	0.826
6/30/86-87	224,370	0.921	1,896,353	1.008	1,912,621	N/A	1,912,621	0.852	0.852
6/30/87-88	262,864	1.034	2,484,224	1.009	2,508,316	N/A	2,508,316	0.954	0.954
6/30/88-89	283,884	1.417	3,945,246	1.011	3,988,860	N/A	3,988,860	1.405	1.405
6/30/89-90	285,078	1.435	3,685,774	1.013	3,738,205	N/A	3,738,205	1.311	1.311
6/30/90-91	267,732	1.095	2,909,098	1.015	2,952,455	N/A	2,952,455	1.103	1.103
6/30/91-92	261,442	1.009	2,629,981	1.017	2,674,189	N/A	2,674,189	1.023	1.023
6/30/92-93	259,992	0.679	1,758,372	1.019	1,791,393	N/A	1,791,393	0.689	0.689
6/30/93-94	257,062	0.498	1,270,668	1.021	1,297,144	N/A	1,297,144	0.505	0.505
6/30/94-95	255,854	0.370	928,160	1.023	949,573	N/A	949,573	0.371	0.371
6/30/95-96	255,539	0.400	1,004,022	1.025	1,029,127	N/A	1,029,127	0.403	0.403
6/30/96-97	270,071	0.337	882,663	1.026	905,549	N/A	905,549	0.335	0.335
6/30/97-98	245,367	0.328	776,156	1.027	797,108	N/A	797,108	0.325	0.325
6/30/98-99	251,453	0.269	634,493	1.030	654,329	N/A	654,329	0.260	0.260
6/30/99-00	255,641	0.332	813,062	1.031	838,715	N/A	838,715	0.328	0.328
6/30/00-01	263,918	0.555	1,462,400	1.038	1,516,061	N/A	1,516,061	0.574	0.574
6/30/01-02	267,598	0.370	949,420	1.041	988,315	N/A	988,315	0.369	0.369
6/30/02-03	274,465	0.334	861,497	1.045	901,027	N/A	901,027	0.328	0.328
6/30/03-04	272,384	0.347	885,864	1.049	930,237	N/A	930,237	0.342	0.342
6/30/04-05	273,647	0.409	1,050,861	1.052	1,106,388	N/A	1,106,388	0.404	0.404
6/30/05-06	285,139	0.413	1,180,575	1.056	1,243,382	N/A	1,243,382	0.436	0.436
6/30/06-07	298,516	0.415	1,163,078	1.061	1,233,830	N/A	1,233,830	0.413	0.413
6/30/07-08	314,231	0.417	1,133,617	1.075	1,224,657	N/A	1,224,657	0.390	0.390
6/30/08-09	302,998	0.421	1,161,838	1.085	1,262,292	N/A	1,262,292	0.417	0.417
6/30/09-10	297,252	0.435	1,291,253	1.124	1,434,038	N/A	1,434,038	0.482	0.482
6/30/10-11	292,432	0.437	1,003,572	1.165	1,184,162	N/A	1,184,162	0.405	0.405
6/30/11-12	295,908	0.439	1,099,797	1.208	1,323,767	N/A	1,323,767	0.447	0.447
6/30/12-13	301,541	0.441	1,070,185	1.258	1,343,006	N/A	1,343,006	0.445	0.445
6/30/13-14	309,910	0.443	854,796	1.414	1,256,988	N/A	1,256,988	0.406	0.406
6/30/14-15	316,552	0.446	703,991	1.782	1,322,807	N/A	1,322,807	0.418	0.418
6/30/15-16	316,565	0.448	441,825	3.938	1,499,318	N/A	1,499,318	0.474	0.474
Total	8,696,212		44,299,185		48,190,485		48,190,485		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 2, Exhibit 2, Page 4, Column 11

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

(5) From Section 2, Exhibit 2, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Expected Ult Loss	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.445	0.445
6/30/85-86									0.858	0.858
6/30/86-87									0.921	0.921
6/30/87-88									1.034	1.034
6/30/88-89									1.417	1.417
6/30/89-90									1.435	1.435
6/30/90-91	267,732	2,952,761	1.103	1.194	1.317	1.138	1.499	0.331	1.096	1.095
6/30/91-92	261,442	2,674,793	1.023	1.189	1.216	1.133	1.377	0.334	1.000	1.009
6/30/92-93	259,992	1,791,909	0.689	1.189	0.820	1.127	0.924	0.336	0.679	0.679
6/30/93-94	257,062	1,297,493	0.505	1.178	0.595	1.122	0.667	0.341	0.498	0.498
6/30/94-95	255,854	949,650	0.371	1.170	0.434	1.116	0.485	0.345	0.369	0.370
6/30/95-96	255,539	1,029,323	0.403	1.155	0.465	1.110	0.517	0.351	0.398	0.400
6/30/96-97	270,071	905,439	0.335	1.137	0.381	1.105	0.421	0.358	0.335	0.337
6/30/97-98	245,367	796,924	0.325	1.135	0.369	1.099	0.405	0.361	0.321	0.328
6/30/98-99	251,453	653,649	0.260	1.135	0.295	1.094	0.323	0.362	0.266	0.269
6/30/99-00	255,641	838,435	0.328	1.135	0.372	1.088	0.405	0.364	0.322	0.332
6/30/00-01	263,918	1,518,000	0.575	1.109	0.638	1.083	0.691	0.375	0.535	0.555
6/30/01-02	267,598	988,209	0.369	1.101	0.407	1.078	0.438	0.379	0.343	0.370
6/30/02-03	274,465	900,281	0.328	1.073	0.352	1.072	0.377	0.391	0.330	0.334
6/30/03-04	272,384	929,448	0.341	1.046	0.357	1.067	0.381	0.403	0.341	0.347
6/30/04-05	273,647	1,105,676	0.404	1.036	0.418	1.062	0.444	0.409	0.390	0.409
6/30/05-06	285,139	1,247,126	0.437	1.032	0.451	1.056	0.477	0.413	0.396	0.413
6/30/06-07	298,516	1,233,556	0.413	1.032	0.426	1.051	0.448	0.415	0.400	0.415
6/30/07-08	314,231	1,218,280	0.388	1.032	0.400	1.046	0.418	0.417	0.405	0.417
6/30/08-09	302,998	1,261,095	0.416	1.027	0.427	1.041	0.445	0.421	0.412	0.421
6/30/09-10	297,252	1,451,722	0.488	1.000	0.488	1.036	0.506	0.435	0.428	0.435
6/30/10-11	292,432	1,168,849	0.400	1.000	0.400	1.030	0.412	0.437	0.433	0.437
6/30/11-12	295,908	1,328,971	0.449	1.000	0.449	1.025	0.460	0.439	0.439	0.439
6/30/12-13	301,541	1,346,328	0.446	1.000	0.446	1.020	0.455	0.441	0.444	0.441
6/30/13-14	309,910	1,208,604	0.390	1.000	0.390	1.015	0.396	0.443	0.449	0.443
6/30/14-15	316,552	1,254,370	0.396	1.000	0.396	1.010	0.400	0.446	0.455	0.446
6/30/15-16	316,565	1,739,819	0.550	1.000	0.550	1.005	0.552	0.448		0.448
Total	7,263,209	33,790,708								

Trend Last 4 (ex 15-16):	-5.0%	Avg 3 (ex 15-16):	0.417
Trend Last 8 (ex 15-16):	-0.8%	Avg 5 (ex 15-16):	0.425
Trend Last 12 (ex 15-16):	0.3%	Avg 10 (ex 15-16):	0.442
Prior Selected Trend:	1.2%	Prior Sel Avg:	0.460
Selected Trend:	0.5%	Sel. Loss Cost:	0.450

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 2, Exhibit 2, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCIRB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.775
(2)	Credibility		32%
(3)	Average Pmt Trend Statewide		0.950
(4)	Credibility Weighted Trend		0.894
		(Low)	(High)
(5)	Selected Range	0.850	0.939
(6)	Incremental Paid for 2016	1,473	1,473
(7)	Estimated Reserve	8,348	22,625
(8)	Paid to Date (82 & Prior)	1,212,617	1,212,617
(9)	Est Ult Paid for 1982 & Prior	1,220,966	1,235,242

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	762	330
(11)	Projected Number of Years	2	7
(12)	Estimated Reserve	1,523	2,312
(13)	Paid to Date (82 & Prior)	1,212,617	1,211,144
(14)	Est Ult Paid for 1982 & Prior	1,214,141	1,213,456
(14a)	Paid Counts During Fiscal Year	2	2
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	1,217,553	1,224,349
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**1,217,553**	**1,224,349**
(18)	Implied Tail	1.004	1.010
(19)	Ult Loss Inc Lump Sums @ 6/15	1,213,417	1,217,026

NOTES:

(1) From Section 2, Exhibit 2, Page 6
(2) = (Average of Section 2, Exhibit 2, Page 6, Column 3 / 175,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 2, Exhibit 2, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 2, Exhibit 2, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) Lump Sums are considered in Indemnity analysis (Section 1)
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	76,171	11.241			
1993	2	75,723	11.235	0.994		
1994	3	63,040	11.052	0.833		
1995	4	28,227	10.248	0.448		
1996	5	63,291	11.055	2.242		
1997	6	29,585	10.295	0.467		
1998	7	13,039	9.476	0.441		
1999	8	13,407	9.504	1.028		
2000	9	11,930	9.387	0.890	n =	25
2001	10	9,078	9.114	0.761	S(x) =	50,100
2002	11	5,110	8.539	0.563	S(x-sq) =	100,401,700
2003	12	6,295	8.748	1.232	S(xy) =	433,502
2004	13	4,115	8.322	0.654	S(y) =	216
2005	14	17,494	9.770	4.251	D =	32,500
2006	15	5,802	8.666	0.332	slope =	-0.225
2007	16	8,975	9.102	1.547	Avg Trend =	0.775
2008	17	3,912	8.272	0.436		
2009	18	2,186	7.690	0.559		
2010	19	4,246	8.354	1.943		
2011	20	1,195	7.086	0.281		
2012	21	179	5.189	0.150		
2013	22	179	5.189	1.000		
2014	23	179	5.189	1.000		
2015	24	632	6.449	3.527		
2016	25	1,473	7.295	2.330		
					Selected Trend:	**0.775**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 2.33 = 1473 / 632

Commonwealth of Massachusetts Workers Compensation
Department of Developmental Services - Cluster 1
MEDICAL
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	21,006	49,638	70,591	88,239	105,504	122,855	138,893	160,692	180,838	198,763	206,648	244,385	249,094	254,712	256,363	256,876	257,735	258,257	258,537	258,637	259,334	259,869	260,265	260,719	260,969	260,969	260,969	260,969	260,969	260,969	260,969	260,969	260,969	260,969
June-84	130,216	307,707	437,592	546,990	654,018	741,928	857,012	959,232	1,050,170	1,118,632	1,160,913	1,192,447	1,199,268	1,203,920	1,225,075	1,249,653	1,268,798	1,290,858	1,296,673	1,300,275	1,316,793	1,333,199	1,342,906	1,349,107	1,358,330	1,363,288	1,375,051	1,401,444	1,403,198	1,404,636	1,410,461	1,413,497	1,414,165	
June-85	89,170	210,713	299,656	374,570	455,180	522,720	582,177	634,207	685,633	702,603	713,358	717,026	720,062	720,920	726,880	729,520	730,301	731,081	731,204	731,204	731,218	731,218	731,218	731,218	731,218	731,218	731,218	739,645	763,916	764,161	764,174	764,179		
June-86	189,273	447,261	636,052	765,617	939,707	1,103,818	1,243,019	1,358,130	1,444,684	1,485,929	1,499,042	1,514,132	1,520,647	1,537,037	1,547,606	1,553,176	1,564,852	1,567,432	1,573,496	1,575,982	1,582,467	1,586,081	1,593,552	1,596,723	1,600,637	1,602,166	1,602,166	1,602,166	1,602,166	1,602,166	1,602,166			
June-87	243,465	575,319	884,604	1,135,085	1,272,135	1,441,924	1,619,831	1,685,111	1,741,279	1,772,270	1,801,621	1,842,953	1,884,775	1,889,603	1,894,366	1,894,597	1,895,476	1,895,651	1,895,651	1,895,651	1,896,140	1,896,353	1,896,353	1,896,353	1,896,353	1,896,353	1,896,353	1,896,353	1,896,353	1,896,353				
June-88	363,164	980,917	1,485,789	1,802,447	2,044,603	2,209,730	2,337,274	2,381,902	2,440,826	2,450,413	2,453,714	2,458,155	2,468,582	2,469,709	2,470,273	2,472,242	2,472,926	2,474,120	2,475,679	2,476,698	2,479,622	2,480,422	2,482,560	2,482,824	2,483,087	2,483,417	2,483,681	2,483,878	2,484,224					
June-89	524,148	1,718,544	2,367,574	2,805,123	3,095,247	3,298,078	3,424,849	3,485,100	3,510,635	3,573,650	3,625,589	3,649,159	3,663,581	3,699,511	3,725,869	3,746,061	3,765,157	3,783,602	3,796,379	3,809,734	3,820,868	3,838,465	3,852,950	3,867,441	3,882,545	3,902,335	3,923,798	3,945,246						
June-90	721,216	2,076,487	2,697,946	3,042,168	3,365,956	3,509,844	3,547,356	3,618,254	3,660,798	3,669,321	3,673,294	3,674,043	3,675,267	3,676,903	3,676,903	3,676,975	3,676,975	3,677,208	3,677,264	3,677,264	3,677,264	3,677,264	3,680,769	3,681,790	3,685,474	3,685,625	3,685,774							
June-91	573,775	1,832,452	2,336,684	2,570,536	2,690,503	2,737,602	2,767,093	2,783,177	2,796,096	2,807,853	2,815,389	2,817,526	2,821,013	2,824,311	2,824,746	2,835,316	2,844,386	2,852,912	2,862,970	2,871,036	2,880,572	2,890,850	2,897,227	2,902,044	2,903,974	2,909,098								
June-92	682,252	1,646,809	2,002,754	2,139,991	2,195,456	2,229,059	2,250,251	2,258,976	2,271,388	2,282,222	2,299,759	2,312,696	2,324,613	2,341,522	2,353,263	2,361,934	2,370,332	2,377,427	2,385,401	2,392,636	2,402,525	2,411,498	2,588,626	2,601,391	2,629,981									
June-93	530,227	1,313,078	1,537,374	1,593,966	1,619,013	1,650,226	1,662,183	1,669,637	1,672,913	1,676,324	1,679,743	1,683,745	1,688,008	1,694,444	1,700,344	1,735,033	1,740,584	1,747,278	1,750,189	1,752,832	1,755,026	1,755,793	1,758,341	1,758,372										
June-94	507,386	988,866	1,093,334	1,170,915	1,212,098	1,230,432	1,235,833	1,243,122	1,247,382	1,251,645	1,252,686	1,255,338	1,260,284	1,261,941	1,262,624	1,262,948	1,263,197	1,263,431	1,264,853	1,267,940	1,270,183	1,270,498	1,270,668											
June-95	419,212	715,818	815,621	863,086	890,307	917,113	922,985	923,881	924,606	926,605	926,605	926,605	926,605	926,605	926,779	927,514	927,514	927,514	927,514	928,160	928,160	928,160											
June-96	382,658	780,302	879,753	927,773	959,109	977,572	986,429	994,587	997,113	999,835	999,878	999,878	1,002,373	1,003,880	1,003,880	1,004,022	1,004,022	1,004,022	1,004,022	1,004,022	1,004,022												
June-97	375,777	680,288	796,380	819,630	848,942	854,522	862,163	870,431	872,306	876,115	878,979	880,535	881,313	882,123	882,572	882,572	882,572	882,663	882,663	882,663													
June-98	271,043	554,887	629,610	674,301	694,718	711,568	723,173	728,434	739,218	743,949	744,590	744,993	744,993	746,349	751,655	753,336	760,571	764,236	776,156														
June-99	200,054	434,499	509,933	556,932	596,752	611,737	618,749	622,442	625,193	627,351	628,383	630,351	632,095	633,627	633,750	634,493	634,493	634,493															
June-00	278,690	480,160	554,610	607,363	639,042	681,279	703,362	725,333	730,593	734,009	743,547	751,052	758,824	768,373	779,490	794,445	813,062																
June-01	312,280	500,976	665,683	751,467	818,710	893,280	968,370	1,062,045	1,117,446	1,168,471	1,217,356	1,269,474	1,306,387	1,358,630	1,416,743	1,462,400																	
June-02	197,389	476,132	547,189	630,575	673,854	722,281	746,769	768,857	788,866	810,710	820,868	840,995	861,213	880,964	949,420																		
June-03	163,049	459,264	666,927	739,223	775,337	800,620	814,827	825,961	832,962	839,586	845,639	851,935	856,279	861,497																			
June-04	79,919	361,725	544,497	684,486	731,761	788,111	824,704	835,702	842,619	849,442	861,676	877,029	885,864																				
June-05	394,825	766,546	887,167	942,140	987,834	999,094	1,003,380	1,005,881	1,006,180	1,046,856	1,049,675	1,050,861																					
June-06	318,539	662,581	842,645	941,494	1,038,675	1,080,705	1,115,105	1,134,878	1,157,537	1,168,675	1,180,575																						
June-07	310,954	746,618	936,091	1,034,943	1,071,013	1,094,137	1,114,504	1,128,520	1,148,970	1,163,078																							
June-08	418,873	692,272	777,557	805,740	842,963	874,236	948,911	1,045,997	1,133,617																								
June-09	491,289	882,544	982,774	1,088,621	1,119,184	1,136,600	1,146,349	1,161,838																									
June-10	412,961	823,720	1,038,592	1,141,629	1,181,671	1,235,565	1,291,253																										
June-11	434,256	781,068	901,778	953,435	989,604	1,003,572																											
June-12	463,779	899,638	985,560	1,039,330	1,099,797																												
June-13	317,812	782,569	959,446	1,070,185																													
June-14	343,501	744,703	854,796																														
June-15	337,278	703,991																															
June-16	441,825																																

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.363	1.422	1.250	1.196	1.164	1.131	1.157	1.125	1.099	1.040	1.183	1.019	1.023	1.006	1.002	1.003	1.002	1.001	1.000	1.003	1.002	1.002	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-84	2.363	1.422	1.250	1.196	1.134	1.155	1.119	1.095	1.065	1.038	1.027	1.006	1.004	1.018	1.020	1.015	1.017	1.005	1.003	1.013	1.012	1.007	1.005	1.007	1.004	1.009	1.019	1.001	1.001	1.004	1.002	1.000	
June-85	2.363	1.422	1.250	1.215	1.148	1.114	1.089	1.081	1.025	1.015	1.005	1.004	1.001	1.008	1.004	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.012	1.033	1.000	1.000	1.000		
June-86	2.363	1.422	1.204	1.227	1.175	1.126	1.093	1.064	1.029	1.009	1.010	1.004	1.011	1.007	1.004	1.008	1.002	1.004	1.002	1.004	1.002	1.005	1.002	1.002	1.001	1.000	1.000	1.000	1.000	1.000			
June-87	2.363	1.538	1.283	1.121	1.133	1.123	1.040	1.033	1.018	1.017	1.023	1.023	1.003	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
June-88	2.701	1.515	1.213	1.134	1.081	1.058	1.019	1.025	1.004	1.001	1.002	1.004	1.000	1.000	1.001	1.000	1.000	1.001	1.000	1.001	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000					
June-89	3.279	1.378	1.185	1.103	1.066	1.038	1.018	1.007	1.018	1.015	1.007	1.004	1.010	1.007	1.005	1.005	1.005	1.003	1.004	1.003	1.005	1.004	1.004	1.004	1.005	1.006	1.005						
June-90	2.879	1.299	1.128	1.106	1.043	1.011	1.020	1.012	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.001	1.000	1.000							
June-91	3.194	1.275	1.100	1.047	1.018	1.011	1.006	1.005	1.004	1.003	1.001	1.001	1.001	1.000	1.004	1.003	1.003	1.004	1.003	1.003	1.004	1.002	1.002	1.001	1.002								
June-92	2.414	1.216	1.069	1.026	1.015	1.010	1.004	1.005	1.005	1.008	1.006	1.005	1.007	1.005	1.004	1.004	1.003	1.003	1.003	1.004	1.004	1.073	1.005	1.011									
June-93	2.476	1.171	1.037	1.016	1.019	1.007	1.004	1.002	1.002	1.002	1.002	1.003	1.004	1.003	1.020	1.003	1.004	1.002	1.002	1.001	1.000	1.001	1.000										
June-94	1.949	1.106	1.071	1.035	1.015	1.004	1.006	1.003	1.003	1.001	1.002	1.004	1.001	1.001	1.000	1.000	1.000	1.001	1.002	1.002	1.000	1.000											
June-95	1.708	1.139	1.058	1.032	1.030	1.006	1.001	1.001	1.002	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.000	1.001	1.000	1.000												
June-96	2.039	1.127	1.055	1.034	1.019	1.009	1.008	1.003	1.003	1.000	1.000	1.002	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
June-97	1.810	1.171	1.029	1.036	1.007	1.009	1.010	1.002	1.004	1.003	1.002	1.001	1.001	1.001	1.000	1.000	1.000	1.000	1.000														
June-98	2.047	1.135	1.071	1.030	1.024	1.016	1.007	1.015	1.006	1.001	1.001	1.000	1.002	1.007	1.002	1.010	1.005	1.016															
June-99	2.172	1.174	1.092	1.071	1.025	1.011	1.006	1.004	1.003	1.002	1.003	1.003	1.002	1.000	1.001	1.000	1.000																
June-00	1.723	1.155	1.095	1.052	1.066	1.032	1.031	1.007	1.005	1.013	1.010	1.010	1.013	1.014	1.019	1.023																	
June-01	1.604	1.329	1.129	1.089	1.091	1.084	1.097	1.052	1.046	1.042	1.043	1.029	1.040	1.043	1.032																		
June-02	2.412	1.149	1.152	1.069	1.072	1.034	1.030	1.026	1.028	1.013	1.025	1.024	1.023	1.078																			
June-03	2.817	1.452	1.108	1.049	1.033	1.018	1.014	1.008	1.008	1.007	1.007	1.005	1.006																				
June-04	4.526	1.505	1.257	1.069	1.077	1.046	1.013	1.008	1.008	1.014	1.018	1.010																					
June-05	1.941	1.157	1.062	1.049	1.011	1.004	1.002	1.000	1.040	1.003	1.001																						
June-06	2.080	1.272	1.117	1.103	1.040	1.032	1.018	1.020	1.010	1.010																							
June-07	2.401	1.254	1.106	1.035	1.022	1.019	1.013	1.018	1.012																								
June-08	1.653	1.123	1.036	1.046	1.037	1.085	1.102	1.084																									
June-09	1.796	1.114	1.108	1.028	1.016	1.009	1.014																										
June-10	1.995	1.261	1.099	1.035	1.046	1.045																											
June-11	1.799	1.155	1.057	1.038	1.014																												
June-12	1.940	1.096	1.055	1.058																													
June-13	2.462	1.226	1.115																														
June-14	2.168	1.148																															
June-15	2.087																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.300	1.260	1.124	1.078	1.057	1.045	1.035	1.027	1.018	1.011	1.016	1.007	1.007	1.010	1.006	1.004	1.003	1.002	1.001	1.002	1.002	1.008	1.002	1.003	1.001	1.002	1.005	1.006	1.000	1.001	1.001	1.000	1.000	
Latest 5	2.091	1.177	1.087	1.041	1.027	1.038	1.030	1.026	1.016	1.009	1.019	1.016	1.017	1.028	1.011	1.007	1.001	1.003	1.001	1.001	1.002	1.016	1.002	1.003	1.001	1.001	1.003	1.007	1.000					
Latest 3	2.239	1.156	1.076	1.044	1.025	1.046	1.043	1.041	1.021	1.009	1.009	1.013	1.023	1.045	1.018	1.011	1.002	1.005	1.000	1.001	1.000	1.025	1.002	1.004	1.002	1.002	1.002	1.000	1.000	1.001	1.001			
Volume Wtd																																		
All Yrs	2.268	1.246	1.115	1.071	1.048	1.036	1.026	1.020	1.013	1.009	1.009	1.006	1.006	1.008	1.006	1.004	1.003	1.002	1.002	1.002	1.002	1.009	1.002	1.003	1.002	1.002	1.005	1.003	1.000	1.001	1.001	1.000	1.000	
Latest 5	2.063	1.176	1.087	1.041	1.027	1.036	1.028	1.027	1.016	1.009	1.020	1.017	1.020	1.033	1.014	1.006	1.001	1.003	1.001	1.002	1.002	1.016	1.002	1.003	1.002	1.002	1.003	1.003	1.000					
Latest 3	2.234	1.154	1.076	1.044	1.026	1.043	1.039	1.040	1.020	1.009	1.008	1.013	1.026	1.046	1.022	1.012	1.002	1.004	1.000	1.001	1.000	1.033	1.002	1.004	1.002	1.002	1.003	1.000	1.000	1.002	1.001			

Dev Factor Selection																																		
Industry 1	1.937	1.138	1.051	1.025	1.014	1.013	1.011	1.011	1.011	1.011	1.011	1.010	1.010	1.008	1.007	1.006	1.006	1.005																
Industry 2		1.271	1.076	1.031	1.019	1.013	1.010	1.010	1.011	1.009	1.010	1.014	1.012	1.008	1.007	1.008	1.006	1.005	1.005	1.006														
Prior	*2.190*	*1.264*	*1.124*	*1.036*	*1.038*	*1.028*	*1.037*	*1.010*	*1.013*	*1.004*	*1.004*	*1.003*	*1.004*	*1.004*	*1.003*	*1.002*	*1.001*	*1.001*	*1.002*	*1.001*	*1.002*	*1.002*	*1.002*	*1.002*	*1.002*	*1.002*	*1.002*	*1.002*	*1.001*	*1.001*	*1.001*	*1.001*	*1.006*	
Selected	2.210	1.260	1.124	1.041	1.038	1.036	1.036	1.010	1.013	1.004	1.004	1.003	1.004	1.004	1.003	1.007	1.001	1.003	1.001	1.001	1.002	1.002	1.002	1.002	1.002	1.002	1.002	1.002	1.001	1.001	1.001	1.001	1.001	1.004
FacToUlt	3.938	1.782	1.414	1.258	1.208	1.165	1.124	1.085	1.075	1.061	1.056	1.052	1.049	1.045	1.041	1.038	1.031	1.030	1.027	1.026	1.025	1.023	1.021	1.019	1.017	1.015	1.013	1.011	1.009	1.008	1.007	1.006	1.005	1.004
Percent of Ult	25.4%	56.1%	70.7%	79.5%	82.8%	85.9%	88.9%	92.1%	93.1%	94.3%	94.7%	95.0%	95.3%	95.7%	96.1%	96.3%	97.0%	97.1%	97.4%	97.5%	97.5%	97.7%	97.9%	98.1%	98.3%	98.5%	98.7%	98.9%	99.1%	99.2%	99.3%	99.4%	99.5%	99.6%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	1,213,417	1,217,026	1,217,553	1,224,349	4,136	0.3%	7,323	0.6%
6/30/82-83	263,000	263,000	262,000	262,000	(1,000)	-0.4%	(1,000)	-0.4%
6/30/83-84	1,427,632	1,441,767	1,428,307	1,442,449	675	0.0%	681	0.0%
6/30/84-85	771,815	779,457	771,820	779,462	5	0.0%	5	0.0%
6/30/85-86	1,616,000	1,617,000	1,613,000	1,614,000	(3,000)	-0.2%	(3,000)	-0.2%
6/30/86-87	1,915,000	1,917,000	1,911,000	1,913,000	(4,000)	-0.2%	(4,000)	-0.2%
6/30/87-88	2,514,000	2,516,000	2,506,000	2,508,000	(8,000)	-0.3%	(8,000)	-0.3%
6/30/88-89	3,963,036	3,980,000	3,984,699	3,989,000	21,662	0.5%	9,000	0.2%
6/30/89-90	3,745,000	3,750,000	3,734,000	3,738,000	(11,000)	-0.3%	(12,000)	-0.3%
6/30/90-91	2,926,440	2,956,000	2,922,480	2,953,000	(3,960)	-0.1%	(3,000)	-0.1%
6/30/91-92	2,626,470	2,654,000	2,647,260	2,675,000	20,790	0.8%	21,000	0.8%
6/30/92-93	1,779,030	1,797,000	1,773,090	1,792,000	(5,940)	-0.3%	(5,000)	-0.3%
6/30/93-94	1,287,990	1,301,000	1,284,030	1,297,000	(3,960)	-0.3%	(4,000)	-0.3%
6/30/94-95	942,480	952,000	940,500	950,000	(1,980)	-0.2%	(2,000)	-0.2%
6/30/95-96	1,031,000	1,052,000	1,029,000	1,050,000	(2,000)	-0.2%	(2,000)	-0.2%
6/30/96-97	908,000	926,000	905,000	924,000	(3,000)	-0.3%	(2,000)	-0.2%
6/30/97-98	787,000	802,000	797,000	813,000	10,000	1.3%	11,000	1.4%
6/30/98-99	654,000	667,000	654,000	667,000	0	0.0%	0	0.0%
6/30/99-00	820,000	837,000	838,000	855,000	18,000	2.2%	18,000	2.2%
6/30/00-01	1,465,000	1,496,000	1,516,000	1,548,000	51,000	3.5%	52,000	3.5%
6/30/01-02	916,000	934,000	988,000	1,008,000	72,000	7.9%	74,000	7.9%
6/30/02-03	894,000	912,000	900,000	919,000	6,000	0.7%	7,000	0.8%
6/30/03-04	918,000	937,000	929,000	949,000	11,000	1.2%	12,000	1.3%
6/30/04-05	1,101,000	1,125,000	1,106,000	1,129,000	5,000	0.5%	4,000	0.4%
6/30/05-06	1,227,000	1,257,000	1,243,000	1,272,000	16,000	1.3%	15,000	1.2%
6/30/06-07	1,226,000	1,253,000	1,234,000	1,259,000	8,000	0.7%	6,000	0.5%
6/30/07-08	1,129,000	1,163,000	1,218,000	1,249,000	89,000	7.9%	86,000	7.4%
6/30/08-09	1,279,000	1,347,150	1,261,000	1,325,100	(18,000)	-1.4%	(22,050)	-1.6%
6/30/09-10	1,331,900	1,492,050	1,362,300	1,524,600	30,400	2.3%	32,550	2.2%
6/30/10-11	1,086,520	1,254,750	1,075,480	1,243,200	(11,040)	-1.0%	(11,550)	-0.9%
6/30/11-12	1,157,000	1,352,000	1,196,000	1,395,000	39,000	3.4%	43,000	3.2%
6/30/12-13	1,200,000	1,402,000	1,212,000	1,414,000	12,000	1.0%	12,000	0.9%
6/30/13-14	1,178,000	1,412,000	1,088,000	1,320,000	(90,000)	-7.6%	(92,000)	-6.5%
6/30/14-15	1,168,000	1,472,000	1,129,000	1,389,000	(39,000)	-3.3%	(83,000)	-5.6%
6/30/15-16								
Total	48,467,731	50,234,201	48,676,519	50,390,160	208,788	0.4%	155,959	0.3%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 2, Exhibit 2, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	0.4%	0.0%	0.1%	0.1%	1.000	1.000
408	99.6%	0.1%	0.4%	0.0%	0.0%	0.981	0.971
396	99.5%	0.1%	0.5%	0.0%	0.0%	0.951	0.927
384	99.4%	0.1%	0.6%	0.0%	0.0%	0.925	0.891
372	99.3%	0.1%	0.7%	0.0%	0.0%	0.903	0.860
360	99.2%	0.1%	0.8%	0.0%	0.0%	0.882	0.831
348	99.1%	0.2%	0.9%	0.1%	0.0%	0.863	0.805
336	98.9%	0.2%	1.1%	0.1%	0.0%	0.857	0.798
324	98.7%	0.2%	1.3%	0.1%	0.0%	0.848	0.787
312	98.5%	0.2%	1.5%	0.1%	0.0%	0.838	0.773
300	98.3%	0.2%	1.7%	0.1%	0.0%	0.826	0.757
288	98.1%	0.2%	1.9%	0.1%	0.0%	0.814	0.741
276	97.9%	0.2%	2.1%	0.1%	0.1%	0.801	0.725
264	97.7%	0.2%	2.3%	0.1%	0.1%	0.789	0.709
252	97.5%	0.1%	2.5%	0.0%	0.0%	0.776	0.693
240	97.5%	0.1%	2.5%	0.0%	0.0%	0.751	0.661
228	97.4%	0.3%	2.6%	0.2%	0.1%	0.732	0.636
216	97.1%	0.1%	2.9%	0.0%	0.0%	0.734	0.641
204	97.0%	0.6%	3.0%	0.3%	0.2%	0.715	0.616
192	96.3%	0.3%	3.7%	0.1%	0.1%	0.738	0.649
180	96.1%	0.4%	3.9%	0.2%	0.2%	0.728	0.636
168	95.7%	0.4%	4.3%	0.2%	0.2%	0.725	0.633
156	95.3%	0.3%	4.7%	0.2%	0.1%	0.720	0.628
144	95.0%	0.4%	5.0%	0.2%	0.2%	0.708	0.613
132	94.7%	0.4%	5.3%	0.2%	0.2%	0.702	0.606
120	94.3%	1.2%	5.7%	0.9%	0.7%	0.695	0.598
108	93.1%	0.9%	6.9%	0.7%	0.6%	0.724	0.637
96	92.1%	3.2%	7.9%	2.4%	2.1%	0.729	0.644
84	88.9%	3.1%	11.1%	2.4%	2.1%	0.782	0.712
72	85.9%	3.1%	14.1%	2.5%	2.3%	0.802	0.737
60	82.8%	3.3%	17.2%	2.7%	2.5%	0.809	0.745
48	79.5%	8.8%	20.5%	7.6%	7.1%	0.810	0.746
36	70.7%	14.6%	29.3%	13.2%	12.6%	0.839	0.784
24	56.1%	30.7%	43.9%	29.0%	28.2%	0.865	0.817
12	25.4%	25.4%	74.6%	24.9%	24.7%	0.893	0.853
Total		100.0%					

NOTES:

(2) = 1 / Section 2, Exhibit 2, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	4,936	11,732		4,748	11,285
6/30/82-83	1,031	1,031	0.981	1,011	1,011
6/30/83-84	14,142	28,283	0.951	13,442	26,884
6/30/84-85	7,642	15,284	0.925	7,070	14,141
6/30/85-86	10,835	11,835	0.903	9,781	10,684
6/30/86-87	14,647	16,647	0.882	12,922	14,687
6/30/87-88	21,776	23,776	0.863	18,795	20,521
6/30/88-89	39,452	43,754	0.857	33,826	37,514
6/30/89-90	48,226	52,226	0.848	40,918	44,312
6/30/90-91	13,382	43,902	0.838	11,211	36,780
6/30/91-92	17,279	45,019	0.826	14,275	37,191
6/30/92-93	14,718	33,628	0.814	11,979	27,369
6/30/93-94	13,362	26,332	0.801	10,708	21,101
6/30/94-95	12,340	21,840	0.789	9,732	17,224
6/30/95-96	24,978	45,978	0.776	19,382	35,677
6/30/96-97	22,337	41,337	0.751	16,786	31,064
6/30/97-98	20,844	36,844	0.732	15,248	26,952
6/30/98-99	19,507	32,507	0.734	14,320	23,863
6/30/99-00	24,938	41,938	0.715	17,819	29,966
6/30/00-01	53,600	85,600	0.738	39,560	63,178
6/30/01-02	38,580	58,580	0.728	28,078	42,634
6/30/02-03	38,503	57,503	0.725	27,905	41,676
6/30/03-04	43,136	63,136	0.720	31,055	45,454
6/30/04-05	55,139	78,139	0.708	39,031	55,312
6/30/05-06	62,425	91,425	0.702	43,817	64,173
6/30/06-07	70,922	95,922	0.695	49,298	66,675
6/30/07-08	84,383	115,383	0.724	61,084	83,524
6/30/08-09	99,162	163,262	0.729	72,324	119,076
6/30/09-10	71,047	233,347	0.782	55,539	182,413
6/30/10-11	71,908	239,628	0.802	57,643	192,092
6/30/11-12	96,203	295,203	0.809	77,785	238,689
6/30/12-13	141,815	343,815	0.810	114,843	278,424
6/30/13-14	233,204	465,204	0.839	195,683	390,356
6/30/14-15	425,009	685,009	0.865	367,487	592,299
6/30/15-16	907,275	1,298,175	0.893	810,056	1,159,070
Total	2,838,682	4,943,223		2,355,161	4,083,268
			(7) Total Discount Factor:	0.830	0.826

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	4,936	11,732
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	2,468	5,866
(11) Discounted Value at 4%:	4,748	11,285

NOTES:
(2), (3) From Section 2, Exhibit 2, Page 1, Columns 8, 9
(4) From Section 2, Exhibit 2, Page 9, Column 7
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Developmental Services - Cluster 1
Medical

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	4,936	11,732		4,660	11,077
6/30/82-83	1,031	1,031	0.971	1,001	1,001
6/30/83-84	14,142	28,283	0.927	13,116	26,232
6/30/84-85	7,642	15,284	0.891	6,811	13,621
6/30/85-86	10,835	11,835	0.860	9,314	10,173
6/30/86-87	14,647	16,647	0.831	12,175	13,837
6/30/87-88	21,776	23,776	0.805	17,531	19,141
6/30/88-89	39,452	43,754	0.798	31,488	34,921
6/30/89-90	48,226	52,226	0.787	37,934	41,081
6/30/90-91	13,382	43,902	0.773	10,339	33,919
6/30/91-92	17,279	45,019	0.757	13,086	34,095
6/30/92-93	14,718	33,628	0.741	10,912	24,932
6/30/93-94	13,362	26,332	0.725	9,690	19,096
6/30/94-95	12,340	21,840	0.709	8,748	15,483
6/30/95-96	24,978	45,978	0.693	17,305	31,854
6/30/96-97	22,337	41,337	0.661	14,762	27,318
6/30/97-98	20,844	36,844	0.636	13,247	23,415
6/30/98-99	19,507	32,507	0.641	12,499	20,829
6/30/99-00	24,938	41,938	0.616	15,363	25,835
6/30/00-01	53,600	85,600	0.649	34,785	55,552
6/30/01-02	38,580	58,580	0.636	24,547	37,272
6/30/02-03	38,503	57,503	0.633	24,381	36,411
6/30/03-04	43,136	63,136	0.628	27,079	39,635
6/30/04-05	55,139	78,139	0.613	33,787	47,880
6/30/05-06	62,425	91,425	0.606	37,827	55,401
6/30/06-07	70,922	95,922	0.598	42,415	57,366
6/30/07-08	84,383	115,383	0.637	53,718	73,452
6/30/08-09	99,162	163,262	0.644	63,856	105,133
6/30/09-10	71,047	233,347	0.712	50,604	166,204
6/30/10-11	71,908	239,628	0.737	53,017	176,674
6/30/11-12	96,203	295,203	0.745	71,689	219,981
6/30/12-13	141,815	343,815	0.746	105,756	256,393
6/30/13-14	233,204	465,204	0.784	182,756	364,569
6/30/14-15	425,009	685,009	0.817	347,028	559,323
6/30/15-16	907,275	1,298,175	0.853	773,980	1,107,450
Total	2,838,682	4,943,223		2,187,205	3,786,559
			(7) Total Discount Factor:	0.771	0.766

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	4,936	11,732
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	2,468	5,866
(11) Discounted Value at 6%:	4,660	11,077

NOTES:

(2), (3) From Section 2, Exhibit 2, Page 1, Columns 8, 9

(4) From Section 2, Exhibit 2, Page 9, Column 8

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

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		20,342,230			23,133,858	24,307,507	2,791,628	3,965,277		
6/30/82-83		2,749,332	2,934,786		2,876,090	2,949,460	126,759	200,129		
6/30/83-84		2,655,007	2,836,316		2,694,500	2,850,497	39,493	195,491		
6/30/84-85	142,561	4,280,202	4,815,256	4,392,419	4,392,000	4,719,000	111,798	438,798	3.081	3.310
6/30/85-86	153,298	4,634,091	4,836,240	4,829,124	4,680,000	4,836,000	45,909	201,909	3.053	3.155
6/30/86-87	176,136	6,208,413	6,533,385	6,544,990	6,270,000	6,545,000	61,587	336,587	3.560	3.716
6/30/87-88	206,319	11,686,258	12,932,532	12,334,052	12,334,000	12,674,000	647,742	987,742	5.978	6.143
6/30/88-89	222,806	12,372,981	13,223,603	13,156,925	13,196,932	13,224,000	823,951	851,019	5.923	5.935
6/30/89-90	223,751	11,809,846	12,715,285	12,654,236	12,654,000	12,715,000	844,154	905,154	5.655	5.683
6/30/90-91	210,162	7,830,550	8,470,522	8,465,328	7,987,000	8,065,466	156,450	234,916	3.800	3.838
6/30/91-92	205,241	4,260,079	4,631,945	4,626,937	4,303,000	4,400,000	42,921	139,921	2.097	2.144
6/30/92-93	176,705	3,638,351	3,997,526	3,989,798	3,990,000	3,998,000	351,649	359,649	2.258	2.263
6/30/93-94	173,075	2,508,028	2,803,105	2,795,770	2,796,000	2,803,000	287,972	294,972	1.615	1.620
6/30/94-95	178,317	2,818,005	3,166,616	3,155,687	3,092,880	3,103,660	274,875	285,655	1.734	1.741
6/30/95-96	175,996	1,924,351	2,156,326	2,151,023	2,107,980	2,112,880	183,629	188,529	1.198	1.201
6/30/96-97	190,083	1,571,537	1,750,117	1,749,447	1,714,020	1,715,000	142,483	143,463	0.902	0.902
6/30/97-98	177,278	2,912,109	3,281,983	3,266,367	3,102,700	3,117,900	190,591	205,791	1.750	1.759
6/30/98-99	189,080	1,674,660	1,905,325	1,902,666	1,864,940	1,866,900	190,280	192,240	0.986	0.987
6/30/99-00	194,494	2,313,702	2,619,232	2,611,119	2,558,780	2,566,620	245,078	252,918	1.316	1.320
6/30/00-01	201,568	3,299,797	3,773,014	3,751,136	3,751,000	3,773,000	451,203	473,203	1.861	1.872
6/30/01-02	203,105	2,606,204	3,005,151	2,992,140	2,992,000	3,005,000	385,796	398,796	1.473	1.480
6/30/02-03	202,515	1,795,653	2,049,607	2,052,448	2,050,000	2,052,000	254,347	256,347	1.012	1.013
6/30/03-04	189,588	3,243,734	3,765,402	3,741,739	3,554,900	3,689,700	311,166	445,966	1.875	1.946
6/30/04-05	186,990	2,721,593	3,141,435	3,022,008	3,022,000	3,141,000	300,407	419,407	1.616	1.680
6/30/05-06	193,254	1,859,244	2,175,133	2,216,224	2,175,000	2,216,000	315,756	356,756	1.125	1.147
6/30/06-07	203,359	2,221,812	2,695,785	2,665,662	2,532,700	2,561,200	310,888	339,388	1.245	1.259
6/30/07-08	212,083	1,641,504	2,020,054	2,152,403	1,919,000	2,044,400	277,496	402,896	0.905	0.964
6/30/08-09	204,679	1,920,034	2,427,859	2,481,464	2,428,000	2,481,000	507,966	560,966	1.186	1.212
6/30/09-10	184,688	1,231,427	1,622,460	1,812,061	1,718,000	1,812,000	486,573	580,573	0.930	0.981
6/30/10-11	169,689	1,860,888	2,519,121	2,475,089	2,475,000	2,582,000	614,112	721,112	1.459	1.522
6/30/11-12	177,399	1,632,328	2,273,480	2,349,643	2,273,000	2,408,000	640,672	775,672	1.281	1.357
6/30/12-13	189,252	2,020,578	3,080,048	3,023,509	3,024,000	3,157,000	1,003,422	1,136,422	1.598	1.668
6/30/13-14	199,876	2,150,124	3,714,900	3,548,599	3,549,000	3,808,000	1,398,876	1,657,876	1.776	1.905
6/30/14-15	213,700	1,828,249	4,000,263	3,708,200	3,708,000	4,100,000	1,879,751	2,271,751	1.735	1.919
6/30/15-16	211,829	1,405,951	6,388,130	4,658,101	4,658,000	6,548,000	3,252,049	5,142,049	2.199	3.091
Total	6,138,877	141,628,849	144,261,940	135,276,317	161,578,280	167,948,190	19,949,431	26,319,341		
Tot 6/30/84-16	6,138,877	115,882,281	138,490,839	135,276,317	132,873,832	137,840,726	16,991,551	21,958,445	2.164	2.245

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) Sum of Section 3, Exhibit 1, Page 2, Column 3 and Section 3, Exhibit 1, Page 9, Column 8

(4) From Section 3, Exhibit 1, Page 2, Column 8

(5) From Section 3, Exhibit 1, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Accident Year	Payroll (000's)	Paid Loss Excluding Lump Sum	Paid LDF	Adjstmnt for Extra Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim	Average Age
All Prior Yrs		19,676,550							9	6		87
6/30/82-83		2,655,332	1.019	1.050	2,840,645	94,141	2,934,786		1	1	185,314	89
6/30/83-84		2,245,006	1.029	1.050	2,425,700	410,616	2,836,316		0	0		
6/30/84-85	142,561	3,729,119	1.039	1.100	4,263,347	551,910	4,815,256	3.378	1	1	534,227	74
6/30/85-86	153,298	4,048,163	1.050	1.000	4,249,433	586,807	4,836,240	3.155	0	0		
6/30/86-87	176,136	5,376,022	1.060	1.000	5,699,745	833,640	6,533,385	3.709	0	0		
6/30/87-88	206,319	10,001,236	1.071	1.050	11,244,982	1,687,550	12,932,532	6.268	2	2	621,873	75
6/30/88-89	222,806	10,397,339	1.082	1.000	11,244,997	1,978,605	13,223,603	5.935	3	3	282,553	78
6/30/89-90	223,751	9,772,206	1.092	1.000	10,674,588	2,040,696	12,715,285	5.683	2	2	451,191	75
6/30/90-91	210,162	6,165,086	1.103	1.000	6,801,725	1,668,797	8,470,522	4.030	1	0		
6/30/91-92	205,241	3,230,938	1.114	1.000	3,600,228	1,031,717	4,631,945	2.257	0	0		
6/30/92-93	176,705	2,844,272	1.125	1.000	3,201,060	796,466	3,997,526	2.262	1	1	356,788	64
6/30/93-94	173,075	2,149,444	1.137	1.000	2,443,262	359,842	2,803,105	1.620	2	1	293,819	65
6/30/94-95	178,317	2,341,581	1.148	1.000	2,688,281	478,336	3,166,616	1.776	0	1	346,700	71
6/30/95-96	175,996	1,440,291	1.160	1.000	1,670,079	486,246	2,156,326	1.225	0	0		
6/30/96-97	190,083	1,057,037	1.167	1.000	1,233,034	517,083	1,750,117	0.921	0	0		
6/30/97-98	177,278	2,101,308	1.173	1.000	2,465,883	816,100	3,281,983	1.851	0	0		
6/30/98-99	189,080	1,254,410	1.181	1.000	1,480,882	424,443	1,905,325	1.008	0	0		
6/30/99-00	194,494	1,634,502	1.181	1.000	1,929,987	689,245	2,619,232	1.347	0	0		
6/30/00-01	201,568	2,503,297	1.183	1.000	2,961,754	811,260	3,773,014	1.872	0	0		
6/30/01-02	203,105	2,097,298	1.186	1.000	2,486,363	518,788	3,005,151	1.480	0	0		
6/30/02-03	202,515	1,298,653	1.188	1.000	1,542,643	506,965	2,049,607	1.012	2	1	243,989	45
6/30/03-04	189,588	2,662,734	1.189	1.000	3,165,826	599,576	3,765,402	1.986	0	0		
6/30/04-05	186,990	2,086,593	1.189	1.000	2,481,440	659,995	3,141,435	1.680	1	0		
6/30/05-06	193,254	1,356,494	1.214	1.000	1,646,107	529,025	2,175,133	1.126	1	1	289,614	52
6/30/06-07	203,359	1,791,061	1.246	1.000	2,232,139	463,647	2,695,785	1.326	0	0		
6/30/07-08	212,083	1,303,214	1.265	1.000	1,648,276	371,777	2,020,054	0.952	2	1	345,062	53
6/30/08-09	204,679	1,613,034	1.286	1.000	2,074,704	353,155	2,427,859	1.186	3	3	153,890	47
6/30/09-10	184,688	1,060,427	1.320	1.000	1,400,073	222,387	1,622,460	0.878	1	0		
6/30/10-11	169,689	1,679,758	1.342	1.000	2,254,573	264,548	2,519,121	1.485	4	5	114,963	58
6/30/11-12	177,399	1,451,528	1.379	1.000	2,001,365	272,115	2,273,480	1.282	6	3	183,279	52
6/30/12-13	189,252	1,828,578	1.489	1.000	2,722,939	357,109	3,080,048	1.627	18	10	89,436	53
6/30/13-14	199,876	1,975,124	1.640	1.000	3,239,103	475,797	3,714,900	1.859	53	18	70,221	51
6/30/14-15	213,700	1,815,749	2.045	1.000	3,713,849	286,414	4,000,263	1.872	265	55	34,511	46
6/30/15-16	211,829	1,405,951	3.964	1.000	5,572,684	815,446	6,388,130	3.016		244	17,077	45
Total	6,138,877	120,049,331			121,301,694	22,960,247	144,261,940		378	359		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3), (4) From Section 3, Exhibit 1, Page 7

(5) Based on information from the MA WCRIB

(6) = (3) x (4) x (5)

(7) From Section 3, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss Excluding Lump Sum	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	142,561	2.065	3,729,119	1.039	3,840,509	551,910	4,392,419	3.081	2.694
6/30/85-86	153,298	2.674	4,048,163	1.050	4,242,317	586,807	4,829,124	3.150	2.767
6/30/86-87	176,136	3.352	5,376,022	1.060	5,711,351	833,640	6,544,990	3.716	3.243
6/30/87-88	206,319	4.729	10,001,236	1.071	10,646,503	1,687,550	12,334,052	5.978	5.160
6/30/88-89	222,806	4.650	10,397,339	1.082	11,178,320	1,978,605	13,156,925	5.905	5.017
6/30/89-90	223,751	4.448	9,772,206	1.092	10,613,540	2,040,696	12,654,236	5.656	4.743
6/30/90-91	210,162	3.210	6,165,086	1.103	6,796,530	1,668,797	8,465,328	4.028	3.234
6/30/91-92	205,241	1.730	3,230,938	1.114	3,595,220	1,031,717	4,626,937	2.254	1.752
6/30/92-93	176,705	1.772	2,844,272	1.125	3,193,332	796,466	3,989,798	2.258	1.807
6/30/93-94	173,075	1.376	2,149,444	1.137	2,435,928	359,842	2,795,770	1.615	1.407
6/30/94-95	178,317	1.460	2,341,581	1.148	2,677,351	478,336	3,155,687	1.770	1.501
6/30/95-96	175,996	0.927	1,440,291	1.160	1,664,777	486,246	2,151,023	1.222	0.946
6/30/96-97	190,083	0.646	1,057,037	1.167	1,232,364	517,083	1,749,447	0.920	0.648
6/30/97-98	177,278	1.331	2,101,308	1.173	2,450,267	816,100	3,266,367	1.843	1.382
6/30/98-99	189,080	0.774	1,254,410	1.181	1,478,223	424,443	1,902,666	1.006	0.782
6/30/99-00	194,494	0.965	1,634,502	1.181	1,921,874	689,245	2,611,119	1.343	0.988
6/30/00-01	201,568	1.399	2,503,297	1.183	2,939,876	811,260	3,751,136	1.861	1.458
6/30/01-02	203,105	1.183	2,097,298	1.186	2,473,352	518,788	2,992,140	1.473	1.218
6/30/02-03	202,515	0.771	1,298,653	1.188	1,545,484	506,965	2,052,448	1.013	0.763
6/30/03-04	189,588	1.591	2,662,734	1.189	3,142,164	599,576	3,741,739	1.974	1.657
6/30/04-05	186,990	0.926	2,086,593	1.189	2,362,013	659,995	3,022,008	1.616	1.263
6/30/05-06	193,254	0.973	1,356,494	1.214	1,687,199	529,025	2,216,224	1.147	0.873
6/30/06-07	203,359	1.023	1,791,061	1.246	2,202,015	463,647	2,665,662	1.311	1.083
6/30/07-08	212,083	1.075	1,303,214	1.265	1,780,625	371,777	2,152,403	1.015	0.840
6/30/08-09	204,679	1.131	1,613,034	1.286	2,128,310	353,155	2,481,464	1.212	1.040
6/30/09-10	184,688	1.181	1,060,427	1.320	1,589,674	222,387	1,812,061	0.981	0.861
6/30/10-11	169,689	1.227	1,679,758	1.342	2,210,541	264,548	2,475,089	1.459	1.303
6/30/11-12	177,399	1.284	1,451,528	1.379	2,077,528	272,115	2,349,643	1.324	1.171
6/30/12-13	189,252	1.348	1,828,578	1.489	2,666,400	357,109	3,023,509	1.598	1.409
6/30/13-14	199,876	1.407	1,975,124	1.640	3,072,802	475,797	3,548,599	1.775	1.537
6/30/14-15	213,700	1.470	1,815,749	2.045	3,421,786	286,414	3,708,200	1.735	1.601
6/30/15-16	211,829	1.538	1,405,951	3.964	3,842,655	815,446	4,658,101	2.199	1.814
Total	6,138,877		95,472,444		112,820,827	22,455,490	135,276,317		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 3, Exhibit 1, Page 4, Column 11

(4) From Section 3, Exhibit 1, Page 2, Column 3

(5) From Section 3, Exhibit 1, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) From Section 3, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Exp Ult Loss Excluding Lump Sum	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									2.065	2.065
6/30/85-86									2.674	2.674
6/30/86-87									3.352	3.352
6/30/87-88									4.729	4.729
6/30/88-89									4.650	4.650
6/30/89-90									4.448	4.448
6/30/90-91	210,162	6,801,725	3.236	0.969	3.135	2.772	8.692	0.596	3.220	3.210
6/30/91-92	205,241	3,600,228	1.754	1.063	1.864	2.666	4.969	0.565	1.737	1.730
6/30/92-93	176,705	3,201,060	1.812	1.239	2.245	2.563	5.754	0.504	1.759	1.772
6/30/93-94	173,075	2,443,262	1.412	1.223	1.727	2.465	4.256	0.531	1.363	1.376
6/30/94-95	178,317	2,688,281	1.508	1.212	1.827	2.370	4.330	0.557	1.468	1.460
6/30/95-96	175,996	1,670,079	0.949	1.202	1.141	2.279	2.600	0.584	0.931	0.927
6/30/96-97	190,083	1,233,034	0.649	1.190	0.772	2.191	1.692	0.613	0.651	0.646
6/30/97-98	177,278	2,465,883	1.391	1.175	1.635	2.107	3.444	0.646	1.336	1.331
6/30/98-99	189,080	1,480,882	0.783	1.160	0.908	2.026	1.840	0.681	0.778	0.774
6/30/99-00	194,494	1,929,987	0.992	1.141	1.132	1.948	2.206	0.720	0.970	0.965
6/30/00-01	201,568	2,961,754	1.469	1.112	1.634	1.873	3.061	0.768	1.403	1.399
6/30/01-02	203,105	2,486,363	1.224	1.090	1.335	1.801	2.404	0.815	1.187	1.183
6/30/02-03	202,515	1,542,643	0.762	1.086	0.828	1.732	1.433	0.850	0.776	0.771
6/30/03-04	189,588	3,165,826	1.670	1.086	1.814	1.665	3.021	0.884	1.601	1.591
6/30/04-05	186,990	2,481,440	1.327	1.080	1.433	1.601	2.294	0.926	0.963	0.926
6/30/05-06	193,254	1,646,107	0.852	1.069	0.910	1.539	1.401	0.973	1.002	0.973
6/30/06-07	203,359	2,232,139	1.098	1.057	1.160	1.480	1.717	1.023	1.043	1.023
6/30/07-08	212,083	1,648,276	0.777	1.045	0.813	1.423	1.156	1.075	1.086	1.075
6/30/08-09	204,679	2,074,704	1.014	1.033	1.047	1.369	1.434	1.131	1.132	1.131
6/30/09-10	184,688	1,400,073	0.758	1.029	0.780	1.316	1.027	1.181	1.170	1.181
6/30/10-11	169,689	2,254,573	1.329	1.031	1.369	1.265	1.733	1.227	1.204	1.227
6/30/11-12	177,399	2,001,365	1.128	1.024	1.155	1.217	1.405	1.284	1.248	1.284
6/30/12-13	189,252	2,722,939	1.439	1.015	1.460	1.170	1.708	1.348	1.297	1.348
6/30/13-14	199,876	3,239,103	1.621	1.011	1.638	1.125	1.842	1.407	1.342	1.407
6/30/14-15	213,700	3,713,849	1.738	1.006	1.748	1.082	1.891	1.470	1.388	1.470
6/30/15-16	211,829	5,572,684	2.631	1.000	2.631	1.040	2.736	1.538		1.538
Total	5,014,007	68,658,256								

Trend Last 4 (ex 15-16):	14.5%	Avg 3 (ex 15-16):	1.814
Trend Last 8 (ex 15-16):	11.7%	Avg 5 (ex 15-16):	1.716
Trend Last 12 (ex 15-16):	1.9%	Avg 10 (ex 15-16):	1.531
Prior Selected Trend:	3.0%	Prior Sel Avg:	1.430
Selected Trend:	4.0%	Sel. Loss Cost:	1.600

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 3, Exhibit 1, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCRIB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.960	
(2)	Credibility		42%	
(3)	Average Pmt Trend Statewide		0.960	
(4)	Credibility Weighted Trend		0.960	
		(Low)		(High)
(5)	Selected Range	0.930		0.960
(6)	Incremental Paid for 2016	251,496		251,496
(7)	Estimated Reserve	3,341,298		6,035,893
(8)	Paid to Date (82 & Prior)	19,676,550		19,676,550
(9)	Est Ult Paid for 1982 & Prior	23,017,848		25,712,443

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	319,994	354,337
(11)	Projected Number of Years	7	8
(12)	Estimated Reserve	2,239,961	2,834,697
(13)	Paid to Date (82 & Prior)	19,676,550	19,425,054
(14)	Est Ult Paid for 1982 & Prior	21,916,511	22,259,751
(14a)	Paid Counts During Fiscal Year	6	9
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	22,467,179	23,640,828
(16)	Lump Sum Ultimates	666,679	666,679
(17)	Ult Loss Including Lump Sums	**23,133,858**	**24,307,507**
(18)	Implied Tail	1.142	1.201
(19)	Ult Loss Inc Lump Sums @ 6/15	23,699,323	25,021,982

NOTES:

(1) From Section 3, Exhibit 1, Page 6
(2) = (Average of Section 3, Exhibit 1, Page 6, Column 3 / 3,000,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 3, Exhibit 1, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 3, Exhibit 1, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) From Section 3, Exhibit 1, Page 9, Column 13
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	750,775	13.529			
1993	2	716,997	13.483	0.955		
1994	3	790,631	13.581	1.103		
1995	4	675,209	13.423	0.854		
1996	5	721,864	13.490	1.069		
1997	6	762,764	13.545	1.057		
1998	7	718,856	13.485	0.942		
1999	8	630,481	13.354	0.877		
2000	9	625,893	13.347	0.993	n =	25
2001	10	614,002	13.328	0.981	S(x) =	50,100
2002	11	594,569	13.296	0.968	S(x-sq) =	100,401,700
2003	12	551,328	13.220	0.927	S(xy) =	658,449
2004	13	536,825	13.193	0.974	S(y) =	329
2005	14	518,060	13.158	0.965	D =	32,500
2006	15	465,230	13.050	0.898	slope =	-0.042
2007	16	463,442	13.046	0.996	Avg Trend =	0.958
2008	17	390,409	12.875	0.842		
2009	18	394,388	12.885	1.010		
2010	19	396,721	12.891	1.006		
2011	20	371,480	12.825	0.936		
2012	21	370,117	12.822	0.996		
2013	22	354,524	12.779	0.958		
2014	23	352,103	12.772	0.993		
2015	24	356,384	12.784	1.012		
2016	25	251,496	12.435	0.706		
					Selected Trend:	**0.960**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 0.706 = 251496 / 356384

Commonwealth of Massachusetts Workers Compensation
Department of Mental Health - Cluster 2
INDEMNITY
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	79,308	192,487	287,043	366,841	453,896	544,549	640,359	749,442	914,819	1,077,281	1,197,004	1,318,238	1,411,761	1,487,347	1,551,200	1,663,300	1,725,578	1,794,915	1,844,320	1,889,378	1,935,146	1,980,854	2,027,803	2,076,694	2,127,762	2,181,186	2,236,941	2,293,398	2,349,618	2,407,755	2,467,791	2,528,627	2,590,871	2,655,332
June-84	140,777	341,678	509,522	651,169	805,697	966,187	1,136,616	1,274,005	1,376,021	1,469,295	1,531,586	1,571,197	1,574,113	1,632,297	1,648,271	1,715,119	1,788,667	1,866,433	1,948,603	2,027,969	2,039,380	2,061,132	2,116,425	2,146,711	2,178,653	2,211,990	2,245,006	2,245,006	2,245,006	2,245,006	2,245,006	2,245,006	2,245,006	
June-85	229,548	557,132	830,815	1,036,782	1,282,444	1,536,673	1,759,380	1,967,113	2,201,587	2,336,765	2,327,938	2,488,898	2,562,953	2,635,303	2,683,281	2,681,236	2,703,322	2,765,472	2,829,392	2,893,225	2,958,066	3,025,906	3,097,014	3,171,404	3,249,041	3,327,655	3,405,939	3,486,893	3,570,488	3,628,593	3,677,977	3,729,119		
June-86	424,946	1,031,378	1,515,527	1,911,756	2,265,456	2,545,075	2,747,857	2,913,298	3,035,997	3,203,939	3,246,126	3,354,664	3,430,712	3,506,894	3,646,690	3,769,482	3,845,436	3,884,426	3,884,426	3,901,838	3,936,022	3,971,963	4,009,622	4,048,163	4,048,163	4,048,163	4,048,163	4,048,163	4,048,163	4,048,163	4,048,163			
June-87	556,509	1,350,692	1,993,369	2,579,183	3,116,291	3,554,448	3,811,881	4,007,455	4,213,271	4,383,210	4,532,492	4,672,974	4,887,827	5,019,452	5,138,398	5,229,397	5,303,153	5,343,074	5,369,509	5,376,022	5,376,022	5,376,022	5,376,022	5,376,022	5,376,022	5,376,022	5,376,022	5,376,022	5,376,022	5,376,022				
June-88	996,188	2,332,317	3,514,867	4,556,262	5,500,101	6,017,634	6,366,291	6,722,900	7,030,156	7,360,513	7,651,811	7,905,775	8,097,655	8,296,173	8,504,343	8,714,431	8,884,786	9,012,909	9,145,701	9,284,112	9,391,001	9,490,888	9,559,720	9,628,264	9,699,144	9,772,337	9,846,507	9,922,648	10,001,236					
June-89	974,368	2,808,156	4,300,397	5,491,438	6,395,798	6,912,277	7,273,583	7,577,849	7,816,082	8,040,709	8,232,999	8,388,997	8,540,736	8,681,850	8,813,773	8,957,148	9,087,424	9,215,619	9,374,489	9,492,897	9,614,904	9,738,023	9,864,181	9,984,126	10,084,005	10,185,647	10,289,641	10,397,339						
June-90	1,353,410	3,008,842	4,338,167	5,277,757	5,970,429	6,408,269	6,735,493	6,970,610	7,237,879	7,548,184	7,808,304	7,989,794	8,127,173	8,265,835	8,400,915	8,532,029	8,676,814	8,783,514	8,912,207	9,013,337	9,115,739	9,217,710	9,323,158	9,432,048	9,542,392	9,655,288	9,772,206							
June-91	1,118,653	2,593,016	3,552,946	4,081,060	4,371,249	4,603,681	4,879,272	5,042,637	5,246,506	5,361,660	5,458,410	5,545,863	5,634,530	5,719,796	5,801,980	5,891,283	5,939,454	5,965,760	5,993,853	6,022,299	6,050,626	6,079,918	6,110,167	6,140,819	6,165,086	6,165,086								
June-92	779,443	1,600,490	2,051,414	2,363,890	2,560,991	2,732,954	2,816,302	2,946,286	2,972,351	3,048,807	3,074,042	3,100,183	3,111,601	3,122,928	3,137,949	3,150,571	3,201,317	3,230,938	3,230,938	3,230,938	3,230,938	3,230,938	3,230,938	3,230,938	3,230,938	3,230,938								
June-93	508,042	1,139,423	1,618,359	1,905,411	2,126,599	2,257,595	2,393,075	2,425,099	2,385,748	2,412,183	2,438,986	2,465,788	2,494,233	2,522,478	2,551,473	2,581,602	2,612,495	2,644,362	2,676,330	2,710,104	2,745,340	2,778,023	2,810,764	2,844,272										
June-94	377,925	709,441	935,174	1,117,965	1,249,550	1,323,162	1,417,563	1,481,985	1,569,098	1,629,814	1,690,715	1,751,099	1,818,321	1,857,805	1,886,745	1,916,420	1,946,311	1,976,077	2,006,857	2,038,037	2,070,230	2,117,149	2,149,444										
June-95	574,439	1,025,079	1,426,023	1,674,484	1,757,816	1,829,216	1,892,841	1,966,438	2,053,313	2,075,609	2,139,480	2,201,203	2,270,427	2,322,083	2,335,644	2,336,631	2,340,671	2,340,974	2,341,126	2,341,429	2,341,429	2,341,581											
June-96	465,550	766,030	964,996	1,197,748	1,382,594	1,418,297	1,422,506	1,435,178	1,435,753	1,438,193	1,438,193	1,438,193	1,438,193	1,438,193	1,438,193	1,438,193	1,438,931	1,440,291	1,440,291	1,440,291	1,440,291												
June-97	368,317	714,320	867,272	851,009	922,681	963,841	1,008,538	1,037,840	1,056,559	1,056,947	1,057,037	1,057,037	1,057,037	1,057,037	1,057,037	1,057,037	1,057,037	1,057,037	1,057,037	1,057,037													
June-98	492,131	922,570	1,176,288	1,346,558	1,538,911	1,686,620	1,733,801	1,756,573	1,858,553	1,897,738	1,938,454	2,001,913	2,059,542	2,101,308	2,101,308	2,101,308	2,101,308	2,101,308	2,101,308														
June-99	519,180	827,646	1,011,258	1,112,460	1,171,394	1,215,503	1,243,288	1,247,060	1,247,060	1,249,270	1,249,270	1,254,410	1,254,410	1,254,410	1,254,410	1,254,410	1,254,410	1,254,410	1,254,410														
June-00	421,812	853,733	1,204,737	1,330,009	1,450,814	1,536,528	1,585,725	1,622,250	1,634,502	1,634,502	1,634,502	1,634,502	1,634,502	1,634,502	1,634,502	1,634,502	1,634,502																
June-01	729,752	1,342,599	1,726,067	1,967,587	2,098,934	2,195,511	2,276,106	2,353,436	2,394,597	2,417,073	2,440,162	2,469,209	2,492,651	2,503,297	2,503,297	2,503,297																	
June-02	623,060	1,199,282	1,469,081	1,634,403	1,755,795	1,921,999	2,013,718	2,051,869	2,088,811	2,097,298	2,097,298	2,097,298	2,097,298	2,097,298	2,097,298																		
June-03	598,151	1,030,113	1,208,133	1,287,181	1,329,302	1,354,993	1,378,440	1,386,422	1,396,038	1,404,611	1,404,724	1,297,452	1,298,408	1,298,653																			
June-04	770,179	1,494,135	1,959,406	2,261,994	2,448,308	2,553,905	2,614,936	2,661,897	2,661,897	2,661,897	2,662,734	2,662,734	2,662,734																				
June-05	665,795	1,274,934	1,639,401	1,834,908	1,949,257	2,006,584	2,055,842	2,083,828	2,083,828	2,083,828	2,086,593	2,086,593																					
June-06	602,391	1,043,862	1,212,582	1,295,959	1,330,737	1,350,327	1,353,060	1,354,447	1,354,589	1,355,634	1,356,494																						
June-07	589,461	977,401	1,280,907	1,496,099	1,629,703	1,702,117	1,772,404	1,791,061	1,791,061	1,791,061																							
June-08	619,287	959,312	1,100,546	1,186,728	1,222,576	1,245,348	1,259,889	1,293,854	1,303,214																								
June-09	633,064	1,071,264	1,269,944	1,347,802	1,449,944	1,535,542	1,576,741	1,613,034																									
June-10	415,006	709,896	895,282	1,025,770	1,055,921	1,060,427	1,060,427																										
June-11	652,304	1,099,134	1,404,624	1,565,671	1,663,173	1,679,758																											
June-12	603,523	1,201,631	1,349,652	1,421,088	1,451,528																												
June-13	652,867	1,253,353	1,608,152	1,828,578																													
June-14	737,949	1,535,219	1,975,124																														
June-15	1,026,870	1,815,749																															
June-16	1,405,951																																

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.427	1.491	1.278	1.237	1.200	1.176	1.170	1.221	1.178	1.111	1.101	1.071	1.054	1.043	1.072	1.037	1.040	1.028	1.024	1.024	1.024	1.024	1.024	1.025	1.025	1.026	1.025	1.025	1.025	1.025	1.025	1.025	1.025
June-84	2.427	1.491	1.278	1.237	1.199	1.176	1.121	1.080	1.068	1.042	1.026	1.002	1.037	1.010	1.041	1.043	1.043	1.044	1.041	1.006	1.011	1.027	1.014	1.015	1.015	1.015	1.000	1.000	1.000	1.000	1.000	1.000	
June-85	2.427	1.491	1.248	1.237	1.198	1.145	1.118	1.119	1.061	0.996	1.069	1.030	1.028	1.018	0.999	1.008	1.023	1.023	1.023	1.022	1.023	1.023	1.024	1.024	1.024	1.024	1.024	1.024	1.016	1.014	1.014		
June-86	2.427	1.469	1.261	1.185	1.123	1.080	1.060	1.042	1.055	1.013	1.033	1.023	1.022	1.040	1.034	1.020	1.010	1.000	1.004	1.009	1.009	1.009	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
June-87	2.427	1.476	1.294	1.208	1.141	1.072	1.051	1.051	1.040	1.034	1.031	1.046	1.027	1.024	1.018	1.014	1.008	1.005	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
June-88	2.341	1.507	1.296	1.207	1.094	1.058	1.056	1.046	1.047	1.040	1.033	1.024	1.025	1.025	1.025	1.020	1.014	1.015	1.015	1.012	1.011	1.007	1.007	1.007	1.008	1.008	1.008	1.008					
June-89	2.882	1.531	1.277	1.165	1.081	1.052	1.042	1.031	1.029	1.024	1.019	1.018	1.017	1.015	1.016	1.015	1.014	1.017	1.013	1.013	1.013	1.013	1.012	1.010	1.010	1.010	1.010						
June-90	2.223	1.442	1.217	1.131	1.073	1.051	1.035	1.038	1.043	1.034	1.023	1.017	1.017	1.016	1.016	1.017	1.012	1.015	1.011	1.011	1.011	1.011	1.012	1.012	1.012	1.012							
June-91	2.318	1.370	1.149	1.071	1.053	1.060	1.033	1.040	1.022	1.018	1.016	1.016	1.015	1.014	1.015	1.008	1.004	1.005	1.005	1.005	1.005	1.005	1.005	1.004	1.000								
June-92	2.053	1.282	1.152	1.083	1.067	1.030	1.046	1.009	1.026	1.008	1.009	1.004	1.004	1.005	1.004	1.016	1.009	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
June-93	2.243	1.420	1.177	1.116	1.062	1.060	1.013	0.984	1.011	1.011	1.011	1.012	1.011	1.011	1.012	1.012	1.012	1.012	1.013	1.013	1.012	1.012	1.012										
June-94	1.877	1.318	1.195	1.118	1.059	1.071	1.045	1.059	1.039	1.037	1.036	1.038	1.022	1.016	1.016	1.016	1.015	1.016	1.016	1.016	1.023	1.015											
June-95	1.784	1.391	1.174	1.050	1.041	1.035	1.039	1.044	1.011	1.031	1.029	1.031	1.023	1.006	1.000	1.002	1.000	1.000	1.000	1.000	1.000												
June-96	1.645	1.260	1.241	1.154	1.026	1.003	1.009	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.001	1.000	1.000	1.000													
June-97	1.939	1.214	0.981	1.084	1.045	1.046	1.029	1.018	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
June-98	1.875	1.275	1.145	1.143	1.096	1.028	1.013	1.058	1.021	1.021	1.033	1.029	1.020	1.000	1.000	1.000	1.000	1.000															
June-99	1.594	1.222	1.100	1.053	1.038	1.023	1.003	1.000	1.002	1.000	1.004	1.000	1.000	1.000	1.000	1.000	1.000																
June-00	2.024	1.411	1.104	1.091	1.059	1.032	1.023	1.008	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																	
June-01	1.840	1.286	1.140	1.067	1.046	1.037	1.034	1.017	1.009	1.010	1.012	1.009	1.004	1.000	1.000																		
June-02	1.925	1.225	1.113	1.074	1.095	1.048	1.019	1.018	1.004	1.000	1.000	1.000	1.000	1.000																			
June-03	1.722	1.173	1.065	1.033	1.019	1.017	1.006	1.007	1.006	1.000	0.924	1.001	1.000																				
June-04	1.940	1.311	1.154	1.082	1.043	1.024	1.018	1.000	1.000	1.000	1.000	1.000																					
June-05	1.915	1.286	1.119	1.062	1.029	1.025	1.014	1.000	1.000	1.001	1.000																						
June-06	1.733	1.162	1.069	1.027	1.015	1.002	1.001	1.000	1.001	1.001																							
June-07	1.658	1.311	1.168	1.089	1.044	1.041	1.011	1.000	1.000																								
June-08	1.549	1.147	1.078	1.030	1.019	1.012	1.027	1.007																									
June-09	1.692	1.185	1.061	1.076	1.059	1.027	1.023																										
June-10	1.711	1.261	1.146	1.029	1.004	1.000																											
June-11	1.685	1.278	1.115	1.062	1.010																												
June-12	1.991	1.123	1.053	1.021																													
June-13	1.920	1.283	1.137																														
June-14	2.080	1.287																															
June-15	1.768																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.002	1.324	1.161	1.107	1.070	1.051	1.039	1.035	1.027	1.018	1.018	1.017	1.015	1.012	1.014	1.013	1.012	1.011	1.011	1.009	1.011	1.012	1.011	1.010	1.010	1.012	1.010	1.009	1.008	1.010	1.013	1.012	1.025	
Latest 5	1.889	1.246	1.102	1.044	1.027	1.016	1.015	1.001	1.001	1.000	0.987	1.002	1.001	1.000	1.000	1.000	1.000	1.003	1.006	1.006	1.008	1.009	1.008	1.007	1.006	1.006	1.008	1.006	1.008					
Latest 3	1.923	1.231	1.102	1.038	1.024	1.013	1.020	1.002	1.000	1.001	0.975	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.005	1.012	1.009	1.006	1.005	1.007	1.010	1.006	1.003	1.005	1.005	1.007			
Volume Wtd																																		
All Yrs	2.009	1.340	1.175	1.114	1.071	1.050	1.038	1.033	1.029	1.021	1.020	1.019	1.017	1.015	1.016	1.014	1.012	1.012	1.011	1.009	1.010	1.010	1.010	1.008	1.009	1.010	1.009	1.008	1.007	1.009	1.013	1.013	1.025	
Latest 5	1.880	1.247	1.101	1.045	1.029	1.019	1.015	1.001	1.001	1.000	0.993	1.002	1.001	1.000	1.000	1.000	1.000	1.003	1.007	1.006	1.007	1.009	1.009	1.008	1.007	1.008	1.008	1.006	1.007					
Latest 3	1.904	1.236	1.104	1.039	1.026	1.015	1.019	1.002	1.000	1.001	0.983	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.006	1.011	1.008	1.005	1.007	1.008	1.010	1.007	1.004	1.004	1.005	1.013			

Dev Factor Selection																																		
Industry 1	2.869	1.531	1.210	1.100	1.034	1.024	1.017	1.007	1.008	1.005	1.005	1.013	1.002	1.003	1.004	1.004	1.003	1.003																
Industry 2		1.813	1.291	1.118	1.066	1.025	1.021	1.011	1.007	1.003	1.008	1.005	1.005	1.003	1.003	1.004	1.006	1.002	1.004	1.004														
Prior	*1.961*	*1.223*	*1.088*	*1.080*	*1.028*	*1.025*	*1.026*	*1.017*	*1.016*	*1.027*	*1.021*	*1.003*	*1.005*	*1.002*	*1.002*	*1.002*	*1.004*	*1.006*	*1.006*	*1.006*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.022*		
Selected	1.938	1.247	1.101	1.080	1.027	1.017	1.026	1.017	1.015	1.027	1.020	1.000	1.001	1.002	1.002	1.002	1.000	1.006	1.006	1.006	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.019
FacToUlt	3.964	2.045	1.640	1.489	1.379	1.342	1.320	1.286	1.265	1.246	1.214	1.189	1.189	1.188	1.186	1.183	1.181	1.181	1.173	1.167	1.160	1.148	1.137	1.125	1.114	1.103	1.092	1.082	1.071	1.060	1.050	1.039	1.029	1.019
Percent of Ult	25.2%	48.9%	61.0%	67.2%	72.5%	74.5%	75.7%	77.7%	79.1%	80.2%	82.4%	84.1%	84.1%	84.2%	84.4%	84.5%	84.7%	84.7%	85.2%	85.7%	86.2%	87.1%	88.0%	88.9%	89.7%	90.6%	91.5%	92.5%	93.4%	94.3%	95.3%	96.2%	97.2%	98.2%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	23,699,323	25,021,982	23,133,858	24,307,507	(565,465)	-2.4%	(714,475)	-2.9%
6/30/82-83	2,816,073	2,887,912	2,876,090	2,949,460	60,017	2.1%	61,548	2.1%
6/30/83-84	2,700,916	2,857,285	2,694,500	2,850,497	(6,416)	-0.2%	(6,788)	-0.2%
6/30/84-85	4,349,000	4,673,000	4,392,000	4,719,000	43,000	1.0%	46,000	1.0%
6/30/85-86	4,680,000	4,848,000	4,680,000	4,836,000	0	0.0%	(12,000)	-0.2%
6/30/86-87	6,270,000	6,560,000	6,270,000	6,545,000	0	0.0%	(15,000)	-0.2%
6/30/87-88	12,281,000	12,618,000	12,334,000	12,674,000	53,000	0.4%	56,000	0.4%
6/30/88-89	13,113,196	13,138,000	13,196,932	13,224,000	83,736	0.6%	86,000	0.7%
6/30/89-90	12,564,000	12,618,000	12,654,000	12,715,000	90,000	0.7%	97,000	0.8%
6/30/90-91	7,987,000	8,065,466	7,987,000	8,065,466	0	0.0%	0	0.0%
6/30/91-92	4,303,000	4,410,000	4,303,000	4,400,000	0	0.0%	(10,000)	-0.2%
6/30/92-93	3,962,000	3,969,000	3,990,000	3,998,000	28,000	0.7%	29,000	0.7%
6/30/93-94	2,767,000	2,773,000	2,796,000	2,803,000	29,000	1.0%	30,000	1.1%
6/30/94-95	3,100,720	3,110,520	3,092,880	3,103,660	(7,840)	-0.3%	(6,860)	-0.2%
6/30/95-96	2,107,000	2,111,900	2,107,980	2,112,880	980	0.0%	980	0.0%
6/30/96-97	1,714,020	1,715,000	1,714,020	1,715,000	0	0.0%	0	0.0%
6/30/97-98	3,105,550	3,117,900	3,102,700	3,117,900	(2,850)	-0.1%	0	0.0%
6/30/98-99	1,863,960	1,864,940	1,864,940	1,866,900	980	0.1%	1,960	0.1%
6/30/99-00	2,559,760	2,565,640	2,558,780	2,566,620	(980)	0.0%	980	0.0%
6/30/00-01	3,749,000	3,768,000	3,751,000	3,773,000	2,000	0.1%	5,000	0.1%
6/30/01-02	2,992,000	3,003,000	2,992,000	3,005,000	0	0.0%	2,000	0.1%
6/30/02-03	2,055,000	2,059,000	2,050,000	2,052,000	(5,000)	-0.2%	(7,000)	-0.3%
6/30/03-04	3,572,950	3,708,320	3,554,900	3,689,700	(18,050)	-0.5%	(18,620)	-0.5%
6/30/04-05	3,079,000	3,212,000	3,022,000	3,141,000	(57,000)	-1.9%	(71,000)	-2.2%
6/30/05-06	2,234,000	2,283,000	2,175,000	2,216,000	(59,000)	-2.6%	(67,000)	-2.9%
6/30/06-07	2,582,100	2,613,450	2,532,700	2,561,200	(49,400)	-1.9%	(52,250)	-2.0%
6/30/07-08	1,931,350	2,067,200	1,919,000	2,044,400	(12,350)	-0.6%	(22,800)	-1.1%
6/30/08-09	2,437,000	2,492,000	2,428,000	2,481,000	(9,000)	-0.4%	(11,000)	-0.4%
6/30/09-10	1,772,000	1,867,000	1,718,000	1,812,000	(54,000)	-3.0%	(55,000)	-2.9%
6/30/10-11	2,527,000	2,673,000	2,475,000	2,582,000	(52,000)	-2.1%	(91,000)	-3.4%
6/30/11-12	2,398,000	2,481,000	2,273,000	2,408,000	(125,000)	-5.2%	(73,000)	-2.9%
6/30/12-13	2,964,000	3,113,000	3,024,000	3,157,000	60,000	2.0%	44,000	1.4%
6/30/13-14	3,116,000	3,402,000	3,549,000	3,808,000	433,000	13.9%	406,000	11.9%
6/30/14-15	3,860,000	4,784,000	3,708,000	4,100,000	(152,000)	-3.9%	(684,000)	-14.3%
6/30/15-16								
Total	157,212,918	162,451,515	156,920,280	161,400,190	(292,638)	-0.2%	(1,051,325)	-0.6%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 3, Exhibit 1, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Calculation of Ultimate Lump Sum Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Accident Year	Paid Loss Excluding Lump Sum	Implied Cumulative LDF	Ult Loss Excluding Lump Sum	Selected Incr Lump Sum % Outstdg	Cumulative Lump Sum % Outstdg	Total Lump Sum Outstdg	Paid Lump Sum to Date	Est Ult Lump Sum - Incr Method	Ultimate Lump Sum Percentage	Lump Sum LDF	Est Ult Lump Sum - Paid Method	Selected Est Ultimate Lump Sums	Prior Est Ultimate Lump Sums
All Prior Yrs	19,676,550	1.172	23,054,004	0.0%	0.0%	0	665,680	665,680	2.9%	1.003	667,677	666,679	666,679
6/30/82-83	2,655,332	1.070	2,840,645	0.0%	0.0%	0	94,000	94,000	3.3%	1.003	94,282	94,141	94,141
6/30/83-84	2,245,006	1.080	2,425,700	0.0%	0.0%	0	410,001	410,001	16.9%	1.003	411,231	410,616	410,616
6/30/84-85	3,729,119	1.143	4,263,347	0.0%	0.0%	0	551,083	551,083	12.9%	1.003	552,736	551,910	551,910
6/30/85-86	4,048,163	1.050	4,249,433	0.0%	0.0%	0	585,928	585,928	13.8%	1.003	587,686	586,807	586,807
6/30/86-87	5,376,022	1.060	5,699,745	0.0%	0.0%	0	832,391	832,391	14.6%	1.003	834,888	833,640	833,640
6/30/87-88	10,001,236	1.124	11,244,982	0.0%	0.0%	0	1,685,022	1,685,022	15.0%	1.003	1,690,077	1,687,550	1,687,550
6/30/88-89	10,397,339	1.082	11,244,997	0.0%	0.0%	0	1,975,642	1,975,642	17.6%	1.003	1,981,569	1,978,605	1,978,605
6/30/89-90	9,772,206	1.092	10,674,588	0.0%	0.0%	0	2,037,640	2,037,640	19.1%	1.003	2,043,753	2,040,696	2,041,718
6/30/90-91	6,165,086	1.103	6,801,725	0.0%	0.0%	0	1,665,464	1,665,464	24.5%	1.004	1,672,131	1,668,797	1,669,633
6/30/91-92	3,230,938	1.114	3,600,228	0.0%	0.0%	0	1,029,141	1,029,141	28.6%	1.005	1,034,294	1,031,717	1,032,235
6/30/92-93	2,844,272	1.125	3,201,060	0.0%	0.0%	0	794,079	794,079	24.8%	1.006	798,853	796,466	796,865
6/30/93-94	2,149,444	1.137	2,443,262	0.0%	0.0%	0	358,584	358,584	14.7%	1.007	361,101	359,842	360,023
6/30/94-95	2,341,581	1.148	2,688,281	0.0%	0.0%	0	476,424	476,424	17.7%	1.008	480,247	478,336	478,576
6/30/95-96	1,440,291	1.160	1,670,079	0.0%	0.0%	0	484,060	484,060	29.0%	1.009	488,433	486,246	486,490
6/30/96-97	1,057,037	1.167	1,233,034	0.0%	0.0%	0	514,500	514,500	41.7%	1.010	519,667	517,083	517,863
6/30/97-98	2,101,308	1.173	2,465,883	0.0%	0.0%	0	810,801	810,801	32.9%	1.013	821,400	816,100	819,513
6/30/98-99	1,254,410	1.181	1,480,882	0.0%	0.0%	338	420,250	420,588	28.4%	1.019	428,298	424,443	427,088
6/30/99-00	1,634,502	1.181	1,929,987	0.1%	0.2%	2,930	679,200	682,130	35.3%	1.025	696,360	689,245	691,865
6/30/00-01	2,503,297	1.183	2,961,754	0.0%	0.2%	4,497	796,500	800,997	27.0%	1.031	821,524	811,260	812,075
6/30/01-02	2,097,298	1.186	2,486,363	0.0%	0.2%	3,775	508,906	512,681	20.6%	1.031	524,895	518,788	521,078
6/30/02-03	1,298,653	1.188	1,542,643	0.1%	0.3%	4,315	497,000	501,315	32.5%	1.031	512,614	506,965	510,969
6/30/03-04	2,662,734	1.189	3,165,826	0.1%	0.4%	12,905	581,000	593,905	18.8%	1.042	605,246	599,576	606,648
6/30/04-05	2,086,593	1.189	2,481,440	0.0%	0.4%	10,115	635,000	645,115	26.0%	1.063	674,875	659,995	670,337
6/30/05-06	1,356,494	1.214	1,646,107	0.2%	0.6%	9,225	502,750	511,975	31.1%	1.086	546,076	529,025	538,256
6/30/06-07	1,791,061	1.246	2,232,139	0.2%	0.8%	16,974	430,751	447,725	20.1%	1.113	479,569	463,647	475,005
6/30/07-08	1,303,214	1.265	1,648,276	0.2%	1.0%	15,830	338,290	354,120	21.5%	1.151	389,434	371,777	360,621
6/30/08-09	1,613,034	1.286	2,074,704	0.4%	1.4%	28,225	307,000	335,225	16.2%	1.209	371,084	353,155	344,580
6/30/09-10	1,060,427	1.320	1,400,073	1.2%	2.6%	35,848	171,000	206,848	14.8%	1.391	237,926	222,387	233,546
6/30/10-11	1,679,758	1.342	2,254,573	1.3%	3.9%	87,581	181,130	268,712	11.9%	1.438	260,385	264,548	280,973
6/30/11-12	1,451,528	1.379	2,001,365	0.4%	4.3%	86,525	180,800	267,325	13.4%	1.532	276,905	272,115	251,011
6/30/12-13	1,828,578	1.489	2,722,939	2.0%	6.4%	173,533	192,000	365,533	13.4%	1.816	348,685	357,109	394,577
6/30/13-14	1,975,124	1.640	3,239,103	2.8%	9.1%	295,750	175,000	470,750	14.5%	2.748	480,845	475,797	233,085
6/30/14-15	1,815,749	2.045	3,713,849	2.9%	12.1%	447,799	12,500	460,299	12.4%	9.002	112,529	286,414	619,021
6/30/15-16	1,405,951	3.964	5,572,684	2.6%	14.6%	815,446	0	815,446	14.6%	42.086	0	815,446	
Total	120,049,331		144,355,697			2,051,612	21,579,518	23,631,130	16.4%		22,807,274	23,626,925	22,983,597

NOTES:

(2) From Section 3, Exhibit 1, Page 2, Column 3
(3) = (4) / (2)
(4) From Section 3, Exhibit 1, Page 2, Column 6
(5) From Section 3, Exhibit 1, Page 11
(6) Downward sum of (5)
(7) = (6) x (4)
(8) From Section 3, Exhibit 1, Page 10
(9) = (7) + (8)
(10) = (9) / (4)
(11) From Section 3, Exhibit 1, Page 12
(12) = (8) x (11)
(13) Selected based on (9) and (12)
(14) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts Workers Compensation
Department of Mental Health - Cluster 2
INDEMNITY
Lump Sum Development
Incremental Lump Sum Payments

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0	0	0	0	0	0	0	0	0	20,000	46,500	35,000	0	73,500	50,000	69,180	0	0	97,000	198,000	0	0	0	26,500	25,000	25,000	0	0	0	0	0	0	0	0	0
Jun-83	0	0	0	0	0	0	0	15,000	0	20,000	24,000	35,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	0	0	0	0	0	0	0	42,000	0	70,000	40,000	10,001	48,000	0	50,000	0	0	0	0	0	0	0	0	0	0	0	150,000	0	0	0	0	0	0		
Jun-85	0	0	0	25,000	0	28,000	0	31,500	45,000	116,583	190,000	25,000	0	0	0	54,500	35,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Jun-86	0	0	22,500	27,000	52,500	10,000	24,428	133,500	166,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150,000	0	0	0	0	0	0	0				
Jun-87	0	0	14,910	16,000	12,500	60,000	255,275	85,000	106,206	0	27,500	25,000	30,000	90,000	70,000	0	0	40,000	0	0	0	0	0	0	0	0	0	0	0	0					
Jun-88	0	17,171	21,420	31,841	231,000	272,884	239,000	113,000	90,000	20,000	53,826	87,507	227,463	0	19,910	0	36,667	25,000	48,333	0	0	150,000	0	0	0	0	0	0	0						
Jun-89	0	79,840	44,000	108,000	417,491	668,500	334,500	165,000	6,500	16,500	57,811	0	0	52,500	0	0	0	0	20,550	4,450	0	0	0	0	0	0	0	0							
Jun-90	0	39,218	184,450	480,000	338,500	235,500	155,000	60,000	65,793	0	128,678	106,000	7,500	31,000	31,000	0	0	50,125	124,876	0	0	0	0	0	0	0	0								
Jun-91	0	23,609	651,500	370,355	182,000	135,000	97,000	6,000	0	75,000	90,000	0	0	0	35,000	0	0	0	0	0	0	0	0	0	0	0									
Jun-92	0	341,000	83,230	201,910	88,000	23,000	125,000	55,000	75,000	0	0	0	0	0	0	0	0	37,000	1	0	0	0	0	0	0										
Jun-93	23,000	109,000	142,400	120,500	84,000	161,300	42,879	0	93,000	0	0	0	0	0	0	0	0	18,000	0	0	0	0	0	0											
Jun-94	5,000	85,000	44,300	28,284	37,000	0	46,000	63,000	0	0	0	0	0	25,000	25,000	0	0	0	0	0	0	0	0												
Jun-95	12,000	35,000	45,000	142,024	68,400	16,500	40,000	0	50,000	25,000	0	0	0	0	42,500	0	0	0	0	0	0	0													
Jun-96	0	90,000	144,500	10,000	77,560	27,000	0	100,000	0	15,000	20,000	0	0	0	0	0	0	0	0	0	0														
Jun-97	0	76,500	124,000	215,000	0	0	0	15,000	0	0	84,000	0	0	0	0	0	0	0	0	0															
Jun-98	53,300	122,501	318,000	16,000	33,091	127,909	20,000	20,000	0	0	0	0	50,000	50,000	0	0	0	0	0																
Jun-99	48,000	52,250	115,000	130,000	0	7,459	37,541	30,000	0	0	0	0	0	0	0	0	0	0																	
Jun-00	20,500	255,500	125,500	82,000	65,200	27,500	62,000	26,000	15,000	0	0	0	0	0	0	0	0																		
Jun-01	45,000	221,500	170,000	132,500	67,500	77,500	12,500	20,000	50,000	0	0	0	0	0	0	0																			
Jun-02	0	75,000	68,000	62,100	52,950	32,000	144,721	35,000	20,135	19,000	0	0	0	0	0																				
Jun-03	20,000	30,000	107,000	142,500	137,500	0	0	0	0	60,000	0	0	0	0																					
Jun-04	0	28,000	54,000	106,000	132,000	215,000	0	46,000	0	0	0	0	0																						
Jun-05	0	50,787	151,713	171,500	107,000	25,000	39,000	90,000	0	0	0	0																							
Jun-06	0	18,000	261,750	170,500	32,500	20,000	0	0	0	0	0																								
Jun-07	10,000	58,500	66,250	51,001	95,000	0	0	150,000	0	0																									
Jun-08	17,730	170,000	22,500	34,500	40,000	0	31,000	0	22,560																										
Jun-09	35,000	85,000	124,500	25,000	0	0	0	37,500																											
Jun-10	0	30,000	6,000	110,000	25,000	0	0																												
Jun-11	8,500	28,530	28,000	116,100	0	0																													
Jun-12	0	5,500	125,300	0	50,000																														
Jun-13	0	75,000	64,765	52,235																															
Jun-14	0	7,850	167,150																																
Jun-15	0	12,500																																	
Jun-16	0																																		

Cumulative Lump Sum Payments

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	0	0	20,000	66,500	101,500	101,500	175,000	225,000	294,180	294,180	294,180	391,180	589,180	589,180	589,180	589,180	615,680	640,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680
Jun-83	0	0	0	0	0	0	0	15,000	15,000	35,000	59,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000		
Jun-84	0	0	0	0	0	0	0	42,000	42,000	112,000	152,000	162,001	210,001	210,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	410,001	410,001	410,001	410,001	410,001	410,001	410,001			
Jun-85	0	0	0	25,000	25,000	53,000	53,000	84,500	129,500	246,083	436,083	461,083	461,083	461,083	461,083	515,583	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083			
Jun-86	0	0	22,500	49,500	102,000	112,000	136,428	269,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	585,928	585,928	585,928	585,928	585,928	585,928	585,928	585,928				
Jun-87	0	0	14,910	30,910	43,410	103,410	358,685	443,685	549,891	549,891	577,391	602,391	632,391	722,391	792,391	792,391	792,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391					
Jun-88	0	17,171	38,591	70,432	301,432	574,316	813,316	926,316	1,016,316	1,036,316	1,090,142	1,177,649	1,405,112	1,405,112	1,425,022	1,425,022	1,461,689	1,486,689	1,535,022	1,535,022	1,535,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022						
Jun-89	0	79,840	123,840	231,840	649,331	1,317,831	1,652,331	1,817,331	1,823,831	1,840,331	1,898,142	1,898,142	1,898,142	1,950,642	1,950,642	1,950,642	1,950,642	1,950,642	1,971,192	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642								
Jun-90	0	39,218	223,668	703,668	1,042,168	1,277,668	1,432,668	1,492,668	1,558,461	1,558,461	1,687,139	1,793,139	1,800,639	1,831,639	1,862,639	1,862,639	1,862,639	1,912,764	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640									
Jun-91	0	23,609	675,109	1,045,464	1,227,464	1,362,464	1,459,464	1,465,464	1,465,464	1,540,464	1,630,464	1,630,464	1,630,464	1,630,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464									
Jun-92	0	341,000	424,230	626,140	714,140	737,140	862,140	917,140	992,140	992,140	992,140	992,140	992,140	992,140	992,140	992,140	992,140	1,029,140	1,029,141	1,029,141	1,029,141	1,029,141	1,029,141	1,029,141	1,029,141	1,029,141									
Jun-93	23,000	132,000	274,400	394,900	478,900	640,200	683,079	683,079	776,079	776,079	776,079	776,079	776,079	776,079	776,079	776,079	776,079	794,079	794,079	794,079	794,079	794,079	794,079	794,079	794,079										
Jun-94	5,000	90,000	134,300	162,584	199,584	199,584	245,584	308,584	308,584	308,584	308,584	308,584	308,584	333,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584												
Jun-95	12,000	47,000	92,000	234,024	302,424	318,924	358,924	358,924	408,924	433,924	433,924	433,924	433,924	433,924	476,424	476,424	476,424	476,424	476,424	476,424	476,424	476,424													
Jun-96	0	90,000	234,500	244,500	322,060	349,060	349,060	449,060	449,060	464,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060														
Jun-97	0	76,500	200,500	415,500	415,500	415,500	415,500	430,500	430,500	430,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500															
Jun-98	53,300	175,801	493,801	509,801	542,892	670,801	690,801	710,801	710,801	710,801	710,801	710,801	760,801	810,801	810,801	810,801	810,801	810,801	810,801																
Jun-99	48,000	100,250	215,250	345,250	345,250	352,709	390,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250																	
Jun-00	20,500	276,000	401,500	483,500	548,700	576,200	638,200	664,200	679,200	679,200	679,200	679,200	679,200	679,200	679,200	679,200	679,200																		
Jun-01	45,000	266,500	436,500	569,000	636,500	714,000	726,500	746,500	796,500	796,500	796,500	796,500	796,500	796,500	796,500	796,500																			
Jun-02	0	75,000	143,000	205,100	258,050	290,050	434,771	469,771	489,906	508,906	508,906	508,906	508,906	508,906	508,906																				
Jun-03	20,000	50,000	157,000	299,500	437,000	437,000	437,000	437,000	437,000	497,000	497,000	497,000	497,000	497,000																					
Jun-04	0	28,000	82,000	188,000	320,000	535,000	535,000	581,000	581,000	581,000	581,000	581,000	581,000																						
Jun-05	0	50,787	202,500	374,000	481,000	506,000	545,000	635,000	635,000	635,000	635,000	635,000																							
Jun-06	0	18,000	279,750	450,250	482,750	502,750	502,750	502,750	502,750	502,750	502,750																								
Jun-07	10,000	68,500	134,750	185,751	280,751	280,751	280,751	430,751	430,751	430,751																									
Jun-08	17,730	187,730	210,230	244,730	284,730	284,730	315,730	315,730	338,290																										
Jun-09	35,000	120,000	244,500	269,500	269,500	269,500	269,500	307,000																											
Jun-10	0	30,000	36,000	146,000	171,000	171,000	171,000																												
Jun-11	8,500	37,030	65,030	181,130	181,130	181,130																													
Jun-12	0	5,500	130,800	130,800	180,800																														
Jun-13	0	75,000	139,765	192,000																															
Jun-14	0	7,850	175,000																																
Jun-15	0	12,500																																	
Jun-16	0																																		

Commonwealth of Massachusetts Workers Compensation
Department of Mental Health - Cluster 2
INDEMNITY
Lump Sum Development
Incremental Lump Sums as a % of Ultimate Losses Excluding Lump Sums

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.002	0.000	0.003	0.002	0.003	0.000	0.000	0.004	0.009	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-83	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.007	0.008	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-84	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.029	0.016	0.004	0.020	0.000	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.062	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-85	0.000	0.000	0.000	0.006	0.000	0.007	0.000	0.007	0.011	0.027	0.045	0.006	0.000	0.000	0.000	0.013	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.005	0.006	0.012	0.002	0.006	0.031	0.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.000	0.000	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.000	0.003	0.003	0.002	0.011	0.045	0.015	0.019	0.000	0.005	0.004	0.005	0.016	0.012	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.002	0.002	0.003	0.021	0.024	0.021	0.010	0.008	0.002	0.005	0.008	0.020	0.000	0.002	0.000	0.003	0.002	0.004	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
Jun-89	0.000	0.007	0.004	0.010	0.037	0.059	0.030	0.015	0.001	0.001	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.004	0.017	0.045	0.032	0.022	0.015	0.006	0.006	0.000	0.012	0.010	0.001	0.003	0.003	0.000	0.000	0.005	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000								
Jun-91	0.000	0.003	0.096	0.054	0.027	0.020	0.014	0.001	0.000	0.011	0.013	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000									
Jun-92	0.000	0.095	0.023	0.056	0.024	0.006	0.035	0.015	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.007	0.034	0.044	0.038	0.026	0.050	0.013	0.000	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000											
Jun-94	0.002	0.035	0.018	0.012	0.015	0.000	0.019	0.026	0.000	0.000	0.000	0.000	0.000	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000												
Jun-95	0.004	0.013	0.017	0.053	0.025	0.006	0.015	0.000	0.019	0.009	0.000	0.000	0.000	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.054	0.087	0.006	0.046	0.016	0.000	0.060	0.000	0.009	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
Jun-97	0.000	0.062	0.101	0.174	0.000	0.000	0.000	0.012	0.000	0.000	0.068	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000															
Jun-98	0.022	0.050	0.129	0.006	0.013	0.052	0.008	0.008	0.000	0.000	0.000	0.000	0.020	0.020	0.000	0.000	0.000	0.000	0.000																
Jun-99	0.032	0.035	0.078	0.088	0.000	0.005	0.025	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																	
Jun-00	0.011	0.132	0.065	0.042	0.034	0.014	0.032	0.013	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
Jun-01	0.015	0.075	0.057	0.045	0.023	0.026	0.004	0.007	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000																			
Jun-02	0.000	0.030	0.027	0.025	0.021	0.013	0.058	0.014	0.008	0.008	0.000	0.000	0.000	0.000	0.000																				
Jun-03	0.013	0.019	0.069	0.092	0.089	0.000	0.000	0.000	0.000	0.039	0.000	0.000	0.000	0.000																					
Jun-04	0.000	0.009	0.017	0.033	0.042	0.068	0.000	0.015	0.000	0.000	0.000	0.000	0.000																						
Jun-05	0.000	0.020	0.061	0.069	0.043	0.010	0.016	0.036	0.000	0.000	0.000	0.000																							
Jun-06	0.000	0.011	0.159	0.104	0.020	0.012	0.000	0.000	0.000	0.000	0.000																								
Jun-07	0.004	0.026	0.030	0.023	0.043	0.000	0.000	0.067	0.000	0.000																									
Jun-08	0.011	0.103	0.014	0.021	0.024	0.000	0.019	0.000	0.014																										
Jun-09	0.017	0.041	0.060	0.012	0.000	0.000	0.000	0.018																											
Jun-10	0.000	0.021	0.004	0.079	0.018	0.000	0.000																												
Jun-11	0.004	0.013	0.012	0.051	0.000	0.000																													
Jun-12	0.000	0.003	0.063	0.000	0.025																														
Jun-13	0.000	0.028	0.024	0.019																															
Jun-14	0.000	0.002	0.052																																
Jun-15	0.000	0.003																																	
Jun-16	0.000																																		

Averages		*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
Simple Avg																																			
All Yrs (ex P)	0.004	0.028	0.042	0.038	0.022	0.015	0.013	0.016	0.008	0.006	0.008	0.002	0.003	0.003	0.003	0.001	0.001	0.002	0.001	0.000	0.000	0.001	0.000	0.003	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Latest 5	0.000	0.010	0.031	0.032	0.013	0.000	0.004	0.024	0.003	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Latest 3	0.000	0.011	0.046	0.024	0.014	0.000	0.006	0.028	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Olympic Avg																																			
All Yrs (ex P)	0.003	0.026	0.039	0.035	0.020	0.013	0.012	0.014	0.007	0.004	0.006	0.002	0.002	0.002	0.003	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Latest 10	0.002	0.018	0.039	0.038	0.027	0.004	0.005	0.013	0.004	0.001	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.006	0.029	0.028	0.014	0.000	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					

Dev Factor Selection

Prior	*NA*	*0.026*	*0.032*	*0.027*	*0.020*	*0.008*	*0.013*	*0.012*	*0.004*	*0.002*	*0.002*	*0.002*	*0.000*	*0.001*	*0.001*	*0.000*	*0.000*	*0.001*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	
Selected	NA	0.026	0.029	0.028	0.020	0.004	0.013	0.012	0.004	0.002	0.002	0.002	0.000	0.001	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FacToUlt	NA	0.146	0.121	0.091	0.064	0.043	0.039	0.026	0.014	0.010	0.008	0.006	0.004	0.004	0.003	0.002	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Commonwealth of Massachusetts Workers Compensation
Department of Mental Health - Cluster 2
INDEMNITY
Paid Loss Development
Paid Loss - Lump Sum only

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	0	0	20,000	66,500	101,500	101,500	175,000	225,000	294,180	294,180	294,180	391,180	589,180	589,180	589,180	589,180	615,680	640,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680
Jun-83	0	0	0	0	0	0	0	15,000	15,000	35,000	59,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	94,000	
Jun-84	0	0	0	0	0	0	0	42,000	42,000	112,000	152,000	162,001	210,001	210,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	260,001	410,001	410,001	410,001	410,001	410,001	410,001	410,001		
Jun-85	0	0	0	25,000	25,000	53,000	53,000	84,500	129,500	246,083	436,083	461,083	461,083	461,083	461,083	515,583	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083			
Jun-86	0	0	22,500	49,500	102,000	112,000	136,428	269,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	435,928	585,928	585,928	585,928	585,928	585,928	585,928	585,928	585,928	585,928			
Jun-87	0	0	14,910	30,910	43,410	103,410	358,685	443,685	549,891	549,891	577,391	602,391	632,391	722,391	792,391	792,391	792,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391					
Jun-88	0	17,171	38,591	70,432	301,432	574,316	813,316	926,316	1,016,316	1,036,316	1,090,142	1,177,649	1,405,112	1,405,112	1,425,022	1,425,022	1,461,689	1,486,689	1,535,022	1,535,022	1,535,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022					
Jun-89	0	79,840	123,840	231,840	649,331	1,317,831	1,652,331	1,817,331	1,823,831	1,840,331	1,898,142	1,898,142	1,898,142	1,950,642	1,950,642	1,950,642	1,950,642	1,950,642	1,971,192	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642						
Jun-90	0	39,218	223,668	703,668	1,042,168	1,277,668	1,432,668	1,492,668	1,558,461	1,558,461	1,687,139	1,793,139	1,800,639	1,831,639	1,862,639	1,862,639	1,862,639	1,912,764	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640							
Jun-91	0	23,609	675,109	1,045,464	1,227,464	1,362,464	1,459,464	1,465,464	1,465,464	1,540,464	1,630,464	1,630,464	1,630,464	1,630,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464	1,665,464								
Jun-92	0	341,000	424,230	626,140	714,140	737,140	862,140	917,140	992,140	992,140	992,140	992,140	992,140	992,140	992,140	992,140	992,140	1,029,140	1,029,141	1,029,141	1,029,141	1,029,141	1,029,141	1,029,141	1,029,141									
Jun-93	23,000	132,000	274,400	394,900	478,900	640,200	683,079	683,079	776,079	776,079	776,079	776,079	776,079	776,079	776,079	776,079	776,079	794,079	794,079	794,079	794,079	794,079	794,079	794,079										
Jun-94	5,000	90,000	134,300	162,584	199,584	199,584	245,584	308,584	308,584	308,584	308,584	308,584	308,584	333,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584											
Jun-95	12,000	47,000	92,000	234,024	302,424	318,924	358,924	358,924	408,924	433,924	433,924	433,924	433,924	433,924	476,424	476,424	476,424	476,424	476,424	476,424	476,424	476,424												
Jun-96	0	90,000	234,500	244,500	322,060	349,060	349,060	449,060	449,060	464,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060													
Jun-97	0	76,500	200,500	415,500	415,500	415,500	415,500	430,500	430,500	430,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500														
Jun-98	53,300	175,801	493,801	509,801	542,892	670,801	690,801	710,801	710,801	710,801	710,801	710,801	760,801	810,801	810,801	810,801	810,801	810,801	810,801															
Jun-99	48,000	100,250	215,250	345,250	345,250	352,709	390,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250																
Jun-00	20,500	276,000	401,500	483,500	548,700	576,200	638,200	664,200	679,200	679,200	679,200	679,200	679,200	679,200	679,200	679,200	679,200																	
Jun-01	45,000	266,500	436,500	569,000	636,500	714,000	726,500	746,500	796,500	796,500	796,500	796,500	796,500	796,500	796,500	796,500																		
Jun-02	0	75,000	143,000	205,100	258,050	290,050	434,771	469,771	489,906	508,906	508,906	508,906	508,906	508,906	508,906																			
Jun-03	20,000	50,000	157,000	299,500	437,000	437,000	437,000	437,000	437,000	497,000	497,000	497,000	497,000	497,000																				
Jun-04	0	28,000	82,000	188,000	320,000	535,000	535,000	581,000	581,000	581,000	581,000	581,000	581,000																					
Jun-05	0	50,787	202,500	374,000	481,000	506,000	545,000	635,000	635,000	635,000	635,000	635,000																						
Jun-06	0	18,000	279,750	450,250	482,750	502,750	502,750	502,750	502,750	502,750	502,750																							
Jun-07	10,000	68,500	134,750	185,751	280,751	280,751	280,751	430,751	430,751	430,751																								
Jun-08	17,730	187,730	210,230	244,730	284,730	284,730	315,730	315,730	338,290																									
Jun-09	35,000	120,000	244,500	269,500	269,500	269,500	269,500	307,000																										
Jun-10	0	30,000	36,000	146,000	171,000	171,000	171,000																											
Jun-11	8,500	37,030	65,030	181,130	181,130	181,130																												
Jun-12	0	5,500	130,800	130,800	180,800																													
Jun-13	0	75,000	139,765	192,000																														
Jun-14	0	7,850	175,000																															
Jun-15	0	12,500																																
Jun-16	0																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
All Prior Yrs										3.325	1.526	1.000	1.724	1.286	1.307	1.000	1.000	1.330	1.506	1.000	1.000	1.000	1.045	1.041	1.039	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-83								1.000	2.333	1.686	1.593	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Jun-84								1.000	2.667	1.357	1.066	1.296	1.000	1.238	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.577	1.000	1.000	1.000	1.000	1.000			
Jun-85				1.000	2.120	1.000	1.594	1.533	1.900	1.772	1.057	1.000	1.000	1.000	1.118	1.069	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Jun-86			2.200	2.061	1.098	1.218	1.979	1.615	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.344	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Jun-87			2.073	1.404	2.382	3.469	1.237	1.239	1.000	1.050	1.043	1.050	1.142	1.097	1.000	1.000	1.050	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Jun-88		2.247	1.825	4.280	1.905	1.416	1.139	1.097	1.020	1.052	1.080	1.193	1.000	1.014	1.000	1.026	1.017	1.033	1.000	1.000	1.098	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Jun-89		1.551	1.872	2.801	2.030	1.254	1.100	1.004	1.009	1.031	1.000	1.000	1.028	1.000	1.000	1.000	1.000	1.011	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
Jun-90		5.703	3.146	1.481	1.226	1.121	1.042	1.044	1.000	1.083	1.063	1.004	1.017	1.017	1.000	1.000	1.027	1.065	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
Jun-91		28.595	1.549	1.174	1.110	1.071	1.004	1.000	1.051	1.058	1.000	1.000	1.000	1.021	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
Jun-92		1.244	1.476	1.141	1.032	1.170	1.064	1.082	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.037	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93	5.739	2.079	1.439	1.213	1.337	1.067	1.000	1.136	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.023	1.000	1.000	1.000	1.000	1.000	1.000												
Jun-94	18.000	1.492	1.211	1.228	1.000	1.230	1.257	1.000	1.000	1.000	1.000	1.000	1.081	1.075	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95	3.917	1.957	2.544	1.292	1.055	1.125	1.000	1.139	1.061	1.000	1.000	1.000	1.000	1.098	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96		2.606	1.043	1.317	1.084	1.000	1.286	1.000	1.033	1.043	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000															
Jun-97		2.621	2.072	1.000	1.000	1.000	1.036	1.000	1.000	1.195	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																
Jun-98	3.298	2.809	1.032	1.065	1.236	1.030	1.029	1.000	1.000	1.000	1.000	1.070	1.066	1.000	1.000	1.000	1.000	1.000																	
Jun-99	2.089	2.147	1.604	1.000	1.022	1.106	1.077	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																		
Jun-00	13.463	1.455	1.204	1.135	1.050	1.108	1.041	1.023	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																			
Jun-01	5.922	1.638	1.304	1.119	1.122	1.018	1.028	1.067	1.000	1.000	1.000	1.000	1.000	1.000	1.000																				
Jun-02		1.907	1.434	1.258	1.124	1.499	1.081	1.043	1.039	1.000	1.000	1.000	1.000	1.000																					
Jun-03	2.500	3.140	1.908	1.459	1.000	1.000	1.000	1.000	1.137	1.000	1.000	1.000	1.000																						
Jun-04		2.929	2.293	1.702	1.672	1.000	1.086	1.000	1.000	1.000	1.000	1.000																							
Jun-05		3.987	1.847	1.286	1.052	1.077	1.165	1.000	1.000	1.000	1.000																								
Jun-06		15.542	1.609	1.072	1.041	1.000	1.000	1.000	1.000	1.000																									
Jun-07	6.850	1.967	1.378	1.511	1.000	1.000	1.534	1.000	1.000																										
Jun-08	10.588	1.120	1.164	1.163	1.000	1.109	1.000	1.071																											
Jun-09	3.429	2.038	1.102	1.000	1.000	1.000	1.139																												
Jun-10		1.200	4.056	1.171	1.000	1.000																													
Jun-11	4.357	1.756	2.785	1.000	1.000																														
Jun-12		23.782	1.000	1.382																															
Jun-13		1.864	1.374																																
Jun-14		22.293																																	
Jun-15																																			

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Simple Avg																																			
All Yrs (ex P)	6.679	5.247	1.769	1.418	1.248	1.196	1.157	1.080	1.170	1.097	1.039	1.028	1.016	1.028	1.006	1.005	1.009	1.007	1.000	1.000	1.008	1.000	1.031	1.000	1.000	1.072	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		10.179	2.063	1.143	1.000	1.022	1.168	1.014	1.027	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Latest 3		15.979	1.720	1.184	1.000	1.036	1.224	1.024	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Volume Wtd																																			
All Yrs (ex P)		2.394	1.545	1.275	1.196	1.131	1.092	1.052	1.027	1.044	1.018	1.023	1.016	1.018	1.004	1.005	1.012	1.014	1.000	1.000	1.012	1.000	1.013	1.000	1.000	1.019	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		3.518	1.492	1.118	1.000	1.021	1.145	1.009	1.023	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Latest 3		5.043	1.502	1.164	1.000	1.043	1.217	1.018	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				

Dev Factor Selection	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Prior	*4.675*	*3.035*	*1.647*	*1.157*	*1.071*	*1.033*	*1.120*	*1.050*	*1.034*	*1.025*	*1.022*	*1.020*	*1.010*	*1.000*	*1.000*	*1.006*	*1.006*	*1.006*	*1.003*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.003*	
Selected	4.675	3.276	1.513	1.186	1.065	1.033	1.151	1.050	1.034	1.025	1.022	1.020	1.010	1.000	1.000	1.006	1.006	1.006	1.003	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.003
FacToUlt	42.086	9.002	2.748	1.816	1.532	1.438	1.391	1.209	1.151	1.113	1.086	1.063	1.042	1.031	1.031	1.031	1.025	1.019	1.013	1.010	1.009	1.008	1.007	1.006	1.005	1.004	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	
Percent of Ult	2.4%	11.1%	36.4%	55.1%	65.3%	69.6%	71.9%	82.7%	86.9%	89.8%	92.1%	94.1%	96.0%	97.0%	97.0%	97.0%	97.5%	98.1%	98.7%	99.0%	99.1%	99.2%	99.3%	99.4%	99.5%	99.6%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative Paid Loss	Incremental Paid Loss	Percent	Pres Value of Increm.	Pres Value of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
420	100.0%	1.8%	0.0%	0.5%	0.2%	1.000	1.000
408	98.2%	1.0%	1.8%	0.3%	0.1%	0.981	0.971
396	97.2%	1.0%	2.8%	0.3%	0.1%	0.956	0.935
384	96.2%	1.0%	3.8%	0.3%	0.2%	0.935	0.905
372	95.3%	0.9%	4.7%	0.3%	0.2%	0.915	0.877
360	94.3%	0.9%	5.7%	0.3%	0.2%	0.897	0.852
348	93.4%	0.9%	6.6%	0.3%	0.2%	0.879	0.827
336	92.5%	0.9%	7.5%	0.3%	0.2%	0.862	0.804
324	91.5%	0.9%	8.5%	0.3%	0.2%	0.845	0.781
312	90.6%	0.9%	9.4%	0.3%	0.2%	0.829	0.760
300	89.7%	0.9%	10.3%	0.3%	0.2%	0.813	0.739
288	88.9%	0.9%	11.1%	0.4%	0.2%	0.798	0.719
276	88.0%	0.9%	12.0%	0.4%	0.2%	0.783	0.700
264	87.1%	0.9%	12.9%	0.4%	0.2%	0.768	0.681
252	86.2%	0.5%	13.8%	0.2%	0.2%	0.754	0.663
240	85.7%	0.5%	14.3%	0.2%	0.2%	0.734	0.638
228	85.2%	0.5%	14.8%	0.2%	0.2%	0.715	0.615
216	84.7%	0.0%	15.3%	0.0%	0.0%	0.697	0.593
204	84.7%	0.2%	15.3%	0.1%	0.1%	0.671	0.560
192	84.5%	0.2%	15.5%	0.1%	0.1%	0.649	0.533
180	84.4%	0.2%	15.6%	0.1%	0.1%	0.628	0.508
168	84.2%	0.1%	15.8%	0.0%	0.0%	0.607	0.484
156	84.1%	0.0%	15.9%	0.0%	0.0%	0.586	0.459
144	84.1%	1.7%	15.9%	1.1%	0.9%	0.564	0.434
132	82.4%	2.2%	17.6%	1.4%	1.2%	0.584	0.463
120	80.2%	1.2%	19.8%	0.8%	0.7%	0.608	0.496
108	79.1%	1.3%	20.9%	0.9%	0.8%	0.606	0.496
96	77.7%	2.0%	22.3%	1.5%	1.3%	0.607	0.498
84	75.7%	1.2%	24.3%	1.0%	0.8%	0.616	0.511
72	74.5%	2.0%	25.5%	1.6%	1.4%	0.611	0.506
60	72.5%	5.4%	27.5%	4.5%	4.1%	0.616	0.513
48	67.2%	6.2%	32.8%	5.4%	5.0%	0.656	0.563
36	61.0%	12.1%	39.0%	11.0%	10.4%	0.686	0.601
24	48.9%	23.7%	51.1%	22.3%	21.7%	0.736	0.663
12	25.2%	25.2%	74.8%	24.7%	24.5%	0.794	0.735
Total		100.0%					

NOTES:

(2) = 1 / Section 3, Exhibit 1, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	2,791,628	3,965,277		2,441,516	3,467,972
6/30/82-83	126,759	200,129	0.981	124,297	196,242
6/30/83-84	39,493	195,491	0.956	37,750	186,861
6/30/84-85	111,798	438,798	0.935	104,500	410,156
6/30/85-86	45,909	201,909	0.915	42,018	184,793
6/30/86-87	61,587	336,587	0.897	55,227	301,827
6/30/87-88	647,742	987,742	0.879	569,332	868,174
6/30/88-89	823,951	851,019	0.862	710,045	733,371
6/30/89-90	844,154	905,154	0.845	713,368	764,917
6/30/90-91	156,450	234,916	0.829	129,672	194,707
6/30/91-92	42,921	139,921	0.813	34,896	113,759
6/30/92-93	351,649	359,649	0.798	280,476	286,857
6/30/93-94	287,972	294,972	0.783	225,355	230,832
6/30/94-95	274,875	285,655	0.768	211,067	219,344
6/30/95-96	183,629	188,529	0.754	138,367	142,059
6/30/96-97	142,483	143,463	0.734	104,548	105,268
6/30/97-98	190,591	205,791	0.715	136,283	147,151
6/30/98-99	190,280	192,240	0.697	132,680	134,046
6/30/99-00	245,078	252,918	0.671	164,403	169,662
6/30/00-01	451,203	473,203	0.649	292,687	306,958
6/30/01-02	385,796	398,796	0.628	242,117	250,276
6/30/02-03	254,347	256,347	0.607	154,504	155,719
6/30/03-04	311,166	445,966	0.586	182,332	261,320
6/30/04-05	300,407	419,407	0.564	169,420	236,532
6/30/05-06	315,756	356,756	0.584	184,457	208,409
6/30/06-07	310,888	339,388	0.608	188,906	206,223
6/30/07-08	277,496	402,896	0.606	168,300	244,354
6/30/08-09	507,966	560,966	0.607	308,183	340,338
6/30/09-10	486,573	580,573	0.616	299,838	357,764
6/30/10-11	614,112	721,112	0.611	375,432	440,846
6/30/11-12	640,672	775,672	0.616	394,718	477,891
6/30/12-13	1,003,422	1,136,422	0.656	658,140	745,375
6/30/13-14	1,398,876	1,657,876	0.686	959,710	1,137,399
6/30/14-15	1,879,751	2,271,751	0.736	1,382,670	1,671,009
6/30/15-16	3,252,049	5,142,049	0.794	2,581,351	4,081,561
Total	19,949,431	26,319,341		14,898,565	19,979,974
			(7) Total Discount Factor:	0.747	0.759

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	2,791,628	3,965,277
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	398,804	566,468
(11) Discounted Value at 4%:	2,441,516	3,467,972

NOTES:

(2), (3) From Section 3, Exhibit 1, Page 1, Columns 8, 9

(4) From Section 3, Exhibit 1, Page 13, Column 7

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Indemnity

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	2,791,628	3,965,277		2,293,064	3,257,108
6/30/82-83	126,759	200,129	0.971	123,119	194,382
6/30/83-84	39,493	195,491	0.935	36,936	182,831
6/30/84-85	111,798	438,798	0.905	101,169	397,082
6/30/85-86	45,909	201,909	0.877	40,279	177,147
6/30/86-87	61,587	336,587	0.852	52,444	286,618
6/30/87-88	647,742	987,742	0.827	535,719	816,918
6/30/88-89	823,951	851,019	0.804	662,189	683,943
6/30/89-90	844,154	905,154	0.781	659,505	707,162
6/30/90-91	156,450	234,916	0.760	118,859	178,471
6/30/91-92	42,921	139,921	0.739	31,718	103,400
6/30/92-93	351,649	359,649	0.719	252,841	258,593
6/30/93-94	287,972	294,972	0.700	201,508	206,406
6/30/94-95	274,875	285,655	0.681	187,232	194,575
6/30/95-96	183,629	188,529	0.663	121,783	125,032
6/30/96-97	142,483	143,463	0.638	90,921	91,546
6/30/97-98	190,591	205,791	0.615	117,169	126,514
6/30/98-99	190,280	192,240	0.593	112,831	113,993
6/30/99-00	245,078	252,918	0.560	137,212	141,602
6/30/00-01	451,203	473,203	0.533	240,500	252,227
6/30/01-02	385,796	398,796	0.508	195,945	202,548
6/30/02-03	254,347	256,347	0.484	123,203	124,172
6/30/03-04	311,166	445,966	0.459	142,949	204,876
6/30/04-05	300,407	419,407	0.434	130,405	182,062
6/30/05-06	315,756	356,756	0.463	146,266	165,258
6/30/06-07	310,888	339,388	0.496	154,070	168,194
6/30/07-08	277,496	402,896	0.496	137,579	199,751
6/30/08-09	507,966	560,966	0.498	252,734	279,104
6/30/09-10	486,573	580,573	0.511	248,590	296,614
6/30/10-11	614,112	721,112	0.506	310,561	364,672
6/30/11-12	640,672	775,672	0.513	328,445	397,654
6/30/12-13	1,003,422	1,136,422	0.563	565,329	640,261
6/30/13-14	1,398,876	1,657,876	0.601	840,898	996,590
6/30/14-15	1,879,751	2,271,751	0.663	1,245,675	1,505,446
6/30/15-16	3,252,049	5,142,049	0.735	2,389,288	3,777,875
Total	19,949,431	26,319,341		13,328,935	18,000,626
			(7) Total Discount Factor:	0.668	0.684

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	2,791,628	3,965,277
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	398,804	566,468
(11) Discounted Value at 6%:	2,293,064	3,257,108

NOTES:

(2), (3) From Section 3, Exhibit 1, Page 1, Columns 8, 9

(4) From Section 3, Exhibit 1, Page 13, Column 8

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Total Indemnity (Including Lump Sums) + Medical

Calculation of Fiscal Year 7/01/16 - 17 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/16 - 06/30/17	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/16 - 06/30/17		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	23,963,049	25,140,180	21,156,967	2,806,083	3,983,213				241,436	265,579	8.6%	6.7%
6/30/82-83	3,016,427	3,091,200	2,888,774	127,653	202,426	94.6%	0.5%	9.3%	11,810	18,728	9.3%	9.3%
6/30/83-84	2,905,500	3,061,497	2,864,047	41,453	197,451	96.0%	0.5%	12.5%	5,177	24,658	12.5%	12.5%
6/30/84-85	4,889,000	5,220,970	4,773,011	115,989	447,959	94.4%	0.5%	9.0%	10,397	40,153	9.0%	9.0%
6/30/85-86	4,940,000	5,096,000	4,891,866	48,134	204,134	97.5%	0.5%	19.9%	9,575	40,605	19.9%	19.9%
6/30/86-87	6,980,000	7,255,000	6,911,248	68,752	343,752	97.1%	0.5%	17.3%	11,863	59,312	17.3%	17.3%
6/30/87-88	14,205,000	14,549,000	13,539,847	665,153	1,009,153	94.2%	0.5%	8.6%	57,116	86,654	8.6%	8.6%
6/30/88-89	15,276,932	15,325,810	14,425,669	851,263	900,141	94.3%	0.5%	8.7%	74,372	78,642	8.7%	8.7%
6/30/89-90	14,631,000	14,712,000	13,748,464	882,536	963,536	93.7%	0.6%	9.0%	79,723	87,040	9.0%	9.0%
6/30/90-91	9,768,000	9,864,276	9,577,273	190,727	287,004	97.6%	0.5%	20.5%	39,190	58,972	20.5%	20.5%
6/30/91-92	5,589,000	5,698,000	5,520,691	68,309	177,309	97.8%	0.5%	23.0%	15,695	40,740	23.0%	23.0%
6/30/92-93	5,135,000	5,155,460	4,755,475	379,525	399,985	92.4%	1.0%	13.2%	50,102	52,803	13.2%	13.2%
6/30/93-94	3,460,000	3,468,000	3,154,115	305,885	313,885	91.1%	1.0%	11.2%	34,193	35,087	11.2%	11.2%
6/30/94-95	3,971,880	3,991,450	3,670,301	301,579	321,149	92.2%	1.0%	12.8%	38,565	41,068	12.8%	12.8%
6/30/95-96	2,940,980	2,955,220	2,729,014	211,966	226,206	92.6%	1.0%	13.5%	28,523	30,439	13.5%	13.5%
6/30/96-97	2,278,020	2,284,640	2,113,342	164,678	171,298	92.6%	1.0%	13.6%	22,364	23,263	13.6%	13.6%
6/30/97-98	3,632,700	3,653,200	3,418,892	213,808	234,308	93.8%	1.0%	16.3%	34,763	38,096	16.3%	16.3%
6/30/98-99	2,661,940	2,664,900	2,433,758	228,182	231,142	91.4%	1.0%	11.6%	26,463	26,806	11.6%	11.6%
6/30/99-00	3,188,420	3,203,620	2,916,057	272,363	287,563	91.2%	1.0%	11.4%	31,093	32,828	11.4%	11.4%
6/30/00-01	4,544,980	4,576,000	4,053,774	491,206	522,226	88.9%	2.0%	18.0%	88,418	94,002	18.0%	18.0%
6/30/01-02	3,657,000	3,676,650	3,225,278	431,722	451,372	88.0%	2.0%	16.6%	71,705	74,968	16.6%	16.6%
6/30/02-03	2,850,910	2,870,100	2,544,558	306,352	325,542	89.0%	2.0%	18.1%	55,473	58,948	18.1%	18.1%
6/30/03-04	5,005,250	5,176,420	4,587,058	418,192	589,362	90.1%	2.0%	20.2%	84,519	119,114	20.2%	20.2%
6/30/04-05	4,005,000	4,159,000	3,638,408	366,592	520,592	89.1%	2.0%	18.4%	67,469	95,811	18.4%	18.4%
6/30/05-06	3,086,000	3,152,000	2,691,976	394,024	460,024	86.3%	2.0%	14.6%	57,559	67,201	14.6%	14.6%
6/30/06-07	3,298,700	3,342,520	2,893,235	405,465	449,285	87.1%	2.0%	15.5%	63,007	69,817	15.5%	15.5%
6/30/07-08	2,690,000	2,822,400	2,305,389	384,611	517,011	83.6%	3.5%	21.3%	81,969	110,186	21.3%	21.3%
6/30/08-09	3,311,000	3,375,000	2,678,085	632,915	696,915	80.1%	6.0%	30.2%	190,927	210,233	30.2%	30.2%
6/30/09-10	2,349,000	2,469,000	1,750,088	598,912	718,912	72.6%	7.0%	25.6%	153,275	183,985	25.6%	25.6%
6/30/10-11	3,369,000	3,516,000	2,606,769	762,231	909,231	75.7%	8.0%	33.0%	251,179	299,621	33.0%	33.0%
6/30/11-12	2,970,000	3,126,000	2,164,874	805,127	961,127	71.0%	4.7%	16.2%	130,523	155,813	16.2%	16.2%
6/30/12-13	3,791,000	3,949,000	2,575,581	1,215,419	1,373,419	66.6%	4.5%	13.4%	162,561	183,693	13.4%	13.4%
6/30/13-14	4,376,000	4,670,000	2,688,988	1,687,012	1,981,012	59.5%	7.1%	17.5%	295,437	346,924	17.5%	17.5%
6/30/14-15	4,829,000	5,300,000	2,506,612	2,322,388	2,793,388	49.5%	10.0%	19.7%	457,875	550,736	19.7%	19.7%
6/30/15-16	5,934,800	8,105,900	1,859,973	4,074,827	6,245,927	26.5%	23.0%	31.3%	1,274,998	1,954,327	31.3%	31.3%
Total	193,500,488	200,676,414	170,259,454	23,241,034	30,416,959				4,309,311	5,656,853	18.5%	18.6%

NOTES:

(2) Exhibit 1, Page 1, Column (4) + Exhibit 2, Page 1, Column (4)
(3) Exhibit 1, Page 1, Column (5) + Exhibit 2, Page 1, Column (5)
(4) Exhibit 1, Page 1, Column (2) + Exhibit 2, Page 1, Column (2)
(5) = (2) - (4)
(6) = (3) - (4)
(7) = (4) / Average of Columns (2), (3)
(8) = (7) - Prior Year's (7)
(9) = (8) / (1.00 - (7))
(10) = (5) * (9)
(11) = (6) * (9)
(12) = (10) / (5)
(13) = (11) / (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Paid Loss	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		814,737			829,192	832,673	14,455	17,936		
6/30/82-83		139,442	140,337		140,337	141,740	894	2,298		
6/30/83-84		209,040	210,591		211,000	211,000	1,960	1,960		
6/30/84-85	142,561	492,808	496,961	497,097	497,000	501,970	4,192	9,162	0.349	0.352
6/30/85-86	153,298	257,775	260,207	260,254	260,000	260,000	2,225	2,225	0.170	0.170
6/30/86-87	176,136	702,835	710,177	710,428	710,000	710,000	7,165	7,165	0.403	0.403
6/30/87-88	206,319	1,853,589	1,874,824	1,870,811	1,871,000	1,875,000	17,411	21,411	0.907	0.909
6/30/88-89	222,806	2,052,689	2,080,356	2,080,779	2,080,000	2,101,810	27,311	49,121	0.934	0.943
6/30/89-90	223,751	1,938,618	1,970,642	1,971,452	1,977,000	1,997,000	38,382	58,382	0.884	0.893
6/30/90-91	210,162	1,746,723	1,780,904	1,780,651	1,781,000	1,798,810	34,277	52,087	0.847	0.856
6/30/91-92	205,241	1,260,611	1,289,136	1,288,771	1,286,000	1,298,000	25,389	37,389	0.627	0.632
6/30/92-93	176,705	1,117,124	1,145,829	1,145,276	1,145,000	1,157,460	27,876	40,336	0.648	0.655
6/30/93-94	173,075	646,088	664,677	664,399	664,000	665,000	17,912	18,912	0.384	0.384
6/30/94-95	178,317	852,296	879,449	878,774	879,000	887,790	26,704	35,494	0.493	0.498
6/30/95-96	175,996	804,663	833,619	832,827	833,000	842,340	28,337	37,677	0.473	0.479
6/30/96-97	190,083	541,805	564,109	563,960	564,000	569,640	22,195	27,835	0.297	0.300
6/30/97-98	177,278	506,783	530,284	530,136	530,000	535,300	23,217	28,517	0.299	0.302
6/30/98-99	189,080	759,098	798,270	797,103	797,000	798,000	37,902	38,902	0.422	0.422
6/30/99-00	194,494	602,355	636,605	636,210	629,640	637,000	27,285	34,645	0.324	0.328
6/30/00-01	201,568	753,977	802,727	801,569	793,980	803,000	40,003	49,023	0.394	0.398
6/30/01-02	203,105	619,074	664,742	664,551	665,000	671,650	45,926	52,576	0.327	0.331
6/30/02-03	202,515	748,904	810,211	809,134	800,910	818,100	52,006	69,196	0.395	0.404
6/30/03-04	189,588	1,343,324	1,472,375	1,465,230	1,450,350	1,486,720	107,026	143,396	0.765	0.784
6/30/04-05	186,990	916,815	1,017,670	983,344	983,000	1,018,000	66,185	101,185	0.526	0.544
6/30/05-06	193,254	832,733	936,006	911,467	911,000	936,000	78,267	103,267	0.471	0.484
6/30/06-07	203,359	671,423	766,011	766,466	766,000	781,320	94,577	109,897	0.377	0.384
6/30/07-08	212,083	663,885	771,224	778,399	771,000	778,000	107,115	114,115	0.364	0.367
6/30/08-09	204,679	758,051	894,167	882,610	883,000	894,000	124,949	135,949	0.431	0.437
6/30/09-10	184,688	518,661	631,207	657,176	631,000	657,000	112,339	138,339	0.342	0.356
6/30/10-11	169,689	745,881	934,481	893,537	894,000	934,000	148,119	188,119	0.527	0.550
6/30/11-12	177,399	532,545	697,187	717,682	697,000	718,000	164,455	185,455	0.393	0.405
6/30/12-13	189,252	555,003	766,623	791,643	767,000	792,000	211,997	236,997	0.405	0.418
6/30/13-14	199,876	538,864	826,664	861,952	827,000	862,000	288,136	323,136	0.414	0.431
6/30/14-15	213,700	678,363	1,200,404	1,120,651	1,121,000	1,200,000	442,637	521,637	0.525	0.562
6/30/15-16	211,829	454,022	1,731,318	1,216,357	1,276,800	1,557,900	822,778	1,103,878	0.603	0.735
Total	6,138,877	28,630,605	31,789,992	30,830,696	31,922,208	32,728,223	3,291,603	4,097,618		
Tot 6/30/84-16	6,138,877	27,467,386	31,439,065	30,830,696	30,741,680	31,542,810	3,274,294	4,075,424	0.501	0.514

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 3, Exhibit 2, Page 2, Column 3

(4) From Section 3, Exhibit 2, Page 2, Column 8

(5) From Section 3, Exhibit 2, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Accident Year	Payroll (000's)	Paid Loss	Paid LDF	Adjustment for Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim
All Prior Yrs		814,737							2	2	
6/30/82-83		139,442	1.006	1.000	140,337	N/A	140,337		1	1	894
6/30/83-84		209,040	1.007	1.000	210,591	N/A	210,591		0	0	
6/30/84-85	142,561	492,808	1.008	1.000	496,961	N/A	496,961	0.349	1	2	2,077
6/30/85-86	153,298	257,775	1.009	1.000	260,207	N/A	260,207	0.170	0	0	
6/30/86-87	176,136	702,835	1.010	1.000	710,177	N/A	710,177	0.403	0	0	
6/30/87-88	206,319	1,853,589	1.011	1.000	1,874,824	N/A	1,874,824	0.909	1	1	21,234
6/30/88-89	222,806	2,052,689	1.013	1.000	2,080,356	N/A	2,080,356	0.934	1	3	9,222
6/30/89-90	223,751	1,938,618	1.017	1.000	1,970,642	N/A	1,970,642	0.881	1	1	32,024
6/30/90-91	210,162	1,746,723	1.020	1.000	1,780,904	N/A	1,780,904	0.847	1	1	34,181
6/30/91-92	205,241	1,260,611	1.023	1.000	1,289,136	N/A	1,289,136	0.628	0	0	
6/30/92-93	176,705	1,117,124	1.026	1.000	1,145,829	N/A	1,145,829	0.648	3	2	14,352
6/30/93-94	173,075	646,088	1.029	1.000	664,677	N/A	664,677	0.384	0	0	
6/30/94-95	178,317	852,296	1.032	1.000	879,449	N/A	879,449	0.493	2	1	27,153
6/30/95-96	175,996	804,663	1.036	1.000	833,619	N/A	833,619	0.474	1	1	28,957
6/30/96-97	190,083	541,805	1.041	1.000	564,109	N/A	564,109	0.297	3	3	7,435
6/30/97-98	177,278	506,783	1.046	1.000	530,284	N/A	530,284	0.299	2	1	23,500
6/30/98-99	189,080	759,098	1.052	1.000	798,270	N/A	798,270	0.422	1	1	39,172
6/30/99-00	194,494	602,355	1.057	1.000	636,605	N/A	636,605	0.327	1	0	
6/30/00-01	201,568	753,977	1.065	1.000	802,727	N/A	802,727	0.398	0	0	
6/30/01-02	203,105	619,074	1.074	1.000	664,742	N/A	664,742	0.327	1	1	45,668
6/30/02-03	202,515	748,904	1.082	1.000	810,211	N/A	810,211	0.400	3	3	20,435
6/30/03-04	189,588	1,343,324	1.096	1.000	1,472,375	N/A	1,472,375	0.777	4	5	25,810
6/30/04-05	186,990	916,815	1.110	1.000	1,017,670	N/A	1,017,670	0.544	5	5	20,171
6/30/05-06	193,254	832,733	1.124	1.000	936,006	N/A	936,006	0.484	3	2	51,637
6/30/06-07	203,359	671,423	1.141	1.000	766,011	N/A	766,011	0.377	2	2	47,294
6/30/07-08	212,083	663,885	1.162	1.000	771,224	N/A	771,224	0.364	2	0	
6/30/08-09	204,679	758,051	1.180	1.000	894,167	N/A	894,167	0.437	4	3	45,372
6/30/09-10	184,688	518,661	1.217	1.000	631,207	N/A	631,207	0.342	2	3	37,515
6/30/10-11	169,689	745,881	1.253	1.000	934,481	N/A	934,481	0.551	8	6	31,433
6/30/11-12	177,399	532,545	1.309	1.000	697,187	N/A	697,187	0.393	9	3	54,880
6/30/12-13	189,252	555,003	1.381	1.000	766,623	N/A	766,623	0.405	28	12	17,635
6/30/13-14	199,876	538,864	1.534	1.000	826,664	N/A	826,664	0.414	135	23	12,513
6/30/14-15	213,700	678,363	1.770	1.000	1,200,404	N/A	1,200,404	0.562	321	143	3,651
6/30/15-16	211,829	454,022	3.813	1.000	1,731,318	N/A	1,731,318	0.817		310	4,120
Total	6,138,877	28,630,605			31,789,992		31,789,992		548	541	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 4/1/14 filing. Consideration for development beyond 252 months made in selection of LDF's.

(6) = (3) x (4) x (5)

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	142,561	0.360	492,808	1.008	497,097	N/A	497,097	0.349	0.349
6/30/85-86	153,298	0.173	257,775	1.009	260,254	N/A	260,254	0.170	0.170
6/30/86-87	176,136	0.417	702,835	1.010	710,428	N/A	710,428	0.403	0.403
6/30/87-88	206,319	0.737	1,853,589	1.011	1,870,811	N/A	1,870,811	0.907	0.907
6/30/88-89	222,806	0.948	2,052,689	1.013	2,080,779	N/A	2,080,779	0.934	0.934
6/30/89-90	223,751	0.903	1,938,618	1.017	1,971,452	N/A	1,971,452	0.881	0.881
6/30/90-91	210,162	0.841	1,746,723	1.020	1,780,651	N/A	1,780,651	0.847	0.847
6/30/91-92	205,241	0.620	1,260,611	1.023	1,288,771	N/A	1,288,771	0.628	0.628
6/30/92-93	176,705	0.636	1,117,124	1.026	1,145,276	N/A	1,145,276	0.648	0.648
6/30/93-94	173,075	0.378	646,088	1.029	664,399	N/A	664,399	0.384	0.384
6/30/94-95	178,317	0.481	852,296	1.032	878,774	N/A	878,774	0.493	0.493
6/30/95-96	175,996	0.461	804,663	1.036	832,827	N/A	832,827	0.473	0.473
6/30/96-97	190,083	0.295	541,805	1.041	563,960	N/A	563,960	0.297	0.297
6/30/97-98	177,278	0.297	506,783	1.046	530,136	N/A	530,136	0.299	0.299
6/30/98-99	189,080	0.410	759,098	1.052	797,103	N/A	797,103	0.422	0.422
6/30/99-00	194,494	0.324	602,355	1.057	636,210	N/A	636,210	0.327	0.327
6/30/00-01	201,568	0.389	753,977	1.065	801,569	N/A	801,569	0.398	0.398
6/30/01-02	203,105	0.326	619,074	1.074	664,551	N/A	664,551	0.327	0.327
6/30/02-03	202,515	0.393	748,904	1.082	809,134	N/A	809,134	0.400	0.400
6/30/03-04	189,588	0.734	1,343,324	1.096	1,465,230	N/A	1,465,230	0.773	0.773
6/30/04-05	186,990	0.359	916,815	1.110	983,344	N/A	983,344	0.526	0.526
6/30/05-06	193,254	0.369	832,733	1.124	911,467	N/A	911,467	0.472	0.472
6/30/06-07	203,359	0.378	671,423	1.141	766,466	N/A	766,466	0.377	0.377
6/30/07-08	212,083	0.388	663,885	1.162	778,399	N/A	778,399	0.367	0.367
6/30/08-09	204,679	0.400	758,051	1.180	882,610	N/A	882,610	0.431	0.431
6/30/09-10	184,688	0.421	518,661	1.217	657,176	N/A	657,176	0.356	0.356
6/30/10-11	169,689	0.431	745,881	1.253	893,537	N/A	893,537	0.527	0.527
6/30/11-12	177,399	0.442	532,545	1.309	717,682	N/A	717,682	0.405	0.405
6/30/12-13	189,252	0.453	555,003	1.381	791,643	N/A	791,643	0.418	0.418
6/30/13-14	199,876	0.464	538,864	1.534	861,952	N/A	861,952	0.431	0.431
6/30/14-15	213,700	0.476	678,363	1.770	1,120,651	N/A	1,120,651	0.524	0.524
6/30/15-16	211,829	0.488	454,022	3.813	1,216,357	N/A	1,216,357	0.574	0.574
Total	6,138,877		27,467,386		30,830,696		30,830,696		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 3, Exhibit 2, Page 4, Column 11

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

(5) From Section 3, Exhibit 2, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Expected Ult Loss	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.360	0.360
6/30/85-86									0.173	0.173
6/30/86-87									0.417	0.417
6/30/87-88									0.737	0.737
6/30/88-89									0.948	0.948
6/30/89-90									0.903	0.903
6/30/90-91	210,162	1,780,904	0.847	1.194	1.012	1.900	1.923	0.220	0.846	0.841
6/30/91-92	205,241	1,289,136	0.628	1.189	0.747	1.854	1.384	0.227	0.625	0.620
6/30/92-93	176,705	1,145,829	0.648	1.189	0.771	1.809	1.395	0.232	0.631	0.636
6/30/93-94	173,075	664,677	0.384	1.178	0.453	1.765	0.799	0.240	0.384	0.378
6/30/94-95	178,317	879,449	0.493	1.170	0.577	1.722	0.993	0.248	0.487	0.481
6/30/95-96	175,996	833,619	0.474	1.155	0.547	1.680	0.919	0.258	0.469	0.461
6/30/96-97	190,083	564,109	0.297	1.137	0.337	1.639	0.553	0.268	0.301	0.295
6/30/97-98	177,278	530,284	0.299	1.135	0.340	1.599	0.543	0.276	0.306	0.297
6/30/98-99	189,080	798,270	0.422	1.135	0.479	1.560	0.747	0.282	0.401	0.410
6/30/99-00	194,494	636,605	0.327	1.135	0.371	1.522	0.565	0.290	0.335	0.324
6/30/00-01	201,568	802,727	0.398	1.109	0.442	1.485	0.656	0.304	0.401	0.389
6/30/01-02	203,105	664,742	0.327	1.101	0.360	1.448	0.522	0.314	0.337	0.326
6/30/02-03	202,515	810,211	0.400	1.073	0.429	1.413	0.607	0.330	0.396	0.393
6/30/03-04	189,588	1,472,375	0.777	1.046	0.813	1.379	1.120	0.347	0.732	0.734
6/30/04-05	186,990	1,017,670	0.544	1.036	0.564	1.345	0.758	0.359	0.433	0.359
6/30/05-06	193,254	936,006	0.484	1.032	0.500	1.312	0.656	0.369	0.439	0.369
6/30/06-07	203,359	766,011	0.377	1.032	0.389	1.280	0.498	0.378	0.443	0.378
6/30/07-08	212,083	771,224	0.364	1.032	0.375	1.249	0.469	0.388	0.447	0.388
6/30/08-09	204,679	894,167	0.437	1.027	0.448	1.218	0.546	0.400	0.454	0.400
6/30/09-10	184,688	631,207	0.342	1.000	0.342	1.189	0.406	0.421	0.471	0.421
6/30/10-11	169,689	934,481	0.551	1.000	0.551	1.160	0.639	0.431	0.476	0.431
6/30/11-12	177,399	697,187	0.393	1.000	0.393	1.131	0.445	0.442	0.480	0.442
6/30/12-13	189,252	766,623	0.405	1.000	0.405	1.104	0.447	0.453	0.485	0.453
6/30/13-14	199,876	826,664	0.414	1.000	0.414	1.077	0.445	0.464	0.490	0.464
6/30/14-15	213,700	1,200,404	0.562	1.000	0.562	1.051	0.590	0.476	0.495	0.476
6/30/15-16	211,829	1,731,318	0.817	1.000	0.817	1.025	0.838	0.488		0.488
Total	5,014,007	24,045,897								

Trend Last 4 (ex 15-16):	11.5%	Avg 3 (ex 15-16):	0.494
Trend Last 8 (ex 15-16):	3.1%	Avg 5 (ex 15-16):	0.513
Trend Last 12 (ex 15-16):	-2.5%	Avg 10 (ex 15-16):	0.514
Prior Selected Trend:	1.0%	Prior Sel Avg:	0.500
Selected Trend:	2.5%	Sel. Loss Cost:	0.500

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 3, Exhibit 2, Page 2, Column 6

(4) = (3) / (2) / 10

(5) Based on information from the MA WCIRB

(6) = (4) x (5)

(7) Based on Selected Trend from (6)

(8) = (6) x (7)

(9) = Sel. Loss Cost / [(5) * (7)]

(10) From prior Aon analysis as of June 30, 2015

(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.950	
(2)	Credibility		31%	
(3)	Average Pmt Trend Statewide		0.950	
(4)	Credibility Weighted Trend		0.950	
		(Low)		(High)
(5)	Selected Range	0.941		0.960
(6)	Incremental Paid for 2016	1,530		1,530
(7)	Estimated Reserve	24,184		36,248
(8)	Paid to Date (82 & Prior)	814,737		814,737
(9)	Est Ult Paid for 1982 & Prior	838,921		850,985

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	675	165
(11)	Projected Number of Years	7	7
(12)	Estimated Reserve	4,725	1,155
(13)	Paid to Date (82 & Prior)	814,737	813,207
(14)	Est Ult Paid for 1982 & Prior	819,462	814,362
(14a)	Paid Counts During Fiscal Year	2	2

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	829,192	832,673
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**829,192**	**832,673**
(18)	Implied Tail	1.018	1.022
(19)	Ult Loss Inc Lump Sums @ 6/15	817,697	818,823

NOTES:

(1) From Section 3, Exhibit 2, Page 6
(2) = (Average of Section 3, Exhibit 2, Page 6, Column 3 / 175,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 3, Exhibit 2, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 3, Exhibit 2, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) Lump Sums are considered in Indemnity analysis (Section 1)
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	51,889	10.857			
1993	2	26,449	10.183	0.510		
1994	3	19,386	9.872	0.733		
1995	4	14,214	9.562	0.733		
1996	5	30,374	10.321	2.137		
1997	6	29,871	10.305	0.983		
1998	7	19,565	9.881	0.655		
1999	8	34,912	10.461	1.784		
2000	9	33,563	10.421	0.961	n =	21
2001	10	21,898	9.994	0.652	S(x) =	42,045
2002	11	10,530	9.262	0.481	S(x-sq) =	84,180,935
2003	12	13,888	9.539	1.319	S(xy) =	407,572
2004	13	14,770	9.600	1.064	S(y) =	204
2005	14	16,486	9.710	1.116	D =	17,610
2006	15	16,533	9.713	1.003	slope =	-0.096
2007	16	15,051	9.619	0.910	Avg Trend =	0.904
2008	17	15,931	9.676	1.058		
2009	18	15,802	9.668	0.992		
2010	19	17,686	9.781	1.119		
2011	20	7,925	8.978	0.448		
2012	21	0				
2013	22	0				
2014	23	0				
2015	24	495	6.205			
2016	25	1,530	7.333	3.091		
					Selected Trend:	**0.950**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 3.091 = 1530 / 495

Commonwealth of Massachusetts Workers Compensation
Department of Mental Health - Cluster 2
MEDICAL
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	6,910	16,771	25,010	31,963	39,548	47,447	55,206	65,979	79,676	97,881	109,437	118,040	122,472	123,657	124,261	124,960	125,364	127,246	128,435	128,594	128,869	130,242	130,978	131,631	133,115	134,239	135,539	136,526	137,668	137,734	137,833	137,899	138,560	139,442
June-84	15,115	36,685	54,706	69,914	86,505	104,208	114,043	135,514	154,763	169,780	196,611	201,984	204,351	205,488	205,929	206,289	207,062	207,303	207,590	207,590	207,590	207,590	207,590	207,590	207,590	209,040	209,040	209,040	209,040	209,040	209,040	209,040	209,040	
June-85	45,034	109,301	162,993	208,305	264,045	295,679	375,978	436,398	457,324	469,156	478,993	481,392	482,690	484,957	486,098	486,337	486,602	486,918	487,378	488,092	488,848	489,022	489,458	490,407	490,672	490,804	491,592	491,855	492,053	492,119	492,382	492,808		
June-86	31,328	76,036	113,387	149,251	177,640	201,245	224,645	234,675	242,982	244,710	248,077	248,146	248,146	248,464	249,109	249,459	249,459	249,734	249,759	250,509	253,317	253,317	253,317	257,775	257,775	257,775	257,775	257,775	257,775	257,775	257,775			
June-87	76,748	186,273	283,696	389,472	457,883	509,794	575,159	621,158	638,516	650,997	655,971	660,694	667,637	681,728	687,346	690,455	693,082	696,366	698,158	699,573	700,478	701,229	701,978	702,712	702,835	702,835	702,835	702,835	702,835	702,835				
June-88	178,894	502,531	738,028	895,402	1,063,080	1,183,773	1,248,121	1,279,736	1,298,796	1,310,333	1,339,541	1,367,561	1,385,075	1,399,869	1,424,718	1,427,592	1,445,010	1,498,101	1,524,412	1,550,835	1,609,155	1,632,873	1,663,246	1,690,901	1,720,638	1,733,092	1,753,364	1,848,480	1,853,589					
June-89	179,890	786,968	1,088,315	1,330,240	1,584,004	1,681,826	1,741,013	1,807,955	1,845,172	1,876,501	1,906,158	1,945,202	1,962,565	1,969,371	1,973,430	1,978,126	1,981,710	1,986,429	2,002,120	2,035,745	2,040,920	2,043,319	2,045,069	2,046,563	2,047,864	2,049,094	2,050,041	2,052,689							
June-90	298,701	961,341	1,346,536	1,509,954	1,639,655	1,697,547	1,735,975	1,749,267	1,768,436	1,790,051	1,817,206	1,838,401	1,863,987	1,878,469	1,905,280	1,915,675	1,921,866	1,934,997	1,937,028	1,938,078	1,938,078	1,938,078	1,938,078	1,938,078	1,938,078	1,938,378	1,938,618								
June-91	336,650	1,034,501	1,248,801	1,338,322	1,397,546	1,497,111	1,506,640	1,518,859	1,530,350	1,582,638	1,604,133	1,610,563	1,618,558	1,622,507	1,624,821	1,627,667	1,633,766	1,732,296	1,736,277	1,737,397	1,738,820	1,740,878	1,741,982	1,744,875	1,746,213	1,746,723									
June-92	391,215	804,359	985,930	1,100,607	1,131,087	1,152,839	1,156,897	1,204,770	1,207,427	1,217,326	1,239,794	1,242,292	1,245,829	1,245,829	1,247,305	1,249,031	1,251,673	1,256,737	1,256,737	1,257,214	1,258,829	1,260,461	1,260,611	1,260,611	1,260,611										
June-93	258,020	628,980	745,922	854,118	902,554	912,950	924,291	930,378	935,510	938,871	941,935	946,379	956,312	969,261	977,539	988,688	1,003,269	1,015,451	1,027,786	1,045,649	1,059,121	1,078,986	1,097,266	1,117,124										
June-94	182,635	373,628	418,730	436,391	447,015	469,585	491,352	516,384	534,463	550,753	585,007	594,302	601,406	609,303	615,358	624,226	630,803	638,628	643,805	645,213	646,088	646,088	646,088											
June-95	212,717	409,284	509,019	570,032	608,100	631,875	651,359	673,340	687,056	708,855	725,773	748,542	771,912	790,063	800,522	812,267	823,958	831,209	836,947	844,533	849,477	852,296												
June-96	161,311	580,474	655,522	690,974	709,369	717,233	722,565	739,256	747,885	753,899	765,449	771,693	782,222	790,224	794,884	796,128	797,390	798,222	801,390	803,766	804,663													
June-97	135,202	301,857	352,150	378,182	408,711	433,559	446,704	473,023	486,546	493,154	499,117	502,144	505,108	509,796	517,517	522,815	524,946	533,925	536,788	541,805														
June-98	160,545	332,451	383,627	422,681	445,088	461,616	487,824	498,965	499,061	499,770	500,001	503,898	505,757	505,921	506,053	506,185	506,317	506,558	506,783															
June-99	177,752	299,718	340,747	360,722	405,072	439,482	477,272	520,347	561,026	584,273	585,114	588,553	606,906	637,239	655,001	683,204	721,085	759,098																
June-00	185,350	429,256	483,565	521,929	539,722	558,001	575,939	582,579	584,965	587,880	590,258	592,928	595,238	598,391	601,805	602,355	602,355																	
June-01	241,669	433,098	500,398	575,365	598,840	628,934	693,180	725,143	730,102	735,829	737,792	740,203	753,446	753,977	753,977	753,977																		
June-02	174,410	368,134	462,671	501,999	514,827	521,795	525,972	571,546	580,032	584,275	614,358	616,264	616,631	617,414	619,074																			
June-03	106,077	382,205	468,554	496,191	560,019	574,291	585,592	637,875	657,335	673,709	685,713	706,227	728,783	748,904																				
June-04	258,429	665,381	856,411	1,022,737	1,071,500	1,113,490	1,161,995	1,192,531	1,222,893	1,246,683	1,275,099	1,309,808	1,343,324																					
June-05	223,896	627,798	728,574	772,233	797,587	811,216	848,381	866,048	884,416	901,770	910,494	916,815																						
June-06	251,300	520,856	684,007	715,286	737,612	754,221	768,311	780,173	795,227	811,567	832,733																							
June-07	266,977	578,217	638,599	652,141	659,793	664,093	666,803	669,308	669,732	671,423																								
June-08	278,965	550,541	604,168	629,658	649,695	656,991	663,910	663,885	663,885																									
June-09	302,300	569,565	595,188	605,449	639,872	662,294	692,197	758,051																										
June-10	216,046	447,208	465,324	474,345	490,538	503,411	518,661																											
June-11	336,085	580,670	657,420	693,645	718,136	745,881																												
June-12	227,796	448,648	504,764	520,900	532,545																													
June-13	232,201	491,890	540,494	555,003																														
June-14	217,605	461,922	538,864																															
June-15	336,154	678,363																																
June-16	454,022																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.427	1.491	1.278	1.237	1.200	1.164	1.195	1.208	1.228	1.118	1.079	1.038	1.010	1.005	1.006	1.003	1.015	1.009	1.001	1.002	1.011	1.006	1.005	1.011	1.008	1.010	1.007	1.008	1.000	1.001	1.000	1.005	1.006
June-84	2.427	1.491	1.278	1.237	1.205	1.094	1.188	1.142	1.097	1.158	1.027	1.012	1.006	1.002	1.002	1.004	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.007	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
June-85	2.427	1.491	1.278	1.268	1.120	1.272	1.161	1.048	1.026	1.021	1.005	1.003	1.005	1.002	1.000	1.001	1.001	1.001	1.001	1.002	1.000	1.001	1.002	1.001	1.000	1.002	1.001	1.000	1.000	1.001	1.001			
June-86	2.427	1.491	1.316	1.190	1.133	1.116	1.045	1.035	1.007	1.014	1.000	1.000	1.001	1.003	1.001	1.000	1.001	1.000	1.003	1.011	1.000	1.000	1.018	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
June-87	2.427	1.523	1.373	1.176	1.113	1.128	1.080	1.028	1.020	1.008	1.007	1.011	1.021	1.008	1.005	1.004	1.005	1.003	1.002	1.001	1.001	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000					
June-88	2.809	1.469	1.213	1.187	1.114	1.054	1.025	1.015	1.009	1.022	1.021	1.013	1.011	1.018	1.002	1.012	1.037	1.018	1.017	1.038	1.015	1.019	1.017	1.018	1.007	1.012	1.054	1.003						
June-89	4.375	1.383	1.222	1.191	1.062	1.035	1.038	1.021	1.017	1.016	1.020	1.009	1.003	1.002	1.002	1.002	1.002	1.008	1.017	1.003	1.001	1.001	1.001	1.001	1.001	1.000	1.001							
June-90	3.218	1.401	1.121	1.086	1.035	1.023	1.008	1.011	1.012	1.015	1.012	1.014	1.008	1.014	1.005	1.003	1.007	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
June-91	3.073	1.207	1.072	1.044	1.071	1.006	1.008	1.008	1.034	1.014	1.004	1.005	1.002	1.001	1.002	1.004	1.060	1.002	1.001	1.001	1.001	1.001	1.002	1.001	1.000									
June-92	2.056	1.226	1.116	1.028	1.019	1.004	1.041	1.002	1.008	1.018	1.002	1.003	1.000	1.001	1.001	1.002	1.004	1.000	1.000	1.001	1.001	1.000	1.000	1.000										
June-93	2.438	1.186	1.145	1.057	1.012	1.012	1.007	1.006	1.004	1.003	1.005	1.010	1.014	1.009	1.011	1.015	1.012	1.012	1.017	1.013	1.019	1.017	1.018											
June-94	2.046	1.121	1.042	1.024	1.050	1.046	1.051	1.035	1.030	1.062	1.016	1.012	1.013	1.010	1.014	1.011	1.012	1.008	1.002	1.001	1.000	1.000												
June-95	1.924	1.244	1.120	1.067	1.039	1.031	1.034	1.020	1.032	1.024	1.031	1.031	1.024	1.013	1.015	1.014	1.009	1.007	1.009	1.006	1.003													
June-96	3.598	1.129	1.054	1.027	1.011	1.007	1.023	1.012	1.008	1.015	1.008	1.014	1.010	1.006	1.002	1.002	1.001	1.004	1.003	1.001														
June-97	2.233	1.167	1.074	1.081	1.061	1.030	1.059	1.029	1.014	1.012	1.006	1.006	1.009	1.015	1.010	1.004	1.017	1.005	1.009															
June-98	2.071	1.154	1.102	1.053	1.037	1.057	1.023	1.000	1.001	1.000	1.008	1.004	1.000	1.000	1.000	1.000	1.000	1.000																
June-99	1.686	1.137	1.059	1.123	1.085	1.086	1.090	1.078	1.041	1.001	1.006	1.031	1.050	1.028	1.043	1.055	1.053																	
June-00	2.316	1.127	1.079	1.034	1.034	1.032	1.012	1.004	1.005	1.004	1.005	1.004	1.005	1.006	1.001	1.000																		
June-01	1.792	1.155	1.150	1.041	1.050	1.102	1.046	1.007	1.008	1.003	1.003	1.018	1.001	1.000	1.000																			
June-02	2.111	1.257	1.085	1.026	1.014	1.008	1.087	1.015	1.007	1.051	1.003	1.001	1.001	1.003																				
June-03	3.603	1.226	1.059	1.129	1.025	1.020	1.089	1.031	1.025	1.018	1.030	1.032	1.028																					
June-04	2.575	1.287	1.194	1.048	1.039	1.044	1.026	1.025	1.019	1.023	1.027	1.026																						
June-05	2.804	1.161	1.060	1.033	1.017	1.046	1.021	1.021	1.020	1.010	1.007																							
June-06	2.073	1.313	1.046	1.031	1.023	1.019	1.015	1.019	1.021	1.026																								
June-07	2.166	1.104	1.021	1.012	1.007	1.004	1.004	1.001	1.003																									
June-08	1.974	1.097	1.042	1.032	1.011	1.011	1.000	1.000																										
June-09	1.884	1.045	1.017	1.057	1.035	1.045	1.095																											
June-10	2.070	1.041	1.019	1.034	1.026	1.030																												
June-11	1.728	1.132	1.055	1.035	1.039																													
June-12	1.970	1.125	1.032	1.022																														
June-13	2.118	1.099	1.027																															
June-14	2.123	1.167																																
June-15	2.018																																	

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.393	1.239	1.121	1.087	1.058	1.055	1.054	1.032	1.028	1.027	1.014	1.013	1.011	1.007	1.006	1.008	1.014	1.005	1.006	1.006	1.004	1.004	1.006	1.003	1.003	1.003	1.009	1.002	1.000	1.000	1.000	1.002	1.006	
Latest 5	1.991	1.113	1.030	1.036	1.024	1.022	1.027	1.013	1.017	1.026	1.014	1.016	1.017	1.007	1.011	1.012	1.016	1.005	1.008	1.004	1.005	1.004	1.004	1.004	1.002	1.002	1.011	1.001	1.000					
Latest 3	2.086	1.130	1.038	1.031	1.033	1.029	1.033	1.007	1.014	1.020	1.021	1.019	1.010	1.003	1.015	1.019	1.023	1.003	1.007	1.003	1.007	1.006	1.007	1.000	1.000	1.004	1.019	1.001	1.000	1.000	1.000			
Volume Wtd																																		
All Yrs	2.338	1.212	1.104	1.072	1.045	1.038	1.037	1.018	1.018	1.019	1.013	1.013	1.010	1.008	1.006	1.007	1.017	1.006	1.007	1.007	1.004	1.004	1.005	1.003	1.002	1.003	1.018	1.002	1.000	1.000	1.001	1.002	1.006	
Latest 5	1.972	1.114	1.031	1.037	1.024	1.021	1.027	1.015	1.018	1.024	1.016	1.018	1.017	1.007	1.011	1.013	1.016	1.005	1.009	1.005	1.005	1.003	1.003	1.004	1.002	1.003	1.019	1.002	1.000					
Latest 3	2.077	1.130	1.039	1.031	1.034	1.029	1.034	1.007	1.015	1.020	1.021	1.021	1.010	1.003	1.014	1.021	1.027	1.003	1.007	1.003	1.009	1.006	1.006	1.000	1.000	1.004	1.022	1.002	1.000	1.000	1.001			

Dev Factor Selection																																		
Industry 1	1.937	1.138	1.051	1.025	1.014	1.013	1.011	1.011	1.011	1.011	1.011	1.010	1.010	1.008	1.007	1.006	1.006	1.005																
Industry 2		1.271	1.076	1.031	1.019	1.013	1.010	1.010	1.011	1.009	1.010	1.014	1.012	1.008	1.007	1.008	1.006	1.005	1.005	1.006														
Prior	*2.166*	*1.153*	*1.111*	*1.055*	*1.045*	*1.032*	*1.025*	*1.020*	*1.018*	*1.015*	*1.013*	*1.012*	*1.010*	*1.009*	*1.009*	*1.008*	*1.005*	*1.005*	*1.005*	*1.005*	*1.004*	*1.003*	*1.003*	*1.003*	*1.003*	*1.003*	*1.003*	*1.002*	*1.001*	*1.001*	*1.001*	*1.001*	*1.009*	
Selected	2.155	1.153	1.111	1.055	1.045	1.029	1.032	1.015	1.018	1.015	1.013	1.013	1.013	1.008	1.009	1.007	1.005	1.005	1.005	1.005	1.004	1.003	1.003	1.003	1.003	1.003	1.003	1.002	1.001	1.001	1.001	1.001	1.001	1.006
FacToUlt	3.813	1.770	1.534	1.381	1.309	1.253	1.217	1.180	1.162	1.141	1.124	1.110	1.096	1.082	1.074	1.065	1.057	1.052	1.046	1.041	1.036	1.032	1.029	1.026	1.023	1.020	1.017	1.013	1.011	1.010	1.009	1.008	1.007	1.006
Percent of Ult	26.2%	56.5%	65.2%	72.4%	76.4%	79.8%	82.2%	84.8%	86.1%	87.7%	89.0%	90.1%	91.2%	92.4%	93.1%	93.9%	94.6%	95.1%	95.6%	96.0%	96.5%	96.9%	97.2%	97.5%	97.8%	98.1%	98.4%	98.7%	98.9%	99.0%	99.1%	99.2%	99.3%	99.4%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	817,697	818,823	829,192	832,673	11,495	1.4%	13,850	1.7%
6/30/82-83	139,860	141,259	140,337	141,740	477	0.3%	481	0.3%
6/30/83-84	211,000	211,000	211,000	211,000	0	0.0%	0	0.0%
6/30/84-85	498,000	502,980	497,000	501,970	(1,000)	-0.2%	(1,010)	-0.2%
6/30/85-86	261,000	261,000	260,000	260,000	(1,000)	-0.4%	(1,000)	-0.4%
6/30/86-87	712,000	713,000	710,000	710,000	(2,000)	-0.3%	(3,000)	-0.4%
6/30/87-88	1,872,000	1,877,000	1,871,000	1,875,000	(1,000)	-0.1%	(2,000)	-0.1%
6/30/88-89	2,088,000	2,088,000	2,080,000	2,101,810	(8,000)	-0.4%	13,810	0.7%
6/30/89-90	1,977,000	1,997,000	1,977,000	1,997,000	0	0.0%	0	0.0%
6/30/90-91	1,789,000	1,789,000	1,781,000	1,798,810	(8,000)	-0.4%	9,810	0.5%
6/30/91-92	1,286,000	1,298,000	1,286,000	1,298,000	0	0.0%	0	0.0%
6/30/92-93	1,131,000	1,142,310	1,145,000	1,157,460	14,000	1.2%	15,150	1.3%
6/30/93-94	668,000	668,000	664,000	665,000	(4,000)	-0.6%	(3,000)	-0.4%
6/30/94-95	881,000	882,000	879,000	887,790	(2,000)	-0.2%	5,790	0.7%
6/30/95-96	838,000	846,380	833,000	842,340	(5,000)	-0.6%	(4,040)	-0.5%
6/30/96-97	563,000	568,630	564,000	569,640	1,000	0.2%	1,010	0.2%
6/30/97-98	534,000	539,340	530,000	535,300	(4,000)	-0.7%	(4,040)	-0.7%
6/30/98-99	763,000	764,000	797,000	798,000	34,000	4.5%	34,000	4.5%
6/30/99-00	636,570	643,000	629,640	637,000	(6,930)	-1.1%	(6,000)	-0.9%
6/30/00-01	802,890	812,000	793,980	803,000	(8,910)	-1.1%	(9,000)	-1.1%
6/30/01-02	670,000	672,000	665,000	671,650	(5,000)	-0.7%	(350)	-0.1%
6/30/02-03	791,010	808,000	800,910	818,100	9,900	1.3%	10,100	1.3%
6/30/03-04	1,432,530	1,468,540	1,450,350	1,486,720	17,820	1.2%	18,180	1.2%
6/30/04-05	1,000,000	1,023,000	983,000	1,018,000	(17,000)	-1.7%	(5,000)	-0.5%
6/30/05-06	916,000	926,000	911,000	936,000	(5,000)	-0.5%	10,000	1.1%
6/30/06-07	778,000	795,000	766,000	781,320	(12,000)	-1.5%	(13,680)	-1.7%
6/30/07-08	787,000	812,000	771,000	778,000	(16,000)	-2.0%	(34,000)	-4.2%
6/30/08-09	841,000	857,000	883,000	894,000	42,000	5.0%	37,000	4.3%
6/30/09-10	631,000	679,000	631,000	657,000	0	0.0%	(22,000)	-3.2%
6/30/10-11	909,000	941,000	894,000	934,000	(15,000)	-1.7%	(7,000)	-0.7%
6/30/11-12	720,000	756,000	697,000	718,000	(23,000)	-3.2%	(38,000)	-5.0%
6/30/12-13	830,000	861,000	767,000	792,000	(63,000)	-7.6%	(69,000)	-8.0%
6/30/13-14	818,000	888,000	827,000	862,000	9,000	1.1%	(26,000)	-2.9%
6/30/14-15	1,118,000	1,289,000	1,121,000	1,200,000	3,000	0.3%	(89,000)	-6.9%
6/30/15-16								
Total	30,710,557	31,338,262	30,645,408	31,170,323	(65,148)	-0.2%	(167,938)	-0.5%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 3, Exhibit 2, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	0.6%	0.0%	0.2%	0.1%	1.000	1.000
408	99.4%	0.1%	0.6%	0.0%	0.0%	0.981	0.971
396	99.3%	0.1%	0.7%	0.0%	0.0%	0.948	0.924
384	99.2%	0.1%	0.8%	0.0%	0.0%	0.920	0.883
372	99.1%	0.1%	0.9%	0.0%	0.0%	0.895	0.848
360	99.0%	0.1%	1.0%	0.0%	0.0%	0.872	0.816
348	98.9%	0.2%	1.1%	0.1%	0.0%	0.851	0.788
336	98.7%	0.3%	1.3%	0.1%	0.1%	0.842	0.777
324	98.4%	0.3%	1.6%	0.1%	0.1%	0.841	0.776
312	98.1%	0.3%	1.9%	0.1%	0.1%	0.835	0.769
300	97.8%	0.3%	2.2%	0.1%	0.1%	0.826	0.758
288	97.5%	0.3%	2.5%	0.1%	0.1%	0.816	0.745
276	97.2%	0.3%	2.8%	0.1%	0.1%	0.805	0.731
264	96.9%	0.4%	3.1%	0.2%	0.1%	0.794	0.716
252	96.5%	0.5%	3.5%	0.2%	0.1%	0.787	0.708
240	96.0%	0.5%	4.0%	0.2%	0.2%	0.784	0.705
228	95.6%	0.5%	4.4%	0.2%	0.2%	0.778	0.698
216	95.1%	0.5%	4.9%	0.2%	0.2%	0.771	0.689
204	94.6%	0.7%	5.4%	0.4%	0.3%	0.762	0.678
192	93.9%	0.8%	6.1%	0.4%	0.3%	0.761	0.678
180	93.1%	0.7%	6.9%	0.4%	0.3%	0.761	0.678
168	92.4%	1.2%	7.6%	0.7%	0.5%	0.755	0.670
156	91.2%	1.1%	8.8%	0.7%	0.6%	0.760	0.678
144	90.1%	1.1%	9.9%	0.7%	0.6%	0.760	0.678
132	89.0%	1.3%	11.0%	0.9%	0.7%	0.756	0.674
120	87.7%	1.6%	12.3%	1.1%	0.9%	0.754	0.671
108	86.1%	1.3%	13.9%	0.9%	0.8%	0.754	0.671
96	84.8%	2.6%	15.2%	1.9%	1.7%	0.747	0.662
84	82.2%	2.4%	17.8%	1.8%	1.6%	0.756	0.676
72	79.8%	3.4%	20.2%	2.8%	2.5%	0.757	0.676
60	76.4%	4.0%	23.6%	3.3%	3.1%	0.765	0.686
48	72.4%	7.2%	27.6%	6.3%	5.9%	0.771	0.694
36	65.2%	8.7%	34.8%	7.9%	7.5%	0.791	0.721
24	56.5%	30.3%	43.5%	28.6%	27.8%	0.804	0.738
12	26.2%	26.2%	73.8%	25.7%	25.5%	0.858	0.809
Total		100.0%					

NOTES:

(2) = 1 / Section 3, Exhibit 2, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	14,455	17,936		12,642	15,687
6/30/82-83	894	2,298	0.981	877	2,253
6/30/83-84	1,960	1,960	0.948	1,858	1,858
6/30/84-85	4,192	9,162	0.920	3,855	8,426
6/30/85-86	2,225	2,225	0.895	1,990	1,990
6/30/86-87	7,165	7,165	0.872	6,245	6,245
6/30/87-88	17,411	21,411	0.851	14,809	18,211
6/30/88-89	27,311	49,121	0.842	22,996	41,360
6/30/89-90	38,382	58,382	0.841	32,266	49,079
6/30/90-91	34,277	52,087	0.835	28,612	43,479
6/30/91-92	25,389	37,389	0.826	20,977	30,891
6/30/92-93	27,876	40,336	0.816	22,752	32,921
6/30/93-94	17,912	18,912	0.805	14,423	15,228
6/30/94-95	26,704	35,494	0.794	21,194	28,170
6/30/95-96	28,337	37,677	0.787	22,310	29,664
6/30/96-97	22,195	27,835	0.784	17,405	21,827
6/30/97-98	23,217	28,517	0.778	18,073	22,199
6/30/98-99	37,902	38,902	0.771	29,222	29,993
6/30/99-00	27,285	34,645	0.762	20,802	26,413
6/30/00-01	40,003	49,023	0.761	30,454	37,320
6/30/01-02	45,926	52,576	0.761	34,942	40,002
6/30/02-03	52,006	69,196	0.755	39,239	52,209
6/30/03-04	107,026	143,396	0.760	81,378	109,032
6/30/04-05	66,185	101,185	0.760	50,297	76,895
6/30/05-06	78,267	103,267	0.756	59,182	78,086
6/30/06-07	94,577	109,897	0.754	71,317	82,869
6/30/07-08	107,115	114,115	0.754	80,752	86,029
6/30/08-09	124,949	135,949	0.747	93,312	101,527
6/30/09-10	112,339	138,339	0.756	84,981	104,649
6/30/10-11	148,119	188,119	0.757	112,109	142,384
6/30/11-12	164,455	185,455	0.765	125,729	141,784
6/30/12-13	211,997	236,997	0.771	163,362	182,627
6/30/13-14	288,136	323,136	0.791	227,795	255,465
6/30/14-15	442,637	521,637	0.804	355,940	419,467
6/30/15-16	822,778	1,103,878	0.858	706,223	947,502
Total	3,291,603	4,097,618		2,630,319	3,283,742
			(7) Total Discount Factor:	0.799	0.801

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	14,455	17,936
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	2,065	2,562
(11) Discounted Value at 4%:	12,642	15,687

NOTES:

(2), (3) From Section 3, Exhibit 2, Page 1, Columns 8, 9

(4) From Section 3, Exhibit 2, Page 9, Column 7

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Mental Health - Cluster 2
Medical

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	14,455	17,936		11,873	14,733
6/30/82-83	894	2,298	0.971	869	2,232
6/30/83-84	1,960	1,960	0.924	1,810	1,810
6/30/84-85	4,192	9,162	0.883	3,702	8,092
6/30/85-86	2,225	2,225	0.848	1,887	1,887
6/30/86-87	7,165	7,165	0.816	5,849	5,849
6/30/87-88	17,411	21,411	0.788	13,714	16,865
6/30/88-89	27,311	49,121	0.777	21,220	38,165
6/30/89-90	38,382	58,382	0.776	29,794	45,319
6/30/90-91	34,277	52,087	0.769	26,358	40,052
6/30/91-92	25,389	37,389	0.758	19,245	28,341
6/30/92-93	27,876	40,336	0.745	20,768	30,051
6/30/93-94	17,912	18,912	0.731	13,091	13,822
6/30/94-95	26,704	35,494	0.716	19,121	25,414
6/30/95-96	28,337	37,677	0.708	20,073	26,689
6/30/96-97	22,195	27,835	0.705	15,649	19,625
6/30/97-98	23,217	28,517	0.698	16,209	19,910
6/30/98-99	37,902	38,902	0.689	26,112	26,801
6/30/99-00	27,285	34,645	0.678	18,505	23,497
6/30/00-01	40,003	49,023	0.678	27,107	33,219
6/30/01-02	45,926	52,576	0.678	31,128	35,635
6/30/02-03	52,006	69,196	0.670	34,843	46,360
6/30/03-04	107,026	143,396	0.678	72,609	97,283
6/30/04-05	66,185	101,185	0.678	44,894	68,635
6/30/05-06	78,267	103,267	0.674	52,725	69,566
6/30/06-07	94,577	109,897	0.671	63,487	73,770
6/30/07-08	107,115	114,115	0.671	71,917	76,617
6/30/08-09	124,949	135,949	0.662	82,761	90,047
6/30/09-10	112,339	138,339	0.676	75,887	93,451
6/30/10-11	148,119	188,119	0.676	100,160	127,208
6/30/11-12	164,455	185,455	0.686	112,880	127,294
6/30/12-13	211,997	236,997	0.694	147,194	164,552
6/30/13-14	288,136	323,136	0.721	207,609	232,828
6/30/14-15	442,637	521,637	0.738	326,618	384,911
6/30/15-16	822,778	1,103,878	0.809	665,698	893,132
Total	3,291,603	4,097,618		2,403,364	3,003,662
			(7) Total Discount Factor:	0.730	0.733

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	14,455	17,936
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	2,065	2,562
(11) Discounted Value at 6%:	11,873	14,733

NOTES:

(2), (3) From Section 3, Exhibit 2, Page 1, Columns 8, 9

(4) From Section 3, Exhibit 2, Page 9, Column 8

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

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		4,095,750			4,767,200	5,304,410	671,450	1,208,660		
6/30/82-83		2,747,816	2,802,608		2,774,582	2,803,000	26,766	55,184		
6/30/83-84		1,405,260	1,436,279		1,421,917	1,436,000	16,657	30,740		
6/30/84-85	115,258	4,041,185	4,526,544	4,108,756	4,101,768	4,318,000	60,582	276,815	3.559	3.746
6/30/85-86	123,937	6,399,508	6,547,640	6,523,415	6,404,817	6,470,640	5,309	71,132	5.168	5.221
6/30/86-87	142,396	3,884,640	3,978,432	3,985,043	3,902,103	3,942,180	17,463	57,540	2.740	2.768
6/30/87-88	166,792	6,097,875	6,256,838	6,273,618	6,139,923	6,202,350	42,048	104,475	3.681	3.719
6/30/88-89	180,117	7,349,617	7,923,417	7,544,994	7,545,000	7,923,000	195,383	573,383	4.189	4.399
6/30/89-90	180,883	9,344,994	9,662,476	9,658,032	9,658,000	9,662,000	313,006	317,006	5.339	5.342
6/30/90-91	169,902	10,354,975	12,142,728	10,787,059	10,787,000	11,900,140	432,025	1,545,165	6.349	7.004
6/30/91-92	165,926	4,372,135	4,572,703	4,571,681	4,572,000	4,573,000	199,865	200,865	2.755	2.756
6/30/92-93	174,198	3,157,116	3,306,582	3,306,821	3,240,568	3,273,930	83,452	116,814	1.860	1.879
6/30/93-94	185,946	5,034,790	5,319,277	5,315,656	5,316,000	5,319,000	281,210	284,210	2.859	2.861
6/30/94-95	194,051	6,152,581	6,615,512	6,605,011	6,605,000	6,616,000	452,419	463,419	3.404	3.409
6/30/95-96	205,262	5,324,898	5,821,210	5,810,896	5,811,000	5,821,000	486,102	496,102	2.831	2.836
6/30/96-97	234,073	6,031,973	6,662,793	6,648,284	6,648,000	6,663,000	616,027	631,027	2.840	2.847
6/30/97-98	221,865	8,264,125	9,228,474	9,184,765	8,746,289	8,930,790	482,164	666,666	3.942	4.025
6/30/98-99	256,071	7,636,041	8,620,718	8,578,914	8,169,825	8,342,000	533,784	705,959	3.190	3.258
6/30/99-00	268,486	8,170,937	9,262,851	9,211,676	8,775,400	8,959,890	604,463	788,953	3.268	3.337
6/30/00-01	279,182	10,541,308	12,084,236	11,997,985	11,439,055	11,679,770	897,747	1,138,462	4.097	4.184
6/30/01-02	283,070	8,955,672	10,387,328	10,319,423	9,835,707	10,387,000	880,034	1,431,328	3.475	3.669
6/30/02-03	289,846	8,738,259	10,236,171	10,169,109	9,692,508	10,236,000	954,248	1,497,741	3.344	3.532
6/30/03-04	293,771	7,891,296	9,342,722	9,286,493	8,848,877	9,343,000	957,581	1,451,704	3.012	3.180
6/30/04-05	291,382	8,258,462	9,890,594	9,197,414	9,066,804	9,891,000	808,341	1,632,538	3.112	3.395
6/30/05-06	294,709	5,833,869	7,016,954	6,811,783	6,568,650	7,017,000	734,781	1,183,131	2.229	2.381
6/30/06-07	289,603	4,896,053	5,980,996	5,938,095	5,661,568	5,981,000	765,515	1,084,947	1.955	2.065
6/30/07-08	354,668	4,784,582	5,931,051	6,144,155	6,038,000	6,144,000	1,253,418	1,359,418	1.702	1.732
6/30/08-09	332,413	4,010,904	5,084,764	5,414,609	5,250,000	5,685,000	1,239,096	1,674,096	1.579	1.710
6/30/09-10	336,338	2,473,403	3,226,211	4,024,538	3,625,000	4,226,000	1,151,597	1,752,597	1.078	1.256
6/30/10-11	333,783	3,511,006	4,765,453	5,283,259	5,024,000	5,547,000	1,512,994	2,035,994	1.505	1.662
6/30/11-12	348,187	2,567,652	3,651,887	4,663,369	4,158,000	4,897,000	1,590,348	2,329,348	1.194	1.406
6/30/12-13	368,022	2,251,316	3,503,834	4,902,251	4,203,000	5,147,000	1,951,684	2,895,684	1.142	1.399
6/30/13-14	390,528	2,357,876	4,389,118	5,988,625	5,189,000	6,288,000	2,831,124	3,930,124	1.329	1.610
6/30/14-15	402,750	2,184,416	5,549,078	7,143,800	6,346,000	7,501,000	4,161,584	5,316,584	1.576	1.862
6/30/15-16	400,013	1,329,847	7,318,171	8,171,666	7,745,000	8,580,000	6,415,153	7,250,153	1.936	2.145
Total	8,273,428	190,452,142	223,045,648	223,571,195	224,077,559	237,010,100	33,625,417	46,557,958		
Tot 6/30/84-16	8,273,428	182,203,316	218,806,761	223,571,195	215,113,861	227,466,690	32,910,545	45,263,374	2.600	2.749

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) Sum of Section 4, Exhibit 1, Page 2, Column 3 and Section 4, Exhibit 1, Page 9, Column 8

(4) From Section 4, Exhibit 1, Page 2, Column 8

(5) From Section 4, Exhibit 1, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Accident Year	Payroll (000's)	Paid Loss Excluding Lump Sum	Paid LDF	Adjstmnt for Extra Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim	Average Age
All Prior Yrs		3,935,750							2	2		67
6/30/82-83		2,566,735	1.021	1.000	2,621,527	181,081	2,802,608		0	0		
6/30/83-84		1,386,759	1.022	1.000	1,417,778	18,501	1,436,279		0	0		
6/30/84-85	115,258	3,860,335	1.023	1.100	4,345,694	180,850	4,526,544	3.927	1	1	485,359	71
6/30/85-86	123,937	6,067,508	1.024	1.000	6,215,640	332,000	6,547,640	5.283	0	0		
6/30/86-87	142,396	3,544,280	1.026	1.000	3,638,072	340,360	3,978,432	2.794	0	0		
6/30/87-88	166,792	5,380,873	1.030	1.000	5,539,836	717,002	6,256,838	3.751	0	0		
6/30/88-89	180,117	6,723,416	1.034	1.050	7,297,216	626,201	7,923,417	4.399	1	1	573,799	59
6/30/89-90	180,883	8,400,094	1.038	1.000	8,717,576	944,900	9,662,476	5.342	1	1	317,482	73
6/30/90-91	169,902	9,018,207	1.042	1.150	10,805,960	1,336,768	12,142,728	7.147	4	3	595,918	67
6/30/91-92	165,926	3,988,884	1.050	1.000	4,189,452	383,251	4,572,703	2.756	1	1	200,568	80
6/30/92-93	174,198	2,519,814	1.059	1.000	2,667,687	638,895	3,306,582	1.898	0	0		
6/30/93-94	185,946	4,192,115	1.067	1.000	4,474,495	844,782	5,319,277	2.861	2	3	94,127	53
6/30/94-95	194,051	5,419,968	1.085	1.000	5,881,068	734,445	6,615,512	3.409	0	1	461,100	55
6/30/95-96	205,262	4,737,035	1.104	1.000	5,231,878	589,332	5,821,210	2.836	1	2	247,421	58
6/30/96-97	234,073	5,237,372	1.120	1.000	5,866,206	796,588	6,662,793	2.846	2	1	628,834	56
6/30/97-98	221,865	7,832,407	1.122	1.000	8,790,197	438,277	9,228,474	4.159	2	3	319,263	56
6/30/98-99	256,071	7,459,988	1.131	1.000	8,434,903	185,815	8,620,718	3.367	1	1	974,914	72
6/30/99-00	268,486	7,894,835	1.136	1.000	8,971,211	291,640	9,262,851	3.450	0	0		
6/30/00-01	279,182	10,126,025	1.150	1.000	11,642,538	441,698	12,084,236	4.328	1	1	1,516,512	50
6/30/01-02	283,070	8,651,791	1.162	1.000	10,055,765	331,563	10,387,328	3.670	2	0		
6/30/02-03	289,846	8,374,756	1.175	1.000	9,839,795	396,376	10,236,171	3.532	2	0		
6/30/03-04	293,771	7,556,865	1.187	1.000	8,972,256	370,466	9,342,722	3.180	1	2	707,695	58
6/30/04-05	291,382	7,980,912	1.199	1.000	9,570,762	319,832	9,890,594	3.394	3	3	529,950	49
6/30/05-06	294,709	5,571,365	1.206	1.000	6,718,023	298,931	7,016,954	2.381	2	1	1,146,658	49
6/30/06-07	289,603	4,689,050	1.220	1.000	5,718,358	262,639	5,980,996	2.065	3	1	1,029,308	60
6/30/07-08	354,668	4,586,080	1.237	1.000	5,671,696	259,355	5,931,051	1.672	4	2	542,808	54
6/30/08-09	332,413	3,840,887	1.265	1.000	4,857,769	226,995	5,084,764	1.530	6	4	254,220	54
6/30/09-10	336,338	2,372,902	1.301	1.000	3,088,050	138,160	3,226,211	0.959	3	6	119,191	52
6/30/10-11	333,783	3,323,225	1.358	1.000	4,513,601	251,852	4,765,453	1.428	13	7	170,054	52
6/30/11-12	348,187	2,398,549	1.427	1.000	3,423,896	227,990	3,651,887	1.049	17	13	78,873	44
6/30/12-13	368,022	2,135,503	1.549	1.000	3,307,829	196,006	3,503,834	0.952	18	15	78,155	47
6/30/13-14	390,528	2,295,475	1.820	1.000	4,177,728	211,390	4,389,118	1.124	58	23	81,837	43
6/30/14-15	402,750	2,178,416	2.432	1.000	5,298,994	250,084	5,549,078	1.378	172	58	53,803	42
6/30/15-16	400,013	1,329,847	5.222	1.000	6,944,610	373,561	7,318,171	1.829		167	33,621	40
Total	8,273,428	177,578,028			208,908,063	14,137,586	223,045,648		323	323		

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB

(6) = (3) x (4) x (5)

(7) From Section 4, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss Excluding Lump Sum	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	115,258	2.565	3,860,335	1.023	3,927,906	180,850	4,108,756	3.565	3.408
6/30/85-86	123,937	4.195	6,067,508	1.024	6,191,415	332,000	6,523,415	5.263	4.996
6/30/86-87	142,396	2.735	3,544,280	1.026	3,644,683	340,360	3,985,043	2.799	2.560
6/30/87-88	166,792	3.672	5,380,873	1.030	5,556,616	717,002	6,273,618	3.761	3.331
6/30/88-89	180,117	3.331	6,723,416	1.034	6,918,793	626,201	7,544,994	4.189	3.841
6/30/89-90	180,883	4.752	8,400,094	1.038	8,713,132	944,900	9,658,032	5.339	4.817
6/30/90-91	169,902	6.317	9,018,207	1.042	9,450,291	1,336,768	10,787,059	6.349	5.562
6/30/91-92	165,926	2.512	3,988,884	1.050	4,188,430	383,251	4,571,681	2.755	2.524
6/30/92-93	174,198	1.534	2,519,814	1.059	2,667,926	638,895	3,306,821	1.898	1.532
6/30/93-94	185,946	2.375	4,192,115	1.067	4,470,875	844,782	5,315,656	2.859	2.404
6/30/94-95	194,051	2.962	5,419,968	1.085	5,870,566	734,445	6,605,011	3.404	3.025
6/30/95-96	205,262	2.496	4,737,035	1.104	5,221,563	589,332	5,810,896	2.831	2.544
6/30/96-97	234,073	2.448	5,237,372	1.120	5,851,696	796,588	6,648,284	2.840	2.500
6/30/97-98	221,865	3.781	7,832,407	1.122	8,746,488	438,277	9,184,765	4.140	3.942
6/30/98-99	256,071	3.153	7,459,988	1.131	8,393,099	185,815	8,578,914	3.350	3.278
6/30/99-00	268,486	3.183	7,894,835	1.136	8,920,036	291,640	9,211,676	3.431	3.322
6/30/00-01	279,182	3.933	10,126,025	1.150	11,556,287	441,698	11,997,985	4.298	4.139
6/30/01-02	283,070	3.381	8,651,791	1.162	9,987,860	331,563	10,319,423	3.646	3.528
6/30/02-03	289,846	3.239	8,374,756	1.175	9,772,733	396,376	10,169,109	3.508	3.372
6/30/03-04	293,771	2.933	7,556,865	1.187	8,916,027	370,466	9,286,493	3.161	3.035
6/30/04-05	291,382	1.853	7,980,912	1.199	8,877,582	319,832	9,197,414	3.156	3.047
6/30/05-06	294,709	1.872	5,571,365	1.206	6,512,851	298,931	6,811,783	2.311	2.210
6/30/06-07	289,603	1.892	4,689,050	1.220	5,675,456	262,639	5,938,095	2.050	1.960
6/30/07-08	354,668	1.913	4,586,080	1.237	5,884,800	259,355	6,144,155	1.732	1.659
6/30/08-09	332,413	1.935	3,840,887	1.265	5,187,614	226,995	5,414,609	1.629	1.561
6/30/09-10	336,338	1.943	2,372,902	1.301	3,886,378	138,160	4,024,538	1.197	1.155
6/30/10-11	333,783	1.940	3,323,225	1.358	5,031,407	251,852	5,283,259	1.583	1.507
6/30/11-12	348,187	1.953	2,398,549	1.427	4,435,379	227,990	4,663,369	1.339	1.274
6/30/12-13	368,022	1.971	2,135,503	1.549	4,706,246	196,006	4,902,251	1.332	1.279
6/30/13-14	390,528	1.979	2,295,475	1.820	5,777,235	211,390	5,988,625	1.533	1.479
6/30/14-15	402,750	1.988	2,178,416	2.432	6,893,716	250,084	7,143,800	1.774	1.712
6/30/15-16	400,013	2.000	1,329,847	5.222	7,798,105	373,561	8,171,666	2.043	1.949
Total	8,273,428		169,688,784		209,633,191	13,938,004	223,571,195		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 4, Exhibit 1, Page 4, Column 11

(4) From Section 4, Exhibit 1, Page 2, Column 3

(5) From Section 4, Exhibit 1, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) From Section 4, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Exp Ult Loss Excluding Lump Sum	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									2.565	2.565
6/30/85-86									4.195	4.195
6/30/86-87									2.735	2.735
6/30/87-88									3.672	3.672
6/30/88-89									3.331	3.331
6/30/89-90									4.752	4.752
6/30/90-91	169,902	10,805,960	6.360	0.969	6.161	1.000	6.161	2.065	6.315	6.317
6/30/91-92	165,926	4,189,452	2.525	1.063	2.683	1.000	2.683	1.882	2.518	2.512
6/30/92-93	174,198	2,667,687	1.531	1.239	1.898	1.000	1.898	1.614	1.562	1.534
6/30/93-94	185,946	4,474,495	2.406	1.223	2.944	1.000	2.944	1.635	2.416	2.375
6/30/94-95	194,051	5,881,068	3.031	1.212	3.673	1.000	3.673	1.650	3.042	2.962
6/30/95-96	205,262	5,231,878	2.549	1.202	3.065	1.000	3.065	1.663	2.558	2.496
6/30/96-97	234,073	5,866,206	2.506	1.190	2.983	1.000	2.983	1.680	2.489	2.448
6/30/97-98	221,865	8,790,197	3.962	1.175	4.656	1.000	4.656	1.702	3.808	3.781
6/30/98-99	256,071	8,434,903	3.294	1.160	3.820	1.000	3.820	1.725	3.196	3.153
6/30/99-00	268,486	8,971,211	3.341	1.141	3.813	1.000	3.813	1.753	3.265	3.183
6/30/00-01	279,182	11,642,538	4.170	1.112	4.638	1.000	4.638	1.798	4.031	3.933
6/30/01-02	283,070	10,055,765	3.552	1.090	3.873	1.000	3.873	1.834	3.472	3.381
6/30/02-03	289,846	9,839,795	3.395	1.086	3.688	1.000	3.688	1.841	3.329	3.239
6/30/03-04	293,771	8,972,256	3.054	1.086	3.318	1.000	3.318	1.841	3.015	2.933
6/30/04-05	291,382	9,570,762	3.285	1.080	3.546	1.000	3.546	1.853	2.097	1.853
6/30/05-06	294,709	6,718,023	2.280	1.069	2.436	1.000	2.436	1.872	2.118	1.872
6/30/06-07	289,603	5,718,358	1.975	1.057	2.087	1.000	2.087	1.892	2.142	1.892
6/30/07-08	354,668	5,671,696	1.599	1.045	1.672	1.000	1.672	1.913	2.165	1.913
6/30/08-09	332,413	4,857,769	1.461	1.033	1.510	1.000	1.510	1.935	2.190	1.935
6/30/09-10	336,338	3,088,050	0.918	1.029	0.945	1.000	0.945	1.943	2.199	1.943
6/30/10-11	333,783	4,513,601	1.352	1.031	1.394	1.000	1.394	1.940	2.196	1.940
6/30/11-12	348,187	3,423,896	0.983	1.024	1.007	1.000	1.007	1.953	2.211	1.953
6/30/12-13	368,022	3,307,829	0.899	1.015	0.912	1.000	0.912	1.971	2.231	1.971
6/30/13-14	390,528	4,177,728	1.070	1.011	1.081	1.000	1.081	1.979	2.240	1.979
6/30/14-15	402,750	5,298,994	1.316	1.006	1.324	1.000	1.324	1.988	2.250	1.988
6/30/15-16	400,013	6,944,610	1.736	1.000	1.736	1.000	1.736	2.000		2.000
Total	7,364,045	169,114,724								

Trend Last 4 (ex 15-16):	10.4%	Avg 3 (ex 15-16):	1.106
Trend Last 8 (ex 15-16):	-4.4%	Avg 5 (ex 15-16):	1.143
Trend Last 12 (ex 15-16):	-10.7%	Avg 10 (ex 15-16):	1.437
Prior Selected Trend:	0.0%	Prior Sel Avg:	2.250
Selected Trend:	0.0%	Sel. Loss Cost:	2.000

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 4, Exhibit 1, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCRIB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		1.000
(2)	Credibility		19%
(3)	Average Pmt Trend Statewide		0.960
(4)	Credibility Weighted Trend		0.968
		(Low)	(High)
(5)	Selected Range	0.948	0.977
(6)	Incremental Paid for 2016	99,212	99,212
(7)	Estimated Reserve	1,817,979	4,267,409
(8)	Paid to Date (82 & Prior)	3,935,750	3,935,750
(9)	Est Ult Paid for 1982 & Prior	5,753,729	8,203,160

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	96,425	96,096
(11)	Projected Number of Years	3	3
(12)	Estimated Reserve	289,274	288,288
(13)	Paid to Date (82 & Prior)	3,935,750	3,836,538
(14)	Est Ult Paid for 1982 & Prior	4,225,024	4,124,827
(14a)	Paid Counts During Fiscal Year	2	2
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	4,607,200	5,144,410
(16)	Lump Sum Ultimates	160,000	160,000
(17)	Ult Loss Including Lump Sums	**4,767,200**	**5,304,410**
(18)	Implied Tail	1.171	1.307
(19)	Ult Loss Inc Lump Sums @ 6/15	4,651,743	5,166,577

NOTES:

(1) From Section 4, Exhibit 1, Page 6
(2) = (Average of Section 4, Exhibit 1, Page 6, Column 3 / 3,000,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 4, Exhibit 1, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 4, Exhibit 1, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) From Section 4, Exhibit 1, Page 9, Column 13
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	188,569	12.147			
1993	2	151,483	11.928	0.803		
1994	3	104,509	11.557	0.690		
1995	4	93,428	11.445	0.894		
1996	5	94,858	11.460	1.015		
1997	6	35,075	10.465	0.370		
1998	7	103,538	11.548	2.952		
1999	8	96,697	11.479	0.934		
2000	9	73,478	11.205	0.760	n =	25
2001	10	66,717	11.108	0.908	S(x) =	50,100
2002	11	70,033	11.157	1.050	S(x-sq) =	100,401,700
2003	12	124,671	11.733	1.780	S(xy) =	577,414
2004	13	92,927	11.440	0.745	S(y) =	288
2005	14	283,599	12.555	3.052	D =	32,500
2006	15	99,838	11.511	0.352	slope =	0.000
2007	16	101,854	11.531	1.020	Avg Trend =	1.000
2008	17	110,209	11.610	1.082		
2009	18	118,086	11.679	1.071		
2010	19	114,911	11.652	0.973		
2011	20	108,994	11.599	0.949		
2012	21	88,958	11.396	0.816		
2013	22	98,227	11.495	1.104		
2014	23	94,260	11.454	0.960		
2015	24	95,801	11.470	1.016		
2016	25	99,212	11.505	1.036		
					Selected Trend:	**1.000**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2015: 1.036 = 99212 / 94260

Commonwealth of Massachusetts Workers Compensation
Department of Corrections - Cluster 3
INDEMNITY
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	160,888	374,220	534,542	675,661	811,997	954,058	1,116,909	1,304,184	1,471,217	1,635,013	1,757,490	1,859,844	1,949,141	2,029,453	2,148,093	2,178,681	2,205,456	2,235,374	2,318,345	2,353,359	2,388,924	2,424,404	2,461,295	2,499,289	2,538,974	2,566,735	2,566,735	2,566,735	2,566,735	2,566,735	2,566,735	2,566,735	2,566,735	2,566,735
June-84	149,256	331,713	467,188	590,124	701,300	845,012	973,143	1,100,933	1,224,966	1,294,374	1,350,379	1,377,980	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759	1,386,759		
June-85	278,562	647,928	925,510	1,158,844	1,390,342	1,636,071	1,810,725	1,948,970	2,082,835	2,178,082	2,319,274	2,402,755	2,445,792	2,537,445	2,628,105	2,728,723	2,834,546	2,914,527	2,998,669	3,082,607	3,169,057	3,258,902	3,352,791	3,451,011	3,510,756	3,557,919	3,604,884	3,653,451	3,703,603	3,754,423	3,806,419	3,860,335		
June-86	597,558	1,389,906	1,985,364	2,475,336	2,928,617	3,253,763	3,464,240	3,764,813	3,935,847	4,097,154	4,211,904	4,374,071	4,479,419	4,611,691	4,746,846	4,891,689	5,026,555	5,162,645	5,288,465	5,417,172	5,551,316	5,691,506	5,810,912	5,922,767	6,004,210	6,066,309	6,067,508	6,067,508	6,067,508	6,067,508	6,067,508			
June-87	463,134	1,057,238	1,522,773	1,934,421	2,261,898	2,491,874	2,659,729	2,799,050	2,901,503	3,021,876	3,103,922	3,271,697	3,314,455	3,410,332	3,452,632	3,495,733	3,527,775	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280	3,544,280			
June-88	759,128	1,737,832	2,686,963	3,506,695	4,220,441	4,682,677	4,893,879	5,026,539	5,141,074	5,203,833	5,239,349	5,242,532	5,243,019	5,243,019	5,260,048	5,288,978	5,318,482	5,326,859	5,355,106	5,361,539	5,362,873	5,362,873	5,362,873	5,362,873	5,380,873	5,380,873	5,380,873	5,380,873	5,380,873					
June-89	680,636	1,738,554	2,435,784	3,057,497	3,492,498	3,784,686	4,070,002	4,251,487	4,490,766	4,687,032	4,846,109	4,998,762	5,152,745	5,318,978	5,453,186	5,596,167	5,742,890	5,832,925	5,929,581	6,031,181	6,137,243	6,244,608	6,352,619	6,475,512	6,535,663	6,603,324	6,662,320	6,723,416						
June-90	1,246,443	2,758,107	3,953,901	4,833,484	5,310,648	5,694,385	6,073,411	6,354,690	6,596,629	6,831,981	7,007,542	7,150,038	7,296,131	7,414,103	7,526,903	7,637,465	7,757,732	7,827,571	7,914,306	7,972,756	8,030,743	8,088,272	8,148,032	8,208,709	8,272,034	8,334,944	8,400,094							
June-91	1,000,517	2,462,230	3,477,661	4,227,150	4,729,807	5,106,814	5,363,266	5,600,518	5,854,394	6,102,795	6,340,515	6,600,177	6,839,938	7,070,212	7,325,430	7,572,623	7,805,418	8,019,651	8,226,001	8,354,608	8,448,679	8,541,379	8,674,427	8,786,248	8,901,535	9,018,207								
June-92	963,115	1,684,344	2,020,505	2,282,563	2,488,454	2,659,321	2,775,749	2,916,157	3,056,759	3,187,754	3,331,193	3,457,174	3,499,791	3,525,037	3,564,269	3,587,669	3,612,762	3,661,736	3,712,392	3,755,041	3,800,723	3,849,408	3,896,141	3,941,701	3,988,884									
June-93	801,947	1,527,666	1,907,058	2,209,630	2,348,676	2,429,818	2,460,521	2,483,853	2,505,893	2,512,506	2,512,506	2,515,387	2,517,666	2,518,289	2,518,289	2,518,289	2,518,289	2,518,289	2,518,289	2,518,289	2,519,814	2,519,814	2,519,814	2,519,814										
June-94	875,165	1,819,302	2,384,278	2,739,772	2,916,720	3,056,071	3,202,146	3,363,364	3,490,849	3,617,239	3,691,543	3,766,820	3,806,934	3,840,602	3,876,771	3,914,626	3,951,801	3,987,674	4,025,425	4,065,927	4,115,667	4,152,871	4,192,115											
June-95	1,066,149	2,306,245	2,941,602	3,493,104	3,941,201	4,297,491	4,665,184	4,944,044	5,062,779	5,143,804	5,226,875	5,309,969	5,385,490	5,413,698	5,413,698	5,413,698	5,415,952	5,416,002	5,416,002	5,417,339	5,417,339	5,419,968												
June-96	1,138,070	2,104,418	2,766,267	3,096,876	3,400,508	3,669,768	3,910,958	4,114,697	4,277,458	4,365,040	4,414,632	4,445,368	4,479,763	4,513,668	4,547,750	4,581,690	4,620,397	4,658,156	4,733,649	4,734,439	4,737,035													
June-97	1,262,694	2,691,990	3,329,480	3,919,297	4,322,162	4,636,666	4,943,217	5,112,087	5,158,225	5,193,663	5,222,438	5,229,461	5,229,461	5,232,465	5,232,465	5,232,660	5,233,422	5,235,361	5,236,556	5,237,372														
June-98	1,638,670	3,196,042	4,206,538	4,955,846	5,569,408	6,119,997	6,488,625	6,735,243	6,883,928	7,016,935	7,118,193	7,210,560	7,304,495	7,390,265	7,484,278	7,569,489	7,657,448	7,743,183	7,832,407														
June-99	1,336,118	2,975,082	4,075,622	4,979,874	5,739,985	6,193,457	6,542,142	6,776,193	6,959,053	7,099,219	7,215,948	7,278,599	7,305,413	7,335,907	7,367,640	7,401,488	7,430,895	7,459,988															
June-00	1,879,439	3,995,519	5,337,812	6,367,281	6,972,119	7,368,789	7,595,232	7,618,785	7,768,614	7,812,460	7,834,124	7,857,055	7,878,617	7,888,220	7,894,835	7,894,835	7,894,835																
June-01	2,226,443	4,927,848	6,754,618	8,128,201	8,912,524	9,501,364	9,916,815	10,090,085	10,093,706	10,098,792	10,102,701	10,107,752	10,115,331	10,122,622	10,123,390	10,126,025																	
June-02	2,224,570	4,640,913	6,255,872	7,251,577	7,851,163	8,205,089	8,352,527	8,442,240	8,504,072	8,548,892	8,597,046	8,636,684	8,638,876	8,651,791	8,651,791																		
June-03	2,532,484	5,029,957	6,520,088	7,358,736	7,963,011	8,162,267	8,271,915	8,286,330	8,290,078	8,307,565	8,336,977	8,361,400	8,374,756	8,374,756																			
June-04	2,147,040	4,500,943	5,865,460	6,696,306	7,139,497	7,374,551	7,518,148	7,544,299	7,548,670	7,549,433	7,552,695	7,553,195	7,556,865																				
June-05	2,241,999	4,614,395	5,992,285	6,941,629	7,354,316	7,648,410	7,859,634	7,944,264	7,956,390	7,960,585	7,974,262	7,980,912																					
June-06	1,249,906	3,009,799	4,221,387	4,926,296	5,233,916	5,403,155	5,520,760	5,558,413	5,563,096	5,568,003	5,571,365																						
June-07	1,380,680	2,815,182	3,556,899	4,026,861	4,280,218	4,409,792	4,495,865	4,564,874	4,629,170	4,689,050																							
June-08	1,238,290	2,624,403	3,322,948	3,832,582	4,162,771	4,361,974	4,466,756	4,535,679	4,586,080																								
June-09	1,050,261	2,223,832	2,862,597	3,295,878	3,498,318	3,641,036	3,754,484	3,840,887																									
June-10	907,606	1,619,359	1,983,041	2,120,199	2,204,203	2,280,502	2,372,902																										
June-11	985,007	2,210,801	2,754,241	3,017,762	3,188,982	3,323,225																											
June-12	628,004	1,365,683	1,786,119	2,155,722	2,398,549																												
June-13	594,769	1,413,063	1,926,676	2,135,503																													
June-14	832,638	1,825,797	2,295,475																														
June-15	1,195,780	2,178,416																															
June-16	1,329,847																																

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.326	1.428	1.264	1.202	1.175	1.171	1.168	1.128	1.111	1.075	1.058	1.048	1.041	1.058	1.014	1.012	1.014	1.037	1.015	1.015	1.015	1.015	1.015	1.016	1.011	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-84	2.222	1.408	1.263	1.188	1.205	1.152	1.131	1.113	1.057	1.043	1.020	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
June-85	2.326	1.428	1.252	1.200	1.177	1.107	1.076	1.069	1.046	1.065	1.036	1.018	1.037	1.036	1.038	1.039	1.028	1.029	1.028	1.028	1.028	1.029	1.029	1.017	1.013	1.013	1.013	1.014	1.014	1.014	1.014		
June-86	2.326	1.428	1.247	1.183	1.111	1.065	1.087	1.045	1.041	1.028	1.039	1.024	1.030	1.029	1.031	1.028	1.027	1.024	1.024	1.025	1.025	1.021	1.019	1.014	1.010	1.000	1.000	1.000	1.000	1.000			
June-87	2.283	1.440	1.270	1.169	1.102	1.067	1.052	1.037	1.041	1.027	1.054	1.013	1.029	1.012	1.012	1.009	1.005	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
June-88	2.289	1.546	1.305	1.204	1.110	1.045	1.027	1.023	1.012	1.007	1.001	1.000	1.000	1.003	1.005	1.006	1.002	1.005	1.001	1.000	1.000	1.000	1.003	1.000	1.000	1.000	1.000	1.000					
June-89	2.554	1.401	1.255	1.142	1.084	1.075	1.045	1.056	1.044	1.034	1.032	1.031	1.032	1.025	1.026	1.026	1.016	1.017	1.017	1.018	1.017	1.017	1.019	1.009	1.010	1.009	1.009						
June-90	2.213	1.434	1.222	1.099	1.072	1.067	1.046	1.038	1.036	1.026	1.020	1.020	1.016	1.015	1.015	1.016	1.009	1.011	1.007	1.007	1.007	1.007	1.007	1.008	1.008	1.008							
June-91	2.461	1.412	1.216	1.119	1.080	1.050	1.044	1.045	1.042	1.039	1.041	1.036	1.034	1.036	1.034	1.031	1.027	1.026	1.016	1.011	1.011	1.016	1.013	1.013	1.013								
June-92	1.749	1.200	1.130	1.090	1.069	1.044	1.051	1.048	1.043	1.045	1.038	1.012	1.007	1.011	1.007	1.007	1.014	1.014	1.011	1.012	1.013	1.012	1.012	1.012									
June-93	1.905	1.248	1.159	1.063	1.035	1.013	1.009	1.009	1.003	1.000	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.000										
June-94	2.079	1.311	1.149	1.065	1.048	1.048	1.050	1.038	1.036	1.021	1.020	1.011	1.009	1.009	1.010	1.009	1.009	1.009	1.010	1.012	1.009	1.009											
June-95	2.163	1.275	1.187	1.128	1.090	1.086	1.060	1.024	1.016	1.016	1.016	1.014	1.005	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
June-96	1.849	1.315	1.120	1.098	1.079	1.066	1.052	1.040	1.020	1.011	1.007	1.008	1.008	1.008	1.007	1.008	1.008	1.016	1.000	1.001													
June-97	2.132	1.237	1.177	1.103	1.073	1.066	1.034	1.009	1.007	1.006	1.001	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000														
June-98	1.950	1.316	1.178	1.124	1.099	1.060	1.038	1.022	1.019	1.014	1.013	1.013	1.012	1.013	1.011	1.012	1.011	1.012															
June-99	2.227	1.370	1.222	1.153	1.079	1.056	1.036	1.027	1.020	1.016	1.009	1.004	1.004	1.004	1.005	1.004	1.004																
June-00	2.126	1.336	1.193	1.095	1.057	1.031	1.003	1.020	1.006	1.003	1.003	1.003	1.001	1.001	1.000	1.000																	
June-01	2.213	1.371	1.203	1.096	1.066	1.044	1.017	1.000	1.001	1.000	1.000	1.001	1.001	1.000	1.000																		
June-02	2.086	1.348	1.159	1.083	1.045	1.018	1.011	1.007	1.005	1.006	1.005	1.000	1.001	1.000																			
June-03	1.986	1.296	1.129	1.082	1.025	1.013	1.002	1.000	1.002	1.004	1.003	1.002	1.000																				
June-04	2.096	1.303	1.142	1.066	1.033	1.019	1.003	1.001	1.000	1.000	1.000	1.000																					
June-05	2.058	1.299	1.158	1.059	1.040	1.028	1.011	1.002	1.001	1.002	1.001																						
June-06	2.408	1.403	1.167	1.062	1.032	1.022	1.007	1.001	1.001	1.001																							
June-07	2.039	1.263	1.132	1.063	1.030	1.020	1.015	1.014	1.013																								
June-08	2.119	1.266	1.153	1.086	1.048	1.024	1.015	1.011																									
June-09	2.117	1.287	1.151	1.061	1.041	1.031	1.023																										
June-10	1.784	1.225	1.069	1.040	1.035	1.041																											
June-11	2.244	1.246	1.096	1.057	1.042																												
June-12	2.175	1.308	1.207	1.113																													
June-13	2.376	1.363	1.108																														
June-14	2.193	1.257																															
June-15	1.822																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.148	1.337	1.183	1.110	1.075	1.055	1.041	1.032	1.025	1.020	1.018	1.012	1.013	1.013	1.011	1.012	1.010	1.013	1.009	1.009	1.010	1.011	1.011	1.009	1.007	1.004	1.003	1.002	1.003	1.003	1.005	1.000	1.000	
Latest 5	2.162	1.280	1.126	1.071	1.039	1.027	1.014	1.006	1.003	1.002	1.002	1.001	1.002	1.004	1.003	1.005	1.005	1.007	1.002	1.005	1.007	1.009	1.010	1.008	1.006	1.003	1.005	1.003	1.003					
Latest 3	2.130	1.310	1.137	1.070	1.039	1.032	1.018	1.009	1.005	1.001	1.001	1.001	1.001	1.000	1.002	1.005	1.005	1.009	1.000	1.004	1.003	1.007	1.008	1.011	1.010	1.006	1.003	1.000	1.005	1.005	1.007			
Volume Wtd																																		
All Yrs	2.115	1.328	1.175	1.099	1.063	1.044	1.029	1.021	1.017	1.014	1.013	1.010	1.011	1.011	1.011	1.012	1.011	1.013	1.009	1.010	1.010	1.012	1.012	1.009	1.008	1.005	1.004	1.002	1.003	1.004	1.007	1.000	1.000	
Latest 5	2.123	1.274	1.125	1.071	1.039	1.026	1.013	1.005	1.003	1.003	1.002	1.001	1.001	1.003	1.003	1.005	1.005	1.008	1.002	1.005	1.007	1.010	1.012	1.009	1.008	1.004	1.004	1.003	1.003					
Latest 3	2.065	1.305	1.130	1.068	1.040	1.030	1.018	1.008	1.004	1.001	1.001	1.001	1.001	1.000	1.001	1.005	1.006	1.009	1.000	1.004	1.003	1.008	1.010	1.011	1.010	1.006	1.004	1.000	1.004	1.005	1.007			

Dev Factor Selection																																		
Industry 1	2.869	1.531	1.210	1.100	1.034	1.024	1.017	1.007	1.008	1.005	1.005	1.013	1.002	1.003	1.004	1.004	1.003	1.003																
Industry 2		1.813	1.291	1.118	1.066	1.025	1.021	1.011	1.007	1.003	1.008	1.005	1.005	1.003	1.003	1.004	1.006	1.002	1.004	1.004														
Prior	*2.167*	*1.339*	*1.176*	*1.081*	*1.050*	*1.044*	*1.029*	*1.023*	*1.014*	*1.012*	*1.006*	*1.011*	*1.011*	*1.012*	*1.012*	*1.013*	*1.005*	*1.005*	*1.004*	*1.014*	*1.018*	*1.017*	*1.011*	*1.008*	*1.008*	*1.004*	*1.004*	*1.004*	*1.003*	*1.002*	*1.001*	*1.001*	*1.027*	
Selected	2.147	1.337	1.175	1.085	1.051	1.044	1.029	1.023	1.014	1.011	1.006	1.010	1.011	1.011	1.011	1.012	1.005	1.007	1.002	1.014	1.018	1.017	1.008	1.008	1.008	1.004	1.004	1.004	1.003	1.002	1.001	1.001	1.001	1.021
FacToUlt	5.222	2.432	1.820	1.549	1.427	1.358	1.301	1.265	1.237	1.220	1.206	1.199	1.187	1.175	1.162	1.150	1.136	1.131	1.122	1.120	1.104	1.085	1.067	1.059	1.050	1.042	1.038	1.034	1.030	1.026	1.024	1.023	1.022	1.021
Percent of Ult	19.1%	41.1%	54.9%	64.6%	70.1%	73.6%	76.8%	79.1%	80.9%	82.0%	82.9%	83.4%	84.2%	85.1%	86.0%	87.0%	88.0%	88.4%	89.1%	89.3%	90.5%	92.2%	93.7%	94.5%	95.2%	96.0%	96.4%	96.7%	97.1%	97.4%	97.6%	97.7%	97.8%	97.9%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	4,651,743	5,166,577	4,767,200	5,304,410	115,458	2.5%	137,833	2.7%
6/30/82-83	2,759,980	2,816,000	2,774,582	2,803,000	14,602	0.5%	(13,000)	-0.5%
6/30/83-84	1,414,814	1,444,000	1,421,917	1,436,000	7,103	0.5%	(8,000)	-0.6%
6/30/84-85	4,065,095	4,279,000	4,101,768	4,318,000	36,673	0.9%	39,000	0.9%
6/30/85-86	6,439,186	6,505,290	6,404,817	6,470,640	(34,369)	-0.5%	(34,650)	-0.5%
6/30/86-87	3,928,350	3,968,910	3,902,103	3,942,180	(26,247)	-0.7%	(26,730)	-0.7%
6/30/87-88	6,186,102	6,248,880	6,139,923	6,202,350	(46,178)	-0.7%	(46,530)	-0.7%
6/30/88-89	7,531,000	7,917,000	7,545,000	7,923,000	14,000	0.2%	6,000	0.1%
6/30/89-90	9,661,000	9,666,000	9,658,000	9,662,000	(3,000)	0.0%	(4,000)	0.0%
6/30/90-91	10,558,000	11,659,060	10,787,000	11,900,140	229,000	2.2%	241,080	2.1%
6/30/91-92	4,574,000	4,575,000	4,572,000	4,573,000	(2,000)	0.0%	(2,000)	0.0%
6/30/92-93	3,279,999	3,313,530	3,240,568	3,273,930	(39,432)	-1.2%	(39,600)	-1.2%
6/30/93-94	5,377,000	5,381,000	5,316,000	5,319,000	(61,000)	-1.1%	(62,000)	-1.2%
6/30/94-95	6,746,000	6,758,000	6,605,000	6,616,000	(141,000)	-2.1%	(142,000)	-2.1%
6/30/95-96	5,886,000	5,896,000	5,811,000	5,821,000	(75,000)	-1.3%	(75,000)	-1.3%
6/30/96-97	6,692,000	6,704,000	6,648,000	6,663,000	(44,000)	-0.7%	(41,000)	-0.6%
6/30/97-98	8,772,856	8,957,950	8,746,289	8,930,790	(26,567)	-0.3%	(27,160)	-0.3%
6/30/98-99	8,236,512	8,409,900	8,169,825	8,342,000	(66,687)	-0.8%	(67,900)	-0.8%
6/30/99-00	8,946,875	9,135,460	8,775,400	8,959,890	(171,475)	-1.9%	(175,570)	-1.9%
6/30/00-01	11,660,755	11,905,780	11,439,055	11,679,770	(221,700)	-1.9%	(226,010)	-1.9%
6/30/01-02	10,040,782	10,604,000	9,835,707	10,387,000	(205,075)	-2.0%	(217,000)	-2.0%
6/30/02-03	9,899,753	10,454,000	9,692,508	10,236,000	(207,245)	-2.1%	(218,000)	-2.1%
6/30/03-04	9,035,571	9,538,000	8,848,877	9,343,000	(186,694)	-2.1%	(195,000)	-2.0%
6/30/04-05	9,407,000	10,062,000	9,066,804	9,891,000	(340,196)	-3.6%	(171,000)	-1.7%
6/30/05-06	7,058,000	7,179,000	6,568,650	7,017,000	(489,350)	-6.9%	(162,000)	-2.3%
6/30/06-07	6,105,000	6,146,000	5,661,568	5,981,000	(443,432)	-7.3%	(165,000)	-2.7%
6/30/07-08	6,278,000	6,483,000	6,038,000	6,144,000	(240,000)	-3.8%	(339,000)	-5.2%
6/30/08-09	5,459,000	6,028,000	5,250,000	5,685,000	(209,000)	-3.8%	(343,000)	-5.7%
6/30/09-10	3,863,000	4,666,000	3,625,000	4,226,000	(238,000)	-6.2%	(440,000)	-9.4%
6/30/10-11	5,258,000	5,961,000	5,024,000	5,547,000	(234,000)	-4.5%	(414,000)	-6.9%
6/30/11-12	4,283,000	5,314,000	4,158,000	4,897,000	(125,000)	-2.9%	(417,000)	-7.8%
6/30/12-13	4,763,000	6,118,000	4,203,000	5,147,000	(560,000)	-11.8%	(971,000)	-15.9%
6/30/13-14	5,957,000	7,581,000	5,189,000	6,288,000	(768,000)	-12.9%	(1,293,000)	-17.1%
6/30/14-15	7,793,000	9,329,000	6,346,000	7,501,000	(1,447,000)	-18.6%	(1,828,000)	-19.6%
6/30/15-16								
Total	222,567,371	236,170,337	216,332,559	228,430,100	(6,234,811)	-2.8%	(7,740,237)	-3.3%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 4, Exhibit 1, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Calculation of Ultimate Lump Sum Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Accident Year	Paid Loss Excluding Lump Sum	Implied Cumulative LDF	Ult Loss Excluding Lump Sum	Selected Incr Lump Sum % Outstdg	Cumulative Lump Sum % Outstdg	Total Lump Sum Outstdg	Paid Lump Sum to Date	Est Ult Lump Sum - Incr Method	Ultimate Lump Sum Percentage	Lump Sum LDF	Est Ult Lump Sum - Paid Method	Selected Est Ultimate Lump Sums	Prior Est Ultimate Lump Sums
All Prior Yrs	3,935,750	1.239	4,875,805	0.0%	0.0%	0	160,000	160,000	3.3%	1.000	160,000	160,000	160,000
6/30/82-83	2,566,735	1.021	2,621,527	0.0%	0.0%	0	181,081	181,081	6.9%	1.000	181,081	181,081	181,081
6/30/83-84	1,386,759	1.022	1,417,778	0.0%	0.0%	0	18,501	18,501	1.3%	1.000	18,501	18,501	18,501
6/30/84-85	3,860,335	1.126	4,345,694	0.0%	0.0%	0	180,850	180,850	4.2%	1.000	180,850	180,850	180,850
6/30/85-86	6,067,508	1.024	6,215,640	0.0%	0.0%	0	332,000	332,000	5.3%	1.000	332,000	332,000	332,000
6/30/86-87	3,544,280	1.026	3,638,072	0.0%	0.0%	0	340,360	340,360	9.4%	1.000	340,360	340,360	340,360
6/30/87-88	5,380,873	1.030	5,539,836	0.0%	0.0%	0	717,002	717,002	12.9%	1.000	717,002	717,002	717,002
6/30/88-89	6,723,416	1.085	7,297,216	0.0%	0.0%	0	626,201	626,201	8.6%	1.000	626,201	626,201	626,201
6/30/89-90	8,400,094	1.038	8,717,576	0.0%	0.0%	0	944,900	944,900	10.8%	1.000	944,900	944,900	944,900
6/30/90-91	9,018,207	1.198	10,805,960	0.0%	0.0%	0	1,336,768	1,336,768	12.4%	1.000	1,336,768	1,336,768	1,099,768
6/30/91-92	3,988,884	1.050	4,189,452	0.0%	0.0%	0	383,251	383,251	9.1%	1.000	383,251	383,251	384,209
6/30/92-93	2,519,814	1.059	2,667,687	0.0%	0.0%	0	637,302	637,302	23.9%	1.005	640,489	638,895	638,894
6/30/93-94	4,192,115	1.067	4,474,495	0.0%	0.0%	0	842,675	842,675	18.8%	1.005	846,888	844,782	844,782
6/30/94-95	5,419,968	1.085	5,881,068	0.0%	0.0%	0	732,613	732,613	12.5%	1.005	736,276	734,445	734,445
6/30/95-96	4,737,035	1.104	5,231,878	0.0%	0.0%	0	587,863	587,863	11.2%	1.005	590,802	589,332	557,183
6/30/96-97	5,237,372	1.120	5,866,206	0.0%	0.0%	0	794,601	794,601	13.5%	1.005	798,574	796,588	774,413
6/30/97-98	7,832,407	1.122	8,790,197	0.1%	0.1%	8,790	431,718	440,508	5.0%	1.010	436,046	438,277	443,785
6/30/98-99	7,459,988	1.131	8,434,903	0.1%	0.2%	16,870	176,053	192,923	2.3%	1.015	178,707	185,815	190,130
6/30/99-00	7,894,835	1.136	8,971,211	0.1%	0.3%	26,914	276,102	303,016	3.4%	1.015	280,264	291,640	296,478
6/30/00-01	10,126,025	1.150	11,642,538	0.1%	0.4%	46,570	415,283	461,853	4.0%	1.015	421,543	441,698	448,456
6/30/01-02	8,651,791	1.162	10,055,765	0.1%	0.5%	50,279	303,881	354,160	3.5%	1.017	308,966	331,563	337,511
6/30/02-03	8,374,756	1.175	9,839,795	0.1%	0.6%	59,039	363,503	422,542	4.3%	1.018	370,209	396,376	403,748
6/30/03-04	7,556,865	1.187	8,972,256	0.1%	0.7%	62,806	334,431	397,237	4.4%	1.028	343,696	370,466	376,502
6/30/04-05	7,980,912	1.199	9,570,762	0.1%	0.8%	73,870	277,550	351,420	3.7%	1.039	288,243	319,832	328,076
6/30/05-06	5,571,365	1.206	6,718,023	0.1%	0.9%	58,644	262,504	321,148	4.8%	1.054	276,715	298,931	302,661
6/30/06-07	4,689,050	1.220	5,718,358	0.1%	1.0%	55,636	207,003	262,639	4.6%	1.065	220,452	262,639	269,640
6/30/07-08	4,586,080	1.237	5,671,696	0.1%	1.1%	60,853	198,502	259,355	4.6%	1.083	214,962	259,355	267,071
6/30/08-09	3,840,887	1.265	4,857,769	0.1%	1.2%	56,978	170,017	226,995	4.7%	1.101	187,113	226,995	231,757
6/30/09-10	2,372,902	1.301	3,088,050	0.0%	1.2%	37,659	100,501	138,160	4.5%	1.118	112,386	138,160	145,913
6/30/10-11	3,323,225	1.358	4,513,601	0.2%	1.4%	64,071	187,781	251,852	5.6%	1.191	223,720	251,852	234,501
6/30/11-12	2,398,549	1.427	3,423,896	0.3%	1.7%	58,887	169,103	227,990	6.7%	1.342	226,889	227,990	138,583
6/30/12-13	2,135,503	1.549	3,307,829	0.7%	2.4%	80,193	115,813	196,006	5.9%	1.739	201,409	196,006	160,823
6/30/13-14	2,295,475	1.820	4,177,728	1.1%	3.6%	148,989	62,401	211,390	5.1%	3.479	217,102	211,390	204,561
6/30/14-15	2,178,416	2.432	5,298,994	1.0%	4.6%	244,084	6,000	250,084	4.7%	12.699	76,193	250,084	328,072
6/30/15-16	1,329,847	5.222	6,944,610	0.8%	5.4%	373,561	0	373,561	5.4%	64.764	0	373,561	
Total	177,578,028		213,783,868			1,584,692	12,874,114	14,458,805	6.8%		13,418,561	14,297,586	13,642,857

NOTES:

(2) From Section 4, Exhibit 1, Page 2, Column 3
(3) = (4) / (2)
(4) From Section 4, Exhibit 1, Page 2, Column 6
(5) From Section 4, Exhibit 1, Page 11
(6) Downward sum of (5)
(7) = (6) x (4)
(8) From Section 4, Exhibit 1, Page 10
(9) = (7) + (8)
(10) = (9) / (4)
(11) From Section 4, Exhibit 1, Page 12
(12) = (8) x (11)
(13) Selected based on (9) and (12)
(14) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts Workers Compensation
Department of Corrections - Cluster 3
INDEMNITY
Lump Sum Development
Incremental Lump Sum Payments

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0	0	0	0	0	0	0	0	15,000	0	0	0	57,500	26,000	0	60,000	0	0	0	0	0	0	1,500	0	0	0	0	0	0	0	0	0	0	0	0
Jun-83	0	0	0	0	0	0	0	17,500	0	35,000	41,581	41,000	46,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	0	0	0	0	0	0	0	0	18,500	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Jun-85	0	0	0	11,000	0	0	20,000	0	69,000	0	42,000	0	38,850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Jun-86	0	0	0	30,000	68,000	10,000	40,000	27,000	50,000	0	45,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48,000	2,000	12,000	0	0	0				
Jun-87	0	20,000	25,000	22,500	22,500	27,000	38,250	25,001	11,250	85,000	0	37,000	14,859	0	0	0	0	12,000	0	0	0	0	0	0	0	0	0	0	0	0					
Jun-88	0	31,500	17,000	20,000	40,000	191,500	199,000	23,000	102,000	30,000	60,000	0	0	0	0	0	0	3,000	0	1	0	0	0	1	0	0	0	0	0						
Jun-89	0	5,000	70,500	4,500	125,000	86,200	157,000	70,000	30,000	49,500	0	0	0	0	0	18,500	0	0	0	0	0	0	0	10,000	0	1	0	0							
Jun-90	0	16,700	104,500	133,000	151,700	139,500	73,000	98,000	40,000	170,000	1,000	0	0	0	0	0	0	0	5,000	12,500	0	0	0	0	0	0	0								
Jun-91	0	19,996	27,700	321,471	173,500	181,000	68,000	0	40,000	40,000	1	0	0	0	0	100	0	0	10,000	0	0	0	60,000	0	158,000	237,000									
Jun-92	0	30,500	94,000	95,000	50,000	90,000	0	0	0	0	0	11,250	0	0	12,501	0	0	0	0	0	0	0	0	0	0										
Jun-93	0	122,600	116,000	160,700	27,000	80,001	119,000	0	0	0	12,000	0	0	0	0	0	0	0	0	0	0	0	0	1											
Jun-94	52,000	162,000	181,925	221,000	101,000	77,500	7,500	7,500	0	15,750	0	4,500	6,000	0	0	0	6,000	0	0	0	0	0	0												
Jun-95	18,613	172,000	187,000	82,000	135,000	70,000	10,000	0	0	25,000	0	1,000	0	32,000	0	0	0	0	0	0	0	0													
Jun-96	0	35,000	32,000	335,000	0	0	0	0	12,000	15,000	23,000	0	0	0	0	0	0	0	71,725	32,069	32,069														
Jun-97	59,500	268,000	190,500	120,000	43,000	24,000	16,000	20,600	0	9,001	0	17,000	0	0	0	0	0	0	0	27,000															
Jun-98	56,500	160,501	125,715	0	10,000	29,000	20,800	12,201	9,000	8,001	0	0	0	0	0	0	0	0	0																
Jun-99	0	0	20,000	1	91,750	12,800	20,500	15,000	8,001	0	0	8,001	0	0	0	0	0	0																	
Jun-00	0	27,501	5,000	85,500	78,101	17,500	28,500	4,500	10,000	0	7,500	0	0	12,000	0	0	0																		
Jun-01	8,490	1	74,500	89,900	93,000	73,389	33,503	20,500	4,000	18,000	0	0	0	0	0	0																			
Jun-02	0	10,000	43,880	99,500	47,501	66,000	7,000	0	0	0	3,000	27,000	0	0	0																				
Jun-03	0	58,500	110,001	81,000	77,501	21,500	10,001	5,000	0	0	0	0	0	0																					
Jun-04	0	21,923	84,502	80,002	26,003	65,000	35,000	15,000	0	0	1,001	6,000	0																						
Jun-05	0	12,500	108,002	89,501	37,546	0	12,000	10,001	8,000	0	0	0																							
Jun-06	0	35,001	24,502	113,501	81,500	6,000	0	0	0	0	2,000																								
Jun-07	0	36,000	69,500	32,500	50,000	19,000	1	2	0	0																									
Jun-08	0	36,001	37,000	72,000	25,500	10,000	18,000	1	0																										
Jun-09	0	16,000	42,767	47,000	46,250	10,000	8,000	0																											
Jun-10	0	3,000	56,000	31,500	10,000	0	1																												
Jun-11	0	11,750	47,031	67,000	29,000	33,000																													
Jun-12	0	11,050	19,003	30,050	109,000																														
Jun-13	4,000	17,312	21,000	73,501																															
Jun-14	0	8,500	53,901																																
Jun-15	0	6,000																																	
Jun-16	0																																		

Cumulative Lump Sum Payments

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	0	15,000	15,000	15,000	15,000	72,500	98,500	98,500	158,500	158,500	158,500	158,500	158,500	158,500	158,500	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000
Jun-83	0	0	0	0	0	0	0	17,500	17,500	52,500	94,081	135,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081		
Jun-84	0	0	0	0	0	0	0	0	18,500	18,500	18,500	18,500	18,500	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501			
Jun-85	0	0	0	11,000	11,000	11,000	31,000	31,000	100,000	100,000	142,000	142,000	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850				
Jun-86	0	0	0	30,000	98,000	108,000	148,000	175,000	225,000	225,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	318,000	320,000	332,000	332,000	332,000	332,000				
Jun-87	0	20,000	45,000	67,500	90,000	117,000	155,250	180,251	191,501	276,501	276,501	313,501	328,360	328,360	328,360	328,360	328,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360					
Jun-88	0	31,500	48,500	68,500	108,500	300,000	499,000	522,000	624,000	654,000	714,000	714,000	714,000	714,000	714,000	714,000	714,000	717,000	717,000	717,001	717,001	717,001	717,001	717,002	717,002	717,002	717,002	717,002	717,002						
Jun-89	0	5,000	75,500	80,000	205,000	291,200	448,200	518,200	548,200	597,700	597,700	597,700	597,700	597,700	597,700	616,200	616,200	616,200	616,200	616,200	616,200	616,200	616,200	626,200	626,200	626,201	626,201	626,201							
Jun-90	0	16,700	121,200	254,200	405,900	545,400	618,400	716,400	756,400	926,400	927,400	927,400	927,400	927,400	927,400	927,400	927,400	927,400	932,400	944,900	944,900	944,900	944,900	944,900	944,900	944,900	944,900								
Jun-91	0	19,996	47,696	369,167	542,667	723,667	791,667	791,667	831,667	871,667	871,668	871,668	871,668	871,668	871,668	871,768	871,768	871,768	881,768	881,768	881,768	881,768	941,768	941,768	1,099,768	1,336,768									
Jun-92	0	30,500	124,500	219,500	269,500	359,500	359,500	359,500	359,500	359,500	359,500	370,750	370,750	370,750	383,251	383,251	383,251	383,251	383,251	383,251	383,251	383,251	383,251	383,251	383,251	383,251									
Jun-93	0	122,600	238,600	399,300	426,300	506,301	625,301	625,301	625,301	625,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,302											
Jun-94	52,000	214,000	395,925	616,925	717,925	795,425	802,925	810,425	810,425	826,175	826,175	830,675	836,675	836,675	836,675	836,675	836,675	842,675	842,675	842,675	842,675	842,675	842,675												
Jun-95	18,613	190,613	377,613	459,613	594,613	664,613	674,613	674,613	674,613	699,613	699,613	700,613	700,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613													
Jun-96	0	35,000	67,000	402,000	402,000	402,000	402,000	402,000	414,000	429,000	452,000	452,000	452,000	452,000	452,000	452,000	452,000	452,000	523,725	555,794	587,863														
Jun-97	59,500	327,500	518,000	638,000	681,000	705,000	721,000	741,600	741,600	750,601	750,601	767,601	767,601	767,601	767,601	767,601	767,601	767,601	767,601	794,601															
Jun-98	56,500	217,001	342,716	342,716	352,716	381,716	402,516	414,717	423,717	431,718	431,718	431,718	431,718	431,718	431,718	431,718	431,718	431,718	431,718																
Jun-99	0	0	20,000	20,001	111,751	124,551	145,051	160,051	168,052	168,052	168,052	176,053	176,053	176,053	176,053	176,053	176,053	176,053	176,053																
Jun-00	0	27,501	32,501	118,001	196,102	213,602	242,102	246,602	256,602	256,602	264,102	264,102	264,102	276,102	276,102	276,102	276,102																		
Jun-01	8,490	8,491	82,991	172,891	265,891	339,280	372,783	393,283	397,283	415,283	415,283	415,283	415,283	415,283	415,283	415,283																			
Jun-02	0	10,000	53,880	153,380	200,881	266,881	273,881	273,881	273,881	273,881	276,881	303,881	303,881	303,881	303,881																				
Jun-03	0	58,500	168,501	249,501	327,002	348,502	358,503	363,503	363,503	363,503	363,503	363,503	363,503	363,503																					
Jun-04	0	21,923	106,425	186,427	212,430	277,430	312,430	327,430	327,430	327,430	328,431	334,431	334,431																						
Jun-05	0	12,500	120,502	210,003	247,549	247,549	259,549	269,550	277,550	277,550	277,550	277,550																							
Jun-06	0	35,001	59,503	173,004	254,504	260,504	260,504	260,504	260,504	260,504	262,504																								
Jun-07	0	36,000	105,500	138,000	188,000	207,000	207,001	207,003	207,003	207,003																									
Jun-08	0	36,001	73,001	145,001	170,501	180,501	198,501	198,502	198,502																										
Jun-09	0	16,000	58,767	105,767	152,017	162,017	170,017	170,017																											
Jun-10	0	3,000	59,000	90,500	100,500	100,500	100,501																												
Jun-11	0	11,750	58,781	125,781	154,781	187,781																													
Jun-12	0	11,050	30,053	60,103	169,103																														
Jun-13	4,000	21,312	42,312	115,813																															
Jun-14	0	8,500	62,401																																
Jun-15	0	6,000																																	
Jun-16	0																																		

Commonwealth of Massachusetts Workers Compensation
Department of Corrections - Cluster 3
INDEMNITY
Lump Sum Development
Incremental Lump Sums as a % of Ultimate Losses Excluding Lump Sums

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.012	0.005	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-83	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.013	0.016	0.016	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-84	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-85	0.000	0.000	0.000	0.003	0.000	0.000	0.005	0.000	0.016	0.000	0.010	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.000	0.005	0.011	0.002	0.006	0.004	0.008	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.002	0.000	0.000	0.000				
Jun-87	0.000	0.005	0.007	0.006	0.006	0.007	0.011	0.007	0.003	0.023	0.000	0.010	0.004	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.006	0.003	0.004	0.007	0.035	0.036	0.004	0.018	0.005	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
Jun-89	0.000	0.001	0.010	0.001	0.017	0.012	0.022	0.010	0.004	0.007	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.002	0.012	0.015	0.017	0.016	0.008	0.011	0.005	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000								
Jun-91	0.000	0.002	0.003	0.030	0.016	0.017	0.006	0.000	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.006	0.000	0.015	0.022									
Jun-92	0.000	0.007	0.022	0.023	0.012	0.021	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.000	0.046	0.043	0.060	0.010	0.030	0.045	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000											
Jun-94	0.012	0.036	0.041	0.049	0.023	0.017	0.002	0.002	0.000	0.004	0.000	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000												
Jun-95	0.003	0.029	0.032	0.014	0.023	0.012	0.002	0.000	0.000	0.004	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.007	0.006	0.064	0.000	0.000	0.000	0.000	0.002	0.003	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014	0.006	0.006														
Jun-97	0.010	0.046	0.032	0.020	0.007	0.004	0.003	0.004	0.000	0.002	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005															
Jun-98	0.006	0.018	0.014	0.000	0.001	0.003	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.000	0.002	0.000	0.011	0.002	0.002	0.002	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000																	
Jun-00	0.000	0.003	0.001	0.010	0.009	0.002	0.003	0.001	0.001	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000																		
Jun-01	0.001	0.000	0.006	0.008	0.008	0.006	0.003	0.002	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000																			
Jun-02	0.000	0.001	0.004	0.010	0.005	0.007	0.001	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000																				
Jun-03	0.000	0.006	0.011	0.008	0.008	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000																					
Jun-04	0.000	0.002	0.009	0.009	0.003	0.007	0.004	0.002	0.000	0.000	0.000	0.001	0.000																						
Jun-05	0.000	0.001	0.011	0.009	0.004	0.000	0.001	0.001	0.001	0.000	0.000	0.000																							
Jun-06	0.000	0.005	0.004	0.017	0.012	0.001	0.000	0.000	0.000	0.000	0.000																								
Jun-07	0.000	0.006	0.012	0.006	0.009	0.003	0.000	0.000	0.000	0.000																									
Jun-08	0.000	0.006	0.007	0.013	0.004	0.002	0.003	0.000	0.000																										
Jun-09	0.000	0.003	0.009	0.010	0.010	0.002	0.002	0.000																											
Jun-10	0.000	0.001	0.018	0.010	0.003	0.000	0.000																												
Jun-11	0.000	0.003	0.010	0.015	0.006	0.007																													
Jun-12	0.000	0.003	0.006	0.009	0.032																														
Jun-13	0.001	0.005	0.006	0.022																															
Jun-14	0.000	0.002	0.013																																
Jun-15	0.000	0.001																																	
Jun-16	0.000																																		

Averages		*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
Simple Avg																																			
All Yrs (ex P)	0.001	0.008	0.011	0.014	0.009	0.007	0.006	0.002	0.003	0.003	0.002	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Latest 5	0.000	0.003	0.011	0.013	0.011	0.003	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.002	0.001	0.000	0.001	0.000	0.003	0.004	0.000	0.000	0.000	0.000					
Latest 3	0.000	0.003	0.008	0.015	0.014	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.004	0.002	0.000	0.000	0.000	0.005	0.007	0.000	0.000	0.000	0.000	0.000	0.000			
Olympic Avg																																			
All Yrs (ex P)	0.001	0.007	0.010	0.013	0.009	0.007	0.005	0.002	0.002	0.003	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000			
Latest 10	0.000	0.004	0.009	0.011	0.007	0.003	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.003	0.010	0.012	0.007	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					

Dev Factor Selection

Prior	*NA*	*0.008*	*0.010*	*0.010*	*0.006*	*0.003*	*0.002*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	
Selected	NA	0.008	0.010	0.011	0.007	0.003	0.002	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FacToUlt	NA	0.054	0.046	0.036	0.024	0.017	0.014	0.012	0.012	0.011	0.010	0.009	0.008	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Commonwealth of Massachusetts Workers Compensation
Department of Corrections - Cluster 3
INDEMNITY
Paid Loss Development
Paid Loss - Lump Sum only

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	0	15,000	15,000	15,000	15,000	72,500	98,500	98,500	158,500	158,500	158,500	158,500	158,500	158,500	158,500	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000
Jun-83	0	0	0	0	0	0	0	17,500	17,500	52,500	94,081	135,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	181,081	
Jun-84	0	0	0	0	0	0	0	0	18,500	18,500	18,500	18,500	18,500	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501		
Jun-85	0	0	0	11,000	11,000	11,000	31,000	31,000	100,000	100,000	142,000	142,000	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850			
Jun-86	0	0	0	30,000	98,000	108,000	148,000	175,000	225,000	225,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	318,000	320,000	332,000	332,000	332,000	332,000				
Jun-87	0	20,000	45,000	67,500	90,000	117,000	155,250	180,251	191,501	276,501	276,501	313,501	328,360	328,360	328,360	328,360	328,360	328,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360					
Jun-88	0	31,500	48,500	68,500	108,500	300,000	499,000	522,000	624,000	654,000	714,000	714,000	714,000	714,000	714,000	714,000	714,000	714,000	717,000	717,000	717,001	717,001	717,001	717,001	717,002	717,002	717,002	717,002	717,002						
Jun-89	0	5,000	75,500	80,000	205,000	291,200	448,200	518,200	548,200	597,700	597,700	597,700	597,700	597,700	597,700	616,200	616,200	616,200	616,200	616,200	616,200	616,200	616,200	626,200	626,200	626,201	626,201	626,201							
Jun-90	0	16,700	121,200	254,200	405,900	545,400	618,400	716,400	756,400	926,400	927,400	927,400	927,400	927,400	927,400	927,400	927,400	927,400	932,400	944,900	944,900	944,900	944,900	944,900	944,900	944,900	944,900								
Jun-91	0	19,996	47,696	369,167	542,667	723,667	791,667	791,667	831,667	871,667	871,668	871,668	871,668	871,668	871,668	871,768	871,768	871,768	881,768	881,768	881,768	881,768	941,768	941,768	1,099,768	1,336,768									
Jun-92	0	30,500	124,500	219,500	269,500	359,500	359,500	359,500	359,500	359,500	359,500	370,750	370,750	370,750	370,750	383,251	383,251	383,251	383,251	383,251	383,251	383,251	383,251	383,251	383,251										
Jun-93	0	122,600	238,600	399,300	426,300	506,301	625,301	625,301	625,301	625,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,302											
Jun-94	52,000	214,000	395,925	616,925	717,925	795,425	802,925	810,425	810,425	826,175	826,175	830,675	836,675	836,675	836,675	836,675	842,675	842,675	842,675	842,675	842,675	842,675	842,675												
Jun-95	18,613	190,613	377,613	459,613	594,613	664,613	674,613	674,613	674,613	699,613	699,613	700,613	700,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613												
Jun-96	0	35,000	67,000	402,000	402,000	402,000	402,000	402,000	414,000	429,000	452,000	452,000	452,000	452,000	452,000	452,000	452,000	452,000	452,000	523,725	555,794	587,863													
Jun-97	59,500	327,500	518,000	638,000	681,000	705,000	721,000	741,600	741,600	750,601	750,601	767,601	767,601	767,601	767,601	767,601	767,601	767,601	767,601	794,601															
Jun-98	56,500	217,001	342,716	342,716	352,716	381,716	402,516	414,717	423,717	431,718	431,718	431,718	431,718	431,718	431,718	431,718	431,718	431,718	431,718																
Jun-99	0	0	20,000	20,001	111,751	124,551	145,051	160,051	168,052	168,052	168,052	176,053	176,053	176,053	176,053	176,053	176,053	176,053	176,053																
Jun-00	0	27,501	32,501	118,001	196,102	213,602	242,102	246,602	256,602	256,602	264,102	264,102	264,102	276,102	276,102	276,102	276,102																		
Jun-01	8,490	8,491	82,991	172,891	265,891	339,280	372,783	393,283	397,283	415,283	415,283	415,283	415,283	415,283	415,283	415,283																			
Jun-02	0	10,000	53,880	153,380	200,881	266,881	273,881	273,881	273,881	273,881	276,881	303,881	303,881	303,881	303,881																				
Jun-03	0	58,500	168,501	249,501	327,002	348,502	358,503	363,503	363,503	363,503	363,503	363,503	363,503	363,503																					
Jun-04	0	21,923	106,425	186,427	212,430	277,430	312,430	327,430	327,430	327,430	328,431	334,431	334,431																						
Jun-05	0	12,500	120,502	210,003	247,549	247,549	259,549	269,550	277,550	277,550	277,550	277,550																							
Jun-06	0	35,001	59,503	173,004	254,504	260,504	260,504	260,504	260,504	260,504	262,504																								
Jun-07	0	36,000	105,500	138,000	188,000	207,000	207,001	207,003	207,003	207,003																									
Jun-08	0	36,001	73,001	145,001	170,501	180,501	198,501	198,502	198,502																										
Jun-09	0	16,000	58,767	105,767	152,017	162,017	170,017	170,017																											
Jun-10	0	3,000	59,000	90,500	100,500	100,500	100,501																												
Jun-11	0	11,750	58,781	125,781	154,781	187,781																													
Jun-12	0	11,050	30,053	60,103	169,103																														
Jun-13	4,000	21,312	42,312	115,813																															
Jun-14	0	8,500	62,401																																
Jun-15	0	6,000																																	
Jun-16	0																																		

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
All Prior Yrs									1.000	1.000	1.000	4.833	1.359	1.000	1.609	1.000	1.000	1.000	1.000	1.000	1.000	1.009	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-83								1.000	3.000	1.792	1.436	1.341	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-84									1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-85				1.000	1.000	2.818	1.000	3.226	1.000	1.420	1.000	1.274	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Jun-86				3.267	1.102	1.370	1.182	1.286	1.000	1.200	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.178	1.006	1.038	1.000	1.000	1.000					
Jun-87		2.250	1.500	1.333	1.300	1.327	1.161	1.062	1.444	1.000	1.134	1.047	1.000	1.000	1.000	1.000	1.037	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Jun-88		1.540	1.412	1.584	2.765	1.663	1.046	1.195	1.048	1.092	1.000	1.000	1.000	1.000	1.000	1.000	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
Jun-89		15.100	1.060	2.563	1.420	1.539	1.156	1.058	1.090	1.000	1.000	1.000	1.000	1.000	1.031	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.016	1.000	1.000	1.000	1.000								
Jun-90		7.257	2.097	1.597	1.344	1.134	1.158	1.056	1.225	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.005	1.013	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
Jun-91		2.385	7.740	1.470	1.334	1.094	1.000	1.051	1.048	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.011	1.000	1.000	1.000	1.068	1.000	1.168	1.215										
Jun-92		4.082	1.763	1.228	1.334	1.000	1.000	1.000	1.000	1.000	1.031	1.000	1.000	1.034	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93		1.946	1.674	1.068	1.188	1.235	1.000	1.000	1.000	1.019	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
Jun-94	4.115	1.850	1.558	1.164	1.108	1.009	1.009	1.000	1.019	1.000	1.005	1.007	1.000	1.000	1.000	1.007	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95	10.241	1.981	1.217	1.294	1.118	1.015	1.000	1.000	1.037	1.000	1.001	1.000	1.046	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96		1.914	6.000	1.000	1.000	1.000	1.000	1.030	1.036	1.054	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.061	1.058															
Jun-97	5.504	1.582	1.232	1.067	1.035	1.023	1.029	1.000	1.012	1.000	1.023	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.035																
Jun-98	3.841	1.579	1.000	1.029	1.082	1.054	1.030	1.022	1.019	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																	
Jun-99			1.000	5.587	1.115	1.165	1.103	1.050	1.000	1.000	1.048	1.000	1.000	1.000	1.000	1.000	1.000																			
Jun-00		1.182	3.631	1.662	1.089	1.133	1.019	1.041	1.000	1.029	1.000	1.000	1.045	1.000	1.000	1.000																			
Jun-01	1.000	9.774	2.083	1.538	1.276	1.099	1.055	1.010	1.045	1.000	1.000	1.000	1.000	1.000	1.000																				
Jun-02		5.388	2.847	1.310	1.329	1.026	1.000	1.000	1.000	1.011	1.098	1.000	1.000	1.000																					
Jun-03		2.880	1.481	1.311	1.066	1.029	1.014	1.000	1.000	1.000	1.000	1.000	1.000																						
Jun-04		4.854	1.752	1.139	1.306	1.126	1.048	1.000	1.000	1.003	1.018	1.000																							
Jun-05		9.640	1.743	1.179	1.000	1.048	1.039	1.030	1.000	1.000	1.000																								
Jun-06		1.700	2.907	1.471	1.024	1.000	1.000	1.000	1.000	1.008																									
Jun-07		2.931	1.308	1.362	1.101	1.000	1.000	1.000	1.000																										
Jun-08		2.028	1.986	1.176	1.059	1.100	1.000	1.000																											
Jun-09		3.673	1.800	1.437	1.066	1.049	1.000																												
Jun-10		19.667	1.534	1.110	1.000	1.000																													
Jun-11		5.003	2.140	1.231	1.213																														
Jun-12		2.720	2.000	2.814																															
Jun-13	5.328	1.985	2.737																																
Jun-14		7.341																																	
Jun-15																																			

Averages

	12-24	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Simple Avg																																			
All Yrs (ex P)	5.005	4.601	2.193	1.607	1.214	1.195	1.042	1.125	1.121	1.068	1.035	1.030	1.004	1.002	1.002	1.000	1.002	1.011	1.007	1.004	1.000	1.006	1.001	1.017	1.044	1.001	1.005	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		7.343	2.042	1.554	1.088	1.030	1.008	1.006	1.000	1.004	1.023	1.000	1.009	1.000	1.000	1.000	1.000	1.032	1.019	1.012	1.000	1.014	1.003	1.034	1.043	1.001	1.008	1.000	1.000						
Latest 3		4.015	2.292	1.718	1.093	1.050	1.000	1.000	1.000	1.004	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.053	1.032	1.019	1.000	1.000	1.000	1.056	1.072	1.000	1.000	1.000	1.000	1.000	1.000				
Volume Wtd																																			
All Yrs (ex P)		2.285	1.734	1.296	1.179	1.109	1.039	1.043	1.051	1.023	1.015	1.011	1.004	1.001	1.002	1.001	1.002	1.010	1.009	1.004	1.000	1.010	1.002	1.034	1.065	1.001	1.005	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		4.541	2.001	1.417	1.094	1.029	1.009	1.006	1.000	1.004	1.020	1.000	1.008	1.000	1.000	1.000	1.000	1.022	1.017	1.010	1.000	1.016	1.003	1.044	1.064	1.001	1.005	1.000	1.000	1.000					
Latest 3		3.298	2.300	1.535	1.106	1.059	1.000	1.000	1.000	1.003	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.043	1.029	1.015	1.000	1.000	1.000	1.070	1.089	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		

Dev Factor Selection

	12-24	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Prior	*5.100*	*3.650*	*1.825*	*1.270*	*1.093*	*1.064*	*1.020*	*1.020*	*1.017*	*1.009*	*1.015*	*1.011*	*1.009*	*1.002*	*1.002*	*1.000*	*1.000*	*1.005*	*1.005*	*1.000*	*1.000*	*1.000*	*1.000*	*1.005*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Selected	5.100	3.650	2.001	1.296	1.126	1.065	1.016	1.016	1.017	1.010	1.015	1.011	1.009	1.002	1.002	1.000	1.000	1.005	1.005	1.000	1.000	1.000	1.000	1.005	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FacToUlt	64.764	12.699	3.479	1.739	1.342	1.191	1.118	1.101	1.083	1.065	1.054	1.039	1.028	1.018	1.017	1.015	1.015	1.015	1.010	1.005	1.005	1.005	1.005	1.005	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Percent of Ult	1.5%	7.9%	28.7%	57.5%	74.5%	83.9%	89.4%	90.9%	92.3%	93.9%	94.9%	96.3%	97.3%	98.2%	98.4%	98.5%	98.5%	98.5%	99.0%	99.5%	99.5%	99.5%	99.5%	99.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative Paid Loss	Incremental Paid Loss	Percent	Pres Value of Increm.	Pres Value of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
420	100.0%	2.1%	0.0%	0.5%	0.3%	1.000	1.000
408	97.9%	0.1%	2.1%	0.0%	0.0%	0.981	0.971
396	97.8%	0.1%	2.2%	0.0%	0.0%	0.945	0.919
384	97.7%	0.1%	2.3%	0.0%	0.0%	0.911	0.871
372	97.6%	0.2%	2.4%	0.1%	0.0%	0.881	0.828
360	97.4%	0.3%	2.6%	0.1%	0.1%	0.857	0.796
348	97.1%	0.4%	2.9%	0.1%	0.1%	0.840	0.773
336	96.7%	0.4%	3.3%	0.1%	0.1%	0.828	0.758
324	96.4%	0.4%	3.6%	0.1%	0.1%	0.816	0.742
312	96.0%	0.8%	4.0%	0.3%	0.2%	0.803	0.726
300	95.2%	0.8%	4.8%	0.3%	0.2%	0.805	0.730
288	94.5%	0.8%	5.5%	0.3%	0.2%	0.802	0.728
276	93.7%	1.5%	6.3%	0.6%	0.4%	0.797	0.721
264	92.2%	1.6%	7.8%	0.7%	0.5%	0.808	0.737
252	90.5%	1.3%	9.5%	0.6%	0.4%	0.812	0.743
240	89.3%	0.2%	10.7%	0.1%	0.1%	0.804	0.732
228	89.1%	0.7%	10.9%	0.3%	0.2%	0.777	0.695
216	88.4%	0.4%	11.6%	0.2%	0.2%	0.760	0.674
204	88.0%	1.0%	12.0%	0.5%	0.4%	0.740	0.648
192	87.0%	0.9%	13.0%	0.5%	0.4%	0.733	0.640
180	86.0%	0.9%	14.0%	0.5%	0.4%	0.723	0.628
168	85.1%	0.9%	14.9%	0.5%	0.4%	0.713	0.616
156	84.2%	0.8%	15.8%	0.5%	0.4%	0.702	0.603
144	83.4%	0.5%	16.6%	0.3%	0.2%	0.691	0.589
132	82.9%	0.9%	17.1%	0.6%	0.5%	0.672	0.567
120	82.0%	1.1%	18.0%	0.8%	0.7%	0.664	0.558
108	80.9%	1.8%	19.1%	1.3%	1.1%	0.659	0.553
96	79.1%	2.2%	20.9%	1.7%	1.4%	0.663	0.560
84	76.8%	3.2%	23.2%	2.5%	2.2%	0.671	0.571
72	73.6%	3.6%	26.4%	2.9%	2.6%	0.686	0.591
60	70.1%	5.5%	29.9%	4.6%	4.2%	0.698	0.607
48	64.6%	9.6%	35.4%	8.4%	7.8%	0.719	0.635
36	54.9%	13.8%	45.1%	12.5%	12.0%	0.753	0.678
24	41.1%	22.0%	58.9%	20.7%	20.1%	0.784	0.718
12	19.1%	19.1%	80.9%	18.8%	18.6%	0.816	0.757
Total		100.0%					

NOTES:

(2) = 1 / Section 4, Exhibit 1, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	671,450	1,208,660		633,534	1,140,408
6/30/82-83	26,766	55,184	0.981	26,246	54,112
6/30/83-84	16,657	30,740	0.945	15,733	29,036
6/30/84-85	60,582	276,815	0.911	55,210	252,266
6/30/85-86	5,309	71,132	0.881	4,675	62,635
6/30/86-87	17,463	57,540	0.857	14,962	49,300
6/30/87-88	42,048	104,475	0.840	35,310	87,733
6/30/88-89	195,383	573,383	0.828	161,783	474,778
6/30/89-90	313,006	317,006	0.816	255,319	258,581
6/30/90-91	432,025	1,545,165	0.803	346,933	1,240,830
6/30/91-92	199,865	200,865	0.805	160,955	161,760
6/30/92-93	83,452	116,814	0.802	66,966	93,738
6/30/93-94	281,210	284,210	0.797	224,129	226,520
6/30/94-95	452,419	463,419	0.808	365,624	374,514
6/30/95-96	486,102	496,102	0.812	394,657	402,776
6/30/96-97	616,027	631,027	0.804	495,396	507,459
6/30/97-98	482,164	666,666	0.777	374,453	517,738
6/30/98-99	533,784	705,959	0.760	405,746	536,622
6/30/99-00	604,463	788,953	0.740	447,335	583,867
6/30/00-01	897,747	1,138,462	0.733	657,877	834,275
6/30/01-02	880,034	1,431,328	0.723	636,378	1,035,034
6/30/02-03	954,248	1,497,741	0.713	680,454	1,068,006
6/30/03-04	957,581	1,451,704	0.702	672,434	1,019,417
6/30/04-05	808,341	1,632,538	0.691	558,230	1,127,410
6/30/05-06	734,781	1,183,131	0.672	494,139	795,655
6/30/06-07	765,515	1,084,947	0.664	508,240	720,317
6/30/07-08	1,253,418	1,359,418	0.659	825,726	895,557
6/30/08-09	1,239,096	1,674,096	0.663	821,722	1,110,197
6/30/09-10	1,151,597	1,752,597	0.671	772,272	1,175,308
6/30/10-11	1,512,994	2,035,994	0.686	1,037,523	1,396,166
6/30/11-12	1,590,348	2,329,348	0.698	1,109,585	1,625,184
6/30/12-13	1,951,684	2,895,684	0.719	1,403,022	2,081,642
6/30/13-14	2,831,124	3,930,124	0.753	2,131,749	2,959,262
6/30/14-15	4,161,584	5,316,584	0.784	3,263,878	4,169,730
6/30/15-16	6,415,153	7,250,153	0.816	5,232,412	5,913,465
Total	33,625,417	46,557,958		25,290,607	34,981,300
			(7) Total Discount Factor:	0.752	0.751

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	671,450	1,208,660
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	223,817	402,887
(11) Discounted Value at 4%:	633,534	1,140,408

NOTES:

(2), (3) From Section 4, Exhibit 1, Page 1, Columns 8, 9

(4) From Section 4, Exhibit 1, Page 13, Column 7

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Indemnity

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	671,450	1,208,660		616,213	1,109,228
6/30/82-83	26,766	55,184	0.971	25,997	53,599
6/30/83-84	16,657	30,740	0.919	15,303	28,243
6/30/84-85	60,582	276,815	0.871	52,781	241,169
6/30/85-86	5,309	71,132	0.828	4,396	58,900
6/30/86-87	17,463	57,540	0.796	13,892	45,775
6/30/87-88	42,048	104,475	0.773	32,500	80,751
6/30/88-89	195,383	573,383	0.758	148,089	434,591
6/30/89-90	313,006	317,006	0.742	232,301	235,269
6/30/90-91	432,025	1,545,165	0.726	313,653	1,121,799
6/30/91-92	199,865	200,865	0.730	145,997	146,727
6/30/92-93	83,452	116,814	0.728	60,719	84,993
6/30/93-94	281,210	284,210	0.721	202,770	204,934
6/30/94-95	452,419	463,419	0.737	333,445	341,552
6/30/95-96	486,102	496,102	0.743	360,937	368,362
6/30/96-97	616,027	631,027	0.732	451,147	462,132
6/30/97-98	482,164	666,666	0.695	335,315	463,625
6/30/98-99	533,784	705,959	0.674	359,838	475,906
6/30/99-00	604,463	788,953	0.648	391,853	511,452
6/30/00-01	897,747	1,138,462	0.640	574,511	728,556
6/30/01-02	880,034	1,431,328	0.628	552,989	899,406
6/30/02-03	954,248	1,497,741	0.616	588,170	923,162
6/30/03-04	957,581	1,451,704	0.603	577,786	875,930
6/30/04-05	808,341	1,632,538	0.589	476,493	962,331
6/30/05-06	734,781	1,183,131	0.567	416,780	671,091
6/30/06-07	765,515	1,084,947	0.558	426,917	605,060
6/30/07-08	1,253,418	1,359,418	0.553	692,705	751,286
6/30/08-09	1,239,096	1,674,096	0.560	693,757	937,309
6/30/09-10	1,151,597	1,752,597	0.571	657,304	1,000,341
6/30/10-11	1,512,994	2,035,994	0.591	894,517	1,203,726
6/30/11-12	1,590,348	2,329,348	0.607	965,510	1,414,161
6/30/12-13	1,951,684	2,895,684	0.635	1,238,392	1,837,384
6/30/13-14	2,831,124	3,930,124	0.678	1,919,866	2,665,130
6/30/14-15	4,161,584	5,316,584	0.718	2,986,503	3,815,372
6/30/15-16	6,415,153	7,250,153	0.757	4,855,918	5,487,967
Total	33,625,417	46,557,958		22,615,262	31,247,219
			(7) Total Discount Factor:	0.673	0.671

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	671,450	1,208,660
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	223,817	402,887
(11) Discounted Value at 6%:	616,213	1,109,228

NOTES:

(2), (3) From Section 4, Exhibit 1, Page 1, Columns 8, 9

(4) From Section 4, Exhibit 1, Page 13, Column 8

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Total Indemnity (Including Lump Sums) + Medical

Calculation of Fiscal Year 7/01/16 - 17 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/16 - 06/30/17	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/16 - 06/30/17		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	6,096,099	6,998,711	4,970,299	1,125,800	2,028,412				99,212	109,133	8.8%	5.4%
6/30/82-83	2,939,331	2,973,382	2,912,565	26,766	60,817	98.5%	0.5%	33.8%	9,035	20,529	33.8%	33.8%
6/30/83-84	2,152,331	2,192,144	2,135,674	16,657	56,470	98.3%	0.5%	29.7%	4,948	16,774	29.7%	29.7%
6/30/84-85	4,626,768	4,847,000	4,562,224	64,543	284,776	96.3%	0.5%	13.6%	8,752	38,617	13.6%	13.6%
6/30/85-86	6,975,817	7,043,640	6,962,840	12,977	80,800	99.3%	0.5%	74.7%	9,700	60,397	74.7%	74.7%
6/30/86-87	4,562,103	4,603,180	4,532,327	29,776	70,853	98.9%	1.0%	91.1%	27,120	64,533	91.1%	91.1%
6/30/87-88	7,311,923	7,377,350	7,243,858	68,065	133,492	98.6%	1.0%	72.9%	49,605	97,288	72.9%	72.9%
6/30/88-89	8,852,000	9,231,000	8,623,465	228,535	607,535	95.4%	1.0%	21.6%	49,429	131,401	21.6%	21.6%
6/30/89-90	11,578,000	11,582,000	11,206,698	371,302	375,302	96.8%	1.0%	31.0%	115,180	116,420	31.0%	31.0%
6/30/90-91	13,354,000	14,468,140	12,835,169	518,831	1,632,971	92.3%	1.0%	12.9%	67,083	211,138	12.9%	12.9%
6/30/91-92	6,740,000	6,742,000	6,458,761	281,239	283,239	95.8%	1.0%	23.9%	67,171	67,649	23.9%	23.9%
6/30/92-93	4,658,568	4,692,930	4,516,389	142,179	176,542	96.6%	1.0%	29.3%	41,716	51,799	29.3%	29.3%
6/30/93-94	6,932,000	6,937,000	6,577,197	354,803	359,803	94.8%	1.0%	19.4%	68,860	69,830	19.4%	19.4%
6/30/94-95	8,016,000	8,029,000	7,486,168	529,832	542,832	93.3%	1.0%	15.0%	79,253	81,197	15.0%	15.0%
6/30/95-96	7,404,000	7,417,000	6,800,296	603,704	616,704	91.8%	1.0%	12.1%	73,316	74,894	12.1%	12.1%
6/30/96-97	8,649,000	8,669,000	7,855,422	793,578	813,578	90.7%	1.0%	10.8%	85,512	87,668	10.8%	10.8%
6/30/97-98	11,129,289	11,323,790	10,414,662	714,627	909,129	92.8%	1.0%	13.8%	98,818	125,713	13.8%	13.8%
6/30/98-99	10,306,825	10,488,000	9,535,832	770,993	952,168	91.7%	1.0%	12.1%	93,042	114,906	12.1%	12.1%
6/30/99-00	11,136,400	11,332,890	10,251,543	884,857	1,081,347	91.2%	1.0%	11.4%	101,119	123,574	11.4%	11.4%
6/30/00-01	14,818,055	15,084,770	13,481,494	1,336,561	1,603,276	90.2%	1.0%	10.2%	135,950	163,079	10.2%	10.2%
6/30/01-02	12,030,707	12,592,000	10,833,197	1,197,510	1,758,803	88.0%	1.0%	8.3%	99,739	146,488	8.3%	8.3%
6/30/02-03	12,380,508	12,941,000	11,010,637	1,369,871	1,930,364	87.0%	1.0%	7.7%	105,105	148,110	7.7%	7.7%
6/30/03-04	11,291,877	11,798,000	9,931,862	1,360,015	1,866,138	86.0%	1.0%	7.2%	97,338	133,561	7.2%	7.2%
6/30/04-05	12,074,804	13,100,000	10,897,622	1,177,182	2,202,378	86.6%	1.0%	7.4%	87,690	164,058	7.4%	7.4%
6/30/05-06	8,973,650	9,627,000	7,947,940	1,025,710	1,679,060	85.5%	1.0%	6.9%	70,538	115,469	6.9%	6.9%
6/30/06-07	7,646,568	8,174,450	6,561,371	1,085,198	1,613,079	82.9%	1.0%	5.9%	63,629	94,581	5.9%	5.9%
6/30/07-08	7,865,000	8,225,100	6,292,887	1,572,113	1,932,213	78.2%	2.0%	9.2%	144,367	177,435	9.2%	9.2%
6/30/08-09	7,112,000	7,774,500	5,519,887	1,592,113	2,254,613	74.2%	5.0%	19.3%	308,067	436,258	19.3%	19.3%
6/30/09-10	4,798,000	5,778,950	3,393,932	1,404,068	2,385,018	64.2%	5.0%	14.0%	195,968	332,880	14.0%	14.0%
6/30/10-11	6,513,000	7,381,350	4,633,572	1,879,428	2,747,778	66.7%	5.0%	15.0%	282,173	412,545	15.0%	15.0%
6/30/11-12	5,432,000	6,543,400	3,392,171	2,039,829	3,151,229	56.7%	5.0%	11.5%	235,287	363,483	11.5%	11.5%
6/30/12-13	5,526,000	6,947,750	3,040,299	2,485,701	3,907,451	48.7%	7.9%	15.4%	383,391	602,680	15.4%	15.4%
6/30/13-14	6,650,000	8,336,550	3,131,989	3,518,011	5,204,561	41.8%	6.9%	11.9%	420,076	621,462	11.9%	11.9%
6/30/14-15	8,374,000	10,061,950	3,079,001	5,294,999	6,982,949	33.4%	8.4%	12.6%	667,476	880,256	12.6%	12.6%
6/30/15-16	10,521,000	11,511,600	1,832,252	8,688,748	9,679,348	16.6%	10.0%	12.0%	1,042,219	1,161,041	12.0%	12.0%
Total	285,427,621	302,826,527	240,861,501	44,566,120	61,965,026				5,487,883	7,616,846	12.3%	12.3%

NOTES:

(2) Exhibit 1, Page 1, Column (4) + Exhibit 2, Page 1, Column (4)
(3) Exhibit 1, Page 1, Column (5) + Exhibit 2, Page 1, Column (5)
(4) Exhibit 1, Page 1, Column (2) + Exhibit 2, Page 1, Column (2)
(5) = (2) - (4)
(6) = (3) - (4)
(7) = (4) / Average of Columns (2), (3)
(8) = (7) - Prior Year's (7)
(9) = (8) / (1.00 - (7))
(10) = (5) * (9)
(11) = (6) * (9)
(12) = (10) / (5)
(13) = (11) / (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Paid Loss	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		874,549			1,328,899	1,694,301	454,350	819,752		
6/30/82-83		164,749	167,041		164,749	170,382	0	5,633		
6/30/83-84		730,414	741,317		730,414	756,144	0	25,730		
6/30/84-85	115,258	521,039	529,346	525,217	525,000	529,000	3,961	7,961	0.455	0.459
6/30/85-86	123,937	563,332	572,886	571,186	571,000	573,000	7,668	9,668	0.461	0.462
6/30/86-87	142,396	647,687	659,988	660,639	660,000	661,000	12,313	13,313	0.463	0.464
6/30/87-88	166,792	1,145,983	1,172,419	1,174,904	1,172,000	1,175,000	26,017	29,017	0.703	0.704
6/30/88-89	180,117	1,273,848	1,308,446	1,307,092	1,307,000	1,308,000	33,152	34,152	0.726	0.726
6/30/89-90	180,883	1,861,705	1,919,918	1,920,115	1,920,000	1,920,000	58,295	58,295	1.061	1.061
6/30/90-91	169,902	2,480,194	2,567,978	2,567,363	2,567,000	2,568,000	86,806	87,806	1.511	1.511
6/30/91-92	165,926	2,086,626	2,169,123	2,168,052	2,168,000	2,169,000	81,374	82,374	1.307	1.307
6/30/92-93	174,198	1,359,273	1,418,664	1,417,897	1,418,000	1,419,000	58,727	59,727	0.814	0.815
6/30/93-94	185,946	1,542,406	1,617,849	1,616,470	1,616,000	1,618,000	73,594	75,594	0.869	0.870
6/30/94-95	194,051	1,333,586	1,412,804	1,411,458	1,411,000	1,413,000	77,414	79,414	0.727	0.728
6/30/95-96	205,262	1,475,398	1,596,108	1,593,444	1,593,000	1,596,000	117,602	120,602	0.776	0.778
6/30/96-97	234,073	1,823,449	2,005,817	2,000,570	2,001,000	2,006,000	177,551	182,551	0.855	0.857
6/30/97-98	221,865	2,150,537	2,393,215	2,382,989	2,383,000	2,393,000	232,463	242,463	1.074	1.079
6/30/98-99	256,071	1,899,790	2,145,806	2,137,288	2,137,000	2,146,000	237,210	246,210	0.835	0.838
6/30/99-00	268,486	2,080,606	2,373,223	2,361,201	2,361,000	2,373,000	280,394	292,394	0.879	0.884
6/30/00-01	279,182	2,940,185	3,404,527	3,378,586	3,379,000	3,405,000	438,815	464,815	1.210	1.220
6/30/01-02	283,070	1,877,525	2,205,210	2,195,479	2,195,000	2,205,000	317,475	327,475	0.775	0.779
6/30/02-03	289,846	2,272,377	2,705,449	2,688,474	2,688,000	2,705,000	415,623	432,623	0.927	0.933
6/30/03-04	293,771	2,040,566	2,454,880	2,442,590	2,443,000	2,455,000	402,434	414,434	0.832	0.836
6/30/04-05	291,382	2,639,159	3,208,841	2,949,477	3,008,000	3,209,000	368,841	569,841	1.032	1.101
6/30/05-06	294,709	2,114,071	2,609,644	2,454,326	2,405,000	2,610,000	290,929	495,929	0.816	0.886
6/30/06-07	289,603	1,665,318	2,088,557	2,025,687	1,985,000	2,193,450	319,682	528,132	0.685	0.757
6/30/07-08	354,668	1,508,305	1,922,796	1,982,470	1,827,000	2,081,100	318,695	572,795	0.515	0.587
6/30/08-09	332,413	1,508,983	1,959,692	1,990,424	1,862,000	2,089,500	353,017	580,517	0.560	0.629
6/30/09-10	336,338	920,529	1,234,691	1,479,281	1,173,000	1,552,950	252,471	632,421	0.349	0.462
6/30/10-11	333,783	1,122,566	1,567,130	1,746,967	1,489,000	1,834,350	366,434	711,784	0.446	0.550
6/30/11-12	348,187	824,519	1,213,640	1,568,049	1,274,000	1,646,400	449,481	821,881	0.366	0.473
6/30/12-13	368,022	788,982	1,260,417	1,714,944	1,323,000	1,800,750	534,018	1,011,768	0.359	0.489
6/30/13-14	390,528	774,112	1,391,313	1,951,142	1,461,000	2,048,550	686,888	1,274,438	0.374	0.525
6/30/14-15	402,750	894,585	2,027,913	2,439,119	2,028,000	2,560,950	1,133,415	1,666,365	0.504	0.636
6/30/15-16	400,013	502,405	2,792,322	2,775,956	2,776,000	2,931,600	2,273,595	2,429,195	0.694	0.733
Total	8,273,428	50,409,359	60,818,968	61,598,855	61,350,062	65,816,427	10,940,703	15,407,068		
Tot 6/30/84-16	8,273,428	48,639,647	59,910,610	61,598,855	59,126,000	63,195,600	10,486,353	14,555,953	0.715	0.764

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(4) From Section 4, Exhibit 2, Page 2, Column 8

(5) From Section 4, Exhibit 2, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Accident Year	Payroll (000's)	Paid Loss	Paid LDF	Adjustment for Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim
All Prior Yrs		874,549							1	1	
6/30/82-83		164,749	1.014	1.000	167,041	N/A	167,041		0	0	
6/30/83-84		730,414	1.015	1.000	741,317	N/A	741,317		0	0	
6/30/84-85	115,258	521,039	1.016	1.000	529,346	N/A	529,346	0.459	1	1	8,307
6/30/85-86	123,937	563,332	1.017	1.000	572,886	N/A	572,886	0.462	0	0	
6/30/86-87	142,396	647,687	1.019	1.000	659,988	N/A	659,988	0.463	0	0	
6/30/87-88	166,792	1,145,983	1.023	1.000	1,172,419	N/A	1,172,419	0.703	1	0	
6/30/88-89	180,117	1,273,848	1.027	1.000	1,308,446	N/A	1,308,446	0.726	1	1	34,598
6/30/89-90	180,883	1,861,705	1.031	1.000	1,919,918	N/A	1,919,918	1.061	2	2	29,107
6/30/90-91	169,902	2,480,194	1.035	1.000	2,567,978	N/A	2,567,978	1.511	5	4	21,946
6/30/91-92	165,926	2,086,626	1.040	1.000	2,169,123	N/A	2,169,123	1.307	4	2	41,248
6/30/92-93	174,198	1,359,273	1.044	1.000	1,418,664	N/A	1,418,664	0.814	2	0	
6/30/93-94	185,946	1,542,406	1.049	1.000	1,617,849	N/A	1,617,849	0.870	3	4	18,861
6/30/94-95	194,051	1,333,586	1.059	1.000	1,412,804	N/A	1,412,804	0.728	1	1	79,217
6/30/95-96	205,262	1,475,398	1.082	1.000	1,596,108	N/A	1,596,108	0.778	4	3	40,237
6/30/96-97	234,073	1,823,449	1.100	1.000	2,005,817	N/A	2,005,817	0.857	3	4	45,592
6/30/97-98	221,865	2,150,537	1.113	1.000	2,393,215	N/A	2,393,215	1.079	3	3	80,893
6/30/98-99	256,071	1,899,790	1.129	1.000	2,145,806	N/A	2,145,806	0.838	5	4	61,504
6/30/99-00	268,486	2,080,606	1.141	1.000	2,373,223	N/A	2,373,223	0.884	5	3	97,539
6/30/00-01	279,182	2,940,185	1.158	1.000	3,404,527	N/A	3,404,527	1.219	5	4	116,085
6/30/01-02	283,070	1,877,525	1.175	1.000	2,205,210	N/A	2,205,210	0.779	3	3	109,228
6/30/02-03	289,846	2,272,377	1.191	1.000	2,705,449	N/A	2,705,449	0.933	3	1	433,071
6/30/03-04	293,771	2,040,566	1.203	1.000	2,454,880	N/A	2,454,880	0.836	6	7	59,188
6/30/04-05	291,382	2,639,159	1.216	1.000	3,208,841	N/A	3,208,841	1.101	5	6	94,947
6/30/05-06	294,709	2,114,071	1.234	1.000	2,609,644	N/A	2,609,644	0.885	4	4	123,893
6/30/06-07	289,603	1,665,318	1.254	1.000	2,088,557	N/A	2,088,557	0.721	11	9	47,027
6/30/07-08	354,668	1,508,305	1.275	1.000	1,922,796	N/A	1,922,796	0.542	5	4	103,623
6/30/08-09	332,413	1,508,983	1.299	1.000	1,959,692	N/A	1,959,692	0.590	9	9	50,079
6/30/09-10	336,338	920,529	1.341	1.000	1,234,691	N/A	1,234,691	0.367	8	10	31,416
6/30/10-11	333,783	1,122,566	1.396	1.000	1,567,130	N/A	1,567,130	0.470	14	9	49,396
6/30/11-12	348,187	824,519	1.472	1.000	1,213,640	N/A	1,213,640	0.349	18	14	27,794
6/30/12-13	368,022	788,982	1.598	1.000	1,260,417	N/A	1,260,417	0.342	36	18	26,191
6/30/13-14	390,528	774,112	1.797	1.000	1,391,313	N/A	1,391,313	0.356	166	37	16,681
6/30/14-15	402,750	894,585	2.267	1.000	2,027,913	N/A	2,027,913	0.504	265	148	7,658
6/30/15-16	400,013	502,405	5.558	1.000	2,792,322	N/A	2,792,322	0.698		242	9,462
Total	8,273,428	50,409,359			60,818,968		60,818,968		599	558	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 4/1/14 filing. Consideration for development beyond 252 months made in selection of LDF's.

(6) = (3) x (4) x (5)

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	115,258	0.231	521,039	1.016	525,217	N/A	525,217	0.456	0.456
6/30/85-86	123,937	0.380	563,332	1.017	571,186	N/A	571,186	0.461	0.461
6/30/86-87	142,396	0.488	647,687	1.019	660,639	N/A	660,639	0.464	0.464
6/30/87-88	166,792	0.769	1,145,983	1.023	1,174,904	N/A	1,174,904	0.704	0.704
6/30/88-89	180,117	0.698	1,273,848	1.027	1,307,092	N/A	1,307,092	0.726	0.726
6/30/89-90	180,883	1.065	1,861,705	1.031	1,920,115	N/A	1,920,115	1.062	1.062
6/30/90-91	169,902	1.501	2,480,194	1.035	2,567,363	N/A	2,567,363	1.511	1.511
6/30/91-92	165,926	1.290	2,086,626	1.040	2,168,052	N/A	2,168,052	1.307	1.307
6/30/92-93	174,198	0.804	1,359,273	1.044	1,417,897	N/A	1,417,897	0.814	0.814
6/30/93-94	185,946	0.854	1,542,406	1.049	1,616,470	N/A	1,616,470	0.869	0.869
6/30/94-95	194,051	0.716	1,333,586	1.059	1,411,458	N/A	1,411,458	0.727	0.727
6/30/95-96	205,262	0.760	1,475,398	1.082	1,593,444	N/A	1,593,444	0.776	0.776
6/30/96-97	234,073	0.832	1,823,449	1.100	2,000,570	N/A	2,000,570	0.855	0.855
6/30/97-98	221,865	1.033	2,150,537	1.113	2,382,989	N/A	2,382,989	1.074	1.074
6/30/98-99	256,071	0.809	1,899,790	1.129	2,137,288	N/A	2,137,288	0.835	0.835
6/30/99-00	268,486	0.848	2,080,606	1.141	2,361,201	N/A	2,361,201	0.879	0.879
6/30/00-01	279,182	1.151	2,940,185	1.158	3,378,586	N/A	3,378,586	1.210	1.210
6/30/01-02	283,070	0.756	1,877,525	1.175	2,195,479	N/A	2,195,479	0.776	0.776
6/30/02-03	289,846	0.897	2,272,377	1.191	2,688,474	N/A	2,688,474	0.928	0.928
6/30/03-04	293,771	0.811	2,040,566	1.203	2,442,590	N/A	2,442,590	0.831	0.831
6/30/04-05	291,382	0.600	2,639,159	1.216	2,949,477	N/A	2,949,477	1.012	1.012
6/30/05-06	294,709	0.608	2,114,071	1.234	2,454,326	N/A	2,454,326	0.833	0.833
6/30/06-07	289,603	0.614	1,665,318	1.254	2,025,687	N/A	2,025,687	0.699	0.699
6/30/07-08	354,668	0.620	1,508,305	1.275	1,982,470	N/A	1,982,470	0.559	0.559
6/30/08-09	332,413	0.630	1,508,983	1.299	1,990,424	N/A	1,990,424	0.599	0.599
6/30/09-10	336,338	0.653	920,529	1.341	1,479,281	N/A	1,479,281	0.440	0.440
6/30/10-11	333,783	0.659	1,122,566	1.396	1,746,967	N/A	1,746,967	0.523	0.523
6/30/11-12	348,187	0.666	824,519	1.472	1,568,049	N/A	1,568,049	0.450	0.450
6/30/12-13	368,022	0.673	788,982	1.598	1,714,944	N/A	1,714,944	0.466	0.466
6/30/13-14	390,528	0.679	774,112	1.797	1,951,142	N/A	1,951,142	0.500	0.500
6/30/14-15	402,750	0.686	894,585	2.267	2,439,119	N/A	2,439,119	0.606	0.606
6/30/15-16	400,013	0.693	502,405	5.558	2,775,956	N/A	2,775,956	0.694	0.694
Total	8,273,428		48,639,647		61,598,855		61,598,855		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 4, Exhibit 2, Page 4, Column 11

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

(5) From Section 4, Exhibit 2, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Expected Ult Loss	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.231	0.231
6/30/85-86									0.380	0.380
6/30/86-87									0.488	0.488
6/30/87-88									0.769	0.769
6/30/88-89									0.698	0.698
6/30/89-90									1.065	1.065
6/30/90-91	169,902	2,567,978	1.511	1.194	1.805	1.295	2.337	0.453	1.504	1.501
6/30/91-92	165,926	2,169,123	1.307	1.189	1.554	1.282	1.993	0.459	1.282	1.290
6/30/92-93	174,198	1,418,664	0.814	1.189	0.968	1.270	1.230	0.464	0.811	0.804
6/30/93-94	185,946	1,617,849	0.870	1.178	1.025	1.257	1.289	0.473	0.847	0.854
6/30/94-95	194,051	1,412,804	0.728	1.170	0.852	1.245	1.060	0.481	0.736	0.716
6/30/95-96	205,262	1,596,108	0.778	1.155	0.898	1.232	1.107	0.492	0.780	0.760
6/30/96-97	234,073	2,005,817	0.857	1.137	0.974	1.220	1.189	0.505	0.848	0.832
6/30/97-98	221,865	2,393,215	1.079	1.135	1.224	1.208	1.479	0.511	1.030	1.033
6/30/98-99	256,071	2,145,806	0.838	1.135	0.951	1.196	1.138	0.516	0.828	0.809
6/30/99-00	268,486	2,373,223	0.884	1.135	1.003	1.184	1.188	0.521	0.868	0.848
6/30/00-01	279,182	3,404,527	1.219	1.109	1.353	1.173	1.586	0.538	1.173	1.151
6/30/01-02	283,070	2,205,210	0.779	1.101	0.858	1.161	0.996	0.548	0.778	0.756
6/30/02-03	289,846	2,705,449	0.933	1.073	1.002	1.149	1.151	0.568	0.913	0.897
6/30/03-04	293,771	2,454,880	0.836	1.046	0.874	1.138	0.995	0.588	0.831	0.811
6/30/04-05	291,382	3,208,841	1.101	1.036	1.140	1.127	1.285	0.600	0.705	0.600
6/30/05-06	294,709	2,609,644	0.885	1.032	0.914	1.116	1.020	0.608	0.709	0.608
6/30/06-07	289,603	2,088,557	0.721	1.032	0.744	1.105	0.822	0.614	0.711	0.614
6/30/07-08	354,668	1,922,796	0.542	1.032	0.559	1.094	0.612	0.620	0.712	0.620
6/30/08-09	332,413	1,959,692	0.590	1.027	0.605	1.083	0.655	0.630	0.718	0.630
6/30/09-10	336,338	1,234,691	0.367	1.000	0.367	1.072	0.394	0.653	0.739	0.653
6/30/10-11	333,783	1,567,130	0.470	1.000	0.470	1.062	0.498	0.659	0.741	0.659
6/30/11-12	348,187	1,213,640	0.349	1.000	0.349	1.051	0.366	0.666	0.743	0.666
6/30/12-13	368,022	1,260,417	0.342	1.000	0.342	1.041	0.356	0.673	0.744	0.673
6/30/13-14	390,528	1,391,313	0.356	1.000	0.356	1.030	0.367	0.679	0.746	0.679
6/30/14-15	402,750	2,027,913	0.504	1.000	0.504	1.020	0.514	0.686	0.748	0.686
6/30/15-16	400,013	2,792,322	0.698	1.000	0.698	1.010	0.705	0.693		0.693
Total	7,364,045	53,747,607								

Trend Last 4 (ex 15-16):	12.1%	Avg 3 (ex 15-16):	0.412
Trend Last 8 (ex 15-16):	-4.5%	Avg 5 (ex 15-16):	0.420
Trend Last 12 (ex 15-16):	-9.4%	Avg 10 (ex 15-16):	0.560
Prior Selected Trend:	0.3%	Prior Sel Avg:	0.750
Selected Trend:	1.00%	Sel. Loss Cost:	0.700

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 4, Exhibit 2, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCIRB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.900	
(2)	Credibility		42%	
(3)	Average Pmt Trend Statewide		0.950	
(4)	Credibility Weighted Trend		0.929	
		(Low)		(High)
(5)	Selected Range	0.906		0.919
(6)	Incremental Paid for 2016	71,803		71,803
(7)	Estimated Reserve	688,274		819,752
(8)	Paid to Date (82 & Prior)	874,549		874,549
(9)	Est Ult Paid for 1982 & Prior	1,562,823		1,694,301

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	73,475	73,492
(11)	Projected Number of Years	3	3
(12)	Estimated Reserve	220,426	220,476
(13)	Paid to Date (82 & Prior)	874,549	802,746
(14)	Est Ult Paid for 1982 & Prior	1,094,975	1,023,222
(14a)	Paid Counts During Fiscal Year	1	1

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	1,328,899	1,694,301
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**1,328,899**	**1,694,301**
(18)	Implied Tail	1.520	1.937
(19)	Ult Loss Inc Lump Sums @ 6/15	1,376,441	1,942,347

NOTES:

(1) From Section 4, Exhibit 2, Page 6
(2) = (Average of Section 4, Exhibit 2, Page 6, Column 3 / 175,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 4, Exhibit 2, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 4, Exhibit 2, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) Lump Sums are considered in Indemnity analysis (Section 1)
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	24,180	10.093			
1993	2	4,649	8.444	0.192		
1994	3	4,226	8.349	0.909		
1995	4	2,463	7.809	0.583		
1996	5	3,867	8.260	1.570		
1997	6	12,692	9.449	3.282		
1998	7	3,736	8.226	0.294		
1999	8	1,455	7.283	0.389		
2000	9	13,993	9.546	9.617	n =	25
2001	10	18,860	9.845	1.348	S(x) =	50,100
2002	11	1,907	7.553	0.101	S(x-sq) =	100,401,700
2003	12	725	6.586	0.380	S(xy) =	468,877
2004	13	1,808	7.500	2.494	S(y) =	234
2005	14	2,687	7.896	1.486	D =	32,500
2006	15	3,792	8.241	1.411	slope =	0.138
2007	16	10,343	9.244	2.728	Avg Trend =	1.138
2008	17	8,983	9.103	0.869		
2009	18	100,501	11.518	11.187		
2010	19	110,847	11.616	1.103		
2011	20	91,392	11.423	0.824		
2012	21	74,810	11.223	0.819		
2013	22	71,853	11.182	0.960		
2014	23	68,052	11.128	0.947		
2015	24	80,571	11.297	1.184		
2016	25	71,803	11.182	0.891		
					Selected Trend:	**0.900**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 0.891 = 71803 / 80571

Commonwealth of Massachusetts Workers Compensation
Department of Corrections - Cluster 3
MEDICAL
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	11,197	26,045	37,203	47,025	56,514	66,401	72,814	83,440	107,442	118,641	128,866	135,800	137,783	138,069	140,735	141,596	141,596	141,914	142,318	142,318	142,318	142,748	144,456	154,891	160,448	164,749	164,749	164,749	164,749	164,749	164,749	164,749	164,749	164,749
June-84	52,670	137,962	203,703	257,882	317,818	352,402	422,888	501,855	591,716	647,521	689,358	721,711	724,550	728,685	728,693	728,709	728,709	728,709	729,143	729,143	729,143	730,066	730,414	730,414	730,414	730,414	730,414	730,414	730,414	730,414	730,414	730,414	730,414	
June-85	24,581	57,175	81,670	103,231	128,616	150,557	165,276	184,340	192,621	201,787	208,269	211,465	217,592	220,213	229,343	238,016	247,437	257,231	266,584	280,985	298,608	318,573	337,983	352,978	369,873	394,344	415,317	434,308	451,747	470,326	495,794	521,039		
June-86	48,446	112,684	160,960	207,617	233,762	263,664	302,247	319,414	339,302	351,896	365,470	378,302	387,035	413,763	422,216	433,663	460,852	480,856	494,886	512,562	523,474	541,163	550,005	554,546	557,077	558,277	559,768	562,871	563,332	563,332	563,332			
June-87	77,936	181,278	229,911	293,653	369,221	440,930	473,706	485,578	509,980	540,282	563,925	581,583	602,759	614,805	618,094	621,890	624,842	627,889	633,482	636,887	638,336	639,623	640,749	642,212	643,694	648,271	647,521	647,687	647,687	647,687				
June-88	139,053	319,817	519,537	680,966	823,361	912,703	998,546	1,039,983	1,059,846	1,072,337	1,112,168	1,116,550	1,122,900	1,125,982	1,127,653	1,131,576	1,136,086	1,139,881	1,139,671	1,140,874	1,141,510	1,142,078	1,144,288	1,145,006	1,145,741	1,145,836	1,145,900	1,145,983	1,145,983					
June-89	131,654	415,398	576,800	731,889	811,584	895,533	936,684	955,349	999,849	1,017,126	1,032,040	1,060,186	1,074,102	1,089,934	1,108,376	1,126,235	1,147,403	1,157,458	1,164,985	1,178,930	1,193,712	1,206,048	1,216,929	1,227,147	1,246,391	1,260,610	1,269,507	1,273,848						
June-90	233,608	695,685	1,052,182	1,224,162	1,354,697	1,427,692	1,488,096	1,536,324	1,567,188	1,604,683	1,637,523	1,658,777	1,680,547	1,714,885	1,752,807	1,778,979	1,821,497	1,836,851	1,849,519	1,851,871	1,853,225	1,854,022	1,856,452	1,857,840	1,861,177	1,861,474	1,861,705								
June-91	236,602	942,522	1,192,208	1,419,689	1,530,020	1,581,521	1,621,661	1,644,367	1,676,462	1,699,513	1,748,257	1,799,332	1,845,064	1,889,995	1,951,997	2,058,075	2,109,105	2,138,832	2,230,499	2,269,406	2,337,283	2,427,731	2,454,390	2,467,892	2,474,842	2,480,194								
June-92	391,819	811,780	1,023,022	1,084,480	1,141,810	1,171,673	1,196,735	1,319,302	1,369,241	1,426,734	1,445,752	1,475,976	1,501,400	1,542,584	1,553,065	1,562,833	1,573,916	1,589,949	1,615,152	1,692,813	1,819,909	1,945,315	1,977,667	2,060,792	2,086,626										
June-93	344,830	901,476	1,061,794	1,155,998	1,198,560	1,220,287	1,266,026	1,272,695	1,293,165	1,297,361	1,300,910	1,301,951	1,307,475	1,311,803	1,319,110	1,321,122	1,322,034	1,323,404	1,323,509	1,323,675	1,327,602	1,358,187	1,359,273	1,359,273										
June-94	431,268	816,076	959,344	1,052,996	1,141,756	1,231,287	1,271,524	1,296,482	1,314,355	1,335,010	1,357,475	1,376,074	1,390,533	1,402,752	1,413,794	1,423,336	1,430,519	1,446,576	1,458,508	1,476,979	1,496,298	1,505,910	1,542,406												
June-95	351,310	722,998	906,028	985,528	1,057,961	1,106,846	1,136,019	1,186,110	1,209,822	1,232,732	1,266,835	1,285,546	1,294,524	1,301,613	1,305,920	1,312,490	1,318,475	1,323,435	1,325,511	1,329,061	1,329,847	1,333,586												
June-96	344,486	709,731	859,884	962,823	1,085,060	1,150,008	1,181,678	1,213,854	1,256,984	1,305,951	1,334,696	1,371,532	1,394,601	1,418,259	1,433,202	1,445,908	1,456,275	1,465,439	1,469,259	1,471,403	1,475,398													
June-97	404,402	880,944	1,029,045	1,129,661	1,192,806	1,242,248	1,291,581	1,332,755	1,404,699	1,468,293	1,534,845	1,608,334	1,629,854	1,671,824	1,708,017	1,745,451	1,758,270	1,766,104	1,811,375	1,823,449														
June-98	352,321	850,419	1,071,815	1,188,934	1,283,207	1,349,964	1,408,091	1,486,280	1,529,830	1,572,573	1,615,592	1,716,755	1,772,391	1,838,516	1,900,110	1,958,286	2,022,922	2,088,450	2,150,537															
June-99	335,840	780,685	1,009,719	1,120,546	1,237,603	1,345,867	1,452,103	1,561,531	1,613,648	1,654,503	1,683,574	1,743,457	1,791,004	1,820,118	1,838,665	1,854,418	1,895,185	1,899,790																
June-00	496,994	1,118,525	1,328,041	1,481,979	1,601,386	1,717,688	1,766,903	1,812,535	1,852,179	1,901,468	1,931,755	1,967,861	2,003,457	2,029,359	2,049,264	2,065,241	2,080,606																	
June-01	553,191	1,161,108	1,486,434	1,729,264	2,113,882	2,296,440	2,415,155	2,501,361	2,567,715	2,697,204	2,775,225	2,860,089	2,886,161	2,906,989	2,914,059	2,940,185																		
June-02	441,054	954,595	1,190,752	1,457,269	1,628,226	1,698,307	1,736,904	1,769,478	1,813,443	1,830,775	1,851,171	1,867,504	1,871,731	1,874,225	1,877,525																			
June-03	268,200	928,702	1,552,091	1,775,257	1,904,289	1,988,413	2,045,138	2,103,051	2,147,004	2,184,461	2,214,085	2,218,226	2,249,009	2,272,377																				
June-04	152,994	1,174,712	1,612,636	1,744,790	1,811,022	1,896,424	1,965,029	1,975,226	1,988,740	1,997,998	2,012,411	2,028,809	2,040,566																					
June-05	504,986	1,476,366	1,809,319	2,048,757	2,193,956	2,297,784	2,392,936	2,464,260	2,513,823	2,554,231	2,596,472	2,639,159																						
June-06	456,471	1,195,789	1,564,242	1,729,098	1,847,555	1,939,187	2,044,654	2,084,339	2,092,454	2,102,214	2,114,071																							
June-07	537,825	1,000,141	1,218,822	1,380,770	1,450,003	1,505,529	1,543,801	1,601,192	1,634,367	1,665,318																								
June-08	539,208	1,080,479	1,291,808	1,419,250	1,474,245	1,483,165	1,498,179	1,503,319	1,508,305																									
June-09	508,581	995,354	1,230,224	1,338,898	1,369,306	1,446,964	1,482,021	1,508,983																										
June-10	391,950	706,776	789,348	818,015	852,862	886,332	920,529																											
June-11	496,567	863,714	960,779	1,031,286	1,110,947	1,122,566																												
June-12	293,489	638,905	723,823	781,875	824,519																													
June-13	286,539	659,431	752,139	788,982																														
June-14	290,720	674,005	774,112																															
June-15	468,795	894,585																																
June-16	502,405																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.326	1.428	1.264	1.202	1.175	1.097	1.146	1.288	1.104	1.086	1.054	1.015	1.002	1.019	1.006	1.000	1.002	1.003	1.000	1.000	1.003	1.012	1.072	1.036	1.027	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-84	2.619	1.477	1.266	1.232	1.109	1.200	1.187	1.179	1.094	1.065	1.047	1.004	1.006	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
June-85	2.326	1.428	1.264	1.246	1.171	1.098	1.115	1.045	1.048	1.032	1.015	1.029	1.012	1.041	1.038	1.040	1.040	1.036	1.054	1.063	1.067	1.061	1.044	1.048	1.066	1.053	1.046	1.040	1.041	1.054	1.051		
June-86	2.326	1.428	1.290	1.126	1.128	1.146	1.057	1.062	1.037	1.039	1.035	1.023	1.069	1.020	1.027	1.063	1.043	1.029	1.036	1.021	1.034	1.016	1.008	1.005	1.002	1.003	1.006	1.001	1.000	1.000			
June-87	2.326	1.268	1.277	1.257	1.194	1.074	1.025	1.050	1.059	1.044	1.031	1.036	1.020	1.005	1.006	1.005	1.005	1.009	1.005	1.002	1.002	1.002	1.002	1.002	1.007	0.999	1.000	1.000	1.000				
June-88	2.300	1.624	1.311	1.209	1.109	1.094	1.041	1.019	1.012	1.037	1.004	1.006	1.003	1.001	1.003	1.004	1.003	1.000	1.001	1.001	1.000	1.002	1.001	1.001	1.000	1.000	1.000	1.000					
June-89	3.155	1.389	1.269	1.109	1.103	1.046	1.020	1.047	1.017	1.015	1.027	1.013	1.015	1.017	1.016	1.019	1.009	1.007	1.012	1.013	1.010	1.009	1.008	1.016	1.011	1.007	1.003						
June-90	2.978	1.512	1.163	1.107	1.054	1.042	1.032	1.020	1.024	1.020	1.013	1.013	1.020	1.022	1.015	1.024	1.008	1.007	1.001	1.001	1.000	1.001	1.001	1.002	1.000	1.000							
June-91	3.984	1.265	1.191	1.078	1.034	1.025	1.014	1.020	1.014	1.029	1.029	1.025	1.024	1.033	1.054	1.025	1.014	1.043	1.017	1.030	1.039	1.011	1.006	1.003	1.002								
June-92	2.072	1.260	1.060	1.053	1.026	1.021	1.102	1.038	1.042	1.013	1.021	1.017	1.027	1.007	1.006	1.007	1.010	1.016	1.048	1.075	1.069	1.017	1.042	1.013									
June-93	2.614	1.178	1.089	1.037	1.018	1.037	1.005	1.016	1.003	1.003	1.001	1.004	1.003	1.006	1.002	1.001	1.001	1.000	1.000	1.003	1.023	1.001	1.000										
June-94	1.892	1.176	1.098	1.084	1.078	1.033	1.020	1.014	1.016	1.017	1.014	1.011	1.009	1.008	1.007	1.005	1.011	1.008	1.013	1.013	1.006	1.024											
June-95	2.058	1.253	1.088	1.073	1.046	1.026	1.044	1.020	1.019	1.028	1.015	1.007	1.005	1.003	1.005	1.005	1.004	1.002	1.003	1.001	1.003												
June-96	2.060	1.212	1.120	1.127	1.060	1.028	1.027	1.036	1.039	1.022	1.028	1.017	1.017	1.011	1.009	1.007	1.006	1.003	1.001	1.003													
June-97	2.178	1.168	1.098	1.056	1.041	1.040	1.032	1.054	1.045	1.045	1.048	1.013	1.026	1.022	1.022	1.007	1.004	1.026	1.007														
June-98	2.414	1.260	1.109	1.079	1.052	1.043	1.056	1.029	1.028	1.027	1.063	1.032	1.037	1.034	1.031	1.033	1.032	1.030															
June-99	2.325	1.293	1.110	1.104	1.087	1.079	1.075	1.033	1.025	1.018	1.036	1.027	1.016	1.010	1.009	1.022	1.002																
June-00	2.251	1.187	1.116	1.081	1.073	1.029	1.026	1.022	1.027	1.016	1.019	1.018	1.013	1.010	1.008	1.007																	
June-01	2.099	1.280	1.163	1.222	1.086	1.052	1.036	1.027	1.050	1.029	1.031	1.009	1.007	1.002	1.009																		
June-02	2.164	1.247	1.224	1.117	1.043	1.023	1.019	1.025	1.010	1.011	1.009	1.002	1.001	1.002																			
June-03	3.463	1.671	1.144	1.073	1.044	1.029	1.028	1.021	1.017	1.014	1.002	1.014	1.010																				
June-04	7.678	1.373	1.082	1.038	1.047	1.036	1.005	1.007	1.005	1.007	1.008	1.006																					
June-05	2.924	1.226	1.132	1.071	1.047	1.041	1.030	1.020	1.016	1.017	1.016																						
June-06	2.620	1.308	1.105	1.069	1.050	1.054	1.019	1.004	1.005	1.006																							
June-07	1.860	1.219	1.133	1.050	1.038	1.025	1.037	1.021	1.019																								
June-08	2.004	1.196	1.099	1.039	1.006	1.010	1.003	1.003																									
June-09	1.957	1.236	1.088	1.023	1.057	1.024	1.018																										
June-10	1.803	1.117	1.036	1.043	1.039	1.039																											
June-11	1.739	1.112	1.073	1.077	1.010																												
June-12	2.177	1.133	1.080	1.055																													
June-13	2.301	1.141	1.049																														
June-14	2.318	1.149																															
June-15	1.908																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.522	1.288	1.148	1.105	1.070	1.053	1.045	1.043	1.031	1.027	1.025	1.016	1.016	1.014	1.014	1.015	1.012	1.014	1.013	1.016	1.020	1.013	1.017	1.012	1.013	1.008	1.008	1.007	1.008	1.014	1.017	1.000	1.000	
Latest 5	2.089	1.130	1.065	1.047	1.030	1.031	1.022	1.011	1.012	1.011	1.013	1.010	1.010	1.012	1.016	1.015	1.010	1.014	1.005	1.019	1.028	1.011	1.011	1.007	1.004	1.002	1.011	1.008	1.008					
Latest 3	2.176	1.141	1.068	1.058	1.035	1.024	1.020	1.009	1.013	1.010	1.009	1.007	1.006	1.005	1.008	1.021	1.013	1.019	1.004	1.005	1.011	1.014	1.016	1.006	1.005	1.002	1.001	1.000	1.014	1.018	1.017			
Volume Wtd																																		
All Yrs	2.348	1.261	1.125	1.085	1.054	1.041	1.033	1.026	1.024	1.021	1.022	1.014	1.015	1.013	1.015	1.014	1.010	1.015	1.012	1.017	1.021	1.010	1.011	1.007	1.006	1.005	1.005	1.005	1.007	1.013	1.018	1.000	1.000	
Latest 5	2.032	1.129	1.068	1.045	1.030	1.031	1.022	1.011	1.012	1.011	1.014	1.010	1.009	1.011	1.015	1.016	1.011	1.015	1.005	1.021	1.031	1.011	1.012	1.006	1.003	1.002	1.007	1.005	1.007					
Latest 3	2.130	1.141	1.068	1.060	1.037	1.022	1.020	1.009	1.013	1.010	1.009	1.008	1.007	1.004	1.009	1.021	1.014	1.021	1.004	1.006	1.011	1.015	1.017	1.006	1.004	1.002	1.001	1.000	1.011	1.014	1.018			

Dev Factor Selection																																		
Industry 1	1.937	1.138	1.051	1.025	1.014	1.013	1.011	1.011	1.011	1.011	1.011	1.010	1.010	1.008	1.007	1.006	1.006	1.005																
Industry 2		1.271	1.076	1.031	1.019	1.013	1.010	1.010	1.011	1.009	1.010	1.014	1.012	1.008	1.007	1.008	1.006	1.005	1.005	1.006														
Prior	*2.486*	*1.265*	*1.127*	*1.086*	*1.056*	*1.041*	*1.033*	*1.019*	*1.015*	*1.017*	*1.014*	*1.012*	*1.012*	*1.014*	*1.015*	*1.016*	*1.012*	*1.013*	*1.012*	*1.018*	*1.023*	*1.010*	*1.005*	*1.004*	*1.004*	*1.004*	*1.004*	*1.004*	*1.004*	*1.002*	*1.001*	*1.001*	*1.014*	
Selected	2.452	1.261	1.125	1.085	1.054	1.041	1.033	1.019	1.016	1.016	1.015	1.011	1.010	1.014	1.014	1.015	1.010	1.015	1.012	1.017	1.021	1.010	1.005	1.004	1.004	1.004	1.004	1.004	1.004	1.002	1.001	1.001	1.001	1.014
FacToUlt	5.558	2.267	1.797	1.598	1.472	1.396	1.341	1.299	1.275	1.254	1.234	1.216	1.203	1.191	1.175	1.158	1.141	1.129	1.113	1.100	1.082	1.059	1.049	1.044	1.040	1.035	1.031	1.027	1.023	1.019	1.017	1.016	1.015	1.014
Percent of Ult	18.0%	44.1%	55.6%	62.6%	67.9%	71.6%	74.6%	77.0%	78.4%	79.7%	81.0%	82.2%	83.1%	84.0%	85.1%	86.4%	87.7%	88.5%	89.9%	90.9%	92.4%	94.4%	95.3%	95.8%	96.2%	96.6%	97.0%	97.4%	97.7%	98.1%	98.3%	98.4%	98.5%	98.6%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	1,376,441	1,942,347	1,328,899	1,694,301	(47,542)	-3.5%	(248,046)	-12.8%
6/30/82-83	164,749	170,461	164,749	170,382	0	0.0%	(79)	0.0%
6/30/83-84	730,414	756,495	730,414	756,144	0	0.0%	(351)	0.0%
6/30/84-85	500,000	504,000	525,000	529,000	25,000	5.0%	25,000	5.0%
6/30/85-86	572,000	574,000	571,000	573,000	(1,000)	-0.2%	(1,000)	-0.2%
6/30/86-87	662,000	663,000	660,000	661,000	(2,000)	-0.3%	(2,000)	-0.3%
6/30/87-88	1,176,000	1,179,000	1,172,000	1,175,000	(4,000)	-0.3%	(4,000)	-0.3%
6/30/88-89	1,307,000	1,309,000	1,307,000	1,308,000	0	0.0%	(1,000)	-0.1%
6/30/89-90	1,926,000	1,926,000	1,920,000	1,920,000	(6,000)	-0.3%	(6,000)	-0.3%
6/30/90-91	2,571,000	2,571,000	2,567,000	2,568,000	(4,000)	-0.2%	(3,000)	-0.1%
6/30/91-92	2,149,000	2,150,000	2,168,000	2,169,000	19,000	0.9%	19,000	0.9%
6/30/92-93	1,424,000	1,425,000	1,418,000	1,419,000	(6,000)	-0.4%	(6,000)	-0.4%
6/30/93-94	1,593,000	1,595,000	1,616,000	1,618,000	23,000	1.4%	23,000	1.4%
6/30/94-95	1,439,000	1,440,000	1,411,000	1,413,000	(28,000)	-1.9%	(27,000)	-1.9%
6/30/95-96	1,621,000	1,623,000	1,593,000	1,596,000	(28,000)	-1.7%	(27,000)	-1.7%
6/30/96-97	2,018,000	2,022,000	2,001,000	2,006,000	(17,000)	-0.8%	(16,000)	-0.8%
6/30/97-98	2,353,000	2,362,000	2,383,000	2,393,000	30,000	1.3%	31,000	1.3%
6/30/98-99	2,162,000	2,169,000	2,137,000	2,146,000	(25,000)	-1.2%	(23,000)	-1.1%
6/30/99-00	2,390,000	2,400,000	2,361,000	2,373,000	(29,000)	-1.2%	(27,000)	-1.1%
6/30/00-01	3,412,000	3,436,000	3,379,000	3,405,000	(33,000)	-1.0%	(31,000)	-0.9%
6/30/01-02	2,235,000	2,242,000	2,195,000	2,205,000	(40,000)	-1.8%	(37,000)	-1.7%
6/30/02-03	2,710,000	2,723,000	2,688,000	2,705,000	(22,000)	-0.8%	(18,000)	-0.7%
6/30/03-04	2,479,000	2,487,000	2,443,000	2,455,000	(36,000)	-1.5%	(32,000)	-1.3%
6/30/04-05	3,148,950	3,229,000	3,008,000	3,209,000	(140,950)	-4.5%	(20,000)	-0.6%
6/30/05-06	2,589,780	2,659,000	2,405,000	2,610,000	(184,780)	-7.1%	(49,000)	-1.8%
6/30/06-07	1,984,550	2,097,000	1,985,000	2,193,450	450	0.0%	96,450	4.6%
6/30/07-08	1,966,000	2,097,000	1,827,000	2,081,100	(139,000)	-7.1%	(15,900)	-0.8%
6/30/08-09	1,902,000	2,102,000	1,862,000	2,089,500	(40,000)	-2.1%	(12,500)	-0.6%
6/30/09-10	1,309,000	1,604,000	1,173,000	1,552,950	(136,000)	-10.4%	(51,050)	-3.2%
6/30/10-11	1,567,000	2,013,900	1,489,000	1,834,350	(78,000)	-5.0%	(179,550)	-8.9%
6/30/11-12	1,324,000	1,852,200	1,274,000	1,646,400	(50,000)	-3.8%	(205,800)	-11.1%
6/30/12-13	1,436,000	2,084,250	1,323,000	1,800,750	(113,000)	-7.9%	(283,500)	-13.6%
6/30/13-14	1,627,000	2,436,000	1,461,000	2,048,550	(166,000)	-10.2%	(387,450)	-15.9%
6/30/14-15	2,812,000	3,102,750	2,028,000	2,560,950	(784,000)	-27.9%	(541,800)	-17.5%
6/30/15-16								
Total	60,636,884	64,946,403	58,574,062	62,884,827	(2,062,822)	-3.4%	(2,061,577)	-3.2%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 4, Exhibit 2, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative Paid Loss	Incremental Paid Loss	Percent	Pres Value of Increm.	Pres Value of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
420	100.0%	1.4%	0.0%	0.4%	0.2%	1.000	1.000
408	98.6%	0.1%	1.4%	0.0%	0.0%	0.981	0.971
396	98.5%	0.1%	1.5%	0.0%	0.0%	0.945	0.920
384	98.4%	0.1%	1.6%	0.0%	0.0%	0.914	0.874
372	98.3%	0.2%	1.7%	0.1%	0.0%	0.884	0.834
360	98.1%	0.4%	1.9%	0.1%	0.1%	0.864	0.806
348	97.7%	0.4%	2.3%	0.1%	0.1%	0.857	0.797
336	97.4%	0.4%	2.6%	0.1%	0.1%	0.847	0.784
324	97.0%	0.4%	3.0%	0.1%	0.1%	0.836	0.769
312	96.6%	0.4%	3.4%	0.1%	0.1%	0.824	0.754
300	96.2%	0.4%	3.8%	0.1%	0.1%	0.811	0.737
288	95.8%	0.5%	4.2%	0.2%	0.1%	0.798	0.721
276	95.3%	0.9%	4.7%	0.4%	0.3%	0.789	0.710
264	94.4%	2.0%	5.6%	0.8%	0.6%	0.796	0.720
252	92.4%	1.5%	7.6%	0.7%	0.5%	0.821	0.755
240	90.9%	1.0%	9.1%	0.5%	0.3%	0.822	0.756
228	89.9%	1.3%	10.1%	0.6%	0.5%	0.810	0.740
216	88.5%	0.9%	11.5%	0.4%	0.3%	0.802	0.729
204	87.7%	1.3%	12.3%	0.7%	0.5%	0.786	0.708
192	86.4%	1.2%	13.6%	0.7%	0.5%	0.777	0.697
180	85.1%	1.1%	14.9%	0.6%	0.5%	0.766	0.683
168	84.0%	0.9%	16.0%	0.5%	0.4%	0.754	0.668
156	83.1%	0.9%	16.9%	0.5%	0.4%	0.739	0.648
144	82.2%	1.2%	17.8%	0.8%	0.6%	0.724	0.629
132	81.0%	1.3%	19.0%	0.8%	0.7%	0.714	0.618
120	79.7%	1.3%	20.3%	0.9%	0.7%	0.705	0.607
108	78.4%	1.4%	21.6%	1.0%	0.9%	0.696	0.597
96	77.0%	2.4%	23.0%	1.8%	1.6%	0.689	0.589
84	74.6%	2.9%	25.4%	2.3%	2.0%	0.693	0.595
72	71.6%	3.7%	28.4%	3.0%	2.7%	0.699	0.604
60	67.9%	5.3%	32.1%	4.5%	4.1%	0.707	0.616
48	62.6%	7.0%	37.4%	6.1%	5.7%	0.723	0.637
36	55.6%	11.5%	44.4%	10.4%	10.0%	0.740	0.659
24	44.1%	26.1%	55.9%	24.6%	23.9%	0.767	0.694
12	18.0%	18.0%	82.0%	17.6%	17.5%	0.815	0.755
Total		100.0%					

NOTES:

(2) = 1 / Section 4, Exhibit 2, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	454,350	819,752		428,693	773,461
6/30/82-83	0	5,633	0.981	0	5,524
6/30/83-84	0	25,730	0.945	0	24,325
6/30/84-85	3,961	7,961	0.914	3,618	7,273
6/30/85-86	7,668	9,668	0.884	6,781	8,550
6/30/86-87	12,313	13,313	0.864	10,640	11,504
6/30/87-88	26,017	29,017	0.857	22,292	24,863
6/30/88-89	33,152	34,152	0.847	28,078	28,925
6/30/89-90	58,295	58,295	0.836	48,714	48,714
6/30/90-91	86,806	87,806	0.824	71,486	72,309
6/30/91-92	81,374	82,374	0.811	65,989	66,800
6/30/92-93	58,727	59,727	0.798	46,872	47,670
6/30/93-94	73,594	75,594	0.789	58,082	59,660
6/30/94-95	77,414	79,414	0.796	61,636	63,228
6/30/95-96	117,602	120,602	0.821	96,571	99,035
6/30/96-97	177,551	182,551	0.822	145,895	150,004
6/30/97-98	232,463	242,463	0.810	188,248	196,346
6/30/98-99	237,210	246,210	0.802	190,238	197,456
6/30/99-00	280,394	292,394	0.786	220,342	229,772
6/30/00-01	438,815	464,815	0.777	341,046	361,253
6/30/01-02	317,475	327,475	0.766	243,335	251,000
6/30/02-03	415,623	432,623	0.754	313,569	326,394
6/30/03-04	402,434	414,434	0.739	297,232	306,095
6/30/04-05	368,841	569,841	0.724	266,866	412,295
6/30/05-06	290,929	495,929	0.714	207,796	354,217
6/30/06-07	319,682	528,132	0.705	225,459	372,470
6/30/07-08	318,695	572,795	0.696	221,895	398,814
6/30/08-09	353,017	580,517	0.689	243,225	399,970
6/30/09-10	252,471	632,421	0.693	174,979	438,308
6/30/10-11	366,434	711,784	0.699	256,058	497,384
6/30/11-12	449,481	821,881	0.707	317,996	581,460
6/30/12-13	534,018	1,011,768	0.723	386,173	731,655
6/30/13-14	686,888	1,274,438	0.740	508,347	943,177
6/30/14-15	1,133,415	1,666,365	0.767	869,418	1,278,233
6/30/15-16	2,273,595	2,429,195	0.815	1,852,930	1,979,740
Total	10,940,703	15,407,068		8,420,498	11,747,882
			(7) Total Discount Factor:	0.770	0.762

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	454,350	819,752
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	151,450	273,251
(11) Discounted Value at 4%:	428,693	773,461

NOTES:

(2), (3) From Section 4, Exhibit 2, Page 1, Columns 8, 9

(4) From Section 4, Exhibit 2, Page 9, Column 7

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Department of Corrections - Cluster 3
Medical

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	454,350	819,752		416,972	752,314
6/30/82-83	0	5,633	0.971	0	5,471
6/30/83-84	0	25,730	0.920	0	23,671
6/30/84-85	3,961	7,961	0.874	3,463	6,961
6/30/85-86	7,668	9,668	0.834	6,391	8,058
6/30/86-87	12,313	13,313	0.806	9,922	10,728
6/30/87-88	26,017	29,017	0.797	20,731	23,121
6/30/88-89	33,152	34,152	0.784	25,993	26,777
6/30/89-90	58,295	58,295	0.769	44,847	44,847
6/30/90-91	86,806	87,806	0.754	65,409	66,162
6/30/91-92	81,374	82,374	0.737	59,989	60,726
6/30/92-93	58,727	59,727	0.721	42,326	43,047
6/30/93-94	73,594	75,594	0.710	52,230	53,650
6/30/94-95	77,414	79,414	0.720	55,764	57,204
6/30/95-96	117,602	120,602	0.755	88,790	91,055
6/30/96-97	177,551	182,551	0.756	134,198	137,977
6/30/97-98	232,463	242,463	0.740	171,963	179,360
6/30/98-99	237,210	246,210	0.729	173,035	179,601
6/30/99-00	280,394	292,394	0.708	198,528	207,024
6/30/00-01	438,815	464,815	0.697	305,884	324,008
6/30/01-02	317,475	327,475	0.683	216,956	223,790
6/30/02-03	415,623	432,623	0.668	277,683	289,041
6/30/03-04	402,434	414,434	0.648	260,725	268,499
6/30/04-05	368,841	569,841	0.629	231,991	358,414
6/30/05-06	290,929	495,929	0.618	179,788	306,473
6/30/06-07	319,682	528,132	0.607	194,182	320,799
6/30/07-08	318,695	572,795	0.597	190,232	341,906
6/30/08-09	353,017	580,517	0.589	207,827	341,760
6/30/09-10	252,471	632,421	0.595	150,313	376,523
6/30/10-11	366,434	711,784	0.604	221,282	429,832
6/30/11-12	449,481	821,881	0.616	276,867	506,254
6/30/12-13	534,018	1,011,768	0.637	340,072	644,312
6/30/13-14	686,888	1,274,438	0.659	452,581	839,709
6/30/14-15	1,133,415	1,666,365	0.694	786,259	1,155,971
6/30/15-16	2,273,595	2,429,195	0.755	1,717,390	1,834,925
Total	10,940,703	15,407,068		7,580,582	10,539,971
			(7) Total Discount Factor:	0.693	0.684

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	454,350	819,752
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	151,450	273,251
(11) Discounted Value at 6%:	416,972	752,314

NOTES:

(2), (3) From Section 4, Exhibit 2, Page 1, Columns 8, 9

(4) From Section 4, Exhibit 2, Page 9, Column 8

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

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		2,238,208			2,618,279	2,673,350	380,071	435,142		
6/30/82-83		134,406	136,267		138,000	140,000	3,594	5,594		
6/30/83-84		188,031	190,579		192,000	196,000	3,969	7,969		
6/30/84-85	176,924	1,942,197	2,362,624	1,969,710	1,970,000	2,363,000	27,803	420,803	1.113	1.336
6/30/85-86	188,662	1,624,227	1,940,915	1,647,318	1,657,000	1,690,000	32,773	65,773	0.878	0.896
6/30/86-87	212,277	2,423,721	2,913,994	2,461,527	2,462,000	2,914,000	38,279	490,279	1.160	1.373
6/30/87-88	243,118	2,209,980	2,478,196	2,255,670	2,256,000	2,478,000	46,020	268,020	0.928	1.019
6/30/88-89	248,990	1,939,914	2,180,795	1,985,154	1,985,000	2,181,000	45,086	241,086	0.797	0.876
6/30/89-90	250,404	522,038	535,298	541,287	533,000	543,000	10,962	20,962	0.213	0.217
6/30/90-91	235,170	2,375,091	2,663,683	2,446,411	2,446,000	2,664,000	70,909	288,909	1.040	1.133
6/30/91-92	235,607	2,494,851	2,799,090	2,573,123	2,573,000	2,799,000	78,149	304,149	1.092	1.188
6/30/92-93	241,161	450,365	461,300	461,295	455,000	473,000	4,635	22,635	0.189	0.196
6/30/93-94	254,321	710,933	735,663	735,201	719,000	747,000	8,067	36,067	0.283	0.294
6/30/94-95	256,665	761,806	791,665	790,929	770,000	800,000	8,194	38,194	0.300	0.312
6/30/95-96	265,739	591,722	616,956	616,499	598,000	622,000	6,278	30,278	0.225	0.234
6/30/96-97	296,336	512,528	540,080	539,685	518,000	539,000	5,473	26,473	0.175	0.182
6/30/97-98	296,982	463,804	484,175	484,497	469,000	487,000	5,196	23,196	0.158	0.164
6/30/98-99	299,530	670,669	703,555	703,038	678,000	705,000	7,331	34,331	0.226	0.235
6/30/99-00	323,627	1,216,150	1,293,134	1,288,664	1,229,000	1,277,000	12,850	60,850	0.380	0.395
6/30/00-01	338,348	1,394,026	1,491,499	1,485,484	1,485,000	1,491,000	90,974	96,974	0.439	0.441
6/30/01-02	329,555	775,348	835,917	834,666	835,000	836,000	59,652	60,652	0.253	0.254
6/30/02-03	329,179	889,621	960,307	958,526	959,000	960,000	69,379	70,379	0.291	0.292
6/30/03-04	344,547	268,295	293,491	296,609	293,000	297,000	24,705	28,705	0.085	0.086
6/30/04-05	325,530	624,705	683,843	684,883	684,000	685,000	59,295	60,295	0.210	0.210
6/30/05-06	403,750	353,027	395,000	437,283	395,000	437,000	41,973	83,973	0.098	0.108
6/30/06-07	420,219	442,769	497,317	539,672	497,000	540,000	54,231	97,231	0.118	0.129
6/30/07-08	425,998	435,492	501,749	541,805	502,000	542,000	66,508	106,508	0.118	0.127
6/30/08-09	420,566	890,980	1,034,977	1,018,404	1,018,000	1,035,000	127,020	144,020	0.242	0.246
6/30/09-10	433,206	564,452	666,459	703,026	666,000	703,000	101,548	138,548	0.154	0.162
6/30/10-11	444,673	884,141	1,097,313	1,054,925	1,055,000	1,097,000	170,859	212,859	0.237	0.247
6/30/11-12	467,753	808,953	1,093,887	1,072,236	1,072,000	1,094,000	263,047	285,047	0.229	0.234
6/30/12-13	495,398	517,982	820,239	876,120	820,000	876,000	302,018	358,018	0.166	0.177
6/30/13-14	518,391	507,365	786,223	998,301	786,000	998,000	278,635	490,635	0.152	0.193
6/30/14-15	539,631	514,207	1,305,898	1,266,490	1,266,000	1,436,600	751,793	922,393	0.235	0.266
6/30/15-16	585,875	271,286	1,574,937	1,434,824	1,435,000	1,575,000	1,163,714	1,303,714	0.245	0.269
Total	10,848,132	33,613,291	37,867,024	35,703,261	38,034,279	40,893,950	4,420,988	7,280,659		
Tot 6/30/84-16	10,848,132	31,052,645	37,540,177	35,703,261	35,086,000	37,884,600	4,033,355	6,831,955	0.323	0.349

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) Sum of Section 5, Exhibit 1, Page 2, Column 3 and Section 5, Exhibit 1, Page 9, Column 8

(4) From Section 5, Exhibit 1, Page 2, Column 8

(5) From Section 5, Exhibit 1, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Accident Year	Payroll (000's)	Paid Loss Excluding Lump Sum	Paid LDF	Adjstmnt for Extra Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim	Average Age
All Prior Yrs		2,150,168							1	1		80
6/30/82-83		134,406	1.014	1.000	136,267	0	136,267		0	0		
6/30/83-84		160,531	1.016	1.000	163,079	27,500	190,579		0	0		
6/30/84-85	176,924	1,898,197	1.018	1.200	2,318,624	44,000	2,362,624	1.335	1	1	420,427	76
6/30/85-86	188,662	1,414,227	1.020	1.200	1,730,915	210,000	1,940,915	1.029	0	0		
6/30/86-87	212,277	2,165,721	1.022	1.200	2,655,994	258,000	2,913,994	1.373	1	1	490,273	64
6/30/87-88	243,118	2,121,480	1.024	1.100	2,389,696	88,500	2,478,196	1.019	1	1	268,216	65
6/30/88-89	248,990	1,871,914	1.026	1.100	2,112,795	68,000	2,180,795	0.876	1	1	240,881	66
6/30/89-90	250,404	471,448	1.028	1.000	484,708	50,590	535,298	0.214	0	0		
6/30/90-91	235,170	2,166,591	1.030	1.100	2,455,183	208,500	2,663,683	1.133	1	1	288,591	76
6/30/91-92	235,607	2,245,851	1.032	1.100	2,550,090	249,000	2,799,090	1.188	1	1	304,239	74
6/30/92-93	241,161	292,355	1.037	1.000	303,290	158,010	461,300	0.191	0	0		
6/30/93-94	254,321	580,633	1.043	1.000	605,363	130,300	735,663	0.289	0	0		
6/30/94-95	256,665	624,606	1.048	1.000	654,465	137,200	791,665	0.308	0	0		
6/30/95-96	265,739	475,722	1.053	1.000	500,956	116,000	616,956	0.232	0	0		
6/30/96-97	296,336	472,528	1.058	1.000	500,080	40,000	540,080	0.182	0	0		
6/30/97-98	296,982	320,304	1.064	1.000	340,675	143,500	484,175	0.163	0	0		
6/30/98-99	299,530	477,169	1.069	1.000	510,055	193,500	703,555	0.235	0	0		
6/30/99-00	323,627	1,036,650	1.074	1.000	1,113,634	179,500	1,293,134	0.400	0	0		
6/30/00-01	338,348	1,224,026	1.080	1.000	1,321,499	170,000	1,491,499	0.441	1	1	97,474	53
6/30/01-02	329,555	582,848	1.102	1.000	642,455	193,463	835,917	0.254	0	1	59,606	69
6/30/02-03	329,179	629,649	1.108	1.000	697,373	262,933	960,307	0.292	0	0		
6/30/03-04	344,547	212,295	1.113	1.000	236,288	57,203	293,491	0.085	0	0		
6/30/04-05	325,530	457,755	1.118	1.000	511,967	171,875	683,843	0.210	0	0		
6/30/05-06	403,750	276,027	1.139	1.000	314,464	80,536	395,000	0.098	0	0		
6/30/06-07	420,219	324,328	1.147	1.000	372,131	125,187	497,317	0.118	0	0		
6/30/07-08	425,998	372,992	1.157	1.000	431,616	70,133	501,749	0.118	2	1	58,624	54
6/30/08-09	420,566	727,480	1.167	1.000	848,822	186,155	1,034,977	0.246	2	0		
6/30/09-10	433,206	446,862	1.182	1.000	528,322	138,136	666,459	0.154	2	2	40,730	66
6/30/10-11	444,673	854,141	1.212	1.000	1,035,060	62,253	1,097,313	0.247	6	3	60,306	59
6/30/11-12	467,753	722,953	1.302	1.000	941,049	152,838	1,093,887	0.234	6	3	72,699	51
6/30/12-13	495,398	499,184	1.494	1.000	745,924	74,315	820,239	0.166	4	5	49,348	55
6/30/13-14	518,391	273,338	1.777	1.000	485,703	300,520	786,223	0.152	18	4	53,091	52
6/30/14-15	539,631	484,207	2.263	1.000	1,095,992	209,906	1,305,898	0.242	93	26	23,530	52
6/30/15-16	585,875	271,286	4.821	1.000	1,307,925	267,011	1,574,937	0.269		67	15,472	49
Total	10,848,132	29,439,872			33,042,458	4,824,565	37,867,024		141	120		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3), (4) From Section 5, Exhibit 1, Page 7

(5) Based on information from the MA WCRIB

(6) = (3) x (4) x (5)

(7) From Section 5, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss Excluding Lump Sum	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	176,924	0.884	1,898,197	1.018	1,925,710	44,000	1,969,710	1.113	1.088
6/30/85-86	188,662	0.626	1,414,227	1.020	1,437,318	210,000	1,647,318	0.873	0.762
6/30/86-87	212,277	0.828	2,165,721	1.022	2,203,527	258,000	2,461,527	1.160	1.038
6/30/87-88	243,118	0.801	2,121,480	1.024	2,167,170	88,500	2,255,670	0.928	0.891
6/30/88-89	248,990	0.715	1,871,914	1.026	1,917,154	68,000	1,985,154	0.797	0.770
6/30/89-90	250,404	0.281	471,448	1.028	490,697	50,590	541,287	0.216	0.196
6/30/90-91	235,170	1.035	2,166,591	1.030	2,237,911	208,500	2,446,411	1.040	0.952
6/30/91-92	235,607	1.064	2,245,851	1.032	2,324,123	249,000	2,573,123	1.092	0.986
6/30/92-93	241,161	0.126	292,355	1.037	303,285	158,010	461,295	0.191	0.126
6/30/93-94	254,321	0.234	580,633	1.043	604,901	130,300	735,201	0.289	0.238
6/30/94-95	256,665	0.249	624,606	1.048	653,729	137,200	790,929	0.308	0.255
6/30/95-96	265,739	0.185	475,722	1.053	500,499	116,000	616,499	0.232	0.188
6/30/96-97	296,336	0.166	472,528	1.058	499,685	40,000	539,685	0.182	0.169
6/30/97-98	296,982	0.117	320,304	1.064	340,997	143,500	484,497	0.163	0.115
6/30/98-99	299,530	0.168	477,169	1.069	509,538	193,500	703,038	0.235	0.170
6/30/99-00	323,627	0.324	1,036,650	1.074	1,109,164	179,500	1,288,664	0.398	0.343
6/30/00-01	338,348	0.366	1,224,026	1.080	1,315,484	170,000	1,485,484	0.439	0.389
6/30/01-02	329,555	0.191	582,848	1.102	641,204	193,463	834,666	0.253	0.195
6/30/02-03	329,179	0.206	629,649	1.108	695,592	262,933	958,526	0.291	0.211
6/30/03-04	344,547	0.077	212,295	1.113	239,406	57,203	296,609	0.086	0.069
6/30/04-05	325,530	0.160	457,755	1.118	513,008	171,875	684,883	0.210	0.158
6/30/05-06	403,750	0.164	276,027	1.139	356,747	80,536	437,283	0.108	0.088
6/30/06-07	420,219	0.167	324,328	1.147	414,485	125,187	539,672	0.128	0.099
6/30/07-08	425,998	0.171	372,992	1.157	471,671	70,133	541,805	0.127	0.111
6/30/08-09	420,566	0.174	727,480	1.167	832,249	186,155	1,018,404	0.242	0.198
6/30/09-10	433,206	0.177	446,862	1.182	564,890	138,136	703,026	0.162	0.130
6/30/10-11	444,673	0.178	854,141	1.212	992,671	62,253	1,054,925	0.237	0.223
6/30/11-12	467,753	0.181	722,953	1.302	919,398	152,838	1,072,236	0.229	0.197
6/30/12-13	495,398	0.185	499,184	1.494	801,805	74,315	876,120	0.177	0.162
6/30/13-14	518,391	0.187	273,338	1.777	697,781	300,520	998,301	0.193	0.135
6/30/14-15	539,631	0.190	484,207	2.263	1,056,584	209,906	1,266,490	0.235	0.196
6/30/15-16	585,875	0.193	271,286	4.821	1,167,812	267,011	1,434,824	0.245	0.199
Total	10,848,132		26,994,766		30,906,196	4,797,065	35,703,261		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 5, Exhibit 1, Page 4, Column 11

(4) From Section 5, Exhibit 1, Page 2, Column 3

(5) From Section 5, Exhibit 1, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) From Section 5, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Exp Ult Loss Excluding Lump Sum	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.884	0.884
6/30/85-86									0.626	0.626
6/30/86-87									0.828	0.828
6/30/87-88									0.801	0.801
6/30/88-89									0.715	0.715
6/30/89-90									0.281	0.281
6/30/90-91	235,170	2,455,183	1.044	0.969	1.011	1.295	1.310	0.155	1.021	1.035
6/30/91-92	235,607	2,550,090	1.082	1.063	1.150	1.282	1.475	0.143	1.054	1.064
6/30/92-93	241,161	303,290	0.126	1.239	0.156	1.270	0.198	0.124	0.125	0.126
6/30/93-94	254,321	605,363	0.238	1.223	0.291	1.257	0.366	0.127	0.234	0.234
6/30/94-95	256,665	654,465	0.255	1.212	0.309	1.245	0.385	0.129	0.249	0.249
6/30/95-96	265,739	500,956	0.189	1.202	0.227	1.232	0.279	0.132	0.184	0.185
6/30/96-97	296,336	500,080	0.169	1.190	0.201	1.220	0.245	0.134	0.165	0.166
6/30/97-98	296,982	340,675	0.115	1.175	0.135	1.208	0.163	0.137	0.115	0.117
6/30/98-99	299,530	510,055	0.170	1.160	0.197	1.196	0.236	0.141	0.166	0.168
6/30/99-00	323,627	1,113,634	0.344	1.141	0.393	1.184	0.465	0.144	0.323	0.324
6/30/00-01	338,348	1,321,499	0.391	1.112	0.434	1.173	0.509	0.150	0.363	0.366
6/30/01-02	329,555	642,455	0.195	1.090	0.213	1.161	0.247	0.154	0.189	0.191
6/30/02-03	329,179	697,373	0.212	1.086	0.230	1.149	0.265	0.156	0.205	0.206
6/30/03-04	344,547	236,288	0.069	1.086	0.075	1.138	0.085	0.158	0.076	0.077
6/30/04-05	325,530	511,967	0.157	1.080	0.170	1.127	0.191	0.160	0.142	0.160
6/30/05-06	403,750	314,464	0.078	1.069	0.083	1.116	0.093	0.164	0.147	0.164
6/30/06-07	420,219	372,131	0.089	1.057	0.094	1.105	0.103	0.167	0.152	0.167
6/30/07-08	425,998	431,616	0.101	1.045	0.106	1.094	0.116	0.171	0.158	0.171
6/30/08-09	420,566	848,822	0.202	1.033	0.209	1.083	0.226	0.174	0.164	0.174
6/30/09-10	433,206	528,322	0.122	1.029	0.126	1.072	0.135	0.177	0.169	0.177
6/30/10-11	444,673	1,035,060	0.233	1.031	0.240	1.062	0.255	0.178	0.173	0.178
6/30/11-12	467,753	941,049	0.201	1.024	0.206	1.051	0.216	0.181	0.178	0.181
6/30/12-13	495,398	745,924	0.151	1.015	0.153	1.041	0.159	0.185	0.184	0.185
6/30/13-14	518,391	485,703	0.094	1.011	0.095	1.030	0.098	0.187	0.189	0.187
6/30/14-15	539,631	1,095,992	0.203	1.006	0.204	1.020	0.208	0.190	0.195	0.190
6/30/15-16	585,875	1,307,925	0.223	1.000	0.223	1.010	0.225	0.193		0.193
Total	9,527,758	21,050,380								

Trend Last 4 (ex 15-16):	-4.9%	Avg 3 (ex 15-16):	0.158
Trend Last 8 (ex 15-16):	1.3%	Avg 5 (ex 15-16):	0.172
Trend Last 12 (ex 15-16):	5.7%	Avg 10 (ex 15-16):	0.159
Prior Selected Trend:	2.5%	Prior Sel Avg:	0.200
Selected Trend:	1.0%	Sel. Loss Cost:	0.195

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 5, Exhibit 1, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCRIB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.940	
(2)	Credibility		14%	
(3)	Average Pmt Trend Statewide		0.960	
(4)	Credibility Weighted Trend		0.957	
		(Low)		(High)
(5)	Selected Range	0.938		0.967
(6)	Incremental Paid for 2016	36,282		36,282
(7)	Estimated Reserve	549,027		1,054,153
(8)	Paid to Date (82 & Prior)	2,150,168		2,150,168
(9)	Est Ult Paid for 1982 & Prior	2,699,195		3,204,321

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	35,186	34,355
(11)	Projected Number of Years	6	6
(12)	Estimated Reserve	211,115	206,133
(13)	Paid to Date (82 & Prior)	2,150,168	2,113,887
(14)	Est Ult Paid for 1982 & Prior	2,361,283	2,320,020
(14a)	Paid Counts During Fiscal Year	1	1

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	2,530,239	2,585,310
(16)	Lump Sum Ultimates	88,040	88,040
(17)	Ult Loss Including Lump Sums	**2,618,279**	**2,673,350**
(18)	Implied Tail	1.177	1.202
(19)	Ult Loss Inc Lump Sums @ 6/15	2,621,520	2,750,944

NOTES:

(1) From Section 5, Exhibit 1, Page 6
(2) = (Average of Section 5, Exhibit 1, Page 6, Column 3 / 3,000,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 5, Exhibit 1, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 5, Exhibit 1, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) From Section 5, Exhibit 1, Page 9, Column 13
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	105,743	11.569			
1993	2	106,772	11.578	1.010		
1994	3	104,490	11.557	0.979		
1995	4	93,231	11.443	0.892		
1996	5	83,819	11.336	0.899		
1997	6	71,966	11.184	0.859		
1998	7	75,700	11.235	1.052		
1999	8	69,564	11.150	0.919		
2000	9	65,140	11.084	0.936	n =	25
2001	10	69,462	11.149	1.066	S(x) =	50,100
2002	11	72,621	11.193	1.045	S(x-sq) =	100,401,700
2003	12	73,534	11.206	1.013	S(xy) =	546,718
2004	13	73,411	11.204	0.998	S(y) =	273
2005	14	77,899	11.263	1.061	D =	32,500
2006	15	44,021	10.692	0.565	slope =	-0.057
2007	16	28,745	10.266	0.653	Avg Trend =	0.943
2008	17	31,541	10.359	1.097		
2009	18	31,382	10.354	0.995		
2010	19	34,140	10.438	1.088		
2011	20	31,644	10.362	0.927		
2012	21	32,723	10.396	1.034		
2013	22	33,791	10.428	1.033		
2014	23	34,242	10.441	1.013		
2015	24	35,034	10.464	1.023		
2016	25	36,282	10.499	1.036		
					Selected Trend:	**0.940**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 1.036 = 36282 / 35034

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Amherst) - Cluster 4
INDEMNITY
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	9,901	27,199	38,094	47,389	62,514	76,567	110,541	128,600	128,600	128,600	128,600	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406	134,406
June-84	12,002	32,972	46,180	57,447	75,782	92,840	110,643	140,015	147,985	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	160,531	
June-85	96,162	264,176	369,998	460,278	608,898	675,356	769,715	839,890	909,635	972,316	1,027,903	1,068,427	1,096,448	1,126,464	1,157,182	1,193,170	1,230,415	1,270,584	1,311,388	1,352,093	1,394,014	1,437,567	1,483,096	1,530,726	1,581,634	1,636,270	1,687,070	1,738,901	1,792,424	1,846,661	1,902,943	1,898,197		
June-86	62,242	170,991	239,486	289,205	386,115	436,793	545,340	637,721	703,230	742,718	771,694	801,514	833,158	865,475	902,795	941,906	984,064	1,026,987	1,069,806	1,113,907	1,159,474	1,207,370	1,257,125	1,309,416	1,362,366	1,414,227	1,414,227	1,414,227	1,414,227	1,414,227	1,414,227			
June-87	114,930	315,736	434,426	540,241	638,550	728,426	816,220	883,030	959,990	1,087,438	1,157,085	1,228,783	1,294,957	1,353,217	1,408,627	1,466,232	1,524,982	1,583,672	1,643,019	1,705,167	1,769,184	1,838,793	1,908,370	1,966,226	1,996,908	2,028,636	2,061,400	2,094,601	2,128,570	2,165,721				
June-88	145,512	388,262	580,167	742,458	913,661	1,023,389	1,122,499	1,187,899	1,243,915	1,301,898	1,363,345	1,426,364	1,496,845	1,538,376	1,582,716	1,627,788	1,673,942	1,720,105	1,757,371	1,788,805	1,821,696	1,856,017	1,892,584	1,933,305	1,969,091	2,006,043	2,043,490	2,081,803	2,121,480					
June-89	149,323	412,040	585,718	734,611	862,714	940,958	1,000,308	1,091,299	1,155,714	1,209,050	1,258,035	1,312,045	1,364,494	1,425,132	1,470,732	1,496,093	1,522,212	1,550,498	1,578,865	1,608,540	1,639,511	1,670,871	1,702,101	1,734,395	1,767,742	1,801,535	1,836,109	1,871,914						
June-90	147,842	316,313	418,270	483,765	493,004	500,207	470,618	470,618	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448	471,448						
June-91	221,834	616,722	912,374	1,121,784	1,264,030	1,316,233	1,389,392	1,447,121	1,486,680	1,550,949	1,590,832	1,657,948	1,707,507	1,756,977	1,801,084	1,841,720	1,882,581	1,912,600	1,943,013	1,973,183	2,003,226	2,034,294	2,066,375	2,098,884	2,132,145	2,166,591								
June-92	172,146	475,588	707,613	916,461	996,673	1,097,913	1,173,097	1,245,955	1,399,954	1,481,116	1,564,487	1,649,535	1,732,053	1,809,950	1,869,935	1,921,123	1,976,310	2,034,348	2,068,242	2,095,831	2,124,362	2,153,822	2,183,675	2,214,219	2,245,851									
June-93	81,038	222,727	276,572	310,192	330,479	348,662	351,823	276,708	276,708	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355									
June-94	106,895	214,659	321,406	344,959	362,159	373,504	398,819	422,133	440,603	460,274	479,091	498,642	518,380	538,584	559,634	580,633	580,633	580,633	580,633	580,633	580,633	580,633	580,633										
June-95	150,379	381,117	506,335	558,037	585,924	605,733	622,315	624,606	624,606	624,606	624,606	624,606	624,606	624,606	624,606	624,606	624,606	624,606	624,606	624,606	624,606	624,606											
June-96	188,667	308,485	416,852	435,702	459,899	469,932	470,598	475,072	475,222	475,722	475,722	475,722	475,722	475,722	475,722	475,722	475,722	475,722	475,722	475,722	475,722												
June-97	106,252	219,810	296,841	353,903	388,354	412,255	429,409	446,564	464,289	472,427	472,427	472,427	472,427	472,427	472,427	472,427	472,528	472,528	472,528	472,528													
June-98	89,150	206,061	269,266	292,631	307,643	318,681	318,681	318,681	319,304	320,304	320,304	320,304	320,304	320,304	320,304	320,304	320,304	320,304	320,304														
June-99	79,713	235,741	363,483	410,110	440,701	457,432	467,619	476,062	476,685	476,775	476,815	476,815	476,815	477,169	477,169	477,169	477,169	477,169															
June-00	199,557	423,727	611,687	721,978	842,583	936,681	993,407	1,021,874	1,036,650	1,036,650	1,036,650	1,036,650	1,036,650	1,036,650	1,036,650	1,036,650	1,036,650																
June-01	195,155	433,892	620,127	728,970	802,692	874,675	926,705	967,811	1,019,057	1,061,416	1,087,275	1,114,014	1,141,100	1,168,374	1,195,971	1,224,026																	
June-02	134,258	318,384	436,848	510,454	554,485	576,982	577,623	579,568	581,568	581,568	582,625	582,625	582,625	582,625	582,848																		
June-03	110,118	229,192	295,970	379,354	446,784	478,317	500,756	523,384	546,666	569,968	589,299	629,649	629,649	629,649																			
June-04	119,754	192,578	206,484	211,562	212,295	212,295	212,295	212,295	212,295	212,295	212,295	212,295	212,295																				
June-05	118,177	251,133	297,710	349,273	395,191	448,261	457,017	457,755	457,755	457,755	457,755	457,755																					
June-06	109,288	227,014	271,354	276,027	276,027	276,027	276,027	276,027	276,027	276,027	276,027																						
June-07	130,909	212,144	272,353	307,382	318,762	324,328	324,328	324,328	324,328	324,328																							
June-08	136,833	207,607	263,568	288,690	304,525	321,451	336,306	358,096	372,992																								
June-09	157,647	372,637	490,926	555,124	656,285	711,812	727,480	727,480																									
June-10	84,674	225,140	286,244	344,751	390,834	422,920	446,862																										
June-11	203,344	361,140	445,050	584,777	786,089	854,141																											
June-12	198,403	427,078	566,988	683,266	722,953																												
June-13	283,404	453,488	474,086	499,184																													
June-14	158,266	231,996	273,338																														
June-15	292,324	484,207																															
June-16	271,286																																

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.747	1.401	1.244	1.319	1.225	1.444	1.163	1.000	1.000	1.000	1.045	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-84	2.747	1.401	1.244	1.319	1.225	1.192	1.265	1.057	1.085	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
June-85	2.747	1.401	1.244	1.323	1.109	1.140	1.091	1.083	1.069	1.057	1.039	1.026	1.027	1.027	1.031	1.031	1.033	1.032	1.031	1.031	1.031	1.032	1.032	1.033	1.035	1.031	1.031	1.031	1.030	1.030	0.998		
June-86	2.747	1.401	1.208	1.335	1.131	1.249	1.169	1.103	1.056	1.039	1.039	1.039	1.039	1.043	1.043	1.045	1.044	1.042	1.041	1.041	1.041	1.041	1.042	1.040	1.038	1.000	1.000	1.000	1.000	1.000			
June-87	2.747	1.376	1.244	1.182	1.141	1.121	1.082	1.087	1.133	1.064	1.062	1.054	1.045	1.041	1.041	1.040	1.038	1.037	1.038	1.038	1.039	1.038	1.030	1.016	1.016	1.016	1.016	1.016	1.017				
June-88	2.668	1.494	1.280	1.231	1.120	1.097	1.058	1.047	1.047	1.047	1.046	1.049	1.028	1.029	1.028	1.028	1.028	1.022	1.018	1.018	1.019	1.020	1.022	1.019	1.019	1.019	1.019	1.019					
June-89	2.759	1.422	1.254	1.174	1.091	1.063	1.091	1.059	1.046	1.041	1.043	1.040	1.044	1.032	1.017	1.017	1.019	1.018	1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.020						
June-90	2.140	1.322	1.157	1.019	1.015	0.941	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
June-91	2.780	1.479	1.230	1.127	1.041	1.056	1.042	1.027	1.043	1.026	1.042	1.030	1.029	1.025	1.023	1.022	1.016	1.016	1.016	1.015	1.016	1.016	1.016	1.016	1.016								
June-92	2.763	1.488	1.295	1.088	1.102	1.068	1.062	1.124	1.058	1.056	1.054	1.050	1.045	1.033	1.027	1.029	1.029	1.017	1.013	1.014	1.014	1.014	1.014	1.014									
June-93	2.748	1.242	1.122	1.065	1.055	1.009	0.786	1.000	1.057	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	2.008	1.497	1.073	1.050	1.031	1.068	1.058	1.044	1.045	1.041	1.041	1.040	1.039	1.039	1.038	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-95	2.534	1.329	1.102	1.050	1.034	1.027	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
June-96	1.635	1.351	1.045	1.056	1.022	1.001	1.010	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
June-97	2.069	1.350	1.192	1.097	1.062	1.042	1.040	1.040	1.018	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
June-98	2.311	1.307	1.087	1.051	1.036	1.000	1.000	1.002	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
June-99	2.957	1.542	1.128	1.075	1.038	1.022	1.018	1.001	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.000	1.000	1.000															
June-00	2.123	1.444	1.180	1.167	1.112	1.061	1.029	1.014	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																	
June-01	2.223	1.429	1.176	1.101	1.090	1.059	1.044	1.053	1.042	1.024	1.025	1.024	1.024	1.024	1.023																		
June-02	2.371	1.372	1.168	1.086	1.041	1.001	1.003	1.003	1.000	1.002	1.000	1.000	1.000	1.000																			
June-03	2.081	1.291	1.282	1.178	1.071	1.047	1.045	1.044	1.043	1.034	1.068	1.000	1.000																				
June-04	1.608	1.072	1.025	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																					
June-05	2.125	1.185	1.173	1.131	1.134	1.020	1.002	1.000	1.000	1.000	1.000																						
June-06	2.077	1.195	1.017	1.000	1.000	1.000	1.000	1.000	1.000	1.000																							
June-07	1.621	1.284	1.129	1.037	1.017	1.000	1.000	1.000	1.000																								
June-08	1.517	1.270	1.095	1.055	1.056	1.046	1.065	1.042																									
June-09	2.364	1.317	1.131	1.182	1.085	1.022	1.000																										
June-10	2.659	1.271	1.204	1.134	1.082	1.057																											
June-11	1.776	1.232	1.314	1.344	1.087																												
June-12	2.153	1.328	1.205	1.058																													
June-13	1.600	1.045	1.053																														
June-14	1.466	1.178																															
June-15	1.656																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.259	1.335	1.171	1.135	1.078	1.066	1.042	1.032	1.030	1.018	1.022	1.016	1.015	1.015	1.014	1.012	1.012	1.011	1.012	1.013	1.014	1.015	1.016	1.016	1.016	1.011	1.012	1.011	1.010	1.008	0.999	1.000	1.000	
Latest 5	1.730	1.211	1.181	1.155	1.065	1.025	1.013	1.008	1.009	1.007	1.019	1.005	1.005	1.005	1.005	1.000	1.000	1.000	1.000	1.003	1.006	1.006	1.010	1.014	1.014	1.011	1.017	1.013	1.010					
Latest 3	1.574	1.184	1.191	1.179	1.084	1.042	1.022	1.014	1.000	1.000	1.023	1.000	1.008	1.008	1.008	1.000	1.000	1.000	1.000	1.000	1.000	1.005	1.010	1.010	1.012	1.013	1.018	1.012	1.016	1.010	0.999			
Volume Wtd																																		
All Yrs	2.159	1.343	1.180	1.131	1.076	1.057	1.042	1.043	1.038	1.028	1.030	1.026	1.024	1.022	1.021	1.020	1.021	1.019	1.018	1.019	1.020	1.021	1.022	1.020	1.021	1.016	1.017	1.017	1.016	1.016	0.998	1.000	1.000	
Latest 5	1.724	1.204	1.178	1.164	1.073	1.026	1.011	1.009	1.013	1.010	1.023	1.008	1.007	1.008	1.008	1.000	1.000	1.000	1.000	1.007	1.011	1.011	1.014	1.016	1.016	1.014	1.018	1.017	1.016					
Latest 3	1.594	1.181	1.189	1.178	1.085	1.037	1.016	1.016	1.000	1.000	1.032	1.000	1.012	1.010	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.010	1.014	1.014	1.016	1.017	1.018	1.013	1.017	1.016	0.998			

Dev Factor Selection																																		
Industry 1	2.869	1.531	1.210	1.100	1.034	1.024	1.017	1.007	1.008	1.005	1.005	1.013	1.002	1.003	1.004	1.004	1.003	1.003																
Industry 2		1.813	1.291	1.118	1.066	1.025	1.021	1.011	1.007	1.003	1.008	1.005	1.005	1.003	1.003	1.004	1.006	1.002	1.004	1.004														
Prior	*2.130*	*1.289*	*1.191*	*1.158*	*1.066*	*1.018*	*1.013*	*1.009*	*1.009*	*1.012*	*1.019*	*1.005*	*1.005*	*1.005*	*1.021*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.002*	*1.002*	*1.002*	*1.002*	*1.002*	*1.002*	*1.002*	*1.002*	*1.017*	
Selected	2.130	1.274	1.189	1.148	1.074	1.025	1.013	1.008	1.009	1.007	1.019	1.005	1.005	1.005	1.021	1.005	1.005	1.005	1.005	1.005	1.005	1.005	1.005	1.005	1.002	1.002	1.002	1.002	1.002	1.002	1.002	1.002	1.002	1.014
FacToUlt	4.821	2.263	1.777	1.494	1.302	1.212	1.182	1.167	1.157	1.147	1.139	1.118	1.113	1.108	1.102	1.080	1.074	1.069	1.064	1.058	1.053	1.048	1.043	1.037	1.032	1.030	1.028	1.026	1.024	1.022	1.020	1.018	1.016	1.014
Percent of Ult	20.7%	44.2%	56.3%	66.9%	76.8%	82.5%	84.6%	85.7%	86.4%	87.2%	87.8%	89.4%	89.8%	90.3%	90.7%	92.6%	93.1%	93.6%	94.0%	94.5%	95.0%	95.4%	95.9%	96.4%	96.9%	97.1%	97.3%	97.5%	97.7%	97.8%	98.0%	98.2%	98.4%	98.6%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	2,621,520	2,750,944	2,618,279	2,673,350	(3,240)	-0.1%	(77,594)	-2.8%
6/30/82-83	138,000	140,000	138,000	140,000	0	0.0%	0	0.0%
6/30/83-84	192,000	196,000	192,000	196,000	0	0.0%	0	0.0%
6/30/84-85	1,979,000	2,375,000	1,970,000	2,363,000	(9,000)	-0.5%	(12,000)	-0.5%
6/30/85-86	1,657,000	1,690,000	1,657,000	1,690,000	0	0.0%	0	0.0%
6/30/86-87	2,429,000	2,876,000	2,462,000	2,914,000	33,000	1.4%	38,000	1.3%
6/30/87-88	2,221,000	2,440,000	2,256,000	2,478,000	35,000	1.6%	38,000	1.6%
6/30/88-89	1,954,000	2,146,000	1,985,000	2,181,000	31,000	1.6%	35,000	1.6%
6/30/89-90	533,000	543,000	533,000	543,000	0	0.0%	0	0.0%
6/30/90-91	2,418,000	2,631,000	2,446,000	2,664,000	28,000	1.2%	33,000	1.3%
6/30/91-92	2,555,000	2,778,000	2,573,000	2,799,000	18,000	0.7%	21,000	0.8%
6/30/92-93	455,000	473,000	455,000	473,000	0	0.0%	0	0.0%
6/30/93-94	719,000	747,000	719,000	747,000	0	0.0%	0	0.0%
6/30/94-95	770,000	800,000	770,000	800,000	0	0.0%	0	0.0%
6/30/95-96	598,000	622,000	598,000	622,000	0	0.0%	0	0.0%
6/30/96-97	518,000	539,000	518,000	539,000	0	0.0%	0	0.0%
6/30/97-98	469,000	487,000	469,000	487,000	0	0.0%	0	0.0%
6/30/98-99	678,000	705,000	678,000	705,000	0	0.0%	0	0.0%
6/30/99-00	1,229,000	1,277,000	1,229,000	1,277,000	0	0.0%	0	0.0%
6/30/00-01	1,482,000	1,490,000	1,485,000	1,491,000	3,000	0.2%	1,000	0.1%
6/30/01-02	838,000	840,000	835,000	836,000	(3,000)	-0.4%	(4,000)	-0.5%
6/30/02-03	964,000	966,000	959,000	960,000	(5,000)	-0.5%	(6,000)	-0.6%
6/30/03-04	295,000	298,000	293,000	297,000	(2,000)	-0.7%	(1,000)	-0.3%
6/30/04-05	688,000	696,000	684,000	685,000	(4,000)	-0.6%	(11,000)	-1.6%
6/30/05-06	400,000	437,000	395,000	437,000	(5,000)	-1.3%	0	0.0%
6/30/06-07	505,000	542,000	497,000	540,000	(8,000)	-1.6%	(2,000)	-0.4%
6/30/07-08	493,000	530,000	502,000	542,000	9,000	1.8%	12,000	2.3%
6/30/08-09	1,032,000	1,060,000	1,018,000	1,035,000	(14,000)	-1.4%	(25,000)	-2.4%
6/30/09-10	671,000	708,000	666,000	703,000	(5,000)	-0.7%	(5,000)	-0.7%
6/30/10-11	1,045,000	1,101,000	1,055,000	1,097,000	10,000	1.0%	(4,000)	-0.4%
6/30/11-12	1,137,000	1,199,000	1,072,000	1,094,000	(65,000)	-5.7%	(105,000)	-8.8%
6/30/12-13	962,000	992,000	820,000	876,000	(142,000)	-14.8%	(116,000)	-11.7%
6/30/13-14	853,000	1,107,000	786,000	998,000	(67,000)	-7.9%	(109,000)	-9.8%
6/30/14-15	1,420,000	1,717,000	1,266,000	1,436,600	(154,000)	-10.8%	(280,400)	-16.3%
6/30/15-16								
Total	36,918,520	39,898,944	36,599,279	39,318,950	(319,240)	-0.9%	(579,994)	-1.5%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 5, Exhibit 1, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Calculation of Ultimate Lump Sum Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Accident Year	Paid Loss Excluding Lump Sum	Implied Cumulative LDF	Ult Loss Excluding Lump Sum	Selected Incr Lump Sum % Outstdg	Cumulative Lump Sum % Outstdg	Total Lump Sum Outstdg	Paid Lump Sum to Date	Est Ult Lump Sum - Incr Method	Ultimate Lump Sum Percentage	Lump Sum LDF	Est Ult Lump Sum - Paid Method	Selected Est Ultimate Lump Sums	Prior Est Ultimate Lump Sums
All Prior Yrs	2,150,168	1.190	2,557,775	0.0%	0.0%	0	88,040	88,040	3.4%	1.000	88,040	88,040	88,040
6/30/82-83	134,406	1.014	136,267	0.0%	0.0%	0	0	0	0.0%	1.000	0	0	0
6/30/83-84	160,531	1.016	163,079	0.0%	0.0%	0	27,500	27,500	16.9%	1.000	27,500	27,500	27,500
6/30/84-85	1,898,197	1.221	2,318,624	0.0%	0.0%	0	44,000	44,000	1.9%	1.000	44,000	44,000	44,000
6/30/85-86	1,414,227	1.224	1,730,915	0.0%	0.0%	0	210,000	210,000	12.1%	1.000	210,000	210,000	210,000
6/30/86-87	2,165,721	1.226	2,655,994	0.0%	0.0%	0	258,000	258,000	9.7%	1.000	258,000	258,000	258,000
6/30/87-88	2,121,480	1.126	2,389,696	0.0%	0.0%	0	88,500	88,500	3.7%	1.000	88,500	88,500	88,500
6/30/88-89	1,871,914	1.129	2,112,795	0.0%	0.0%	0	68,000	68,000	3.2%	1.000	68,000	68,000	68,000
6/30/89-90	471,448	1.028	484,708	0.0%	0.0%	0	50,590	50,590	10.4%	1.000	50,590	50,590	50,590
6/30/90-91	2,166,591	1.133	2,455,183	0.0%	0.0%	0	208,500	208,500	8.5%	1.000	208,500	208,500	208,500
6/30/91-92	2,245,851	1.135	2,550,090	0.0%	0.0%	0	249,000	249,000	9.8%	1.000	249,000	249,000	249,000
6/30/92-93	292,355	1.037	303,290	0.0%	0.0%	0	158,010	158,010	52.1%	1.000	158,010	158,010	158,010
6/30/93-94	580,633	1.043	605,363	0.0%	0.0%	0	130,300	130,300	21.5%	1.000	130,300	130,300	130,300
6/30/94-95	624,606	1.048	654,465	0.0%	0.0%	0	137,200	137,200	21.0%	1.000	137,200	137,200	137,200
6/30/95-96	475,722	1.053	500,956	0.0%	0.0%	0	116,000	116,000	23.2%	1.000	116,000	116,000	116,000
6/30/96-97	472,528	1.058	500,080	0.0%	0.0%	0	40,000	40,000	8.0%	1.000	40,000	40,000	40,000
6/30/97-98	320,304	1.064	340,675	0.0%	0.0%	0	143,500	143,500	42.1%	1.000	143,500	143,500	143,500
6/30/98-99	477,169	1.069	510,055	0.0%	0.0%	0	193,500	193,500	37.9%	1.000	193,500	193,500	193,500
6/30/99-00	1,036,650	1.074	1,113,634	0.0%	0.0%	0	179,500	179,500	16.1%	1.000	179,500	179,500	179,500
6/30/00-01	1,224,026	1.080	1,321,499	0.0%	0.0%	0	170,000	170,000	12.9%	1.000	170,000	170,000	170,850
6/30/01-02	582,848	1.102	642,455	0.0%	0.0%	0	192,500	192,500	30.0%	1.010	194,425	193,463	194,757
6/30/02-03	629,649	1.108	697,373	0.1%	0.1%	697	259,972	260,669	37.4%	1.020	265,197	262,933	264,962
6/30/03-04	212,295	1.113	236,288	0.2%	0.3%	709	56,000	56,709	24.0%	1.030	57,697	57,203	57,850
6/30/04-05	457,755	1.118	511,967	0.3%	0.6%	3,072	166,950	170,022	33.2%	1.041	173,729	171,875	173,817
6/30/05-06	276,027	1.139	314,464	0.4%	1.0%	3,145	77,000	80,145	25.5%	1.051	80,928	80,536	81,959
6/30/06-07	324,328	1.147	372,131	0.5%	1.5%	5,582	118,441	124,023	33.3%	1.067	126,350	125,187	128,135
6/30/07-08	372,992	1.157	431,616	0.7%	2.2%	9,496	62,500	71,996	16.7%	1.092	68,271	70,133	72,635
6/30/08-09	727,480	1.167	848,822	0.7%	2.9%	24,616	163,500	188,116	22.2%	1.127	184,194	186,155	195,048
6/30/09-10	446,862	1.182	528,322	0.8%	3.7%	19,548	117,591	137,139	26.0%	1.183	139,134	138,136	158,731
6/30/10-11	854,141	1.212	1,035,060	1.1%	4.8%	50,141	30,000	80,141	7.7%	1.479	44,366	62,253	86,875
6/30/11-12	722,953	1.302	941,049	1.9%	6.8%	63,861	86,000	149,861	15.9%	1.812	155,815	152,838	178,656
6/30/12-13	499,184	1.494	745,924	2.4%	9.2%	68,550	18,798	87,348	11.7%	3.260	61,283	74,315	118,306
6/30/13-14	273,338	1.777	485,703	4.5%	13.7%	66,492	234,027	300,520	61.9%	5.849	1,368,859	300,520	320,752
6/30/14-15	484,207	2.263	1,095,992	2.7%	16.4%	179,906	30,000	209,906	19.2%	15.624	468,716	209,906	289,863
6/30/15-16	271,286	4.821	1,307,925	4.0%	20.4%	267,011	0	267,011	20.4%	15.624	0	267,011	
Total	29,439,872		35,600,233			762,826	4,173,419	4,936,245	13.9%		5,949,104	4,912,605	4,883,337

NOTES:

(2) From Section 5, Exhibit 1, Page 2, Column 3
(3) = (4) / (2)
(4) From Section 5, Exhibit 1, Page 2, Column 6
(5) From Section 5, Exhibit 1, Page 11
(6) Downward sum of (5)
(7) = (6) x (4)
(8) From Section 5, Exhibit 1, Page 10
(9) = (7) + (8)
(10) = (9) / (4)
(11) From Section 5, Exhibit 1, Page 12
(12) = (8) x (11)
(13) Selected based on (9) and (12)
(14) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Amherst) - Cluster 4
INDEMNITY
Lump Sum Development
Incremental Lump Sum Payments

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0	0	0	0	0	0	0	0	7,000	0	0	0	0	0	54,000	0	0	0	0	0	0	0	0	0	27,040	0	0	0	0	0	0	0	0	0	0
Jun-83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Jun-85	0	0	0	0	0	16,500	0	0	0	0	0	27,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Jun-86	0	0	0	0	0	0	0	0	50,000	0	10,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150,000	0	0	0	0	0				
Jun-87	0	0	0	0	0	10,000	37,500	0	10,000	0	0	0	19,000	46,500	0	0	0	0	0	0	0	0	0	135,000	0	0	0	0	0	0					
Jun-88	0	0	0	12,500	12,500	0	43,500	0	0	0	0	0	0	0	0	0	0	0	20,000	0	0	0	0	0	0	0	0	0	0						
Jun-89	0	0	0	0	14,000	0	0	9,000	45,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
Jun-90	0	0	0	33,000	8,000	9,590	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Jun-91	0	0	0	30,000	20,000	60,000	46,500	0	27,000	0	0	0	0	0	25,000	0	0	0	0	0	0	0	0	0	0	0									
Jun-92	0	5,000	0	100,500	0	0	0	27,500	0	0	0	0	0	36,000	0	0	0	0	80,000	0	0	0	0	0	0										
Jun-93	0	20,010	43,000	10,000	0	10,000	0	75,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
Jun-94	0	0	0	0	0	0	0	0	0	10,300	0	0	0	0	0	120,000	0	0	0	0	0	0	0												
Jun-95	0	37,200	35,000	40,000	25,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Jun-96	0	0	16,000	0	25,000	37,500	37,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0														
Jun-97	0	0	0	0	0	0	0	0	0	40,000	0	0	0	0	0	0	0	0	0	0															
Jun-98	0	0	88,500	0	30,000	25,000	0	0	0	0	0	0	0	0	0	0	0	0	0																
Jun-99	0	40,000	93,500	27,500	0	22,500	0	0	0	10,000	0	0	0	0	0	0	0	0																	
Jun-00	0	0	23,000	27,500	75,000	0	24,000	0	30,000	0	0	0	0	0	0	0	0																		
Jun-01	0	17,500	72,500	50,000	0	30,000	0	0	0	0	0	0	0	0	0	0																			
Jun-02	0	24,000	18,000	52,500	63,000	35,000	0	0	0	0	0	0	0	0	0																				
Jun-03	0	9,000	26,500	32,000	30,000	92,472	0	0	0	0	70,000	0	0	0																					
Jun-04	0	6,000	0	0	50,000	0	0	0	0	0	0	0	0																						
Jun-05	0	24,450	18,500	0	35,000	12,000	65,000	12,000	0	0	0	0																							
Jun-06	0	35,000	28,000	14,000	0	0	0	0	0	0	0																								
Jun-07	0	0	0	60,000	40,000	15,000	3,441	0	0	0																									
Jun-08	0	0	17,500	45,000	0	0	0	0	0																										
Jun-09	0	62,500	30,000	0	0	40,000	31,000	0																											
Jun-10	0	62,591	25,000	0	30,000	0	0																												
Jun-11	0	0	0	0	20,000	10,000																													
Jun-12	0	0	51,000	35,000	0																														
Jun-13	0	0	3,798	15,000																															
Jun-14	0	234,027	0																																
Jun-15	0	30,000																																	
Jun-16	0																																		

Cumulative Lump Sum Payments

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	0	7,000	7,000	7,000	7,000	7,000	7,000	61,000	61,000	61,000	61,000	61,000	61,000	61,000	61,000	61,000	61,000	88,040	88,040	88,040	88,040	88,040	88,040	88,040	88,040	88,040	88,040	88,040
Jun-83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500		
Jun-85	0	0	0	0	0	16,500	16,500	16,500	16,500	16,500	16,500	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000			
Jun-86	0	0	0	0	0	0	0	0	50,000	50,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	210,000	210,000	210,000	210,000	210,000	210,000				
Jun-87	0	0	0	0	0	10,000	47,500	47,500	57,500	57,500	57,500	57,500	76,500	123,000	123,000	123,000	123,000	123,000	123,000	123,000	123,000	123,000	123,000	258,000	258,000	258,000	258,000	258,000	258,000	258,000				
Jun-88	0	0	0	12,500	25,000	25,000	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500						
Jun-89	0	0	0	0	14,000	14,000	14,000	23,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000							
Jun-90	0	0	0	33,000	41,000	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590								
Jun-91	0	0	0	30,000	50,000	110,000	156,500	156,500	183,500	183,500	183,500	183,500	183,500	183,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500										
Jun-92	0	5,000	5,000	105,500	105,500	105,500	105,500	133,000	133,000	133,000	133,000	133,000	133,000	169,000	169,000	169,000	169,000	169,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000										
Jun-93	0	20,010	63,010	73,010	73,010	83,010	83,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010											
Jun-94	0	0	0	0	0	0	0	0	0	10,300	10,300	10,300	10,300	10,300	10,300	10,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300												
Jun-95	0	37,200	72,200	112,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200													
Jun-96	0	0	16,000	16,000	41,000	78,500	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000												
Jun-97	0	0	0	0	0	0	0	0	0	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000														
Jun-98	0	0	88,500	88,500	118,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500														
Jun-99	0	40,000	133,500	161,000	161,000	183,500	183,500	183,500	183,500	193,500	193,500	193,500	193,500	193,500	193,500	193,500	193,500	193,500	193,500	193,500	193,500														
Jun-00	0	0	23,000	50,500	125,500	125,500	149,500	149,500	179,500	179,500	179,500	179,500	179,500	179,500	179,500	179,500	179,500	179,500	179,500	179,500															
Jun-01	0	17,500	90,000	140,000	140,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000															
Jun-02	0	24,000	42,000	94,500	157,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500																
Jun-03	0	9,000	35,500	67,500	97,500	189,972	189,972	189,972	189,972	189,972	259,972	259,972	259,972	259,972																					
Jun-04	0	6,000	6,000	6,000	56,000	56,000	56,000	56,000	56,000	56,000	56,000	56,000	56,000																						
Jun-05	0	24,450	42,950	42,950	77,950	89,950	154,950	166,950	166,950	166,950	166,950	166,950																							
Jun-06	0	35,000	63,000	77,000	77,000	77,000	77,000	77,000	77,000	77,000	77,000																								
Jun-07	0	0	0	60,000	100,000	115,000	118,441	118,441	118,441	118,441																									
Jun-08	0	0	17,500	62,500	62,500	62,500	62,500	62,500	62,500																										
Jun-09	0	62,500	92,500	92,500	92,500	132,500	163,500	163,500																											
Jun-10	0	62,591	87,591	87,591	117,591	117,591	117,591																												
Jun-11	0	0	0	0	20,000	30,000																													
Jun-12	0	0	51,000	86,000	86,000																														
Jun-13	0	0	3,798	18,798																															
Jun-14	0	234,027	234,027																																
Jun-15	0	30,000																																	
Jun-16	0																																		

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Amherst) - Cluster 4
INDEMNITY
Lump Sum Development
Incremental Lump Sums as a % of Ultimate Losses Excluding Lump Sums

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-83	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-84	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.169	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-85	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.087	0.000	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.000	0.000	0.000	0.000	0.004	0.014	0.000	0.004	0.000	0.000	0.000	0.007	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.051	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.000	0.000	0.005	0.005	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
Jun-89	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.004	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.000	0.000	0.068	0.017	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000								
Jun-91	0.000	0.000	0.000	0.012	0.008	0.024	0.019	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000									
Jun-92	0.000	0.002	0.000	0.039	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.031	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.000	0.066	0.142	0.033	0.000	0.033	0.000	0.247	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000											
Jun-94	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.198	0.000	0.000	0.000	0.000	0.000	0.000	0.000												
Jun-95	0.000	0.057	0.053	0.061	0.038	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.000	0.032	0.000	0.050	0.075	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
Jun-97	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000															
Jun-98	0.000	0.000	0.260	0.000	0.088	0.073	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.078	0.183	0.054	0.000	0.044	0.000	0.000	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																	
Jun-00	0.000	0.000	0.021	0.025	0.067	0.000	0.022	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
Jun-01	0.000	0.013	0.055	0.038	0.000	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																			
Jun-02	0.000	0.037	0.028	0.082	0.098	0.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																				
Jun-03	0.000	0.013	0.038	0.046	0.043	0.133	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.000																					
Jun-04	0.000	0.025	0.000	0.000	0.212	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																						
Jun-05	0.000	0.048	0.036	0.000	0.068	0.023	0.127	0.023	0.000	0.000	0.000	0.000																							
Jun-06	0.000	0.111	0.089	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000																								
Jun-07	0.000	0.000	0.000	0.161	0.107	0.040	0.009	0.000	0.000	0.000																									
Jun-08	0.000	0.000	0.041	0.104	0.000	0.000	0.000	0.000	0.000																										
Jun-09	0.000	0.074	0.035	0.000	0.000	0.047	0.037	0.000																											
Jun-10	0.000	0.118	0.047	0.000	0.057	0.000	0.000																												
Jun-11	0.000	0.000	0.000	0.000	0.019	0.010																													
Jun-12	0.000	0.000	0.054	0.037	0.000																														
Jun-13	0.000	0.000	0.005	0.020																															
Jun-14	0.000	0.482	0.000																																
Jun-15	0.000	0.027																																	
Jun-16	0.000																																		

Averages		*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
Simple Avg																																			
All Yrs (ex P)	0.000	0.035	0.035	0.027	0.029	0.021	0.011	0.011	0.004	0.005	0.004	0.001	0.000	0.002	0.001	0.010	0.009	0.000	0.002	0.000	0.000	0.000	0.000	0.005	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Latest 5	0.000	0.102	0.021	0.011	0.015	0.019	0.009	0.005	0.000	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Latest 3	0.000	0.170	0.020	0.019	0.025	0.019	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Olympic Avg																																			
All Yrs (ex P)	0.000	0.022	0.029	0.023	0.024	0.018	0.007	0.002	0.003	0.002	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Latest 10	0.000	0.041	0.027	0.026	0.037	0.022	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.009	0.017	0.007	0.006	0.017	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					

Dev Factor Selection

Prior	*NA*	*0.040*	*0.027*	*0.045*	*0.025*	*0.017*	*0.012*	*0.008*	*0.007*	*0.007*	*0.005*	*0.004*	*0.003*	*0.002*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	
Selected	NA	0.040	0.027	0.045	0.024	0.019	0.011	0.008	0.007	0.007	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FacToUlt	NA	0.204	0.164	0.137	0.092	0.068	0.048	0.037	0.029	0.022	0.015	0.010	0.006	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Amherst) - Cluster 4
INDEMNITY
Paid Loss Development
Paid Loss - Lump Sum only

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	0	7,000	7,000	7,000	7,000	7,000	7,000	61,000	61,000	61,000	61,000	61,000	61,000	61,000	61,000	61,000	61,000	88,040	88,040	88,040	88,040	88,040	88,040	88,040	88,040	88,040	88,040	88,040
Jun-83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500	27,500		
Jun-85	0	0	0	0	0	16,500	16,500	16,500	16,500	16,500	16,500	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000			
Jun-86	0	0	0	0	0	0	0	0	50,000	50,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	210,000	210,000	210,000	210,000	210,000	210,000				
Jun-87	0	0	0	0	0	10,000	47,500	47,500	57,500	57,500	57,500	57,500	76,500	123,000	123,000	123,000	123,000	123,000	123,000	123,000	123,000	123,000	123,000	258,000	258,000	258,000	258,000	258,000	258,000	258,000					
Jun-88	0	0	0	12,500	25,000	25,000	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	68,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500						
Jun-89	0	0	0	0	14,000	14,000	14,000	23,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000							
Jun-90	0	0	0	33,000	41,000	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590	50,590								
Jun-91	0	0	0	30,000	50,000	110,000	156,500	156,500	183,500	183,500	183,500	183,500	183,500	183,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500									
Jun-92	0	5,000	5,000	105,500	105,500	105,500	105,500	133,000	133,000	133,000	133,000	133,000	133,000	169,000	169,000	169,000	169,000	169,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000										
Jun-93	0	20,010	63,010	73,010	73,010	83,010	83,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010											
Jun-94	0	0	0	0	0	0	0	0	0	10,300	10,300	10,300	10,300	10,300	10,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300												
Jun-95	0	37,200	72,200	112,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200													
Jun-96	0	0	16,000	16,000	41,000	78,500	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000														
Jun-97	0	0	0	0	0	0	0	0	0	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000															
Jun-98	0	0	88,500	88,500	118,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500																
Jun-99	0	40,000	133,500	161,000	161,000	183,500	183,500	183,500	183,500	193,500	193,500	193,500	193,500	193,500	193,500	193,500	193,500	193,500																	
Jun-00	0	0	23,000	50,500	125,500	125,500	149,500	149,500	179,500	179,500	179,500	179,500	179,500	179,500	179,500	179,500	179,500																		
Jun-01	0	17,500	90,000	140,000	140,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000																			
Jun-02	0	24,000	42,000	94,500	157,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500	192,500																				
Jun-03	0	9,000	35,500	67,500	97,500	189,972	189,972	189,972	189,972	189,972	259,972	259,972	259,972	259,972																					
Jun-04	0	6,000	6,000	6,000	56,000	56,000	56,000	56,000	56,000	56,000	56,000	56,000	56,000																						
Jun-05	0	24,450	42,950	42,950	77,950	89,950	154,950	166,950	166,950	166,950	166,950	166,950																							
Jun-06	0	35,000	63,000	77,000	77,000	77,000	77,000	77,000	77,000	77,000	77,000																								
Jun-07	0	0	0	60,000	100,000	115,000	118,441	118,441	118,441	118,441																									
Jun-08	0	0	17,500	62,500	62,500	62,500	62,500	62,500	62,500																										
Jun-09	0	62,500	92,500	92,500	92,500	132,500	163,500	163,500																											
Jun-10	0	62,591	87,591	87,591	117,591	117,591	117,591																												
Jun-11	0	0	0	0	20,000	30,000																													
Jun-12	0	0	51,000	86,000	86,000																														
Jun-13	0	0	3,798	18,798																															
Jun-14	0	234,027	234,027																																
Jun-15	0	30,000																																	
Jun-16	0																																		

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
All Prior Yrs									1.000	1.000	1.000	1.000	1.000	8.714	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.443	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-83																																			
Jun-84																	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-85						1.000	1.000	1.000	1.000	1.000	2.667	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-86									1.000	1.200	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	3.500	1.000	1.000	1.000	1.000	1.000					
Jun-87						4.750	1.000	1.211	1.000	1.000	1.000	1.330	1.608	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	2.098	1.000	1.000	1.000	1.000	1.000	1.000					
Jun-88				2.000	1.000	2.740	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.292	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
Jun-89					1.000	1.000	1.643	2.957	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
Jun-90				1.242	1.234	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
Jun-91				1.667	2.200	1.423	1.000	1.173	1.000	1.000	1.000	1.000	1.000	1.136	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
Jun-92		1.000	21.100	1.000	1.000	1.000	1.261	1.000	1.000	1.000	1.000	1.000	1.271	1.000	1.000	1.000	1.000	1.473	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
Jun-93		3.149	1.159	1.000	1.137	1.000	1.904	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-94										1.000	1.000	1.000	1.000	1.000	12.650	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95		1.941	1.554	1.223	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-96			1.000	2.563	1.915	1.478	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-97										1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000															
Jun-98			1.000	1.339	1.211	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																
Jun-99		3.338	1.206	1.000	1.140	1.000	1.000	1.000	1.054	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																		
Jun-00			2.196	2.485	1.000	1.191	1.000	1.201	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																			
Jun-01		5.143	1.556	1.000	1.214	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																				
Jun-02		1.750	2.250	1.667	1.222	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																					
Jun-03		3.944	1.901	1.444	1.948	1.000	1.000	1.000	1.000	1.368	1.000	1.000	1.000																						
Jun-04		1.000	1.000	9.333	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																							
Jun-05		1.757	1.000	1.815	1.154	1.723	1.077	1.000	1.000	1.000	1.000																								
Jun-06		1.800	1.222	1.000	1.000	1.000	1.000	1.000	1.000	1.000																									
Jun-07				1.667	1.150	1.030	1.000	1.000	1.000																										
Jun-08			3.571	1.000	1.000	1.000	1.000	1.000																											
Jun-09		1.480	1.000	1.000	1.432	1.234	1.000																												
Jun-10		1.399	1.000	1.343	1.000	1.000																													
Jun-11					1.500																														
Jun-12			1.686	1.000																															
Jun-13			4.950																																
Jun-14		1.000																																	
Jun-15																																			

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Simple Avg																																			
All Yrs (ex P)		2.208	2.797	1.799	1.248	1.329	1.086	1.121	1.003	1.026	1.079	1.017	1.046	1.008	1.685	1.000	1.000	1.051	1.000	1.000	1.000	1.000	1.110	1.000	1.313	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Latest 5			2.545	1.114	1.233	1.066	1.000	1.000	1.000	1.092	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Latest 3			3.318	1.000	1.250	1.117	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Volume Wtd																																			
All Yrs (ex P)		2.022	1.626	1.319	1.225	1.126	1.050	1.067	1.024	1.033	1.011	1.008	1.036	1.012	1.062	1.015	1.000	1.065	1.000	1.000	1.000	1.000	1.125	1.000	1.186	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Latest 5			1.213	1.152	1.166	1.068	1.021	1.000	1.000	1.103	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Latest 3			1.912	1.288	1.217	1.099	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			

Dev Factor Selection																																			
Prior	*1.000*	*2.671*	*1.794*	*1.839*	*1.222*	*1.250*	*1.054*	*1.033*	*1.025*	*1.015*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Selected	1.000	2.671	1.794	1.799	1.225	1.250	1.050	1.031	1.024	1.015	1.010	1.010	1.010	1.010	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FacToUlt	15.624	15.624	5.849	3.260	1.812	1.479	1.183	1.127	1.092	1.067	1.051	1.041	1.030	1.020	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Percent of Ult	6.4%	6.4%	17.1%	30.7%	55.2%	67.6%	84.5%	88.8%	91.5%	93.7%	95.1%	96.1%	97.1%	98.0%	99.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	1.4%	0.0%	0.4%	0.2%	1.000	1.000
408	98.6%	0.2%	1.4%	0.1%	0.0%	0.981	0.971
396	98.4%	0.2%	1.6%	0.1%	0.0%	0.948	0.923
384	98.2%	0.2%	1.8%	0.1%	0.0%	0.919	0.882
372	98.0%	0.2%	2.0%	0.1%	0.0%	0.893	0.846
360	97.8%	0.2%	2.2%	0.1%	0.0%	0.870	0.814
348	97.7%	0.2%	2.3%	0.1%	0.0%	0.849	0.785
336	97.5%	0.2%	2.5%	0.1%	0.0%	0.829	0.758
324	97.3%	0.2%	2.7%	0.1%	0.0%	0.810	0.733
312	97.1%	0.2%	2.9%	0.1%	0.0%	0.792	0.710
300	96.9%	0.5%	3.1%	0.2%	0.1%	0.775	0.689
288	96.4%	0.5%	3.6%	0.2%	0.1%	0.777	0.693
276	95.9%	0.5%	4.1%	0.2%	0.1%	0.774	0.691
264	95.4%	0.5%	4.6%	0.2%	0.1%	0.769	0.685
252	95.0%	0.5%	5.0%	0.2%	0.1%	0.762	0.677
240	94.5%	0.5%	5.5%	0.2%	0.2%	0.754	0.667
228	94.0%	0.5%	6.0%	0.2%	0.2%	0.745	0.656
216	93.6%	0.5%	6.4%	0.2%	0.2%	0.736	0.645
204	93.1%	0.5%	6.9%	0.2%	0.2%	0.726	0.633
192	92.6%	1.9%	7.4%	1.0%	0.8%	0.716	0.620
180	90.7%	0.4%	9.3%	0.2%	0.2%	0.748	0.664
168	90.3%	0.4%	9.7%	0.3%	0.2%	0.731	0.642
156	89.8%	0.4%	10.2%	0.3%	0.2%	0.715	0.622
144	89.4%	1.6%	10.6%	1.0%	0.8%	0.700	0.602
132	87.8%	0.6%	12.2%	0.4%	0.3%	0.714	0.622
120	87.2%	0.7%	12.8%	0.5%	0.4%	0.701	0.606
108	86.4%	0.7%	13.6%	0.5%	0.4%	0.690	0.593
96	85.7%	1.1%	14.3%	0.8%	0.7%	0.680	0.580
84	84.6%	2.1%	15.4%	1.6%	1.4%	0.677	0.578
72	82.5%	5.7%	17.5%	4.6%	4.1%	0.690	0.596
60	76.8%	9.9%	23.2%	8.3%	7.6%	0.741	0.662
48	66.9%	10.6%	33.1%	9.3%	8.7%	0.793	0.729
36	56.3%	12.1%	43.7%	11.0%	10.5%	0.816	0.757
24	44.2%	23.4%	55.8%	22.1%	21.5%	0.827	0.770
12	20.7%	20.7%	79.3%	20.3%	20.1%	0.850	0.799
Total		100.0%					

NOTES:

(2) = 1 / Section 5, Exhibit 1, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	380,071	435,142		338,705	387,782
6/30/82-83	3,594	5,594	0.981	3,524	5,485
6/30/83-84	3,969	7,969	0.948	3,761	7,552
6/30/84-85	27,803	420,803	0.919	25,549	386,686
6/30/85-86	32,773	65,773	0.893	29,277	58,756
6/30/86-87	38,279	490,279	0.870	33,303	426,551
6/30/87-88	46,020	268,020	0.849	39,050	227,427
6/30/88-89	45,086	241,086	0.829	37,355	199,749
6/30/89-90	10,962	20,962	0.810	8,876	16,974
6/30/90-91	70,909	288,909	0.792	56,159	228,812
6/30/91-92	78,149	304,149	0.775	60,574	235,750
6/30/92-93	4,635	22,635	0.777	3,600	17,582
6/30/93-94	8,067	36,067	0.774	6,246	27,927
6/30/94-95	8,194	38,194	0.769	6,303	29,380
6/30/95-96	6,278	30,278	0.762	4,786	23,082
6/30/96-97	5,473	26,473	0.754	4,128	19,967
6/30/97-98	5,196	23,196	0.745	3,873	17,288
6/30/98-99	7,331	34,331	0.736	5,394	25,261
6/30/99-00	12,850	60,850	0.726	9,328	44,170
6/30/00-01	90,974	96,974	0.716	65,112	69,406
6/30/01-02	59,652	60,652	0.748	44,627	45,375
6/30/02-03	69,379	70,379	0.731	50,717	51,448
6/30/03-04	24,705	28,705	0.715	17,665	20,525
6/30/04-05	59,295	60,295	0.700	41,479	42,179
6/30/05-06	41,973	83,973	0.714	29,960	59,939
6/30/06-07	54,231	97,231	0.701	37,994	68,121
6/30/07-08	66,508	106,508	0.690	45,911	73,523
6/30/08-09	127,020	144,020	0.680	86,318	97,871
6/30/09-10	101,548	138,548	0.677	68,774	93,833
6/30/10-11	170,859	212,859	0.690	117,899	146,881
6/30/11-12	263,047	285,047	0.741	195,033	211,344
6/30/12-13	302,018	358,018	0.793	239,516	283,926
6/30/13-14	278,635	490,635	0.816	227,263	400,176
6/30/14-15	751,793	922,393	0.827	621,586	762,639
6/30/15-16	1,163,714	1,303,714	0.850	989,021	1,108,004
Total	4,420,988	7,280,659		3,558,665	5,921,370
			(7) Total Discount Factor:	0.805	0.813

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	380,071	435,142
(9) Projected Number of Years:	6	6
(10) Projected Paid Loss per Year:	63,345	72,524
(11) Discounted Value at 4%:	338,705	387,782

NOTES:

(2), (3) From Section 5, Exhibit 1, Page 1, Columns 8, 9

(4) From Section 5, Exhibit 1, Page 13, Column 7

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	380,071	435,142		320,833	367,321
6/30/82-83	3,594	5,594	0.971	3,491	5,433
6/30/83-84	3,969	7,969	0.923	3,664	7,357
6/30/84-85	27,803	420,803	0.882	24,528	371,224
6/30/85-86	32,773	65,773	0.846	27,732	55,657
6/30/86-87	38,279	490,279	0.814	31,160	399,102
6/30/87-88	46,020	268,020	0.785	36,120	210,363
6/30/88-89	45,086	241,086	0.758	34,182	182,781
6/30/89-90	10,962	20,962	0.733	8,040	15,375
6/30/90-91	70,909	288,909	0.710	50,377	205,254
6/30/91-92	78,149	304,149	0.689	53,837	209,530
6/30/92-93	4,635	22,635	0.693	3,211	15,683
6/30/93-94	8,067	36,067	0.691	5,574	24,920
6/30/94-95	8,194	38,194	0.685	5,615	26,172
6/30/95-96	6,278	30,278	0.677	4,251	20,501
6/30/96-97	5,473	26,473	0.667	3,652	17,664
6/30/97-98	5,196	23,196	0.656	3,410	15,225
6/30/98-99	7,331	34,331	0.645	4,727	22,135
6/30/99-00	12,850	60,850	0.633	8,130	38,500
6/30/00-01	90,974	96,974	0.620	56,440	60,163
6/30/01-02	59,652	60,652	0.664	39,633	40,298
6/30/02-03	69,379	70,379	0.642	44,554	45,196
6/30/03-04	24,705	28,705	0.622	15,361	17,848
6/30/04-05	59,295	60,295	0.602	35,717	36,320
6/30/05-06	41,973	83,973	0.622	26,113	52,243
6/30/06-07	54,231	97,231	0.606	32,840	58,879
6/30/07-08	66,508	106,508	0.593	39,438	63,157
6/30/08-09	127,020	144,020	0.580	73,667	83,526
6/30/09-10	101,548	138,548	0.578	58,698	80,085
6/30/10-11	170,859	212,859	0.596	101,751	126,763
6/30/11-12	263,047	285,047	0.662	174,260	188,834
6/30/12-13	302,018	358,018	0.729	220,064	260,868
6/30/13-14	278,635	490,635	0.757	210,792	371,173
6/30/14-15	751,793	922,393	0.770	578,518	709,797
6/30/15-16	1,163,714	1,303,714	0.799	929,234	1,041,025
Total	4,420,988	7,280,659		3,269,614	5,446,373
			(7) Total Discount Factor:	0.740	0.748

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	380,071	435,142
(9) Projected Number of Years:	6	6
(10) Projected Paid Loss per Year:	63,345	72,524
(11) Discounted Value at 6%:	320,833	367,321

NOTES:

(2), (3) From Section 5, Exhibit 1, Page 1, Columns 8, 9

(4) From Section 5, Exhibit 1, Page 13, Column 8

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

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

Calculation of Fiscal Year 7/01/16 - 17 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/16 - 06/30/17	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/16 - 06/30/17		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	5,236,558	5,346,700	4,476,417	760,141	870,283				34,105	37,515	4.5%	4.3%
6/30/82-83	276,000	280,000	268,812	7,188	11,188	96.7%	0.3%	9.1%	652	1,016	9.1%	9.1%
6/30/83-84	384,000	392,000	376,062	7,938	15,938	96.9%	0.3%	9.8%	774	1,554	9.8%	9.8%
6/30/84-85	3,940,000	4,726,000	3,884,393	55,607	841,607	89.6%	0.5%	4.8%	2,685	40,645	4.8%	4.8%
6/30/85-86	3,314,000	3,380,000	3,248,453	65,547	131,547	97.1%	0.5%	17.0%	11,131	22,339	17.0%	17.0%
6/30/86-87	4,924,000	5,828,000	4,847,442	76,558	980,558	90.2%	0.5%	5.1%	3,893	49,867	5.1%	5.1%
6/30/87-88	4,512,000	4,956,000	4,419,960	92,040	536,040	93.4%	0.5%	7.5%	6,937	40,403	7.5%	7.5%
6/30/88-89	3,970,000	4,362,000	3,879,829	90,171	482,171	93.1%	0.5%	7.3%	6,563	35,097	7.3%	7.3%
6/30/89-90	1,066,000	1,086,000	1,044,076	21,924	41,924	97.0%	0.5%	16.9%	3,695	7,065	16.9%	16.9%
6/30/90-91	4,892,000	5,328,000	4,750,183	141,818	577,818	93.0%	0.5%	7.1%	10,070	41,030	7.1%	7.1%
6/30/91-92	5,146,000	5,598,000	4,989,703	156,297	608,297	92.9%	0.5%	7.0%	10,981	42,739	7.0%	7.0%
6/30/92-93	910,000	946,000	900,730	9,270	45,270	97.1%	0.5%	17.0%	1,577	7,703	17.0%	17.0%
6/30/93-94	1,438,000	1,494,000	1,421,867	16,133	72,133	97.0%	0.5%	16.6%	2,680	11,980	16.6%	16.6%
6/30/94-95	1,540,000	1,600,000	1,523,612	16,388	76,388	97.0%	0.5%	16.9%	2,773	12,927	16.9%	16.9%
6/30/95-96	1,196,000	1,244,000	1,183,444	12,556	60,556	97.0%	0.5%	16.7%	2,095	10,105	16.7%	16.7%
6/30/96-97	1,036,000	1,078,000	1,025,055	10,945	52,945	97.0%	0.5%	16.5%	1,811	8,759	16.5%	16.5%
6/30/97-98	938,000	974,000	927,608	10,392	46,392	97.0%	0.5%	16.8%	1,750	7,810	16.8%	16.8%
6/30/98-99	1,356,000	1,410,000	1,341,339	14,661	68,661	97.0%	0.5%	16.6%	2,434	11,396	16.6%	16.6%
6/30/99-00	2,458,000	2,554,000	2,432,300	25,700	121,700	97.1%	0.5%	17.0%	4,369	20,691	17.0%	17.0%
6/30/00-01	2,970,000	2,982,000	2,788,051	181,949	193,949	93.7%	1.0%	15.8%	28,810	30,710	15.8%	15.8%
6/30/01-02	1,670,000	1,672,000	1,550,696	119,304	121,304	92.8%	1.0%	13.9%	16,571	16,849	13.9%	13.9%
6/30/02-03	1,918,000	1,920,000	1,779,241	138,759	140,759	92.7%	2.0%	27.5%	38,105	38,655	27.5%	27.5%
6/30/03-04	586,000	594,000	536,589	49,411	57,411	90.9%	2.0%	22.1%	10,916	12,684	22.1%	22.1%
6/30/04-05	1,368,000	1,370,000	1,249,410	118,590	120,590	91.3%	2.0%	22.9%	27,151	27,609	22.9%	22.9%
6/30/05-06	790,000	874,000	706,055	83,945	167,945	84.9%	2.0%	13.2%	11,091	22,189	13.2%	13.2%
6/30/06-07	994,000	1,080,000	885,539	108,461	194,461	85.4%	2.0%	13.7%	14,852	26,628	13.7%	13.7%
6/30/07-08	1,004,000	1,084,000	870,985	133,015	213,015	83.4%	2.0%	12.1%	16,053	25,707	12.1%	12.1%
6/30/08-09	2,036,000	2,070,000	1,781,960	254,040	288,040	86.8%	2.0%	15.1%	38,485	43,635	15.1%	15.1%
6/30/09-10	1,332,000	1,406,000	1,128,905	203,095	277,095	82.5%	3.0%	17.1%	34,741	47,399	17.1%	17.1%
6/30/10-11	2,110,000	2,194,000	1,768,282	341,718	425,718	82.2%	3.0%	16.8%	57,494	71,626	16.8%	16.8%
6/30/11-12	2,144,000	2,188,000	1,617,906	526,094	570,094	74.7%	5.0%	19.8%	103,953	112,647	19.8%	19.8%
6/30/12-13	1,640,000	1,752,000	1,035,963	604,037	716,037	61.1%	8.0%	20.6%	124,168	147,192	20.6%	20.6%
6/30/13-14	1,572,000	1,996,000	1,014,730	557,270	981,270	56.9%	10.0%	23.2%	129,235	227,565	23.2%	23.2%
6/30/14-15	2,532,000	2,873,200	1,028,414	1,503,586	1,844,786	38.1%	12.0%	19.4%	291,265	357,359	19.4%	19.4%
6/30/15-16	2,870,000	3,150,000	542,572	2,327,428	2,607,428	18.0%	15.0%	18.3%	425,882	477,118	18.3%	18.3%
Total	76,068,558	81,787,900	67,226,582	8,841,977	14,561,318				1,479,749	2,096,212	16.7%	14.4%

NOTES:

(2) Exhibit 1, Page 1, Column (4) + Exhibit 2, Page 1, Column (4)
(3) Exhibit 1, Page 1, Column (5) + Exhibit 2, Page 1, Column (5)
(4) Exhibit 1, Page 1, Column (2) + Exhibit 2, Page 1, Column (2)
(5) = (2) - (4)
(6) = (3) - (4)
(7) = (4) / Average of Columns (2), (3)
(8) = (7) - Prior Year's (7)
(9) = (8) / (1.00 - (7))
(10) = (5) * (9)
(11) = (6) * (9)
(12) = (10) / (5)
(13) = (11) / (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Paid Loss	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		109,307			110,743	111,525	1,436	2,218		
6/30/82-83		91,124	91,435		91,124	92,349	0	1,225		
6/30/83-84		32,907	33,052		32,907	34,044	0	1,137		
6/30/84-85	176,924	75,201	75,609	75,687	75,953	77,121	752	1,920	0.043	0.044
6/30/85-86	188,662	52,218	52,554	52,640	52,741	53,263	522	1,044	0.028	0.028
6/30/86-87	212,277	200,006	201,492	201,462	201,000	201,000	994	994	0.095	0.095
6/30/87-88	243,118	231,967	233,925	233,839	234,000	234,000	2,033	2,033	0.096	0.096
6/30/88-89	248,990	296,430	299,231	299,809	299,000	300,000	2,570	3,570	0.120	0.120
6/30/89-90	250,404	157,317	158,962	159,494	159,000	159,000	1,683	1,683	0.063	0.063
6/30/90-91	235,170	507,961	513,786	513,741	514,000	514,000	6,039	6,039	0.219	0.219
6/30/91-92	235,607	551,403	558,285	558,176	558,000	558,000	6,597	6,597	0.237	0.237
6/30/92-93	241,161	262,075	265,611	265,555	264,696	267,317	2,621	5,242	0.110	0.111
6/30/93-94	254,321	534,763	542,521	542,289	542,000	543,000	7,237	8,237	0.213	0.214
6/30/94-95	256,665	305,369	310,728	310,584	308,423	311,476	3,054	6,107	0.120	0.121
6/30/95-96	265,739	243,985	249,012	248,897	246,425	248,865	2,440	4,880	0.093	0.094
6/30/96-97	296,336	187,967	192,799	192,777	189,847	191,726	1,880	3,759	0.064	0.065
6/30/97-98	296,982	188,043	193,841	193,824	194,000	194,000	5,957	5,957	0.065	0.065
6/30/98-99	299,530	247,484	256,390	256,195	256,000	261,120	8,516	13,636	0.085	0.087
6/30/99-00	323,627	360,854	375,710	375,077	375,000	376,000	14,146	15,146	0.116	0.116
6/30/00-01	338,348	396,630	415,024	414,237	414,000	415,000	17,370	18,370	0.122	0.123
6/30/01-02	329,555	520,323	549,938	548,270	548,000	550,000	27,677	29,677	0.166	0.167
6/30/02-03	329,179	297,086	317,823	317,404	317,000	318,000	19,914	20,914	0.096	0.097
6/30/03-04	344,547	146,045	158,270	159,213	158,000	159,000	11,955	12,955	0.046	0.046
6/30/04-05	325,530	287,625	315,916	312,305	312,000	316,000	24,375	28,375	0.096	0.097
6/30/05-06	403,750	287,295	318,708	322,117	319,000	322,000	31,705	34,705	0.079	0.080
6/30/06-07	420,219	212,260	237,824	252,970	238,000	253,000	25,740	40,740	0.057	0.060
6/30/07-08	425,998	439,771	495,207	484,041	484,000	495,000	44,229	55,229	0.114	0.116
6/30/08-09	420,566	564,035	646,508	615,607	616,000	647,000	51,965	82,965	0.146	0.154
6/30/09-10	433,206	343,231	402,857	408,398	403,000	428,400	59,769	85,169	0.093	0.099
6/30/10-11	444,673	364,981	442,933	446,906	443,000	469,350	78,019	104,369	0.100	0.106
6/30/11-12	467,753	449,827	574,020	558,948	559,000	574,000	109,173	124,173	0.120	0.123
6/30/12-13	495,398	348,994	464,450	485,765	464,000	510,300	115,006	161,306	0.094	0.103
6/30/13-14	518,391	336,151	519,335	545,319	519,000	545,000	182,849	208,849	0.100	0.105
6/30/14-15	539,631	402,056	755,932	699,702	700,000	793,800	297,944	391,744	0.130	0.147
6/30/15-16	585,875	182,684	666,448	698,797	666,000	699,000	483,316	516,316	0.114	0.119
Total	10,848,132	10,215,377	11,886,136	11,750,046	11,864,858	12,222,656	1,649,481	2,007,279		
Tot 6/30/84-16	10,848,132	9,982,039	11,761,649	11,750,046	11,630,083	11,984,737	1,648,045	2,002,699	0.107	0.110

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 5, Exhibit 2, Page 2, Column 3

(4) From Section 5, Exhibit 2, Page 2, Column 8

(5) From Section 5, Exhibit 2, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Accident Year	Payroll (000's)	Paid Loss	Paid LDF	Adjustment for Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim
All Prior Yrs		109,307							0	1	
6/30/82-83		91,124	1.003	1.000	91,435	N/A	91,435		0	0	
6/30/83-84		32,907	1.004	1.000	33,052	N/A	33,052		0	0	
6/30/84-85	176,924	75,201	1.005	1.000	75,609	N/A	75,609	0.043	1	1	408
6/30/85-86	188,662	52,218	1.006	1.000	52,554	N/A	52,554	0.028	0	0	
6/30/86-87	212,277	200,006	1.007	1.000	201,492	N/A	201,492	0.095	1	1	1,487
6/30/87-88	243,118	231,967	1.008	1.000	233,925	N/A	233,925	0.096	2	2	979
6/30/88-89	248,990	296,430	1.009	1.000	299,231	N/A	299,231	0.120	0	0	
6/30/89-90	250,404	157,317	1.010	1.000	158,962	N/A	158,962	0.063	0	0	
6/30/90-91	235,170	507,961	1.011	1.000	513,786	N/A	513,786	0.218	1	1	5,826
6/30/91-92	235,607	551,403	1.012	1.000	558,285	N/A	558,285	0.237	1	0	
6/30/92-93	241,161	262,075	1.013	1.000	265,611	N/A	265,611	0.110	0	0	
6/30/93-94	254,321	534,763	1.015	1.000	542,521	N/A	542,521	0.213	1	1	7,758
6/30/94-95	256,665	305,369	1.018	1.000	310,728	N/A	310,728	0.121	0	0	
6/30/95-96	265,739	243,985	1.021	1.000	249,012	N/A	249,012	0.094	0	0	
6/30/96-97	296,336	187,967	1.026	1.000	192,799	N/A	192,799	0.065	0	0	
6/30/97-98	296,982	188,043	1.031	1.000	193,841	N/A	193,841	0.065	0	0	
6/30/98-99	299,530	247,484	1.036	1.000	256,390	N/A	256,390	0.086	1	1	8,907
6/30/99-00	323,627	360,854	1.041	1.000	375,710	N/A	375,710	0.116	0	0	
6/30/00-01	338,348	396,630	1.046	1.000	415,024	N/A	415,024	0.123	2	2	9,197
6/30/01-02	329,555	520,323	1.057	1.000	549,938	N/A	549,938	0.167	3	2	14,808
6/30/02-03	329,179	297,086	1.070	1.000	317,823	N/A	317,823	0.097	2	1	20,737
6/30/03-04	344,547	146,045	1.084	1.000	158,270	N/A	158,270	0.046	0	0	
6/30/04-05	325,530	287,625	1.098	1.000	315,916	N/A	315,916	0.097	0	0	
6/30/05-06	403,750	287,295	1.109	1.000	318,708	N/A	318,708	0.079	1	0	
6/30/06-07	420,219	212,260	1.120	1.000	237,824	N/A	237,824	0.057	1	1	25,564
6/30/07-08	425,998	439,771	1.126	1.000	495,207	N/A	495,207	0.116	2	3	18,479
6/30/08-09	420,566	564,035	1.146	1.000	646,508	N/A	646,508	0.154	5	5	16,495
6/30/09-10	433,206	343,231	1.174	1.000	402,857	N/A	402,857	0.093	5	4	14,906
6/30/10-11	444,673	364,981	1.214	1.000	442,933	N/A	442,933	0.100	6	5	15,590
6/30/11-12	467,753	449,827	1.276	1.000	574,020	N/A	574,020	0.123	9	6	20,699
6/30/12-13	495,398	348,994	1.331	1.000	464,450	N/A	464,450	0.094	16	7	16,494
6/30/13-14	518,391	336,151	1.545	1.000	519,335	N/A	519,335	0.100	92	12	15,265
6/30/14-15	539,631	402,056	1.880	1.000	755,932	N/A	755,932	0.140	233	108	3,277
6/30/15-16	585,875	182,684	3.648	1.000	666,448	N/A	666,448	0.114		160	3,024
Total	10,848,132	10,215,377			11,886,136		11,886,136		385	324	

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3), (4) From Section 5, Exhibit 2, Page 7

(5) Based on information from the MA WCRIB 4/1/14 filing. Consideration for development beyond 252 months made in selection of LDF's.

(6) = (3) x (4) x (5)

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	176,924	0.051	75,201	1.005	75,687	N/A	75,687	0.043	0.043
6/30/85-86	188,662	0.035	52,218	1.006	52,640	N/A	52,640	0.028	0.028
6/30/86-87	212,277	0.093	200,006	1.007	201,462	N/A	201,462	0.095	0.095
6/30/87-88	243,118	0.092	231,967	1.008	233,839	N/A	233,839	0.096	0.096
6/30/88-89	248,990	0.145	296,430	1.009	299,809	N/A	299,809	0.120	0.120
6/30/89-90	250,404	0.084	157,317	1.010	159,494	N/A	159,494	0.064	0.064
6/30/90-91	235,170	0.217	507,961	1.011	513,741	N/A	513,741	0.218	0.218
6/30/91-92	235,607	0.233	551,403	1.012	558,176	N/A	558,176	0.237	0.237
6/30/92-93	241,161	0.108	262,075	1.013	265,555	N/A	265,555	0.110	0.110
6/30/93-94	254,321	0.207	534,763	1.015	542,289	N/A	542,289	0.213	0.213
6/30/94-95	256,665	0.118	305,369	1.018	310,584	N/A	310,584	0.121	0.121
6/30/95-96	265,739	0.092	243,985	1.021	248,897	N/A	248,897	0.094	0.094
6/30/96-97	296,336	0.065	187,967	1.026	192,777	N/A	192,777	0.065	0.065
6/30/97-98	296,982	0.065	188,043	1.031	193,824	N/A	193,824	0.065	0.065
6/30/98-99	299,530	0.084	247,484	1.036	256,195	N/A	256,195	0.086	0.086
6/30/99-00	323,627	0.111	360,854	1.041	375,077	N/A	375,077	0.116	0.116
6/30/00-01	338,348	0.117	396,630	1.046	414,237	N/A	414,237	0.122	0.122
6/30/01-02	329,555	0.157	520,323	1.057	548,270	N/A	548,270	0.166	0.166
6/30/02-03	329,179	0.095	297,086	1.070	317,404	N/A	317,404	0.096	0.096
6/30/03-04	344,547	0.049	146,045	1.084	159,213	N/A	159,213	0.046	0.046
6/30/04-05	325,530	0.085	287,625	1.098	312,305	N/A	312,305	0.096	0.096
6/30/05-06	403,750	0.088	287,295	1.109	322,117	N/A	322,117	0.080	0.080
6/30/06-07	420,219	0.090	212,260	1.120	252,970	N/A	252,970	0.060	0.060
6/30/07-08	425,998	0.093	439,771	1.126	484,041	N/A	484,041	0.114	0.114
6/30/08-09	420,566	0.096	564,035	1.146	615,607	N/A	615,607	0.146	0.146
6/30/09-10	433,206	0.102	343,231	1.174	408,398	N/A	408,398	0.094	0.094
6/30/10-11	444,673	0.105	364,981	1.214	446,906	N/A	446,906	0.101	0.101
6/30/11-12	467,753	0.108	449,827	1.276	558,948	N/A	558,948	0.119	0.119
6/30/12-13	495,398	0.111	348,994	1.331	485,765	N/A	485,765	0.098	0.098
6/30/13-14	518,391	0.114	336,151	1.545	545,319	N/A	545,319	0.105	0.105
6/30/14-15	539,631	0.118	402,056	1.880	699,702	N/A	699,702	0.130	0.130
6/30/15-16	585,875	0.121	182,684	3.648	698,797	N/A	698,797	0.119	0.119
Total	10,848,132		9,982,039		11,750,046		11,750,046		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 5, Exhibit 2, Page 4, Column 11

(4) From Section 5, Exhibit 2, Page 2, Column 3

(5) From Section 5, Exhibit 2, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Expected Ult Loss	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.051	0.051
6/30/85-86									0.035	0.035
6/30/86-87									0.093	0.093
6/30/87-88									0.092	0.092
6/30/88-89									0.145	0.145
6/30/89-90									0.084	0.084
6/30/90-91	235,170	513,786	0.218	1.194	0.261	2.157	0.563	0.049	0.217	0.217
6/30/91-92	235,607	558,285	0.237	1.189	0.282	2.094	0.590	0.050	0.234	0.233
6/30/92-93	241,161	265,611	0.110	1.189	0.131	2.033	0.266	0.052	0.109	0.108
6/30/93-94	254,321	542,521	0.213	1.178	0.251	1.974	0.496	0.054	0.195	0.207
6/30/94-95	256,665	310,728	0.121	1.170	0.142	1.916	0.271	0.056	0.118	0.118
6/30/95-96	265,739	249,012	0.094	1.155	0.108	1.860	0.201	0.058	0.092	0.092
6/30/96-97	296,336	192,799	0.065	1.137	0.074	1.806	0.134	0.061	0.065	0.065
6/30/97-98	296,982	193,841	0.065	1.135	0.074	1.754	0.130	0.063	0.066	0.065
6/30/98-99	299,530	256,390	0.086	1.135	0.097	1.702	0.165	0.065	0.080	0.084
6/30/99-00	323,627	375,710	0.116	1.135	0.132	1.653	0.218	0.067	0.112	0.111
6/30/00-01	338,348	415,024	0.123	1.109	0.136	1.605	0.218	0.070	0.118	0.117
6/30/01-02	329,555	549,938	0.167	1.101	0.184	1.558	0.286	0.073	0.149	0.157
6/30/02-03	329,179	317,823	0.097	1.073	0.104	1.513	0.157	0.077	0.093	0.095
6/30/03-04	344,547	158,270	0.046	1.046	0.048	1.469	0.071	0.081	0.050	0.049
6/30/04-05	325,530	315,916	0.097	1.036	0.100	1.426	0.143	0.085	0.085	0.085
6/30/05-06	403,750	318,708	0.079	1.032	0.081	1.384	0.113	0.088	0.087	0.088
6/30/06-07	420,219	237,824	0.057	1.032	0.058	1.344	0.078	0.090	0.089	0.090
6/30/07-08	425,998	495,207	0.116	1.032	0.120	1.305	0.157	0.093	0.091	0.093
6/30/08-09	420,566	646,508	0.154	1.027	0.158	1.267	0.200	0.096	0.093	0.096
6/30/09-10	433,206	402,857	0.093	1.000	0.093	1.230	0.114	0.102	0.098	0.102
6/30/10-11	444,673	442,933	0.100	1.000	0.100	1.194	0.119	0.105	0.100	0.105
6/30/11-12	467,753	574,020	0.123	1.000	0.123	1.159	0.142	0.108	0.102	0.108
6/30/12-13	495,398	464,450	0.094	1.000	0.094	1.126	0.106	0.111	0.104	0.111
6/30/13-14	518,391	519,335	0.100	1.000	0.100	1.093	0.109	0.114	0.106	0.114
6/30/14-15	539,631	755,932	0.140	1.000	0.140	1.061	0.149	0.118	0.108	0.118
6/30/15-16	585,875	666,448	0.114	1.000	0.114	1.030	0.117	0.121		0.121
Total	9,527,758	10,739,876								

Trend Last 4 (ex 15-16):	4.7%	Avg 3 (ex 15-16):	0.121
Trend Last 8 (ex 15-16):	-1.1%	Avg 5 (ex 15-16):	0.125
Trend Last 12 (ex 15-16):	5.5%	Avg 10 (ex 15-16):	0.129
Prior Selected Trend:	2.0%	Prior Sel Avg:	0.110
Selected Trend:	3.0%	Sel. Loss Cost:	0.125

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 5, Exhibit 2, Page 2, Column 6

(4) = (3) / (2) / 10

(5) Based on information from the MA WCIRB

(6) = (4) x (5)

(7) Based on Selected Trend from (6)

(8) = (6) x (7)

(9) = Sel. Loss Cost / [(5) * (7)]

(10) From prior Aon analysis as of June 30, 2015

(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.950
(2)	Credibility		11%
(3)	Average Pmt Trend Statewide		0.950
(4)	Credibility Weighted Trend		0.950
		(Low)	(High)
(5)	Selected Range	0.941	0.960
(6)	Incremental Paid for 2016	174	174
(7)	Estimated Reserve	2,756	4,131
(8)	Paid to Date (82 & Prior)	109,307	109,307
(9)	Est Ult Paid for 1982 & Prior	112,063	113,438

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	58	240
(11)	Projected Number of Years	2	2
(12)	Estimated Reserve	116	480
(13)	Paid to Date (82 & Prior)	109,307	109,133
(14)	Est Ult Paid for 1982 & Prior	109,424	109,613
(14a)	Paid Counts During Fiscal Year	1	0
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	110,743	111,525
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**110,743**	**111,525**
(18)	Implied Tail	1.013	1.020
(19)	Ult Loss Inc Lump Sums @ 6/15	109,373	109,373

NOTES:

(1) From Section 5, Exhibit 2, Page 6
(2) = (Average of Section 5, Exhibit 2, Page 6, Column 3 / 175,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 5, Exhibit 2, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 5, Exhibit 2, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) Lump Sums are considered in Indemnity analysis (Section 1)
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	9,975	9.208			
1993	2	1,394	7.240	0.140		
1994	3	30,337	10.320	21.763		
1995	4	-7,026		-0.232		
1996	5	2,087	7.643	-0.297		
1997	6	418	6.035	0.200		
1998	7	0				
1999	8	390	5.966			
2000	9	1,546	7.343	3.964	n =	15
2001	10	0			S(x) =	30,044
2002	11	0			S(x-sq) =	60,176,946
2003	12	0			S(xy) =	216,340
2004	13	1,400	7.244		S(y) =	108
2005	14	0			D =	12,254
2006	15	424	6.050		slope =	0
2007	16	284	5.649	0.670	Avg Trend =	0.912
2008	17	1,845	7.520	6.499		
2009	18	3,150	8.055	1.707		
2010	19	3,080	8.033	0.978		
2011	20	0				
2012	21	0				
2013	22	720	6.579			
2014	23	0				
2015	24	0				
2016	25	174	5.161			
					Selected Trend:	**0.950**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2010: 0.978 = 3080 / 3150

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Amherst) - Cluster 4
MEDICAL
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	7,015	19,272	26,992	33,578	44,296	54,254	69,123	86,430	87,691	89,009	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124	91,124
June-84	2,065	5,673	7,945	9,884	13,039	15,948	22,112	25,109	27,259	27,620	27,620	29,236	29,236	29,236	29,774	29,774	33,170	32,907	32,907	32,907	32,907	32,907	32,907	32,907	32,907	32,907	32,907	32,907	32,907	32,907	32,907	32,907	32,907	
June-85	5,341	14,673	20,551	25,565	32,019	36,080	42,108	45,751	51,440	65,690	69,695	65,951	67,047	67,047	67,068	67,485	69,103	70,526	70,577	71,427	71,777	71,777	71,777	73,027	73,027	73,027	74,065	74,065	74,065	74,201	75,051	75,201		
June-86	4,254	11,686	16,367	29,076	33,757	37,603	39,971	43,583	45,896	47,123	47,123	47,123	47,123	47,123	48,153	48,153	48,153	48,153	48,503	49,375	49,375	49,375	50,070	50,670	50,670	52,218	52,218	52,218	52,218	52,218	52,218			
June-87	17,332	47,614	74,474	96,432	115,240	124,178	130,253	135,326	138,193	142,828	144,778	146,075	148,983	150,159	151,984	152,431	153,300	154,154	156,424	159,661	167,912	175,836	182,412	189,688	194,323	195,870	195,870	196,094	196,321	200,006				
June-88	21,776	71,312	105,389	144,783	150,052	156,889	162,436	164,340	165,770	169,300	170,433	171,904	172,900	173,563	174,460	176,155	179,540	184,256	189,906	193,501	195,901	201,522	207,981	215,719	220,354	223,356	225,509	230,109	231,967					
June-89	31,748	113,449	180,690	213,618	227,584	232,537	247,318	252,055	260,621	266,739	270,947	278,041	284,182	288,891	291,536	292,751	293,625	293,975	294,069	294,094	295,364	295,364	296,430	296,430	296,430	296,430	296,430	296,430						
June-90	19,060	117,509	146,705	152,013	155,556	157,028	157,217	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317	157,317							
June-91	49,629	201,675	266,883	315,231	324,767	338,441	344,037	344,920	345,667	349,590	353,310	355,602	356,167	359,042	361,717	364,813	366,594	376,706	462,325	499,976	507,147	507,299	507,299	507,399	507,483	507,961								
June-92	93,121	216,421	309,712	382,754	413,527	441,551	469,869	498,257	502,052	506,299	508,720	511,219	517,091	518,976	521,249	523,045	528,030	532,841	536,465	544,719	549,635	550,127	550,346	551,403	551,403									
June-93	81,970	229,344	254,404	256,957	260,901	261,422	261,544	261,544	261,544	262,036	262,075	262,075	262,075	262,075	262,075	262,075	262,075	262,075	262,075	262,075	262,075	262,075	262,075	262,075										
June-94	77,508	161,802	222,213	282,819	289,168	318,109	326,227	327,931	339,521	345,752	357,217	392,989	403,792	437,920	445,327	454,454	462,395	472,317	484,855	493,591	497,802	502,382	534,763											
June-95	86,716	239,689	284,148	295,763	301,706	303,344	303,490	305,369	305,369	305,369	305,369	305,369	305,369	305,369	305,369	305,369	305,369	305,369	305,369	305,369	305,369	305,369												
June-96	81,054	187,654	205,831	215,693	219,869	225,627	237,068	241,239	242,923	243,938	243,985	243,985	243,985	243,985	243,985	243,985	243,985	243,985	243,985	243,985	243,985													
June-97	61,666	103,895	129,694	181,008	185,516	187,189	187,267	187,617	187,617	187,967	187,967	187,967	187,967	187,967	187,967	187,967	187,967	187,967	187,967	187,967														
June-98	40,014	98,284	119,324	134,344	139,107	141,779	147,819	148,338	149,621	183,281	184,542	185,346	186,264	187,193	188,013	188,043	188,043	188,043	188,043															
June-99	57,055	145,931	161,873	165,175	173,370	179,001	181,785	183,278	186,735	189,893	194,365	198,821	204,465	208,778	214,267	223,056	234,647	247,484																
June-00	78,904	144,101	178,359	211,117	245,711	260,589	272,440	284,728	298,320	311,888	326,984	344,501	356,294	360,812	360,854	360,854	360,854																	
June-01	78,435	185,081	235,180	264,482	271,555	289,614	313,258	334,076	349,005	361,767	371,025	374,808	383,719	389,538	393,015	396,630																		
June-02	42,493	107,557	182,137	222,791	235,866	244,961	262,574	293,121	350,090	378,624	404,630	431,685	458,566	489,061	520,323																			
June-03	25,041	124,452	162,035	187,240	223,402	231,574	235,669	238,598	245,618	250,270	253,237	278,177	288,992	297,086																				
June-04	58,014	123,410	131,529	133,995	134,242	145,534	145,992	146,045	146,045	146,045	146,045	146,045	146,045																					
June-05	90,145	204,953	256,853	271,491	281,203	284,263	285,428	287,625	287,625	287,625	287,625	287,625																						
June-06	104,747	269,295	283,925	286,559	286,907	286,907	287,115	287,115	287,115	287,295	287,295																							
June-07	90,114	168,280	184,018	193,167	200,918	206,920	207,690	208,341	209,581	212,260																								
June-08	174,365	329,758	353,009	367,373	382,156	389,416	393,780	428,915	439,771																									
June-09	175,201	332,994	476,353	502,636	515,594	547,517	553,032	564,035																										
June-10	71,728	205,753	256,446	286,005	301,536	322,879	343,231																											
June-11	188,496	302,104	334,423	349,891	353,820	364,981																												
June-12	156,195	356,432	391,171	447,380	449,827																													
June-13	144,944	280,644	335,988	348,994																														
June-14	132,938	226,821	336,151																															
June-15	218,511	402,056																																
June-16	182,684																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.747	1.401	1.244	1.319	1.225	1.274	1.250	1.015	1.015	1.024	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-84	2.747	1.400	1.244	1.319	1.223	1.387	1.136	1.086	1.013	1.000	1.059	1.000	1.000	1.018	1.000	1.114	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
June-85	2.747	1.401	1.244	1.252	1.127	1.167	1.087	1.124	1.277	1.061	0.946	1.017	1.000	1.000	1.006	1.024	1.021	1.001	1.012	1.005	1.000	1.000	1.017	1.000	1.000	1.014	1.000	1.000	1.002	1.011	1.002			
June-86	2.747	1.401	1.777	1.161	1.114	1.063	1.090	1.053	1.027	1.000	1.000	1.000	1.000	1.022	1.000	1.000	1.000	1.007	1.018	1.000	1.000	1.014	1.012	1.000	1.031	1.000	1.000	1.000	1.000	1.000				
June-87	2.747	1.564	1.295	1.195	1.078	1.049	1.039	1.021	1.034	1.014	1.009	1.020	1.008	1.012	1.003	1.006	1.006	1.015	1.021	1.052	1.047	1.037	1.040	1.024	1.008	1.000	1.001	1.001	1.019					
June-88	3.275	1.478	1.374	1.036	1.046	1.035	1.012	1.009	1.021	1.007	1.009	1.006	1.004	1.005	1.010	1.019	1.026	1.031	1.019	1.012	1.029	1.032	1.037	1.021	1.014	1.010	1.020	1.008						
June-89	3.573	1.593	1.182	1.065	1.022	1.064	1.019	1.034	1.023	1.016	1.026	1.022	1.017	1.009	1.004	1.003	1.001	1.000	1.000	1.004	1.000	1.004	1.000	1.000	1.000	1.000	1.000							
June-90	6.165	1.248	1.036	1.023	1.009	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
June-91	4.064	1.323	1.181	1.030	1.042	1.017	1.003	1.002	1.011	1.011	1.006	1.002	1.008	1.007	1.009	1.005	1.028	1.227	1.081	1.014	1.000	1.000	1.000	1.000	1.001									
June-92	2.324	1.431	1.236	1.080	1.068	1.064	1.060	1.008	1.008	1.005	1.005	1.011	1.004	1.004	1.003	1.010	1.009	1.007	1.015	1.009	1.001	1.000	1.002	1.000										
June-93	2.798	1.109	1.010	1.015	1.002	1.000	1.000	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
June-94	2.088	1.373	1.273	1.022	1.100	1.026	1.005	1.035	1.018	1.033	1.100	1.027	1.085	1.017	1.020	1.017	1.021	1.027	1.018	1.009	1.009	1.064												
June-95	2.764	1.185	1.041	1.020	1.005	1.000	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
June-96	2.315	1.097	1.048	1.019	1.026	1.051	1.018	1.007	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
June-97	1.685	1.248	1.396	1.025	1.009	1.000	1.002	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000															
June-98	2.456	1.214	1.126	1.035	1.019	1.043	1.004	1.009	1.225	1.007	1.004	1.005	1.005	1.004	1.000	1.000	1.000	1.000																
June-99	2.558	1.109	1.020	1.050	1.032	1.016	1.008	1.019	1.017	1.024	1.023	1.028	1.021	1.026	1.041	1.052	1.055																	
June-00	1.826	1.238	1.184	1.164	1.061	1.045	1.045	1.048	1.045	1.048	1.054	1.034	1.013	1.000	1.000	1.000																		
June-01	2.360	1.271	1.125	1.027	1.067	1.082	1.066	1.045	1.037	1.026	1.010	1.024	1.015	1.009	1.009																			
June-02	2.531	1.693	1.223	1.059	1.039	1.072	1.116	1.194	1.082	1.069	1.067	1.062	1.067	1.064																				
June-03	4.970	1.302	1.156	1.193	1.037	1.018	1.012	1.029	1.019	1.012	1.098	1.039	1.028																					
June-04	2.127	1.066	1.019	1.002	1.084	1.003	1.000	1.000	1.000	1.000	1.000	1.000																						
June-05	2.274	1.253	1.057	1.036	1.011	1.004	1.008	1.000	1.000	1.000	1.000																							
June-06	2.571	1.054	1.009	1.001	1.000	1.001	1.000	1.000	1.001	1.000																								
June-07	1.867	1.094	1.050	1.040	1.030	1.004	1.003	1.006	1.013																									
June-08	1.891	1.071	1.041	1.040	1.019	1.011	1.089	1.025																										
June-09	1.901	1.431	1.055	1.026	1.062	1.010	1.020																											
June-10	2.869	1.246	1.115	1.054	1.071	1.063																												
June-11	1.603	1.107	1.046	1.011	1.032																													
June-12	2.282	1.097	1.144	1.005																														
June-13	1.936	1.197	1.039																															
June-14	1.706	1.482																																
June-15	1.840																																	

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.617	1.287	1.161	1.078	1.057	1.056	1.041	1.030	1.036	1.015	1.018	1.014	1.013	1.010	1.006	1.014	1.009	1.020	1.012	1.008	1.007	1.013	1.010	1.005	1.006	1.003	1.003	1.002	1.004	1.003	1.001	1.000	1.000	
Latest 5	1.873	1.226	1.080	1.027	1.043	1.018	1.024	1.006	1.006	1.016	1.035	1.032	1.029	1.021	1.010	1.010	1.011	1.005	1.004	1.004	1.002	1.013	1.000	1.004	1.005	1.002	1.004	1.002	1.004					
Latest 3	1.827	1.259	1.076	1.024	1.055	1.028	1.037	1.010	1.004	1.000	1.033	1.034	1.037	1.024	1.017	1.017	1.018	1.000	1.000	1.003	1.003	1.022	1.001	1.000	1.000	1.003	1.007	1.003	1.007	1.004	1.001			
Volume Wtd																																		
All Yrs	2.239	1.240	1.113	1.046	1.042	1.033	1.031	1.026	1.026	1.016	1.024	1.018	1.019	1.012	1.007	1.009	1.012	1.031	1.018	1.008	1.006	1.016	1.007	1.004	1.004	1.003	1.005	1.003	1.009	1.003	1.001	1.000	1.000	
Latest 5	1.864	1.206	1.078	1.025	1.044	1.018	1.028	1.009	1.006	1.021	1.038	1.037	1.031	1.025	1.009	1.010	1.011	1.009	1.006	1.005	1.002	1.016	1.001	1.003	1.004	1.002	1.006	1.004	1.009					
Latest 3	1.832	1.231	1.080	1.020	1.055	1.024	1.041	1.013	1.004	1.000	1.036	1.044	1.039	1.028	1.013	1.015	1.021	1.000	1.000	1.004	1.004	1.025	1.001	1.000	1.000	1.003	1.007	1.004	1.012	1.005	1.001			

Dev Factor Selection																																		
Industry 1	1.937	1.138	1.051	1.025	1.014	1.013	1.011	1.011	1.011	1.011	1.011	1.010	1.010	1.008	1.007	1.006	1.006	1.005																
Industry 2		1.271	1.076	1.031	1.019	1.013	1.010	1.010	1.011	1.009	1.010	1.014	1.012	1.008	1.007	1.008	1.006	1.005	1.005	1.006														
Prior	*1.940*	*1.191*	*1.165*	*1.048*	*1.048*	*1.023*	*1.020*	*1.018*	*1.013*	*1.010*	*1.010*	*1.014*	*1.012*	*1.007*	*1.008*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.003*	*1.003*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.004*	
Selected	1.940	1.217	1.161	1.043	1.052	1.034	1.024	1.018	1.005	1.010	1.010	1.014	1.013	1.012	1.010	1.005	1.005	1.005	1.005	1.005	1.003	1.003	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.003
FacToUlt	3.648	1.880	1.545	1.331	1.276	1.214	1.174	1.146	1.126	1.120	1.109	1.098	1.084	1.070	1.057	1.046	1.041	1.036	1.031	1.026	1.021	1.018	1.015	1.013	1.012	1.011	1.010	1.009	1.008	1.007	1.006	1.005	1.004	1.003
Percent of Ult	27.4%	53.2%	64.7%	75.1%	78.4%	82.4%	85.2%	87.2%	88.8%	89.3%	90.1%	91.0%	92.3%	93.5%	94.6%	95.6%	96.0%	96.5%	97.0%	97.5%	98.0%	98.3%	98.6%	98.7%	98.8%	98.9%	99.0%	99.1%	99.2%	99.3%	99.4%	99.5%	99.6%	99.7%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/8)		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	109,373	109,373	110,743	111,525	1,371	1.3%	2,153	2.0%
6/30/82-83	91,124	92,439	91,124	92,349	0	0.0%	(89)	-0.1%
6/30/83-84	32,907	34,077	32,907	34,044	0	0.0%	(33)	-0.1%
6/30/84-85	75,801	77,041	75,953	77,121	152	0.2%	79	0.1%
6/30/85-86	52,741	53,263	52,741	53,263	0	0.0%	0	0.0%
6/30/86-87	198,000	198,000	201,000	201,000	3,000	1.5%	3,000	1.5%
6/30/87-88	232,000	232,000	234,000	234,000	2,000	0.9%	2,000	0.9%
6/30/88-89	300,000	300,000	299,000	300,000	(1,000)	-0.3%	0	0.0%
6/30/89-90	159,000	160,000	159,000	159,000	0	0.0%	(1,000)	-0.6%
6/30/90-91	514,000	514,000	514,000	514,000	0	0.0%	0	0.0%
6/30/91-92	559,000	559,000	558,000	558,000	(1,000)	-0.2%	(1,000)	-0.2%
6/30/92-93	264,696	267,317	264,696	267,317	0	0.0%	0	0.0%
6/30/93-94	511,000	511,000	542,000	543,000	31,000	6.1%	32,000	6.3%
6/30/94-95	308,423	311,476	308,423	311,476	0	0.0%	0	0.0%
6/30/95-96	246,425	248,865	246,425	248,865	0	0.0%	0	0.0%
6/30/96-97	189,847	191,726	189,847	191,726	0	0.0%	0	0.0%
6/30/97-98	195,000	195,000	194,000	194,000	(1,000)	-0.5%	(1,000)	-0.5%
6/30/98-99	244,000	244,000	256,000	261,120	12,000	4.9%	17,120	7.0%
6/30/99-00	377,000	378,000	375,000	376,000	(2,000)	-0.5%	(2,000)	-0.5%
6/30/00-01	414,000	415,000	414,000	415,000	0	0.0%	0	0.0%
6/30/01-02	518,000	519,000	548,000	550,000	30,000	5.8%	31,000	6.0%
6/30/02-03	310,000	311,000	317,000	318,000	7,000	2.3%	7,000	2.3%
6/30/03-04	159,000	160,000	158,000	159,000	(1,000)	-0.6%	(1,000)	-0.6%
6/30/04-05	313,000	317,000	312,000	316,000	(1,000)	-0.3%	(1,000)	-0.3%
6/30/05-06	319,000	323,000	319,000	322,000	0	0.0%	(1,000)	-0.3%
6/30/06-07	236,000	252,000	238,000	253,000	2,000	0.8%	1,000	0.4%
6/30/07-08	479,000	492,000	484,000	495,000	5,000	1.0%	3,000	0.6%
6/30/08-09	610,000	647,000	616,000	647,000	6,000	1.0%	0	0.0%
6/30/09-10	387,000	412,650	403,000	428,400	16,000	4.1%	15,750	3.8%
6/30/10-11	444,000	466,200	443,000	469,350	(1,000)	-0.2%	3,150	0.7%
6/30/11-12	561,000	589,000	559,000	574,000	(2,000)	-0.4%	(15,000)	-2.5%
6/30/12-13	514,000	540,750	464,000	510,300	(50,000)	-9.7%	(30,450)	-5.6%
6/30/13-14	414,000	498,750	519,000	545,000	105,000	25.4%	46,250	9.3%
6/30/14-15	636,000	774,000	700,000	793,800	64,000	10.1%	19,800	2.6%
6/30/15-16								
Total	10,974,336	11,393,927	11,198,858	11,523,656	224,522	2.0%	129,730	1.1%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 5, Exhibit 2, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	0.3%	0.0%	0.1%	0.0%	1.000	1.000
408	99.7%	0.1%	0.3%	0.0%	0.0%	0.981	0.971
396	99.6%	0.1%	0.4%	0.0%	0.0%	0.951	0.929
384	99.5%	0.1%	0.5%	0.0%	0.0%	0.927	0.894
372	99.4%	0.1%	0.6%	0.0%	0.0%	0.905	0.863
360	99.3%	0.1%	0.7%	0.0%	0.0%	0.885	0.835
348	99.2%	0.1%	0.8%	0.0%	0.0%	0.866	0.810
336	99.1%	0.1%	0.9%	0.0%	0.0%	0.849	0.786
324	99.0%	0.1%	1.0%	0.0%	0.0%	0.832	0.763
312	98.9%	0.1%	1.1%	0.0%	0.0%	0.816	0.742
300	98.8%	0.1%	1.2%	0.0%	0.0%	0.800	0.722
288	98.7%	0.1%	1.3%	0.0%	0.0%	0.785	0.702
276	98.6%	0.3%	1.4%	0.1%	0.1%	0.770	0.684
264	98.3%	0.3%	1.7%	0.1%	0.1%	0.782	0.701
252	98.0%	0.5%	2.0%	0.2%	0.1%	0.785	0.706
240	97.5%	0.5%	2.5%	0.2%	0.2%	0.799	0.726
228	97.0%	0.5%	3.0%	0.2%	0.2%	0.802	0.731
216	96.5%	0.5%	3.5%	0.2%	0.2%	0.801	0.729
204	96.0%	0.5%	4.0%	0.3%	0.2%	0.795	0.722
192	95.6%	1.0%	4.4%	0.5%	0.4%	0.788	0.712
180	94.6%	1.1%	5.4%	0.6%	0.5%	0.797	0.725
168	93.5%	1.2%	6.5%	0.7%	0.5%	0.804	0.734
156	92.3%	1.2%	7.7%	0.8%	0.6%	0.805	0.736
144	91.0%	0.9%	9.0%	0.6%	0.5%	0.803	0.732
132	90.1%	0.9%	9.9%	0.6%	0.5%	0.791	0.717
120	89.3%	0.4%	10.7%	0.3%	0.3%	0.779	0.701
108	88.8%	1.6%	11.2%	1.1%	1.0%	0.758	0.673
96	87.2%	2.0%	12.8%	1.5%	1.3%	0.760	0.676
84	85.2%	2.8%	14.8%	2.2%	1.9%	0.765	0.684
72	82.4%	4.0%	17.6%	3.3%	2.9%	0.775	0.697
60	78.4%	3.2%	21.6%	2.7%	2.5%	0.789	0.716
48	75.1%	10.4%	24.9%	9.1%	8.5%	0.787	0.714
36	64.7%	11.5%	35.3%	10.5%	10.0%	0.823	0.761
24	53.2%	25.8%	46.8%	24.3%	23.6%	0.838	0.781
12	27.4%	27.4%	72.6%	26.9%	26.6%	0.868	0.820
Total		100.0%					

NOTES:

(2) = 1 / Section 5, Exhibit 2, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	1,436	2,218		1,381	2,134
6/30/82-83	0	1,225	0.981	0	1,202
6/30/83-84	0	1,137	0.951	0	1,082
6/30/84-85	752	1,920	0.927	697	1,780
6/30/85-86	522	1,044	0.905	473	945
6/30/86-87	994	994	0.885	880	880
6/30/87-88	2,033	2,033	0.866	1,762	1,762
6/30/88-89	2,570	3,570	0.849	2,181	3,030
6/30/89-90	1,683	1,683	0.832	1,400	1,400
6/30/90-91	6,039	6,039	0.816	4,926	4,926
6/30/91-92	6,597	6,597	0.800	5,278	5,278
6/30/92-93	2,621	5,242	0.785	2,057	4,114
6/30/93-94	7,237	8,237	0.770	5,574	6,344
6/30/94-95	3,054	6,107	0.782	2,387	4,774
6/30/95-96	2,440	4,880	0.785	1,915	3,830
6/30/96-97	1,880	3,759	0.799	1,501	3,002
6/30/97-98	5,957	5,957	0.802	4,780	4,780
6/30/98-99	8,516	13,636	0.801	6,818	10,917
6/30/99-00	14,146	15,146	0.795	11,252	12,047
6/30/00-01	17,370	18,370	0.788	13,689	14,477
6/30/01-02	27,677	29,677	0.797	22,065	23,659
6/30/02-03	19,914	20,914	0.804	16,009	16,813
6/30/03-04	11,955	12,955	0.805	9,626	10,432
6/30/04-05	24,375	28,375	0.803	19,564	22,775
6/30/05-06	31,705	34,705	0.791	25,075	27,447
6/30/06-07	25,740	40,740	0.779	20,044	31,725
6/30/07-08	44,229	55,229	0.758	33,525	41,863
6/30/08-09	51,965	82,965	0.760	39,476	63,026
6/30/09-10	59,769	85,169	0.765	45,722	65,153
6/30/10-11	78,019	104,369	0.775	60,428	80,837
6/30/11-12	109,173	124,173	0.789	86,109	97,940
6/30/12-13	115,006	161,306	0.787	90,534	126,982
6/30/13-14	182,849	208,849	0.823	150,478	171,875
6/30/14-15	297,944	391,744	0.838	249,668	328,270
6/30/15-16	483,316	516,316	0.868	419,433	448,071
Total	1,649,481	2,007,279		1,356,707	1,645,570
			(7) Total Discount Factor:	0.823	0.820

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	1,436	2,218
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	718	1,109
(11) Discounted Value at 4%:	1,381	2,134

NOTES:

(2), (3) From Section 5, Exhibit 2, Page 1, Columns 8, 9

(4) From Section 5, Exhibit 2, Page 9, Column 7

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Amherst) - Cluster 4
Medical

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	1,436	2,218		1,356	2,094
6/30/82-83	0	1,225	0.971	0	1,190
6/30/83-84	0	1,137	0.929	0	1,056
6/30/84-85	752	1,920	0.894	672	1,716
6/30/85-86	522	1,044	0.863	451	901
6/30/86-87	994	994	0.835	831	831
6/30/87-88	2,033	2,033	0.810	1,646	1,646
6/30/88-89	2,570	3,570	0.786	2,020	2,806
6/30/89-90	1,683	1,683	0.763	1,285	1,285
6/30/90-91	6,039	6,039	0.742	4,482	4,482
6/30/91-92	6,597	6,597	0.722	4,762	4,762
6/30/92-93	2,621	5,242	0.702	1,841	3,682
6/30/93-94	7,237	8,237	0.684	4,950	5,634
6/30/94-95	3,054	6,107	0.701	2,141	4,281
6/30/95-96	2,440	4,880	0.706	1,724	3,447
6/30/96-97	1,880	3,759	0.726	1,364	2,728
6/30/97-98	5,957	5,957	0.731	4,355	4,355
6/30/98-99	8,516	13,636	0.729	6,207	9,939
6/30/99-00	14,146	15,146	0.722	10,214	10,937
6/30/00-01	17,370	18,370	0.712	12,376	13,088
6/30/01-02	27,677	29,677	0.725	20,069	21,519
6/30/02-03	19,914	20,914	0.734	14,621	15,355
6/30/03-04	11,955	12,955	0.736	8,798	9,534
6/30/04-05	24,375	28,375	0.732	17,851	20,780
6/30/05-06	31,705	34,705	0.717	22,718	24,868
6/30/06-07	25,740	40,740	0.701	18,031	28,538
6/30/07-08	44,229	55,229	0.673	29,775	37,180
6/30/08-09	51,965	82,965	0.676	35,142	56,107
6/30/09-10	59,769	85,169	0.684	40,883	58,256
6/30/10-11	78,019	104,369	0.697	54,390	72,759
6/30/11-12	109,173	124,173	0.716	78,188	88,930
6/30/12-13	115,006	161,306	0.714	82,111	115,168
6/30/13-14	182,849	208,849	0.761	139,232	159,030
6/30/14-15	297,944	391,744	0.781	232,609	305,840
6/30/15-16	483,316	516,316	0.820	396,262	423,318
Total	1,649,481	2,007,279		1,253,354	1,518,043
			(7) Total Discount Factor:	0.760	0.756

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	1,436	2,218
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	718	1,109
(11) Discounted Value at 6%:	1,356	2,094

NOTES:
(2), (3) From Section 5, Exhibit 2, Page 1, Columns 8, 9
(4) From Section 5, Exhibit 2, Page 9, Column 8
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

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		1,329,412			1,329,412	1,329,412	0	0		
6/30/82-83		306,340	306,705		306,340	313,999	0	7,659		
6/30/83-84		1,443,839	1,445,482		1,472,716	1,501,593	28,877	57,754		
6/30/84-85	116,303	852,745	853,873	854,297	869,800	886,855	17,055	34,110	0.748	0.763
6/30/85-86	123,981	2,517,941	2,521,202	2,521,935	2,521,000	2,522,000	3,059	4,059	2.033	2.034
6/30/86-87	139,388	3,380,019	3,384,156	3,384,072	3,384,000	3,447,619	3,981	67,600	2.428	2.473
6/30/87-88	159,499	3,025,877	3,291,900	3,029,260	3,029,000	3,160,580	3,123	134,703	1.899	1.982
6/30/88-89	180,644	2,623,646	2,628,919	2,630,967	2,676,119	2,754,828	52,473	131,182	1.481	1.525
6/30/89-90	142,494	3,243,583	3,253,066	3,256,750	3,308,455	3,405,762	64,872	162,179	2.322	2.390
6/30/90-91	143,694	1,101,823	1,104,797	1,104,775	1,123,859	1,156,914	22,036	55,091	0.782	0.805
6/30/91-92	155,170	1,518,304	1,522,203	1,522,140	1,548,670	1,594,219	30,366	75,915	0.998	1.027
6/30/92-93	163,283	638,167	642,308	642,236	650,930	670,075	12,763	31,908	0.399	0.410
6/30/93-94	177,184	1,876,019	1,898,614	1,897,851	1,898,000	1,899,000	21,981	22,981	1.071	1.072
6/30/94-95	188,391	521,127	527,559	527,523	528,000	528,000	6,873	6,873	0.280	0.280
6/30/95-96	201,751	491,723	500,294	500,306	496,640	501,557	4,917	9,834	0.246	0.249
6/30/96-97	231,872	422,390	427,402	427,973	426,614	430,838	4,224	8,448	0.184	0.186
6/30/97-98	232,237	545,727	570,020	569,386	551,184	556,642	5,457	10,915	0.237	0.240
6/30/98-99	232,075	631,601	647,416	647,484	637,917	644,233	6,316	12,632	0.275	0.278
6/30/99-00	211,819	687,583	714,274	713,142	694,459	701,335	6,876	13,752	0.328	0.331
6/30/00-01	215,099	737,973	761,541	760,785	745,353	752,733	7,380	14,759	0.347	0.350
6/30/01-02	227,797	341,709	356,000	356,405	345,126	348,543	3,417	6,834	0.152	0.153
6/30/02-03	242,008	1,031,943	1,091,395	1,087,590	1,088,000	1,145,550	56,057	113,607	0.450	0.473
6/30/03-04	276,758	962,971	1,022,089	1,019,732	1,020,000	1,022,000	57,029	59,029	0.369	0.369
6/30/04-05	260,378	201,102	215,407	237,235	215,000	237,000	13,898	35,898	0.083	0.091
6/30/05-06	317,741	778,823	841,110	832,835	833,000	841,000	54,177	62,177	0.262	0.265
6/30/06-07	325,922	368,698	402,489	427,990	402,000	428,000	33,302	59,302	0.123	0.131
6/30/07-08	354,130	1,174,827	1,284,054	1,262,207	1,262,000	1,284,000	87,173	109,173	0.356	0.363
6/30/08-09	362,309	481,560	552,933	576,328	553,000	576,000	71,440	94,440	0.153	0.159
6/30/09-10	383,298	478,231	557,005	586,753	557,000	587,000	78,769	108,769	0.145	0.153
6/30/10-11	394,924	661,263	800,807	789,414	789,000	833,040	127,737	171,777	0.200	0.211
6/30/11-12	381,943	790,156	984,372	957,250	957,000	984,000	166,844	193,844	0.251	0.258
6/30/12-13	384,763	405,810	569,213	628,177	569,000	628,000	163,190	222,190	0.148	0.163
6/30/13-14	364,582	375,084	684,313	672,540	673,000	684,000	297,916	308,916	0.185	0.188
6/30/14-15	370,543	100,069	263,048	462,591	263,000	463,000	162,931	362,931	0.071	0.125
6/30/15-16	382,602	101,585	522,323	659,962	522,000	660,000	420,415	558,415	0.136	0.173
Total	8,044,584	36,149,667	37,148,290	35,547,891	38,246,594	39,479,326	2,096,927	3,329,659		
Tot 6/30/84-16	8,044,584	33,070,076	35,396,102	35,547,891	35,138,126	36,334,323	2,068,050	3,264,247	0.437	0.452

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) Sum of Section 6, Exhibit 1, Page 2, Column 3 and Section 6, Exhibit 1, Page 9, Column 8

(4) From Section 6, Exhibit 1, Page 2, Column 8

(5) From Section 6, Exhibit 1, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Accident Year	Payroll (000's)	Paid Loss Excluding Lump Sum	Paid LDF	Adjstmnt for Extra Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim	Average Age
All Prior Yrs		1,242,912							0	0		
6/30/82-83		271,340	1.001	1.000	271,705	35,000	306,705		0	0		
6/30/83-84		1,219,902	1.001	1.000	1,221,545	223,937	1,445,482		0	0		
6/30/84-85	116,303	837,745	1.001	1.000	838,873	15,000	853,873	0.734	0	0		
6/30/85-86	123,981	2,421,446	1.001	1.000	2,424,707	96,495	2,521,202	2.034	0	0		
6/30/86-87	139,388	3,072,101	1.001	1.000	3,076,238	307,918	3,384,156	2.428	0	0		
6/30/87-88	159,499	2,621,395	1.001	1.100	2,887,418	404,482	3,291,900	2.064	0	0		
6/30/88-89	180,644	2,245,396	1.002	1.000	2,250,669	378,250	2,628,919	1.455	0	0		
6/30/89-90	142,494	2,830,333	1.003	1.000	2,839,816	413,250	3,253,066	2.283	0	0		
6/30/90-91	143,694	887,647	1.003	1.000	890,621	214,176	1,104,797	0.769	0	0		
6/30/91-92	155,170	1,163,553	1.003	1.000	1,167,452	354,751	1,522,203	0.981	0	0		
6/30/92-93	163,283	494,916	1.008	1.000	499,057	143,251	642,308	0.393	0	0		
6/30/93-94	177,184	1,464,767	1.015	1.000	1,487,362	411,252	1,898,614	1.072	1	1	22,595	73
6/30/94-95	188,391	273,127	1.024	1.000	279,559	248,000	527,559	0.280	0	0		
6/30/95-96	201,751	253,697	1.034	1.000	262,268	238,026	500,294	0.248	0	0		
6/30/96-97	231,872	113,590	1.044	1.000	118,602	308,800	427,402	0.184	0	0		
6/30/97-98	232,237	445,227	1.055	1.000	469,520	100,500	570,020	0.245	0	0		
6/30/98-99	232,075	289,851	1.055	1.000	305,666	341,750	647,416	0.279	0	0		
6/30/99-00	211,819	489,166	1.055	1.000	515,857	198,417	714,274	0.337	0	0		
6/30/00-01	215,099	431,926	1.055	1.000	455,494	306,047	761,541	0.354	0	0		
6/30/01-02	227,797	246,210	1.058	1.000	260,501	95,499	356,000	0.156	0	0		
6/30/02-03	242,008	930,527	1.064	1.000	989,979	101,416	1,091,395	0.451	1	1	59,452	54
6/30/03-04	276,758	635,971	1.090	1.000	693,181	328,908	1,022,089	0.369	0	0		
6/30/04-05	260,378	134,102	1.101	1.000	147,627	67,780	215,407	0.083	0	0		
6/30/05-06	317,741	498,323	1.115	1.000	555,793	285,317	841,110	0.265	0	0		
6/30/06-07	325,922	238,698	1.128	1.000	269,359	133,130	402,489	0.123	0	0		
6/30/07-08	354,130	614,827	1.152	1.000	707,995	576,059	1,284,054	0.363	1	0		
6/30/08-09	362,309	348,059	1.189	1.000	413,902	139,031	552,933	0.153	1	0		
6/30/09-10	383,298	349,231	1.205	1.000	420,693	136,311	557,005	0.145	0	1	71,463	57
6/30/10-11	394,924	548,763	1.229	1.000	674,276	126,531	800,807	0.203	3	2	62,757	58
6/30/11-12	381,943	584,656	1.252	1.000	731,778	252,595	984,372	0.258	5	2	73,561	52
6/30/12-13	384,763	285,810	1.398	1.000	399,538	169,674	569,213	0.148	4	2	56,864	53
6/30/13-14	364,582	375,084	1.621	1.000	607,897	76,415	684,313	0.188	13	3	77,605	55
6/30/14-15	370,543	100,069	2.129	1.000	213,048	50,000	263,048	0.071	23	2	56,489	51
6/30/15-16	382,602	101,585	4.255	1.000	432,238	90,084	522,323	0.137		27	12,246	50
Total	8,044,584	29,061,949			29,780,237	7,368,053	37,148,290		52	41		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3), (4) From Section 6, Exhibit 1, Page 7

(5) Based on information from the MA WCRIB

(6) = (3) x (4) x (5)

(7) From Section 6, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss Excluding Lump Sum	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	116,303	0.992	837,745	1.001	839,297	15,000	854,297	0.735	0.722
6/30/85-86	123,981	2.395	2,421,446	1.001	2,425,440	96,495	2,521,935	2.034	1.956
6/30/86-87	139,388	2.162	3,072,101	1.001	3,076,154	307,918	3,384,072	2.428	2.207
6/30/87-88	159,499	1.577	2,621,395	1.001	2,624,778	404,482	3,029,260	1.899	1.646
6/30/88-89	180,644	1.730	2,245,396	1.002	2,252,717	378,250	2,630,967	1.456	1.247
6/30/89-90	142,494	2.767	2,830,333	1.003	2,843,500	413,250	3,256,750	2.286	1.996
6/30/90-91	143,694	0.615	887,647	1.003	890,599	214,176	1,104,775	0.769	0.620
6/30/91-92	155,170	0.740	1,163,553	1.003	1,167,389	354,751	1,522,140	0.981	0.752
6/30/92-93	163,283	0.300	494,916	1.008	498,985	143,251	642,236	0.393	0.306
6/30/93-94	177,184	0.811	1,464,767	1.015	1,486,599	411,252	1,897,851	1.071	0.839
6/30/94-95	188,391	0.148	273,127	1.024	279,523	248,000	527,523	0.280	0.148
6/30/95-96	201,751	0.130	253,697	1.034	262,280	238,026	500,306	0.248	0.130
6/30/96-97	231,872	0.057	113,590	1.044	119,173	308,800	427,973	0.185	0.051
6/30/97-98	232,237	0.197	445,227	1.055	468,886	100,500	569,386	0.245	0.202
6/30/98-99	232,075	0.132	289,851	1.055	305,734	341,750	647,484	0.279	0.132
6/30/99-00	211,819	0.233	489,166	1.055	514,725	198,417	713,142	0.337	0.243
6/30/00-01	215,099	0.205	431,926	1.055	454,738	306,047	760,785	0.354	0.211
6/30/01-02	227,797	0.118	246,210	1.058	260,906	95,499	356,405	0.156	0.115
6/30/02-03	242,008	0.383	930,527	1.064	986,174	101,416	1,087,590	0.449	0.407
6/30/03-04	276,758	0.240	635,971	1.090	690,824	328,908	1,019,732	0.368	0.250
6/30/04-05	260,378	0.148	134,102	1.101	169,456	67,780	237,235	0.091	0.065
6/30/05-06	317,741	0.150	498,323	1.115	547,518	285,317	832,835	0.262	0.172
6/30/06-07	325,922	0.151	238,698	1.128	294,860	133,130	427,990	0.131	0.090
6/30/07-08	354,130	0.153	614,827	1.152	686,148	576,059	1,262,207	0.356	0.194
6/30/08-09	362,309	0.155	348,059	1.189	437,296	139,031	576,328	0.159	0.121
6/30/09-10	383,298	0.155	349,231	1.205	450,442	136,311	586,753	0.153	0.118
6/30/10-11	394,924	0.155	548,763	1.229	662,884	126,531	789,414	0.200	0.168
6/30/11-12	381,943	0.156	584,656	1.252	704,655	252,595	957,250	0.251	0.184
6/30/12-13	384,763	0.158	285,810	1.398	458,503	169,674	628,177	0.163	0.119
6/30/13-14	364,582	0.158	375,084	1.621	596,125	76,415	672,540	0.184	0.164
6/30/14-15	370,543	0.159	100,069	2.129	412,591	50,000	462,591	0.125	0.111
6/30/15-16	382,602	0.160	101,585	4.255	569,877	90,084	659,962	0.172	0.149
Total	8,044,584		26,327,795		28,438,775	7,109,116	35,547,891		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 6, Exhibit 1, Page 4, Column 11

(4) From Section 6, Exhibit 1, Page 2, Column 3

(5) From Section 6, Exhibit 1, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) From Section 6, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Exp Ult Loss Excluding Lump Sum	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.992	0.992
6/30/85-86									2.395	2.395
6/30/86-87									2.162	2.162
6/30/87-88									1.577	1.577
6/30/88-89									1.730	1.730
6/30/89-90									2.767	2.767
6/30/90-91	143,694	890,621	0.620	0.969	0.600	1.000	0.600	0.165	0.617	0.615
6/30/91-92	155,170	1,167,452	0.752	1.063	0.800	1.000	0.800	0.151	0.747	0.740
6/30/92-93	163,283	499,057	0.306	1.239	0.379	1.000	0.379	0.129	0.304	0.300
6/30/93-94	177,184	1,487,362	0.839	1.223	1.027	1.000	1.027	0.131	0.809	0.811
6/30/94-95	188,391	279,559	0.148	1.212	0.180	1.000	0.180	0.132	0.151	0.148
6/30/95-96	201,751	262,268	0.130	1.202	0.156	1.000	0.156	0.133	0.133	0.130
6/30/96-97	231,872	118,602	0.051	1.190	0.061	1.000	0.061	0.134	0.059	0.057
6/30/97-98	232,237	469,520	0.202	1.175	0.238	1.000	0.238	0.136	0.200	0.197
6/30/98-99	232,075	305,666	0.132	1.160	0.153	1.000	0.153	0.138	0.135	0.132
6/30/99-00	211,819	515,857	0.244	1.141	0.278	1.000	0.278	0.140	0.237	0.233
6/30/00-01	215,099	455,494	0.212	1.112	0.235	1.000	0.235	0.144	0.210	0.205
6/30/01-02	227,797	260,501	0.114	1.090	0.125	1.000	0.125	0.147	0.122	0.118
6/30/02-03	242,008	989,979	0.409	1.086	0.444	1.000	0.444	0.147	0.365	0.383
6/30/03-04	276,758	693,181	0.250	1.086	0.272	1.000	0.272	0.147	0.241	0.240
6/30/04-05	260,378	147,627	0.057	1.080	0.061	1.000	0.061	0.148	0.177	0.148
6/30/05-06	317,741	555,793	0.175	1.069	0.187	1.000	0.187	0.150	0.179	0.150
6/30/06-07	325,922	269,359	0.083	1.057	0.087	1.000	0.087	0.151	0.181	0.151
6/30/07-08	354,130	707,995	0.200	1.045	0.209	1.000	0.209	0.153	0.183	0.153
6/30/08-09	362,309	413,902	0.114	1.033	0.118	1.000	0.118	0.155	0.185	0.155
6/30/09-10	383,298	420,693	0.110	1.029	0.113	1.000	0.113	0.155	0.186	0.155
6/30/10-11	394,924	674,276	0.171	1.031	0.176	1.000	0.176	0.155	0.185	0.155
6/30/11-12	381,943	731,778	0.192	1.024	0.196	1.000	0.196	0.156	0.187	0.156
6/30/12-13	384,763	399,538	0.104	1.015	0.105	1.000	0.105	0.158	0.188	0.158
6/30/13-14	364,582	607,897	0.167	1.011	0.169	1.000	0.169	0.158	0.189	0.158
6/30/14-15	370,543	213,048	0.057	1.006	0.058	1.000	0.058	0.159	0.190	0.159
6/30/15-16	382,602	432,238	0.113	1.000	0.113	1.000	0.113	0.160		0.160
Total	7,182,274	13,969,264								

Trend Last 4 (ex 15-16):	-27.3%	Avg 3 (ex 15-16):	0.111
Trend Last 8 (ex 15-16):	-8.3%	Avg 5 (ex 15-16):	0.141
Trend Last 12 (ex 15-16):	-2.9%	Avg 10 (ex 15-16):	0.142
Prior Selected Trend:	0.0%	Prior Sel Avg:	0.190
Selected Trend:	0.0%	Sel. Loss Cost:	0.160

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 6, Exhibit 1, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCRIB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.860	
(2)	Credibility	10%	
(3)	Average Pmt Trend Statewide	0.960	
(4)	Credibility Weighted Trend	0.950	
		(Low)	(High)
(5)	Selected Range	0.941	0.970
(6)	Incremental Paid for 2016	0	0
(7)	Estimated Reserve	0	0
(8)	Paid to Date (82 & Prior)	1,242,912	1,242,912
(9)	Est Ult Paid for 1982 & Prior	1,242,912	1,242,912

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	0	0
(11)	Projected Number of Years	1	1
(12)	Estimated Reserve	0	0
(13)	Paid to Date (82 & Prior)	1,242,912	1,242,912
(14)	Est Ult Paid for 1982 & Prior	1,242,912	1,242,912
(14a)	Paid Counts During Fiscal Year	0	0
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	1,242,912	1,242,912
(16)	Lump Sum Ultimates	86,500	86,500
(17)	Ult Loss Including Lump Sums	**1,329,412**	**1,329,412**
(18)	Implied Tail	1.000	1.000
(19)	Ult Loss Inc Lump Sums @ 6/15	1,329,412	1,329,412

NOTES:

(1) From Section 6, Exhibit 1, Page 6
(2) = (Average of Section 6, Exhibit 1, Page 6, Column 3 / 3,000,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 6, Exhibit 1, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 6, Exhibit 1, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) From Section 6, Exhibit 1, Page 9, Column 13
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	92,878	11.439			
1993	2	83,290	11.330	0.897		
1994	3	82,744	11.324	0.993		
1995	4	76,872	11.250	0.929		
1996	5	73,496	11.205	0.956		
1997	6	42,425	10.655	0.577		
1998	7	43,683	10.685	1.030		
1999	8	44,262	10.698	1.013		
2000	9	49,469	10.809	1.118	n =	12
2001	10	47,733	10.773	0.965	S(x) =	23,970
2002	11	28,782	10.268	0.603	S(x-sq) =	47,880,218
2003	12	12,543	9.437	0.436	S(xy) =	259,401
2004	13	0			S(y) =	130
2005	14	0			D =	1,716
2006	15	0			slope =	-0.137
2007	16	0			Avg Trend =	0.863
2008	17	0				
2009	18	0				
2010	19	0				
2011	20	0				
2012	21	0				
2013	22	0				
2014	23	0				
2015	24	0				
2016	25	0				
					Selected Trend:	**0.860**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2003: 0.436 = 12543 / 28782

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Medical Center) - Cluster 4
INDEMNITY
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	20,333	51,116	80,072	103,773	130,398	141,779	176,965	199,729	221,812	232,715	258,415	258,415	263,521	253,827	259,034	264,240	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340	271,340
June-84	57,600	144,806	226,837	293,981	343,659	432,433	537,475	627,523	702,624	756,969	803,646	836,058	882,478	912,918	944,937	977,381	1,013,642	1,052,979	1,095,405	1,138,804	1,183,544	1,219,902	1,219,902	1,219,902	1,219,902	1,219,902	1,219,902	1,219,902	1,219,902	1,219,902	1,219,902	1,219,902	1,219,902	
June-85	63,759	160,290	251,092	325,415	403,737	509,752	570,921	613,784	663,935	693,110	702,075	726,654	753,001	779,914	809,196	840,064	837,165	837,745	837,745	837,745	837,745	837,745	837,745	837,745	837,745	837,745	837,745	837,745	837,745	837,745	837,745	837,745		
June-86	154,113	387,438	606,915	783,976	961,962	1,132,149	1,274,833	1,393,763	1,502,381	1,636,065	1,751,114	1,854,218	1,962,657	2,114,127	2,191,041	2,271,411	2,297,923	2,325,043	2,352,163	2,379,342	2,408,086	2,421,446	2,421,446	2,421,446	2,421,446	2,421,446	2,421,446	2,421,446	2,421,446	2,421,446	2,421,446			
June-87	166,736	419,172	641,668	854,284	1,072,274	1,249,198	1,388,337	1,542,716	1,758,390	1,875,672	1,986,394	2,093,920	2,135,258	2,199,362	2,260,862	2,284,043	2,302,892	2,321,741	2,340,539	2,359,336	2,708,676	2,762,266	2,818,196	2,874,830	2,931,224	2,989,542	3,049,764	3,072,101	3,072,101	3,072,101				
June-88	174,358	435,032	660,480	866,856	1,054,956	1,195,356	1,302,385	1,395,569	1,488,786	1,568,531	1,652,757	1,723,638	1,803,152	1,884,392	1,957,379	2,019,197	2,082,510	2,146,026	2,212,010	2,280,936	2,353,096	2,428,406	2,506,612	2,583,636	2,620,881	2,621,395	2,621,395	2,621,395	2,621,395					
June-89	244,759	583,650	955,229	1,207,778	1,405,394	1,580,598	1,710,863	1,867,443	1,974,910	2,078,269	2,163,384	2,208,386	2,233,112	2,239,652	2,239,652	2,245,396	2,245,396	2,245,396	2,245,396	2,245,396	2,245,396	2,245,396	2,245,396	2,245,396	2,245,396	2,245,396	2,245,396	2,245,396						
June-90	351,648	811,854	1,353,747	1,739,540	2,053,362	2,300,598	2,503,649	2,605,537	2,726,706	2,654,988	2,740,214	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333	2,830,333							
June-91	156,076	357,539	517,757	630,387	728,239	832,901	871,395	947,686	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647	887,647							
June-92	261,100	669,245	900,334	1,044,793	1,152,142	1,241,017	1,237,974	1,112,699	1,137,295	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553	1,163,553									
June-93	206,631	396,390	480,534	554,071	597,393	614,181	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916									
June-94	247,518	643,612	941,958	1,088,319	1,200,112	1,123,946	1,143,130	1,179,142	1,181,321	1,181,499	1,181,499	1,246,051	1,265,620	1,286,180	1,304,675	1,323,640	1,345,114	1,364,136	1,383,838	1,403,763	1,423,826	1,444,130	1,464,767											
June-95	205,179	254,027	345,287	415,297	285,940	285,940	285,940	286,111	286,111	286,111	286,111	273,127	273,127	273,127	273,127	273,127	273,127	273,127	273,127	273,127	273,127	273,127												
June-96	155,417	406,013	576,300	245,663	246,118	246,118	246,697	246,697	253,697	253,697	253,697	253,697	253,697	253,697	253,697	253,697	253,697	253,697	253,697	253,697	253,697													
June-97	97,433	256,318	57,502	85,876	119,079	124,761	113,590	113,590	113,590	113,590	113,590	113,590	113,590	113,590	113,590	113,590	113,590	113,590	113,590	113,590														
June-98	240,727	143,983	232,600	419,169	444,399	445,227	445,227	445,227	445,227	445,227	445,227	445,227	445,227	445,227	445,227	445,227	445,227	445,227	445,227															
June-99	58,149	198,506	223,119	274,795	288,604	286,087	287,457	287,658	287,796	287,796	287,796	287,796	289,251	289,251	289,851	289,851	289,851	289,851																
June-00	139,725	319,021	396,283	425,910	459,317	480,109	487,559	487,559	487,559	487,559	487,559	487,559	489,166	489,166	489,166	489,166	489,166																	
June-01	103,272	231,200	298,053	357,230	397,007	413,694	429,139	431,926	431,926	431,926	431,926	431,926	431,926	431,926	431,926	431,926																		
June-02	111,843	169,158	211,386	237,447	244,070	244,070	244,070	246,210	246,210	246,210	246,210	246,210	246,210	246,210	246,210																			
June-03	103,346	214,476	266,732	299,619	422,566	501,970	559,245	599,400	671,238	720,943	771,432	822,132	873,438	930,527																				
June-04	158,939	366,873	493,674	593,313	624,409	635,971	635,971	635,971	635,971	635,971	635,971	635,971	635,971																					
June-05	66,383	103,442	111,589	111,589	111,589	111,589	111,589	125,745	134,102	134,102	134,102	134,102																						
June-06	148,922	299,710	423,237	498,323	498,323	498,323	498,323	498,323	498,323	498,323	498,323																							
June-07	129,667	222,028	238,698	238,698	238,698	238,698	238,698	238,698	238,698	238,698																								
June-08	199,585	456,548	645,562	768,096	799,003	692,172	609,450	614,827	614,827																									
June-09	126,394	222,250	303,425	345,595	337,031	345,960	348,059	348,059																										
June-10	173,596	323,966	367,986	373,360	374,510	374,510	349,231																											
June-11	204,108	361,900	447,595	503,639	528,963	548,763																												
June-12	169,232	317,366	416,322	526,284	584,656																													
June-13	159,666	227,306	265,791	285,810																														
June-14	86,121	261,428	375,084																															
June-15	49,642	100,069																																
June-16	101,585																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.514	1.566	1.296	1.257	1.087	1.248	1.129	1.111	1.049	1.110	1.000	1.020	0.963	1.021	1.020	1.027	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-84	2.514	1.566	1.296	1.169	1.258	1.243	1.168	1.120	1.077	1.062	1.040	1.056	1.034	1.035	1.034	1.037	1.039	1.040	1.040	1.039	1.031	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
June-85	2.514	1.566	1.296	1.241	1.263	1.120	1.075	1.082	1.044	1.013	1.035	1.036	1.036	1.038	1.038	0.997	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
June-86	2.514	1.566	1.292	1.227	1.177	1.126	1.093	1.078	1.089	1.070	1.059	1.058	1.077	1.036	1.037	1.012	1.012	1.012	1.012	1.012	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
June-87	2.514	1.531	1.331	1.255	1.165	1.111	1.111	1.140	1.067	1.059	1.054	1.020	1.030	1.028	1.010	1.008	1.008	1.008	1.008	1.008	1.148	1.020	1.020	1.020	1.020	1.020	1.020	1.007	1.000	1.000				
June-88	2.495	1.518	1.312	1.217	1.133	1.090	1.072	1.067	1.054	1.054	1.043	1.046	1.045	1.039	1.032	1.031	1.030	1.031	1.031	1.032	1.032	1.032	1.031	1.014	1.000	1.000	1.000	1.000						
June-89	2.385	1.637	1.264	1.164	1.125	1.082	1.092	1.058	1.052	1.041	1.021	1.011	1.003	1.000	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
June-90	2.309	1.667	1.285	1.180	1.120	1.088	1.041	1.047	0.974	1.032	1.033	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
June-91	2.291	1.448	1.218	1.155	1.144	1.046	1.088	0.937	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
June-92	2.563	1.345	1.160	1.103	1.077	0.998	0.899	1.022	1.023	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-93	1.918	1.212	1.153	1.078	1.028	0.806	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
June-94	2.600	1.464	1.155	1.103	0.937	1.017	1.032	1.002	1.000	1.000	1.055	1.016	1.016	1.014	1.015	1.016	1.014	1.014	1.014	1.014	1.014	1.014												
June-95	1.238	1.359	1.203	0.689	1.000	1.000	1.001	1.000	1.000	1.000	0.955	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
June-96	2.612	1.419	0.426	1.002	1.000	1.002	1.000	1.028	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
June-97	2.631	0.224	1.493	1.387	1.048	0.910	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000															
June-98	0.598	1.615	1.802	1.060	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																
June-99	3.414	1.124	1.232	1.050	0.991	1.005	1.001	1.000	1.000	1.000	1.000	1.005	1.000	1.002	1.000	1.000	1.000																	
June-00	2.283	1.242	1.075	1.078	1.045	1.016	1.000	1.000	1.000	1.000	1.000	1.003	1.000	1.000	1.000	1.000																		
June-01	2.239	1.289	1.199	1.111	1.042	1.037	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																			
June-02	1.512	1.250	1.123	1.028	1.000	1.000	1.000	1.009	1.000	1.000	1.000	1.000	1.000	1.000																				
June-03	2.075	1.244	1.123	1.410	1.188	1.114	1.072	1.120	1.074	1.070	1.066	1.062	1.065																					
June-04	2.308	1.346	1.202	1.052	1.019	1.000	1.000	1.000	1.000	1.000	1.000	1.000																						
June-05	1.558	1.079	1.000	1.000	1.000	1.000	1.127	1.066	1.000	1.000	1.000																							
June-06	2.013	1.412	1.177	1.000	1.000	1.000	1.000	1.000	1.000	1.000																								
June-07	1.712	1.075	1.000	1.000	1.000	1.000	1.000	1.000	1.000																									
June-08	2.287	1.414	1.190	1.040	0.866	0.880	1.009	1.000																										
June-09	1.758	1.365	1.139	0.975	1.026	1.006	1.000																											
June-10	1.866	1.136	1.015	1.003	1.000	0.933																												
June-11	1.773	1.237	1.125	1.050	1.037																													
June-12	1.875	1.312	1.264	1.111																														
June-13	1.424	1.169	1.075																															
June-14	3.036	1.435																																
June-15	2.016																																	

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.162	1.339	1.191	1.107	1.061	1.031	1.038	1.034	1.020	1.021	1.016	1.015	1.013	1.011	1.010	1.007	1.006	1.007	1.007	1.018	1.008	1.006	1.005	1.003	1.002	1.003	1.001	1.000	1.000	1.000	1.000	1.000		
Latest 5	2.025	1.258	1.124	1.036	0.986	0.964	1.027	1.013	1.015	1.014	1.013	1.013	1.013	1.000	1.000	1.000	1.000	1.003	1.003	1.003	1.003	1.003	1.000	1.003	1.004	1.004	1.001	1.000	1.000					
Latest 3	2.158	1.305	1.155	1.055	1.021	0.940	1.003	1.000	1.000	1.000	1.022	1.021	1.022	1.000	1.000	1.000	1.000	1.000	1.000	1.005	1.005	1.005	1.000	1.000	1.000	1.000	1.002	1.000	1.000	1.000	1.000			
Volume Wtd																																		
All Yrs	2.107	1.374	1.184	1.117	1.074	1.045	1.044	1.044	1.027	1.031	1.029	1.020	1.021	1.015	1.013	1.009	1.009	1.009	1.010	1.027	1.010	1.008	1.008	1.005	1.004	1.004	1.002	1.000	1.000	1.000	1.000	1.000	1.000	
Latest 5	1.896	1.255	1.130	1.043	0.966	0.951	1.011	1.004	1.023	1.023	1.023	1.020	1.025	1.000	1.000	1.000	1.000	1.008	1.008	1.006	1.005	1.003	1.000	1.004	1.005	1.005	1.002	1.000	1.000					
Latest 3	1.993	1.311	1.165	1.060	1.023	0.925	1.004	1.000	1.000	1.000	1.033	1.030	1.037	1.000	1.000	1.000	1.000	1.000	1.000	1.010	1.009	1.007	1.000	1.000	1.000	1.000	1.003	1.000	1.000	1.000	1.000			

Dev Factor Selection																																		
Industry 1	2.869	1.531	1.210	1.100	1.034	1.024	1.017	1.007	1.008	1.005	1.005	1.013	1.002	1.003	1.004	1.004	1.003	1.003																
Industry 2		1.813	1.291	1.118	1.066	1.025	1.021	1.011	1.007	1.003	1.008	1.005	1.005	1.003	1.003	1.004	1.006	1.002	1.004	1.004														
Prior	*1.977*	*1.286*	*1.160*	*1.117*	*1.019*	*1.020*	*1.013*	*1.033*	*1.020*	*1.020*	*1.013*	*1.010*	*1.000*	*1.006*	*1.003*	*1.000*	*1.003*	*1.000*	*1.010*	*1.010*	*1.010*	*1.008*	*1.007*	*1.005*	*1.000*	*1.000*	*1.001*	*1.001*	*1.000*	*1.000*	*1.000*	*1.000*	*1.004*	
Selected	1.999	1.314	1.159	1.117	1.019	1.020	1.013	1.033	1.020	1.012	1.013	1.010	1.025	1.006	1.003	1.000	1.000	1.000	1.010	1.010	1.010	1.008	1.007	1.005	1.000	1.000	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.001
FacToUlt	4.255	2.129	1.621	1.398	1.252	1.229	1.205	1.189	1.152	1.128	1.115	1.101	1.090	1.064	1.058	1.055	1.055	1.055	1.055	1.044	1.034	1.024	1.015	1.008	1.003	1.003	1.003	1.002	1.001	1.001	1.001	1.001	1.001	1.001
Percent of Ult	23.5%	47.0%	61.7%	71.5%	79.9%	81.4%	83.0%	84.1%	86.8%	88.6%	89.7%	90.8%	91.7%	94.0%	94.5%	94.8%	94.8%	94.8%	94.8%	95.8%	96.7%	97.7%	98.5%	99.2%	99.7%	99.7%	99.7%	99.8%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	1,329,412	1,329,412	1,329,412	1,329,412	0	0.0%	0	0.0%
6/30/82-83	306,340	313,999	306,340	313,999	0	0.0%	0	0.0%
6/30/83-84	1,472,716	1,501,593	1,472,716	1,501,593	0	0.0%	0	0.0%
6/30/84-85	869,800	886,855	869,800	886,855	0	0.0%	0	0.0%
6/30/85-86	2,528,000	2,530,000	2,521,000	2,522,000	(7,000)	-0.3%	(8,000)	-0.3%
6/30/86-87	3,393,000	3,447,619	3,384,000	3,447,619	(9,000)	-0.3%	0	0.0%
6/30/87-88	3,039,000	3,170,917	3,029,000	3,160,580	(10,000)	-0.3%	(10,337)	-0.3%
6/30/88-89	2,676,119	2,754,828	2,676,119	2,754,828	0	0.0%	0	0.0%
6/30/89-90	3,308,455	3,405,762	3,308,455	3,405,762	0	0.0%	0	0.0%
6/30/90-91	1,123,859	1,156,914	1,123,859	1,156,914	0	0.0%	0	0.0%
6/30/91-92	1,548,670	1,594,219	1,548,670	1,594,219	0	0.0%	0	0.0%
6/30/92-93	650,930	670,075	650,930	670,075	0	0.0%	0	0.0%
6/30/93-94	1,892,000	1,894,000	1,898,000	1,899,000	6,000	0.3%	5,000	0.3%
6/30/94-95	531,000	531,000	528,000	528,000	(3,000)	-0.6%	(3,000)	-0.6%
6/30/95-96	501,557	511,392	496,640	501,557	(4,917)	-1.0%	(9,834)	-1.9%
6/30/96-97	430,838	439,286	426,614	430,838	(4,224)	-1.0%	(8,448)	-1.9%
6/30/97-98	556,642	567,556	551,184	556,642	(5,457)	-1.0%	(10,915)	-1.9%
6/30/98-99	644,233	656,865	637,917	644,233	(6,316)	-1.0%	(12,632)	-1.9%
6/30/99-00	701,335	715,087	694,459	701,335	(6,876)	-1.0%	(13,752)	-1.9%
6/30/00-01	752,733	767,492	745,353	752,733	(7,380)	-1.0%	(14,759)	-1.9%
6/30/01-02	348,543	355,377	345,126	348,543	(3,417)	-1.0%	(6,834)	-1.9%
6/30/02-03	1,034,000	1,037,000	1,088,000	1,145,550	54,000	5.2%	108,550	10.5%
6/30/03-04	1,017,000	1,018,000	1,020,000	1,022,000	3,000	0.3%	4,000	0.4%
6/30/04-05	215,000	242,000	215,000	237,000	0	0.0%	(5,000)	-2.1%
6/30/05-06	844,000	845,000	833,000	841,000	(11,000)	-1.3%	(4,000)	-0.5%
6/30/06-07	406,000	445,000	402,000	428,000	(4,000)	-1.0%	(17,000)	-3.8%
6/30/07-08	1,292,000	1,303,000	1,262,000	1,284,000	(30,000)	-2.3%	(19,000)	-1.5%
6/30/08-09	556,000	597,000	553,000	576,000	(3,000)	-0.5%	(21,000)	-3.5%
6/30/09-10	597,000	643,000	557,000	587,000	(40,000)	-6.7%	(56,000)	-8.7%
6/30/10-11	801,000	847,600	789,000	833,040	(12,000)	-1.5%	(14,560)	-1.7%
6/30/11-12	1,018,000	1,063,920	957,000	984,000	(61,000)	-6.0%	(79,920)	-7.5%
6/30/12-13	562,000	674,000	569,000	628,000	7,000	1.2%	(46,000)	-6.8%
6/30/13-14	665,000	742,000	673,000	684,000	8,000	1.2%	(58,000)	-7.8%
6/30/14-15	303,000	681,000	263,000	463,000	(40,000)	-13.2%	(218,000)	-32.0%
6/30/15-16								
Total	37,915,181	39,338,767	37,724,594	38,819,326	(190,587)	-0.5%	(519,441)	-1.3%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 6, Exhibit 1, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Calculation of Ultimate Lump Sum Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Accident Year	Paid Loss Excluding Lump Sum	Implied Cumulative LDF	Ult Loss Excluding Lump Sum	Selected Incr Lump Sum % Outstdg	Cumulative Lump Sum % Outstdg	Total Lump Sum Outstdg	Paid Lump Sum to Date	Est Ult Lump Sum - Incr Method	Ultimate Lump Sum Percentage	Lump Sum LDF	Est Ult Lump Sum - Paid Method	Selected Est Ultimate Lump Sums	Prior Est Ultimate Lump Sums
All Prior Yrs	1,242,912	1.000	1,242,912	0.0%	0.0%	0	86,500	86,500	7.0%	1.000	86,500	86,500	86,500
6/30/82-83	271,340	1.001	271,705	0.0%	0.0%	0	35,000	35,000	12.9%	1.000	35,000	35,000	35,000
6/30/83-84	1,219,902	1.001	1,221,545	0.0%	0.0%	0	223,937	223,937	18.3%	1.000	223,937	223,937	223,937
6/30/84-85	837,745	1.001	838,873	0.0%	0.0%	0	15,000	15,000	1.8%	1.000	15,000	15,000	15,000
6/30/85-86	2,421,446	1.001	2,424,707	0.0%	0.0%	0	96,495	96,495	4.0%	1.000	96,495	96,495	96,495
6/30/86-87	3,072,101	1.001	3,076,238	0.0%	0.0%	0	307,918	307,918	10.0%	1.000	307,918	307,918	307,918
6/30/87-88	2,621,395	1.101	2,887,418	0.0%	0.0%	0	404,482	404,482	14.0%	1.000	404,482	404,482	404,482
6/30/88-89	2,245,396	1.002	2,250,669	0.0%	0.0%	0	378,250	378,250	16.8%	1.000	378,250	378,250	378,250
6/30/89-90	2,830,333	1.003	2,839,816	0.0%	0.0%	0	413,250	413,250	14.6%	1.000	413,250	413,250	413,250
6/30/90-91	887,647	1.003	890,621	0.0%	0.0%	0	214,176	214,176	24.0%	1.000	214,176	214,176	214,176
6/30/91-92	1,163,553	1.003	1,167,452	0.0%	0.0%	0	354,751	354,751	30.4%	1.000	354,751	354,751	354,751
6/30/92-93	494,916	1.008	499,057	0.0%	0.0%	0	143,251	143,251	28.7%	1.000	143,251	143,251	143,251
6/30/93-94	1,464,767	1.015	1,487,362	0.0%	0.0%	0	411,252	411,252	27.6%	1.000	411,252	411,252	411,252
6/30/94-95	273,127	1.024	279,559	0.0%	0.0%	0	248,000	248,000	88.7%	1.000	248,000	248,000	248,000
6/30/95-96	253,697	1.034	262,268	0.0%	0.0%	0	238,026	238,026	90.8%	1.000	238,026	238,026	238,026
6/30/96-97	113,590	1.044	118,602	0.0%	0.0%	0	308,800	308,800	260.4%	1.000	308,800	308,800	308,800
6/30/97-98	445,227	1.055	469,520	0.0%	0.0%	0	100,500	100,500	21.4%	1.000	100,500	100,500	100,500
6/30/98-99	289,851	1.055	305,666	0.0%	0.0%	0	341,750	341,750	111.8%	1.000	341,750	341,750	341,750
6/30/99-00	489,166	1.055	515,857	0.0%	0.0%	0	198,417	198,417	38.5%	1.000	198,417	198,417	198,417
6/30/00-01	431,926	1.055	455,494	0.0%	0.0%	0	306,047	306,047	67.2%	1.000	306,047	306,047	306,047
6/30/01-02	246,210	1.058	260,501	0.0%	0.0%	0	95,499	95,499	36.7%	1.000	95,499	95,499	95,499
6/30/02-03	930,527	1.064	989,979	0.0%	0.0%	0	101,416	101,416	10.2%	1.000	101,416	101,416	102,291
6/30/03-04	635,971	1.090	693,181	0.1%	0.1%	546	327,000	327,546	47.3%	1.010	330,270	328,908	330,781
6/30/04-05	134,102	1.101	147,627	0.1%	0.1%	213	67,000	67,213	45.5%	1.020	68,347	67,780	68,165
6/30/05-06	498,323	1.115	555,793	0.1%	0.2%	1,135	280,500	281,635	50.7%	1.030	288,999	285,317	287,209
6/30/06-07	238,698	1.128	269,359	0.2%	0.4%	982	130,000	130,982	48.6%	1.041	135,279	133,130	133,998
6/30/07-08	614,827	1.152	707,995	0.1%	0.5%	3,553	560,000	563,553	79.6%	1.051	588,566	576,059	579,716
6/30/08-09	348,059	1.189	413,902	0.2%	0.7%	2,848	133,501	136,349	32.9%	1.062	141,714	139,031	140,939
6/30/09-10	349,231	1.205	420,693	0.6%	1.3%	5,318	129,000	134,318	31.9%	1.072	138,305	136,311	141,612
6/30/10-11	548,763	1.229	674,276	0.9%	2.2%	14,759	112,500	127,259	18.9%	1.118	125,802	126,531	145,248
6/30/11-12	584,656	1.252	731,778	3.3%	5.5%	40,013	205,500	245,513	33.6%	1.264	259,676	252,595	294,124
6/30/12-13	285,810	1.398	399,538	5.0%	10.5%	42,002	120,000	162,002	40.5%	1.478	177,347	169,674	134,894
6/30/13-14	375,084	1.621	607,897	14.6%	25.1%	152,830	0	152,830	25.1%	2.702	0	76,415	125,000
6/30/14-15	100,069	2.129	213,048	8.9%	34.0%	72,540	0	72,540	34.0%	5.680	0	50,000	100,000
6/30/15-16	101,585	4.255	432,238	7.6%	41.7%	180,169	0	180,169	41.7%	5.680	0	90,084	
Total	29,061,949		31,023,149			516,908	7,087,718	7,604,626	24.5%		7,277,021	7,454,553	7,505,279

NOTES:

(2) From Section 6, Exhibit 1, Page 2, Column 3
(3) = (4) / (2)
(4) From Section 6, Exhibit 1, Page 2, Column 6
(5) From Section 6, Exhibit 1, Page 11
(6) Downward sum of (5)
(7) = (6) x (4)
(8) From Section 6, Exhibit 1, Page 10
(9) = (7) + (8)
(10) = (9) / (4)
(11) From Section 6, Exhibit 1, Page 12
(12) = (8) x (11)
(13) Selected based on (9) and (12)
(14) From Aon analysis as of June 30, 2013

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Medical Center) - Cluster 4
INDEMNITY
Lump Sum Development
Incremental Lump Sum Payments

Acc Yr Ending	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132-144	144-156	156-168	168-180	180-192	192-204	204-216	216-228	228-240	240-252	252-264	264-276	276-288	288-300	300-312	312-324	324-336	336-348	348-360	360-372	372-384	384-396	396-408	408-420
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0	26,500	0	0	0	0	0	0	0	60,000	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-83	0	0	0	0	0	20,000	0	0	0	0	0	0	0	15,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	0	0	0	0	25,750	0	0	36,687	25,000	0	35,500	17,000	0	0	0	0	0	0	0	0	0	84,000	0	0	0	0	0	0	0	0	0	0	0		
Jun-85	0	0	0	0	0	0	0	0	0	0	5,000	0	0	0	0	0	0	0	10,000	0	0	0	0	0	0	0	0	0	0	0	0	0			
Jun-86	0	0	0	0	0	0	23,000	15,000	10,995	10,000	0	0	0	37,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Jun-87	0	0	8,323	0	0	43,000	9,000	5,000	0	30,000	38,424	25,671	112,500	36,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Jun-88	0	0	0	0	10,482	6,500	21,000	46,000	29,000	0	45,000	32,500	0	0	40,000	0	0	0	0	0	0	0	0	58,000	58,000	58,000	0	0	0						
Jun-89	0	0	16,000	76,750	27,500	0	75,000	15,000	0	0	143,000	0	25,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
Jun-90	0	0	47,500	50,000	3,000	72,500	51,250	50,500	77,200	51,300	0	10,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Jun-91	0	6,300	28,000	0	88,376	13,000	30,000	41,500	7,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Jun-92	0	0	80,001	43,500	79,250	35,000	117,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
Jun-93	0	28,000	1	22,500	52,750	40,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
Jun-94	0	68,500	118,500	39,375	92,877	79,500	0	0	12,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
Jun-95	0	158,500	29,500	35,000	25,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Jun-96	0	25,000	162,356	22,670	0	0	0	0	28,000	0	0	0	0	0	0	0	0	0	0	0	0														
Jun-97	15,000	113,800	110,000	0	70,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0															
Jun-98	1,500	62,500	15,000	0	21,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
Jun-99	0	33,750	125,000	160,000	23,000	0	0	0	0	0	0	0	0	0	0	0	0	0																	
Jun-00	5,000	72,513	47,154	18,750	0	0	25,000	30,000	0	0	0	0	0	0	0	0	0																		
Jun-01	0	71,047	80,000	60,000	0	50,000	0	45,000	0	0	0	0	0	0	0	0																			
Jun-02	0	9,000	38,999	30,000	17,500	0	0	0	0	0	0	0	0	0	0																				
Jun-03	0	16,416	55,000	0	0	0	30,000	0	0	0	0	0	0	0																					
Jun-04	0	65,000	30,000	125,000	55,000	52,000	0	0	0	0	0	0	0																						
Jun-05	0	0	67,000	0	0	0	0	0	0	0	0	0																							
Jun-06	0	15,000	18,000	177,500	40,000	30,000	0	0	0	0	0																								
Jun-07	0	70,000	45,000	15,000	0	0	0	0	0	0																									
Jun-08	0	170,000	150,000	165,000	0	75,000	0	0	0																										
Jun-09	0	0	0	133,501	0	0	0	0																											
Jun-10	0	36,000	93,000	0	0	0	0																												
Jun-11	0	50,000	0	37,500	25,000	0																													
Jun-12	0	95,000	0	110,500	0																														
Jun-13	0	50,000	0	70,000																															
Jun-14	0	0	0																																
Jun-15	0	0																																	
Jun-16	0																																		

Cumulative Lump Sum Payments

Acc Yr Ending	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0	26,500	26,500	26,500	26,500	26,500	26,500	26,500	26,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500
Jun-83	0	0	0	0	0	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	
Jun-84	0	0	0	0	25,750	25,750	25,750	62,437	87,437	87,437	122,937	139,937	139,937	139,937	139,937	139,937	139,937	139,937	139,937	139,937	139,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937		
Jun-85	0	0	0	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000			
Jun-86	0	0	0	0	0	0	23,000	38,000	48,995	58,995	58,995	58,995	58,995	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495			
Jun-87	0	0	8,323	8,323	8,323	51,323	60,323	65,323	65,323	95,323	133,747	159,418	271,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918				
Jun-88	0	0	0	0	10,482	16,982	37,982	83,982	112,982	112,982	157,982	190,482	190,482	190,482	230,482	230,482	230,482	230,482	230,482	230,482	230,482	230,482	230,482	288,482	346,482	404,482	404,482	404,482	404,482						
Jun-89	0	0	16,000	92,750	120,250	120,250	195,250	210,250	210,250	210,250	353,250	353,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250							
Jun-90	0	0	47,500	97,500	100,500	173,000	224,250	274,750	351,950	403,250	403,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250								
Jun-91	0	6,300	34,300	34,300	122,676	135,676	165,676	207,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176									
Jun-92	0	0	80,001	123,501	202,751	237,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751				
Jun-93	0	28,000	28,001	50,501	103,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251					
Jun-94	0	68,500	187,000	226,375	319,252	398,752	398,752	398,752	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252						
Jun-95	0	158,500	188,000	223,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000			
Jun-96	0	25,000	187,356	210,026	210,026	210,026	210,026	210,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026			
Jun-97	15,000	128,800	238,800	238,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800			
Jun-98	1,500	64,000	79,000	79,000	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500				
Jun-99	0	33,750	158,750	318,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750				
Jun-00	5,000	77,513	124,667	143,417	143,417	143,417	168,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417				
Jun-01	0	71,047	151,047	211,047	211,047	261,047	261,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047				
Jun-02	0	9,000	47,999	77,999	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499				
Jun-03	0	16,416	71,416	71,416	71,416	71,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416				
Jun-04	0	65,000	95,000	220,000	275,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000				
Jun-05	0	0	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000				
Jun-06	0	15,000	33,000	210,500	250,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500	280,500				
Jun-07	0	70,000	115,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000				
Jun-08	0	170,000	320,000	485,000	485,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000				
Jun-09	0	0	0	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501	133,501				
Jun-10	0	36,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000				
Jun-11	0	50,000	50,000	87,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500				
Jun-12	0	95,000	95,000	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500	205,500				
Jun-13	0	50,000	50,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000				
Jun-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Medical Center) - Cluster 4
INDEMNITY
Lump Sum Development
Incremental Lump Sums as a % of Ultimate Losses Excluding Lump Sums

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-83	0.000	0.000	0.000	0.000	0.000	0.074	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-84	0.000	0.000	0.000	0.000	0.021	0.000	0.000	0.030	0.020	0.000	0.029	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.069	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-85	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.006	0.005	0.004	0.000	0.000	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.000	0.003	0.000	0.000	0.014	0.003	0.002	0.000	0.010	0.012	0.008	0.037	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.000	0.000	0.000	0.004	0.002	0.007	0.016	0.010	0.000	0.016	0.011	0.000	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.020	0.020	0.000	0.000	0.000						
Jun-89	0.000	0.000	0.007	0.034	0.012	0.000	0.033	0.007	0.000	0.000	0.064	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.000	0.017	0.018	0.001	0.026	0.018	0.018	0.027	0.018	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000								
Jun-91	0.000	0.007	0.031	0.000	0.099	0.015	0.034	0.047	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000									
Jun-92	0.000	0.000	0.069	0.037	0.068	0.030	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.000	0.056	0.000	0.045	0.106	0.080	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000											
Jun-94	0.000	0.046	0.080	0.026	0.062	0.053	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000												
Jun-95	0.000	0.567	0.106	0.125	0.089	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.095	0.619	0.086	0.000	0.000	0.000	0.000	0.107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
Jun-97	0.126	0.960	0.927	0.000	0.590	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000															
Jun-98	0.003	0.133	0.032	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.110	0.409	0.523	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																	
Jun-00	0.010	0.141	0.091	0.036	0.000	0.000	0.048	0.058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
Jun-01	0.000	0.156	0.176	0.132	0.000	0.110	0.000	0.099	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																			
Jun-02	0.000	0.035	0.150	0.115	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																				
Jun-03	0.000	0.017	0.056	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000																					
Jun-04	0.000	0.094	0.043	0.180	0.079	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000																						
Jun-05	0.000	0.000	0.454	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																							
Jun-06	0.000	0.027	0.032	0.319	0.072	0.054	0.000	0.000	0.000	0.000	0.000																								
Jun-07	0.000	0.260	0.167	0.056	0.000	0.000	0.000	0.000	0.000	0.000																									
Jun-08	0.000	0.240	0.212	0.233	0.000	0.106	0.000	0.000	0.000																										
Jun-09	0.000	0.000	0.000	0.323	0.000	0.000	0.000	0.000																											
Jun-10	0.000	0.086	0.221	0.000	0.000	0.000	0.000																												
Jun-11	0.000	0.074	0.000	0.056	0.037	0.000																													
Jun-12	0.000	0.130	0.000	0.151	0.000																														
Jun-13	0.000	0.125	0.000	0.175																															
Jun-14	0.000	0.000	0.000																																
Jun-15	0.000	0.000																																	
Jun-16	0.000																																		

Averages		*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
Simple Avg																																			
All Yrs (ex P)	0.004	0.102	0.122	0.086	0.048	0.022	0.010	0.010	0.007	0.001	0.005	0.002	0.002	0.004	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.005	0.000	0.002	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Latest 5	0.000	0.066	0.044	0.141	0.007	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.004	0.000	0.000	0.000	0.000	0.000				
Latest 3	0.000	0.042	0.000	0.127	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Olympic Avg																																			
All Yrs (ex P)	0.000	0.077	0.099	0.074	0.030	0.020	0.007	0.007	0.003	0.001	0.003	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Latest 10	0.000	0.085	0.079	0.146	0.014	0.016	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.066	0.000	0.127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					

Dev Factor Selection

Prior	*NA*	*0.084*	*0.091*	*0.124*	*0.050*	*0.033*	*0.009*	*0.006*	*0.002*	*0.001*	*0.002*	*0.001*	*0.001*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	
Selected	NA	0.076	0.089	0.146	0.050	0.033	0.009	0.006	0.002	0.001	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FacToUlt	NA	0.417	0.340	0.251	0.105	0.055	0.022	0.013	0.007	0.005	0.004	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Medical Center) - Cluster 4
INDEMNITY
Paid Loss Development
Paid Loss - Lump Sum only

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0	26,500	26,500	26,500	26,500	26,500	26,500	26,500	26,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500	86,500
Jun-83	0	0	0	0	0	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	
Jun-84	0	0	0	0	25,750	25,750	25,750	62,437	87,437	87,437	122,937	139,937	139,937	139,937	139,937	139,937	139,937	139,937	139,937	139,937	139,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937	223,937		
Jun-85	0	0	0	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000			
Jun-86	0	0	0	0	0	0	23,000	38,000	48,995	58,995	58,995	58,995	58,995	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495	96,495				
Jun-87	0	0	8,323	8,323	8,323	51,323	60,323	65,323	65,323	95,323	133,747	159,418	271,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918	307,918					
Jun-88	0	0	0	0	10,482	16,982	37,982	83,982	112,982	112,982	157,982	190,482	190,482	190,482	230,482	230,482	230,482	230,482	230,482	230,482	230,482	230,482	230,482	288,482	346,482	404,482	404,482	404,482	404,482						
Jun-89	0	0	16,000	92,750	120,250	120,250	195,250	210,250	210,250	210,250	353,250	353,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250	378,250							
Jun-90	0	0	47,500	97,500	100,500	173,000	224,250	274,750	351,950	403,250	403,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250	413,250								
Jun-91	0	6,300	34,300	34,300	122,676	135,676	165,676	207,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176	214,176								
Jun-92	0	0	80,001	123,501	202,751	237,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751	354,751										
Jun-93	0	28,000	28,001	50,501	103,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251	143,251											
Jun-94	0	68,500	187,000	226,375	319,252	398,752	398,752	398,752	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252	411,252												
Jun-95	0	158,500	188,000	223,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000	248,000													
Jun-96	0	25,000	187,356	210,026	210,026	210,026	210,026	210,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026	238,026														
Jun-97	15,000	128,800	238,800	238,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800															
Jun-98	1,500	64,000	79,000	79,000	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500																
Jun-99	0	33,750	158,750	318,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750																	
Jun-00	5,000	77,513	124,667	143,417	143,417	143,417	168,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417																		
Jun-01	0	71,047	151,047	211,047	211,047	261,047	261,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047	306,047																			
Jun-02	0	9,000	47,999	77,999	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499	95,499																				
Jun-03	0	16,416	71,416	71,416	71,416	71,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416	101,416																					
Jun-04	0	65,000	95,000	220,000	275,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000	327,000																						
Jun-05	0	0	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000	67,000																							
Jun-06	0	15,000	33,000	210,500	250,500	280,500	280,500	280,500	280,500	280,500	280,500																								
Jun-07	0	70,000	115,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000																									
Jun-08	0	170,000	320,000	485,000	485,000	560,000	560,000	560,000	560,000																										
Jun-09	0	0	0	133,501	133,501	133,501	133,501	133,501																											
Jun-10	0	36,000	129,000	129,000	129,000	129,000	129,000																												
Jun-11	0	50,000	50,000	87,500	112,500	112,500																													
Jun-12	0	95,000	95,000	205,500	205,500																														
Jun-13	0	50,000	50,000	120,000																															
Jun-14	0	0	0																																
Jun-15	0	0																																	
Jun-16	0																																		

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
All Prior Yrs														1.000	1.000	1.000	1.000	1.000	1.000	1.000	3.264	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-83						1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.750	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Jun-84					1.000	1.000	2.425	1.400	1.000	1.406	1.138	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.600	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-85											1.000	1.000	1.000	1.000	1.000	1.000	1.000	3.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-86							1.652	1.289	1.204	1.000	1.000	1.000	1.636	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Jun-87			1.000	1.000	6.166	1.175	1.083	1.000	1.459	1.403	1.192	1.706	1.132	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Jun-88					1.620	2.237	2.211	1.345	1.000	1.398	1.206	1.000	1.000	1.210	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.252	1.201	1.167	1.000	1.000	1.000							
Jun-89			5.797	1.296	1.000	1.624	1.077	1.000	1.000	1.680	1.000	1.071	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
Jun-90			2.053	1.031	1.721	1.296	1.225	1.281	1.146	1.000	1.025	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
Jun-91		5.444	1.000	3.577	1.106	1.221	1.250	1.034	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
Jun-92			1.544	1.642	1.173	1.492	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93		1.000	1.804	2.045	1.387	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
Jun-94		2.730	1.211	1.410	1.249	1.000	1.000	1.031	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95		1.186	1.186	1.112	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96		7.494	1.121	1.000	1.000	1.000	1.000	1.133	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-97	8.587	1.854	1.000	1.293	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-98	42.667	1.234	1.000	1.272	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-99		4.704	2.008	1.072	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-00	15.503	1.608	1.150	1.000	1.000	1.174	1.178	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-01		2.126	1.397	1.000	1.237	1.000	1.172	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-02		5.333	1.625	1.224	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-03		4.350	1.000	1.000	1.000	1.420	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-04		1.462	2.316	1.250	1.189	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-05			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-06		2.200	6.379	1.190	1.120	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-07		1.643	1.130	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-08		1.882	1.516	1.000	1.155	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-09				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-10		3.583	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-11		1.000	1.750	1.286	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-12		1.000	2.163	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-13		1.000	2.400	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-14																																			
Jun-15																																			

Averages

	12-24	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Simple Avg																																			
All Yrs (ex P)	22.252	2.642	1.822	1.268	1.312	1.140	1.164	1.061	1.034	1.082	1.024	1.035	1.072	1.010	1.000	1.000	1.000	1.125	1.000	1.000	1.046	1.000	1.023	1.020	1.019	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		1.646	1.828	1.057	1.031	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.040	1.033	1.000	1.000	1.000	1.000						
Latest 3		1.000	2.104	1.095	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Volume Wtd																																			
All Yrs (ex P)		2.102	1.535	1.170	1.119	1.081	1.057	1.037	1.019	1.056	1.018	1.029	1.019	1.009	1.000	1.000	1.000	1.003	1.000	1.000	1.028	1.000	1.024	1.025	1.029	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		1.403	2.085	1.024	1.076	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.035	1.035	1.000	1.000	1.000	1.000	1.000					
Latest 3		1.000	2.118	1.059	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				

Dev Factor Selection

	12-24	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Prior	*1.000*	*2.200*	*1.638*	*1.179*	*1.130*	*1.043*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Selected	1.000	2.102	1.828	1.170	1.130	1.043	1.010	1.010	1.010	1.010	1.010	1.010	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FacToUlt	5.680	5.680	2.702	1.478	1.264	1.118	1.072	1.062	1.051	1.041	1.030	1.020	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Percent of Ult	17.6%	17.6%	37.0%	67.7%	79.1%	89.4%	93.3%	94.2%	95.1%	96.1%	97.1%	98.0%	99.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative Paid Loss	Incremental Paid Loss	Percent	Pres Value of Increm.	Pres Value of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
420	100.0%	0.1%	0.0%	0.0%	0.0%	1.000	1.000
408	99.9%	0.0%	0.1%	0.0%	0.0%	0.981	0.971
396	99.9%	0.0%	0.1%	0.0%	0.0%	0.943	0.916
384	99.9%	0.0%	0.1%	0.0%	0.0%	0.907	0.864
372	99.9%	0.0%	0.1%	0.0%	0.0%	0.872	0.816
360	99.9%	0.0%	0.1%	0.0%	0.0%	0.838	0.769
348	99.9%	0.1%	0.1%	0.0%	0.0%	0.806	0.726
336	99.8%	0.1%	0.2%	0.0%	0.0%	0.863	0.807
324	99.7%	0.0%	0.3%	0.0%	0.0%	0.874	0.824
312	99.7%	0.0%	0.3%	0.0%	0.0%	0.841	0.777
300	99.7%	0.5%	0.3%	0.2%	0.1%	0.809	0.733
288	99.2%	0.7%	0.8%	0.3%	0.2%	0.899	0.859
276	98.5%	0.8%	1.5%	0.3%	0.2%	0.917	0.883
264	97.7%	1.0%	2.3%	0.4%	0.3%	0.915	0.880
252	96.7%	1.0%	3.3%	0.4%	0.3%	0.910	0.872
240	95.8%	0.9%	4.2%	0.4%	0.3%	0.899	0.856
228	94.8%	0.0%	5.2%	0.0%	0.0%	0.886	0.838
216	94.8%	0.0%	5.2%	0.0%	0.0%	0.852	0.790
204	94.8%	0.0%	5.2%	0.0%	0.0%	0.819	0.746
192	94.8%	0.3%	5.2%	0.2%	0.1%	0.787	0.703
180	94.5%	0.5%	5.5%	0.3%	0.2%	0.770	0.681
168	94.0%	2.2%	6.0%	1.3%	1.0%	0.761	0.671
156	91.7%	0.9%	8.3%	0.6%	0.4%	0.799	0.725
144	90.8%	1.2%	9.2%	0.8%	0.6%	0.790	0.713
132	89.7%	1.0%	10.3%	0.7%	0.6%	0.785	0.706
120	88.6%	1.8%	11.4%	1.2%	1.0%	0.775	0.694
108	86.8%	2.7%	13.2%	2.0%	1.7%	0.777	0.698
96	84.1%	1.1%	15.9%	0.8%	0.7%	0.787	0.712
84	83.0%	1.6%	17.0%	1.3%	1.1%	0.771	0.691
72	81.4%	1.5%	18.6%	1.2%	1.1%	0.763	0.680
60	79.9%	8.4%	20.1%	7.0%	6.4%	0.752	0.666
48	71.5%	9.8%	28.5%	8.6%	8.0%	0.798	0.729
36	61.7%	14.7%	38.3%	13.4%	12.7%	0.822	0.760
24	47.0%	23.5%	53.0%	22.1%	21.5%	0.843	0.788
12	23.5%	23.5%	76.5%	23.0%	22.8%	0.863	0.813
Total		100.0%					

NOTES:

(2) = 1 / Section 6, Exhibit 1, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	0	0		0	0
6/30/82-83	0	7,659	0.981	0	7,510
6/30/83-84	28,877	57,754	0.943	27,227	54,454
6/30/84-85	17,055	34,110	0.907	15,462	30,924
6/30/85-86	3,059	4,059	0.872	2,667	3,539
6/30/86-87	3,981	67,600	0.838	3,337	56,663
6/30/87-88	3,123	134,703	0.806	2,517	108,566
6/30/88-89	52,473	131,182	0.863	45,259	113,148
6/30/89-90	64,872	162,179	0.874	56,729	141,824
6/30/90-91	22,036	55,091	0.841	18,529	46,324
6/30/91-92	30,366	75,915	0.809	24,551	61,378
6/30/92-93	12,763	31,908	0.899	11,472	28,680
6/30/93-94	21,981	22,981	0.917	20,157	21,074
6/30/94-95	6,873	6,873	0.915	6,291	6,291
6/30/95-96	4,917	9,834	0.910	4,474	8,948
6/30/96-97	4,224	8,448	0.899	3,797	7,593
6/30/97-98	5,457	10,915	0.886	4,833	9,666
6/30/98-99	6,316	12,632	0.852	5,378	10,756
6/30/99-00	6,876	13,752	0.819	5,630	11,259
6/30/00-01	7,380	14,759	0.787	5,810	11,620
6/30/01-02	3,417	6,834	0.770	2,630	5,260
6/30/02-03	56,057	113,607	0.761	42,654	86,444
6/30/03-04	57,029	59,029	0.799	45,591	47,190
6/30/04-05	13,898	35,898	0.790	10,975	28,349
6/30/05-06	54,177	62,177	0.785	42,505	48,781
6/30/06-07	33,302	59,302	0.775	25,812	45,965
6/30/07-08	87,173	109,173	0.777	67,737	84,832
6/30/08-09	71,440	94,440	0.787	56,258	74,370
6/30/09-10	78,769	108,769	0.771	60,762	83,903
6/30/10-11	127,737	171,777	0.763	97,413	130,999
6/30/11-12	166,844	193,844	0.752	125,401	145,694
6/30/12-13	163,190	222,190	0.798	130,298	177,405
6/30/13-14	297,916	308,916	0.822	245,001	254,047
6/30/14-15	162,931	362,931	0.843	137,430	306,126
6/30/15-16	420,415	558,415	0.863	362,841	481,943
Total	2,096,927	3,329,659		1,717,429	2,741,525
(7) Total Discount Factor:				0.819	0.823

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	0	0
(9) Projected Number of Years:	1	1
(10) Projected Paid Loss per Year:	0	0
(11) Discounted Value at 4%:	0	0

NOTES:
(2), (3) From Section 6, Exhibit 1, Page 1, Columns 8, 9
(4) From Section 6, Exhibit 1, Page 13, Column 7
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Indemnity

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	0	0		0	0
6/30/82-83	0	7,659	0.971	0	7,439
6/30/83-84	28,877	57,754	0.916	26,460	52,920
6/30/84-85	17,055	34,110	0.864	14,743	29,486
6/30/85-86	3,059	4,059	0.816	2,495	3,310
6/30/86-87	3,981	67,600	0.769	3,063	52,008
6/30/87-88	3,123	134,703	0.726	2,267	97,768
6/30/88-89	52,473	131,182	0.807	42,333	105,832
6/30/89-90	64,872	162,179	0.824	53,443	133,607
6/30/90-91	22,036	55,091	0.777	17,127	42,816
6/30/91-92	30,366	75,915	0.733	22,264	55,661
6/30/92-93	12,763	31,908	0.859	10,961	27,402
6/30/93-94	21,981	22,981	0.883	19,415	20,299
6/30/94-95	6,873	6,873	0.880	6,049	6,049
6/30/95-96	4,917	9,834	0.872	4,288	8,576
6/30/96-97	4,224	8,448	0.856	3,617	7,234
6/30/97-98	5,457	10,915	0.838	4,572	9,145
6/30/98-99	6,316	12,632	0.790	4,992	9,985
6/30/99-00	6,876	13,752	0.746	5,127	10,254
6/30/00-01	7,380	14,759	0.703	5,191	10,383
6/30/01-02	3,417	6,834	0.681	2,328	4,655
6/30/02-03	56,057	113,607	0.671	37,615	76,232
6/30/03-04	57,029	59,029	0.725	41,355	42,806
6/30/04-05	13,898	35,898	0.713	9,903	25,580
6/30/05-06	54,177	62,177	0.706	38,267	43,918
6/30/06-07	33,302	59,302	0.694	23,121	41,173
6/30/07-08	87,173	109,173	0.698	60,819	76,168
6/30/08-09	71,440	94,440	0.712	50,885	67,268
6/30/09-10	78,769	108,769	0.691	54,428	75,158
6/30/10-11	127,737	171,777	0.680	86,836	116,774
6/30/11-12	166,844	193,844	0.666	111,081	129,057
6/30/12-13	163,190	222,190	0.729	118,948	161,952
6/30/13-14	297,916	308,916	0.760	226,554	234,919
6/30/14-15	162,931	362,931	0.788	128,380	285,968
6/30/15-16	420,415	558,415	0.813	341,911	454,142
Total	2,096,927	3,329,659		1,580,841	2,525,945
			(7) Total Discount Factor:	0.754	0.759

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	0	0
(9) Projected Number of Years:	1	1
(10) Projected Paid Loss per Year:	0	0
(11) Discounted Value at 6%:	0	0

NOTES:
(2), (3) From Section 6, Exhibit 1, Page 1, Columns 8, 9
(4) From Section 6, Exhibit 1, Page 13, Column 8
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

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

Calculation of Fiscal Year 7/01/16 - 17 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/16 - 06/30/17	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/16 - 06/30/17		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	1,455,812	1,455,812	1,455,812	0	0				0	0		
6/30/82-83	327,672	335,649	327,566	106	8,083	98.8%	0.5%	40.5%	43	3,274	40.5%	40.5%
6/30/83-84	1,523,932	1,553,573	1,494,800	29,132	58,773	97.1%	0.5%	17.5%	5,099	10,288	17.5%	17.5%
6/30/84-85	1,033,339	1,052,834	1,015,470	17,869	37,364	97.4%	0.5%	18.9%	3,375	7,056	18.9%	18.9%
6/30/85-86	2,737,432	2,741,662	2,733,296	4,136	8,367	99.8%	0.1%	43.8%	1,813	3,666	43.8%	43.8%
6/30/86-87	3,782,000	3,845,619	3,777,375	4,625	68,244	99.0%	0.1%	10.5%	484	7,143	10.5%	10.5%
6/30/87-88	3,377,000	3,509,580	3,373,806	3,194	135,774	98.0%	1.0%	49.6%	1,583	67,283	49.6%	49.6%
6/30/88-89	3,167,349	3,253,390	3,112,432	54,917	140,958	96.9%	1.0%	32.8%	18,002	46,206	32.8%	32.8%
6/30/89-90	3,865,186	3,970,803	3,797,545	67,641	173,258	96.9%	1.0%	32.5%	22,002	56,357	32.5%	32.5%
6/30/90-91	1,427,065	1,464,645	1,403,520	23,545	61,125	97.1%	1.0%	34.2%	8,041	20,876	34.2%	34.2%
6/30/91-92	2,221,204	2,276,791	2,187,492	33,712	89,299	97.3%	1.0%	36.6%	12,327	32,653	36.6%	36.6%
6/30/92-93	1,048,102	1,073,175	1,033,363	14,739	39,812	97.4%	1.0%	38.9%	5,731	15,481	38.9%	38.9%
6/30/93-94	2,600,000	2,601,000	2,577,232	22,768	23,768	99.1%	0.5%	55.9%	12,723	13,282	55.9%	55.9%
6/30/94-95	948,000	948,000	939,741	8,259	8,259	99.1%	0.5%	57.4%	4,740	4,740	57.4%	57.4%
6/30/95-96	881,507	893,237	874,675	6,832	18,562	98.6%	1.0%	69.9%	4,775	12,973	69.9%	69.9%
6/30/96-97	624,614	632,798	619,545	5,069	13,253	98.5%	1.0%	68.6%	3,479	9,095	68.6%	68.6%
6/30/97-98	1,044,184	1,059,502	1,036,308	7,876	23,193	98.5%	1.0%	67.7%	5,333	15,704	67.7%	67.7%
6/30/98-99	948,917	955,233	940,822	8,094	14,410	98.8%	1.0%	84.6%	6,849	12,193	84.6%	84.6%
6/30/99-00	881,459	888,335	872,750	8,710	15,585	98.6%	1.0%	72.8%	6,345	11,353	72.8%	72.8%
6/30/00-01	953,353	960,733	943,388	9,965	17,345	98.6%	1.0%	70.1%	6,984	12,157	70.1%	70.1%
6/30/01-02	571,126	579,063	564,641	6,484	14,421	98.2%	1.0%	55.0%	3,568	7,934	55.0%	55.0%
6/30/02-03	1,309,000	1,370,970	1,249,142	59,858	121,828	93.2%	2.0%	29.5%	17,659	35,941	29.5%	29.5%
6/30/03-04	1,326,000	1,343,300	1,259,443	66,557	83,857	94.4%	2.0%	35.5%	23,623	29,763	35.5%	35.5%
6/30/04-05	390,000	424,950	367,028	22,972	57,922	90.1%	2.0%	20.1%	4,629	11,670	20.1%	20.1%
6/30/05-06	1,232,000	1,266,250	1,157,967	74,033	108,283	92.7%	2.0%	27.4%	20,289	29,676	27.4%	27.4%
6/30/06-07	656,000	686,000	605,124	50,876	80,876	90.2%	2.0%	20.4%	10,364	16,476	20.4%	20.4%
6/30/07-08	1,806,000	1,876,200	1,687,514	118,486	188,686	91.7%	2.0%	24.0%	28,407	45,237	24.0%	24.0%
6/30/08-09	974,000	1,025,400	866,450	107,550	158,950	86.7%	2.0%	15.0%	16,138	23,850	15.0%	15.0%
6/30/09-10	877,000	930,350	760,059	116,941	170,291	84.1%	2.6%	16.1%	18,863	27,469	16.1%	16.1%
6/30/10-11	1,171,000	1,236,240	990,191	180,809	246,049	82.3%	1.8%	10.4%	18,760	25,529	10.4%	10.4%
6/30/11-12	1,309,000	1,358,850	1,087,163	221,837	271,687	81.5%	2.0%	10.8%	23,984	29,373	10.8%	10.8%
6/30/12-13	895,000	981,850	672,235	222,765	309,615	71.6%	5.0%	17.6%	39,267	54,576	17.6%	17.6%
6/30/13-14	997,000	1,033,650	627,536	369,464	406,114	61.8%	9.8%	25.7%	95,071	104,501	25.7%	25.7%
6/30/14-15	434,000	708,700	216,537	217,463	492,163	37.9%	10.0%	16.1%	35,018	79,252	16.1%	16.1%
6/30/15-16	924,000	1,119,900	254,364	669,636	865,536	24.9%	13.0%	17.3%	115,982	149,912	17.3%	17.3%
Total	49,719,252	51,414,044	46,882,331	2,836,921	4,531,713				601,346	1,032,940	21.2%	22.8%

NOTES:

(2) Exhibit 1, Page 1, Column (4) + Exhibit 2, Page 1, Column (4)
(3) Exhibit 1, Page 1, Column (5) + Exhibit 2, Page 1, Column (5)
(4) Exhibit 1, Page 1, Column (2) + Exhibit 2, Page 1, Column (2)
(5) = (2) - (4)
(6) = (3) - (4)
(7) = (4) / Average of Columns (2), (3)
(8) = (7) - Prior Year's (7)
(9) = (8) / (1.00 - (7))
(10) = (5) * (9)
(11) = (6) * (9)
(12) = (10) / (5)
(13) = (11) / (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Paid Loss	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		126,400			126,400	126,400	0	0		
6/30/82-83		21,226	21,256		21,332	21,651	106	425		
6/30/83-84		50,961	51,033		51,216	51,980	255	1,019		
6/30/84-85	116,303	162,725	162,955	163,045	163,539	165,980	814	3,255	0.141	0.143
6/30/85-86	123,981	215,355	215,659	215,773	216,432	219,662	1,077	4,307	0.175	0.177
6/30/86-87	139,388	397,356	397,918	398,110	398,000	398,000	644	644	0.286	0.286
6/30/87-88	159,499	347,929	348,421	348,562	348,000	349,000	71	1,071	0.218	0.219
6/30/88-89	180,644	488,786	489,477	489,676	491,230	498,562	2,444	9,776	0.272	0.276
6/30/89-90	142,494	553,962	554,745	555,098	556,732	565,041	2,770	11,079	0.391	0.397
6/30/90-91	143,694	301,697	302,123	302,121	303,205	307,731	1,508	6,034	0.211	0.214
6/30/91-92	155,170	669,188	670,134	670,119	672,534	682,572	3,346	13,384	0.433	0.440
6/30/92-93	163,283	395,196	395,755	395,744	397,172	403,100	1,976	7,904	0.243	0.247
6/30/93-94	177,184	701,213	702,205	702,173	702,000	702,000	787	787	0.396	0.396
6/30/94-95	188,391	418,614	419,625	419,593	420,000	420,000	1,386	1,386	0.223	0.223
6/30/95-96	201,751	382,952	384,261	384,218	384,867	391,680	1,915	8,728	0.191	0.194
6/30/96-97	231,872	197,155	198,026	198,028	198,000	201,960	845	4,805	0.085	0.087
6/30/97-98	232,237	490,581	493,243	493,118	493,000	502,860	2,419	12,279	0.212	0.217
6/30/98-99	232,075	309,222	311,210	311,149	311,000	311,000	1,778	1,778	0.134	0.134
6/30/99-00	211,819	185,166	186,834	186,834	187,000	187,000	1,834	1,834	0.088	0.088
6/30/00-01	215,099	205,415	208,048	208,030	208,000	208,000	2,585	2,585	0.097	0.097
6/30/01-02	227,797	222,933	226,353	226,324	226,000	230,520	3,067	7,587	0.099	0.101
6/30/02-03	242,008	217,199	220,752	220,759	221,000	225,420	3,801	8,221	0.091	0.093
6/30/03-04	276,758	296,472	305,932	305,804	306,000	321,300	9,528	24,828	0.111	0.116
6/30/04-05	260,378	165,925	174,987	178,945	175,000	187,950	9,075	22,025	0.067	0.072
6/30/05-06	317,741	379,144	404,598	398,514	399,000	425,250	19,856	46,106	0.126	0.134
6/30/06-07	325,922	236,426	253,560	257,767	254,000	258,000	17,574	21,574	0.078	0.079
6/30/07-08	354,130	512,687	564,436	544,148	544,000	592,200	31,313	79,513	0.154	0.167
6/30/08-09	362,309	384,890	428,088	420,506	421,000	449,400	36,110	64,510	0.116	0.124
6/30/09-10	383,298	281,828	319,855	327,398	320,000	343,350	38,172	61,522	0.083	0.090
6/30/10-11	394,924	328,928	381,895	383,702	382,000	403,200	53,072	74,272	0.097	0.102
6/30/11-12	381,943	297,007	352,348	356,997	352,000	374,850	54,993	77,843	0.092	0.098
6/30/12-13	384,763	266,425	325,866	336,609	326,000	353,850	59,575	87,425	0.085	0.092
6/30/13-14	364,582	252,452	323,640	332,645	324,000	349,650	71,548	97,198	0.089	0.096
6/30/14-15	370,543	116,468	170,857	234,424	171,000	245,700	54,532	129,232	0.046	0.066
6/30/15-16	382,602	152,780	437,743	401,847	402,000	459,900	249,220	307,120	0.105	0.120
Total	8,044,584	10,732,664	11,403,837	11,367,779	11,472,658	11,934,718	739,994	1,202,054		
Tot 6/30/84-16	8,044,584	10,534,077	11,331,548	11,367,779	11,273,710	11,734,687	739,633	1,200,610	0.140	0.146

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 6, Exhibit 2, Page 2, Column 3

(4) From Section 6, Exhibit 2, Page 2, Column 8

(5) From Section 6, Exhibit 2, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Accident Year	Payroll (000's)	Paid Loss	Paid LDF	Adjustment for Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim
All Prior Yrs		126,400							0	0	
6/30/82-83		21,226	1.001	1.000	21,256	N/A	21,256		0	0	
6/30/83-84		50,961	1.001	1.000	51,033	N/A	51,033		0	0	
6/30/84-85	116,303	162,725	1.001	1.000	162,955	N/A	162,955	0.140	0	0	
6/30/85-86	123,981	215,355	1.001	1.000	215,659	N/A	215,659	0.174	0	0	
6/30/86-87	139,388	397,356	1.001	1.000	397,918	N/A	397,918	0.285	0	0	
6/30/87-88	159,499	347,929	1.001	1.000	348,421	N/A	348,421	0.218	0	0	
6/30/88-89	180,644	488,786	1.001	1.000	489,477	N/A	489,477	0.271	0	0	
6/30/89-90	142,494	553,962	1.001	1.000	554,745	N/A	554,745	0.389	0	0	
6/30/90-91	143,694	301,697	1.001	1.000	302,123	N/A	302,123	0.210	0	0	
6/30/91-92	155,170	669,188	1.001	1.000	670,134	N/A	670,134	0.432	0	0	
6/30/92-93	163,283	395,196	1.001	1.000	395,755	N/A	395,755	0.242	0	0	
6/30/93-94	177,184	701,213	1.001	1.000	702,205	N/A	702,205	0.396	1	1	991
6/30/94-95	188,391	418,614	1.002	1.000	419,625	N/A	419,625	0.223	1	1	1,011
6/30/95-96	201,751	382,952	1.003	1.000	384,261	N/A	384,261	0.190	0	0	
6/30/96-97	231,872	197,155	1.004	1.000	198,026	N/A	198,026	0.085	1	1	872
6/30/97-98	232,237	490,581	1.005	1.000	493,243	N/A	493,243	0.212	1	1	2,662
6/30/98-99	232,075	309,222	1.006	1.000	311,210	N/A	311,210	0.134	0	0	
6/30/99-00	211,819	185,166	1.009	1.000	186,834	N/A	186,834	0.088	0	0	
6/30/00-01	215,099	205,415	1.013	1.000	208,048	N/A	208,048	0.097	0	0	
6/30/01-02	227,797	222,933	1.015	1.000	226,353	N/A	226,353	0.099	1	1	3,420
6/30/02-03	242,008	217,199	1.016	1.000	220,752	N/A	220,752	0.091	1	1	3,553
6/30/03-04	276,758	296,472	1.032	1.000	305,932	N/A	305,932	0.111	0	1	9,460
6/30/04-05	260,378	165,925	1.055	1.000	174,987	N/A	174,987	0.067	2	1	9,061
6/30/05-06	317,741	379,144	1.067	1.000	404,598	N/A	404,598	0.127	3	3	8,485
6/30/06-07	325,922	236,426	1.072	1.000	253,560	N/A	253,560	0.078	0	0	
6/30/07-08	354,130	512,687	1.101	1.000	564,436	N/A	564,436	0.159	3	3	17,249
6/30/08-09	362,309	384,890	1.112	1.000	428,088	N/A	428,088	0.118	2	1	43,198
6/30/09-10	383,298	281,828	1.135	1.000	319,855	N/A	319,855	0.083	1	1	38,027
6/30/10-11	394,924	328,928	1.161	1.000	381,895	N/A	381,895	0.097	3	1	52,967
6/30/11-12	381,943	297,007	1.186	1.000	352,348	N/A	352,348	0.092	8	3	18,447
6/30/12-13	384,763	266,425	1.223	1.000	325,866	N/A	325,866	0.085	18	9	6,605
6/30/13-14	364,582	252,452	1.282	1.000	323,640	N/A	323,640	0.089	82	18	3,955
6/30/14-15	370,543	116,468	1.467	1.000	170,857	N/A	170,857	0.046	110	65	837
6/30/15-16	382,602	152,780	2.865	1.000	437,743	N/A	437,743	0.114		108	2,639
Total	8,044,584	10,732,664			11,403,837		11,403,837		238	220	

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3), (4) From Section 6, Exhibit 2, Page 7

(5) Based on information from the MA WCRIB 4/1/14 filing. Consideration for development beyond 252 months made in selection of LDF's.

(6) = (3) x (4) x (5)

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	116,303	0.195	162,725	1.001	163,045	N/A	163,045	0.140	0.140
6/30/85-86	123,981	0.239	215,355	1.001	215,773	N/A	215,773	0.174	0.174
6/30/86-87	139,388	0.383	397,356	1.001	398,110	N/A	398,110	0.286	0.286
6/30/87-88	159,499	0.281	347,929	1.001	348,562	N/A	348,562	0.219	0.219
6/30/88-89	180,644	0.349	488,786	1.001	489,676	N/A	489,676	0.271	0.271
6/30/89-90	142,494	0.565	553,962	1.001	555,098	N/A	555,098	0.390	0.390
6/30/90-91	143,694	0.209	301,697	1.001	302,121	N/A	302,121	0.210	0.210
6/30/91-92	155,170	0.425	669,188	1.001	670,119	N/A	670,119	0.432	0.432
6/30/92-93	163,283	0.238	395,196	1.001	395,744	N/A	395,744	0.242	0.242
6/30/93-94	177,184	0.384	701,213	1.001	702,173	N/A	702,173	0.396	0.396
6/30/94-95	188,391	0.216	418,614	1.002	419,593	N/A	419,593	0.223	0.223
6/30/95-96	201,751	0.184	382,952	1.003	384,218	N/A	384,218	0.190	0.190
6/30/96-97	231,872	0.086	197,155	1.004	198,028	N/A	198,028	0.085	0.085
6/30/97-98	232,237	0.202	490,581	1.005	493,118	N/A	493,118	0.212	0.212
6/30/98-99	232,075	0.130	309,222	1.006	311,149	N/A	311,149	0.134	0.134
6/30/99-00	211,819	0.088	185,166	1.009	186,834	N/A	186,834	0.088	0.088
6/30/00-01	215,099	0.096	205,415	1.013	208,030	N/A	208,030	0.097	0.097
6/30/01-02	227,797	0.099	222,933	1.015	226,324	N/A	226,324	0.099	0.099
6/30/02-03	242,008	0.091	217,199	1.016	220,759	N/A	220,759	0.091	0.091
6/30/03-04	276,758	0.109	296,472	1.032	305,804	N/A	305,804	0.110	0.110
6/30/04-05	260,378	0.097	165,925	1.055	178,945	N/A	178,945	0.069	0.069
6/30/05-06	317,741	0.097	379,144	1.067	398,514	N/A	398,514	0.125	0.125
6/30/06-07	325,922	0.097	236,426	1.072	257,767	N/A	257,767	0.079	0.079
6/30/07-08	354,130	0.097	512,687	1.101	544,148	N/A	544,148	0.154	0.154
6/30/08-09	362,309	0.097	384,890	1.112	420,506	N/A	420,506	0.116	0.116
6/30/09-10	383,298	0.100	281,828	1.135	327,398	N/A	327,398	0.085	0.085
6/30/10-11	394,924	0.100	328,928	1.161	383,702	N/A	383,702	0.097	0.097
6/30/11-12	381,943	0.100	297,007	1.186	356,997	N/A	356,997	0.093	0.093
6/30/12-13	384,763	0.100	266,425	1.223	336,609	N/A	336,609	0.087	0.087
6/30/13-14	364,582	0.100	252,452	1.282	332,645	N/A	332,645	0.091	0.091
6/30/14-15	370,543	0.100	116,468	1.467	234,424	N/A	234,424	0.063	0.063
6/30/15-16	382,602	0.100	152,780	2.865	401,847	N/A	401,847	0.105	0.105
Total	8,044,584		10,534,077		11,367,779		11,367,779		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 6, Exhibit 2, Page 4, Column 11

(4) From Section 6, Exhibit 2, Page 2, Column 3

(5) From Section 6, Exhibit 2, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Expected Ult Loss	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.195	0.195
6/30/85-86									0.239	0.239
6/30/86-87									0.383	0.383
6/30/87-88									0.281	0.281
6/30/88-89									0.349	0.349
6/30/89-90									0.565	0.565
6/30/90-91	143,694	302,123	0.210	1.194	0.251	1.000	0.251	0.084	0.209	0.209
6/30/91-92	155,170	670,134	0.432	1.189	0.513	1.000	0.513	0.084	0.425	0.425
6/30/92-93	163,283	395,755	0.242	1.189	0.288	1.000	0.288	0.084	0.238	0.238
6/30/93-94	177,184	702,205	0.396	1.178	0.467	1.000	0.467	0.085	0.383	0.384
6/30/94-95	188,391	419,625	0.223	1.170	0.261	1.000	0.261	0.085	0.216	0.216
6/30/95-96	201,751	384,261	0.190	1.155	0.220	1.000	0.220	0.087	0.184	0.184
6/30/96-97	231,872	198,026	0.085	1.137	0.097	1.000	0.097	0.088	0.086	0.086
6/30/97-98	232,237	493,243	0.212	1.135	0.241	1.000	0.241	0.088	0.200	0.202
6/30/98-99	232,075	311,210	0.134	1.135	0.152	1.000	0.152	0.088	0.130	0.130
6/30/99-00	211,819	186,834	0.088	1.135	0.100	1.000	0.100	0.088	0.089	0.088
6/30/00-01	215,099	208,048	0.097	1.109	0.107	1.000	0.107	0.090	0.096	0.096
6/30/01-02	227,797	226,353	0.099	1.101	0.109	1.000	0.109	0.091	0.097	0.099
6/30/02-03	242,008	220,752	0.091	1.073	0.098	1.000	0.098	0.093	0.091	0.091
6/30/03-04	276,758	305,932	0.111	1.046	0.116	1.000	0.116	0.096	0.111	0.109
6/30/04-05	260,378	174,987	0.067	1.036	0.070	1.000	0.070	0.097	0.097	0.097
6/30/05-06	317,741	404,598	0.127	1.032	0.131	1.000	0.131	0.097	0.097	0.097
6/30/06-07	325,922	253,560	0.078	1.032	0.080	1.000	0.080	0.097	0.097	0.097
6/30/07-08	354,130	564,436	0.159	1.032	0.164	1.000	0.164	0.097	0.097	0.097
6/30/08-09	362,309	428,088	0.118	1.027	0.121	1.000	0.121	0.097	0.097	0.097
6/30/09-10	383,298	319,855	0.083	1.000	0.083	1.000	0.083	0.100	0.100	0.100
6/30/10-11	394,924	381,895	0.097	1.000	0.097	1.000	0.097	0.100	0.100	0.100
6/30/11-12	381,943	352,348	0.092	1.000	0.092	1.000	0.092	0.100	0.100	0.100
6/30/12-13	384,763	325,866	0.085	1.000	0.085	1.000	0.085	0.100	0.100	0.100
6/30/13-14	364,582	323,640	0.089	1.000	0.089	1.000	0.089	0.100	0.100	0.100
6/30/14-15	370,543	170,857	0.046	1.000	0.046	1.000	0.046	0.100	0.100	0.100
6/30/15-16	382,602	437,743	0.114	1.000	0.114	1.000	0.114	0.100		0.100
Total	7,182,274	9,162,372								

Trend Last 4 (ex 15-16):	-18.4%	Avg 3 (ex 15-16):	0.073
Trend Last 8 (ex 15-16):	-11.7%	Avg 5 (ex 15-16):	0.082
Trend Last 12 (ex 15-16):	-4.2%	Avg 10 (ex 15-16):	0.099
Prior Selected Trend:	0.0%	Prior Sel Avg:	0.100
Selected Trend:	0.0%	Sel. Loss Cost:	0.100

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 6, Exhibit 2, Page 2, Column 6

(4) = (3) / (2) / 10

(5) Based on information from the MA WCIRB

(6) = (4) x (5)

(7) Based on Selected Trend from (6)

(8) = (6) x (7)

(9) = Sel. Loss Cost / [(5) * (7)]

(10) From prior Aon analysis as of June 30, 2015

(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.750	
(2)	Credibility	14%	
(3)	Average Pmt Trend Statewide	0.950	
(4)	Credibility Weighted Trend	0.922	
		(Low)	(High)
(5)	Selected Range	0.913	0.931
(6)	Incremental Paid for 2016	0	0
(7)	Estimated Reserve	0	0
(8)	Paid to Date (82 & Prior)	126,400	126,400
(9)	Est Ult Paid for 1982 & Prior	126,400	126,400

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	0	0
(11)	Projected Number of Years	2	2
(12)	Estimated Reserve	0	0
(13)	Paid to Date (82 & Prior)	126,400	126,400
(14)	Est Ult Paid for 1982 & Prior	126,400	126,400
(14a)	Paid Counts During Fiscal Year	0	0
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	126,400	126,400
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**126,400**	**126,400**
(18)	Implied Tail	1.000	1.000
(19)	Ult Loss Inc Lump Sums @ 6/15	126,400	126,400

NOTES:

(1) From Section 6, Exhibit 2, Page 6
(2) = (Average of Section 6, Exhibit 2, Page 6, Column 3 / 175,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 6, Exhibit 2, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 6, Exhibit 2, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) Lump Sums are considered in Indemnity analysis (Section 1)
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	1,277	7.152			
1993	2	1,933	7.567	1.514		
1994	3	2,959	7.993	1.531		
1995	4	30,696	10.332	10.374		
1996	5	1,619	7.390	0.053		
1997	6	7,074	8.864	4.369		
1998	7	5,136	8.544	0.726		
1999	8	26,679	10.192	5.195		
2000	9	8,683	9.069	0.325	n =	12
2001	10	453	6.116	0.052	S(x) =	23,970
2002	11	573	6.351	1.265	S(x-sq) =	47,880,218
2003	12	16	2.773	0.028	S(xy) =	184,417
2004	13	0			S(y) =	92
2005	14	0			D =	1,716
2006	15	0			slope =	-0.246
2007	16	0			Avg Trend =	0.754
2008	17	0				
2009	18	0				
2010	19	0				
2011	20	0				
2012	21	0				
2013	22	0				
2014	23	0				
2015	24	0				
2016	25	0				
					Selected Trend:	**0.750**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2003: 0.028 = 16 / 573

Commonwealth of Massachusetts Workers Compensation
University of Massachusetts (Medical Center) - Cluster 4
MEDICAL
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	1,234	3,103	4,861	6,300	7,916	9,821	13,039	13,611	14,794	16,517	16,901	19,950	21,086	21,192	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226	21,226
June-84	2,119	5,327	8,344	10,814	13,588	16,986	18,288	23,404	25,737	31,059	49,301	49,301	49,616	49,616	49,616	49,911	50,261	50,611	50,611	50,611	50,961	50,961	50,961	50,961	50,961	50,961	50,961	50,961	50,961	50,961	50,961	50,961	50,961	
June-85	12,116	30,459	47,713	61,836	82,871	90,557	102,192	116,196	126,162	134,269	144,586	146,053	155,423	156,868	159,570	160,025	160,725	160,725	162,725	162,725	162,725	162,725	162,725	162,725	162,725	162,725	162,725	162,725	162,725	162,725	162,725	162,725		
June-86	20,894	52,527	82,283	109,226	113,177	157,428	181,217	194,111	201,338	202,138	203,815	204,040	204,668	207,774	211,955	212,780	212,780	212,780	215,180	215,355	215,355	215,355	215,355	215,355	215,355	215,355	215,355	215,355	215,355	215,355	215,355			
June-87	31,042	78,039	128,883	164,579	225,534	253,273	269,701	290,822	307,535	321,418	343,535	347,855	391,585	394,847	396,769	397,163	397,163	397,163	397,163	397,163	397,356	397,356	397,356	397,356	397,356	397,356	397,356	397,356	397,356	397,356				
June-88	38,803	100,851	169,323	220,047	246,044	269,806	298,617	307,956	313,205	317,782	319,598	322,343	325,039	329,817	329,817	329,817	331,017	332,429	332,429	333,094	334,344	338,304	341,814	346,679	347,929	347,929	347,929	347,929	347,929					
June-89	23,530	123,605	224,861	257,852	314,169	363,076	415,231	428,349	431,502	433,102	439,481	459,235	462,320	479,638	484,373	488,387	488,786	488,786	488,786	488,786	488,786	488,786	488,786	488,786	488,786	488,786	488,786	488,786						
June-90	50,815	273,859	359,066	409,059	478,183	534,786	577,745	596,162	604,078	543,745	548,041	553,962	553,962	553,962	553,962	553,962	553,962	553,962	553,962	553,962	553,962	553,962	553,962	553,962	553,962	553,962	553,962							
June-91	100,348	235,116	278,654	299,094	305,642	311,577	324,200	331,771	300,441	301,585	301,697	301,697	301,697	301,697	301,697	301,697	301,697	301,697	301,697	301,697	301,697	301,697	301,697	301,697	301,697	301,697								
June-92	214,704	524,294	598,233	667,108	699,896	707,764	731,353	668,555	669,244	669,244	669,188	669,188	669,188	669,188	669,188	669,188	669,188	669,188	669,188	669,188	669,188	669,188	669,188	669,188	669,188									
June-93	170,873	375,060	420,253	430,949	444,131	448,308	394,918	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196										
June-94	300,512	596,595	667,456	713,591	730,452	676,827	679,845	681,410	682,760	684,108	684,108	684,335	686,279	687,551	690,014	691,979	693,434	694,829	694,829	694,829	694,829	698,854	701,213											
June-95	224,267	378,724	433,955	457,533	409,745	410,858	411,003	411,481	412,287	412,616	413,407	414,199	414,911	415,394	415,394	416,151	416,388	416,634	416,984	417,700	418,185	418,614												
June-96	167,356	393,930	501,689	378,074	378,587	378,666	378,667	379,037	379,508	382,952	382,952	382,952	382,952	382,952	382,952	382,952	382,952	382,952	382,952	382,952	382,952													
June-97	130,080	273,734	170,451	178,673	186,292	189,102	189,531	190,062	190,753	191,531	192,270	193,209	194,029	194,724	195,455	195,912	196,119	196,392	196,765	197,155														
June-98	153,489	249,584	276,046	301,383	308,237	314,372	326,267	379,647	404,376	420,822	440,261	450,569	452,424	455,322	458,466	462,440	470,685	482,508	490,581															
June-99	74,009	144,825	187,509	205,821	213,634	225,729	262,895	277,050	296,551	301,615	304,333	305,562	306,665	306,876	308,775	309,222	309,222	309,222																
June-00	42,966	116,743	129,805	138,406	149,847	152,795	156,525	163,267	168,512	177,868	177,868	177,992	185,166	185,166	185,166	185,166	185,166																	
June-01	66,977	112,847	134,511	164,585	186,174	191,353	193,876	196,194	197,019	200,449	202,529	202,659	204,334	205,415	205,415	205,415																		
June-02	51,704	99,105	124,129	132,683	137,298	144,909	146,854	147,302	174,745	189,334	201,469	209,356	215,153	219,704	222,933																			
June-03	24,338	126,639	167,817	173,658	176,063	176,926	181,096	186,492	190,822	196,704	200,649	205,235	213,052	217,199																				
June-04	83,690	216,265	266,643	284,876	292,325	295,052	295,295	296,029	296,255	296,405	296,405	296,405	296,472																					
June-05	70,794	151,383	161,299	162,118	162,383	162,449	162,848	165,224	165,325	165,630	165,860	165,925																						
June-06	111,267	215,773	247,375	290,539	295,723	304,040	318,675	338,665	353,952	368,605	379,144																							
June-07	135,214	210,808	235,383	235,931	236,426	236,426	236,426	236,426	236,426	236,426																								
June-08	163,349	354,750	465,422	484,430	499,466	503,458	508,133	512,405	512,687																									
June-09	147,783	237,019	285,263	290,878	311,776	330,161	342,462	384,890																										
June-10	151,041	251,654	264,987	272,182	276,801	280,207	281,828																											
June-11	207,552	306,733	317,839	322,382	326,484	328,928																												
June-12	139,332	221,373	251,760	270,206	297,007																													
June-13	127,443	223,391	256,039	266,425																														
June-14	99,522	206,623	252,452																															
June-15	68,762	116,468																																
June-16	152,780																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.515	1.567	1.296	1.257	1.241	1.328	1.044	1.087	1.116	1.023	1.180	1.057	1.005	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-84	2.514	1.566	1.296	1.257	1.250	1.077	1.280	1.100	1.207	1.587	1.000	1.006	1.000	1.000	1.006	1.007	1.007	1.000	1.000	1.007	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
June-85	2.514	1.566	1.296	1.340	1.093	1.128	1.137	1.086	1.064	1.077	1.010	1.064	1.009	1.017	1.003	1.004	1.000	1.012	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
June-86	2.514	1.566	1.327	1.036	1.391	1.151	1.071	1.037	1.004	1.008	1.001	1.003	1.015	1.020	1.004	1.000	1.000	1.011	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
June-87	2.514	1.652	1.277	1.370	1.123	1.065	1.078	1.057	1.045	1.069	1.013	1.126	1.008	1.005	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
June-88	2.599	1.679	1.300	1.118	1.097	1.107	1.031	1.017	1.015	1.006	1.009	1.008	1.015	1.000	1.000	1.004	1.004	1.000	1.002	1.004	1.012	1.010	1.014	1.004	1.000	1.000	1.000	1.000						
June-89	5.253	1.819	1.147	1.218	1.156	1.144	1.032	1.007	1.004	1.015	1.045	1.007	1.037	1.010	1.008	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
June-90	5.389	1.311	1.139	1.169	1.118	1.080	1.032	1.013	0.900	1.008	1.011	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
June-91	2.343	1.185	1.073	1.022	1.019	1.041	1.023	0.906	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
June-92	2.442	1.141	1.115	1.049	1.011	1.033	0.914	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-93	2.195	1.120	1.025	1.031	1.009	0.881	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
June-94	1.985	1.119	1.069	1.024	0.927	1.004	1.002	1.002	1.002	1.000	1.000	1.003	1.002	1.004	1.003	1.002	1.002	1.000	1.000	1.000	1.006	1.003												
June-95	1.689	1.146	1.054	0.896	1.003	1.000	1.001	1.002	1.001	1.002	1.002	1.002	1.001	1.000	1.002	1.001	1.001	1.001	1.002	1.001	1.001													
June-96	2.354	1.274	0.754	1.001	1.000	1.000	1.001	1.001	1.009	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
June-97	2.104	0.623	1.048	1.043	1.015	1.002	1.003	1.004	1.004	1.004	1.005	1.004	1.004	1.004	1.002	1.001	1.001	1.002	1.002															
June-98	1.626	1.106	1.092	1.023	1.020	1.038	1.164	1.065	1.041	1.046	1.023	1.004	1.006	1.007	1.009	1.018	1.025	1.017																
June-99	1.957	1.295	1.098	1.038	1.057	1.165	1.054	1.070	1.017	1.009	1.004	1.004	1.001	1.006	1.001	1.000	1.000																	
June-00	2.717	1.112	1.066	1.083	1.020	1.024	1.043	1.032	1.056	1.000	1.001	1.040	1.000	1.000	1.000	1.000																		
June-01	1.685	1.192	1.224	1.131	1.028	1.013	1.012	1.004	1.017	1.010	1.001	1.008	1.005	1.000	1.000																			
June-02	1.917	1.252	1.069	1.035	1.055	1.013	1.003	1.186	1.083	1.064	1.039	1.028	1.021	1.015																				
June-03	5.203	1.325	1.035	1.014	1.005	1.024	1.030	1.023	1.031	1.020	1.023	1.038	1.019																					
June-04	2.584	1.233	1.068	1.026	1.009	1.001	1.002	1.001	1.001	1.000	1.000	1.000																						
June-05	2.138	1.066	1.005	1.002	1.000	1.002	1.015	1.001	1.002	1.001	1.000																							
June-06	1.939	1.146	1.174	1.018	1.028	1.048	1.063	1.045	1.041	1.029																								
June-07	1.559	1.117	1.002	1.002	1.000	1.000	1.000	1.000	1.000																									
June-08	2.172	1.312	1.041	1.031	1.008	1.009	1.008	1.001																										
June-09	1.604	1.204	1.020	1.072	1.059	1.037	1.124																											
June-10	1.666	1.053	1.027	1.017	1.012	1.006																												
June-11	1.478	1.036	1.014	1.013	1.007																													
June-12	1.589	1.137	1.073	1.099																														
June-13	1.753	1.146	1.041																															
June-14	2.076	1.222																																
June-15	1.694																																	

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.372	1.259	1.105	1.081	1.061	1.051	1.043	1.029	1.027	1.041	1.016	1.018	1.007	1.004	1.002	1.002	1.002	1.003	1.000	1.001	1.001	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Latest 5	1.718	1.119	1.035	1.046	1.017	1.020	1.042	1.009	1.015	1.023	1.013	1.023	1.009	1.006	1.002	1.004	1.005	1.004	1.001	1.000	1.001	1.001	1.000	1.001	1.000	1.000	1.000	1.000	1.000					
Latest 3	1.841	1.168	1.043	1.043	1.026	1.017	1.044	1.015	1.014	1.010	1.008	1.022	1.015	1.005	1.000	1.006	1.009	1.006	1.001	1.000	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Volume Wtd																																		
All Yrs	2.056	1.178	1.063	1.051	1.031	1.032	1.024	1.016	1.007	1.016	1.009	1.013	1.007	1.004	1.002	1.002	1.003	1.002	1.000	1.000	1.002	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Latest 5	1.672	1.110	1.034	1.044	1.017	1.020	1.044	1.010	1.017	1.022	1.012	1.021	1.009	1.006	1.004	1.006	1.007	1.004	1.001	1.000	1.002	1.001	1.000	1.001	1.000	1.000	1.000	1.000	1.000					
Latest 3	1.848	1.167	1.040	1.041	1.026	1.017	1.043	1.014	1.020	1.013	1.007	1.019	1.015	1.005	1.001	1.009	1.012	1.008	1.001	1.000	1.003	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			

Dev Factor Selection																																		
Industry 1	1.937	1.138	1.051	1.025	1.014	1.013	1.011	1.011	1.011	1.011	1.011	1.010	1.010	1.008	1.007	1.006	1.006	1.005																
Industry 2		1.271	1.076	1.031	1.019	1.013	1.010	1.010	1.011	1.009	1.010	1.014	1.012	1.008	1.007	1.008	1.006	1.005	1.005	1.006														
Prior	*1.971*	*1.143*	*1.049*	*1.028*	*1.022*	*1.021*	*1.020*	*1.016*	*1.028*	*1.005*	*1.012*	*1.025*	*1.009*	*1.001*	*1.002*	*1.004*	*1.003*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.002*	
Selected	1.953	1.144	1.048	1.031	1.022	1.023	1.020	1.010	1.027	1.005	1.012	1.022	1.015	1.001	1.002	1.004	1.003	1.001	1.001	1.001	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001
FacToUlt	2.865	1.467	1.282	1.223	1.186	1.161	1.135	1.112	1.101	1.072	1.067	1.055	1.032	1.016	1.015	1.013	1.009	1.006	1.005	1.004	1.003	1.002	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001
Percent of Ult	34.9%	68.2%	78.0%	81.8%	84.3%	86.1%	88.1%	89.9%	90.8%	93.2%	93.7%	94.8%	96.9%	98.4%	98.5%	98.7%	99.1%	99.4%	99.5%	99.6%	99.7%	99.8%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	126,400	126,400	126,400	126,400	0	0.0%	0	0.0%
6/30/82-83	21,332	21,651	21,332	21,651	0	0.0%	0	0.0%
6/30/83-84	51,216	51,980	51,216	51,980	0	0.0%	0	0.0%
6/30/84-85	163,539	165,980	163,539	165,980	0	0.0%	0	0.0%
6/30/85-86	216,432	219,662	216,432	219,662	0	0.0%	0	0.0%
6/30/86-87	398,000	398,000	398,000	398,000	0	0.0%	0	0.0%
6/30/87-88	349,000	349,000	348,000	349,000	(1,000)	-0.3%	0	0.0%
6/30/88-89	491,230	498,562	491,230	498,562	0	0.0%	0	0.0%
6/30/89-90	556,732	565,041	556,732	565,041	0	0.0%	0	0.0%
6/30/90-91	303,205	307,731	303,205	307,731	0	0.0%	0	0.0%
6/30/91-92	672,534	682,572	672,534	682,572	0	0.0%	0	0.0%
6/30/92-93	397,172	403,100	397,172	403,100	0	0.0%	0	0.0%
6/30/93-94	701,000	701,000	702,000	702,000	1,000	0.1%	1,000	0.1%
6/30/94-95	420,000	420,000	420,000	420,000	0	0.0%	0	0.0%
6/30/95-96	384,867	390,611	384,867	391,680	0	0.0%	1,069	0.3%
6/30/96-97	198,000	201,960	198,000	201,960	0	0.0%	0	0.0%
6/30/97-98	486,000	495,720	493,000	502,860	7,000	1.4%	7,140	1.4%
6/30/98-99	312,000	312,000	311,000	311,000	(1,000)	-0.3%	(1,000)	-0.3%
6/30/99-00	188,000	188,000	187,000	187,000	(1,000)	-0.5%	(1,000)	-0.5%
6/30/00-01	209,000	209,000	208,000	208,000	(1,000)	-0.5%	(1,000)	-0.5%
6/30/01-02	223,000	227,460	226,000	230,520	3,000	1.3%	3,060	1.3%
6/30/02-03	219,000	223,380	221,000	225,420	2,000	0.9%	2,040	0.9%
6/30/03-04	311,000	327,600	306,000	321,300	(5,000)	-1.6%	(6,300)	-1.9%
6/30/04-05	176,000	190,050	175,000	187,950	(1,000)	-0.6%	(2,100)	-1.1%
6/30/05-06	389,000	413,700	399,000	425,250	10,000	2.6%	11,550	2.8%
6/30/06-07	260,000	278,250	254,000	258,000	(6,000)	-2.3%	(20,250)	-7.3%
6/30/07-08	548,000	600,600	544,000	592,200	(4,000)	-0.7%	(8,400)	-1.4%
6/30/08-09	386,000	409,500	421,000	449,400	35,000	9.1%	39,900	9.7%
6/30/09-10	326,000	350,700	320,000	343,350	(6,000)	-1.8%	(7,350)	-2.1%
6/30/10-11	388,000	408,450	382,000	403,200	(6,000)	-1.5%	(5,250)	-1.3%
6/30/11-12	330,000	357,000	352,000	374,850	22,000	6.7%	17,850	5.0%
6/30/12-13	328,000	358,050	326,000	353,850	(2,000)	-0.6%	(4,200)	-1.2%
6/30/13-14	303,000	339,150	324,000	349,650	21,000	6.9%	10,500	3.1%
6/30/14-15	199,000	311,000	171,000	245,700	(28,000)	-14.1%	(65,300)	-21.0%
6/30/15-16								
Total	11,031,658	11,502,859	11,070,658	11,474,818	39,000	0.4%	(28,041)	-0.2%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 6, Exhibit 2, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	0.1%	0.0%	0.0%	0.0%	1.000	1.000
408	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
396	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
384	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
372	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
360	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
348	99.9%	0.0%	0.1%	0.0%	0.0%	0.806	0.726
336	99.9%	0.0%	0.1%	0.0%	0.0%	0.775	0.685
324	99.9%	0.0%	0.1%	0.0%	0.0%	0.745	0.646
312	99.9%	0.0%	0.1%	0.0%	0.0%	0.717	0.609
300	99.9%	0.0%	0.1%	0.0%	0.0%	0.689	0.575
288	99.9%	0.0%	0.1%	0.0%	0.0%	0.662	0.542
276	99.9%	0.1%	0.1%	0.0%	0.0%	0.637	0.512
264	99.8%	0.1%	0.2%	0.0%	0.0%	0.765	0.685
252	99.7%	0.1%	0.3%	0.0%	0.0%	0.807	0.741
240	99.6%	0.1%	0.4%	0.0%	0.0%	0.822	0.761
228	99.5%	0.1%	0.5%	0.0%	0.0%	0.826	0.765
216	99.4%	0.3%	0.6%	0.1%	0.1%	0.823	0.760
204	99.1%	0.4%	0.9%	0.2%	0.1%	0.845	0.789
192	98.7%	0.2%	1.3%	0.1%	0.1%	0.862	0.811
180	98.5%	0.1%	1.5%	0.1%	0.0%	0.854	0.799
168	98.4%	1.5%	1.6%	0.9%	0.7%	0.831	0.767
156	96.9%	2.1%	3.1%	1.3%	1.0%	0.886	0.842
144	94.8%	1.1%	5.2%	0.7%	0.6%	0.904	0.866
132	93.7%	0.5%	6.3%	0.3%	0.3%	0.889	0.844
120	93.2%	2.4%	6.8%	1.7%	1.4%	0.863	0.808
108	90.8%	0.9%	9.2%	0.7%	0.6%	0.870	0.818
96	89.9%	1.8%	10.1%	1.3%	1.2%	0.849	0.790
84	88.1%	2.0%	11.9%	1.5%	1.4%	0.841	0.779
72	86.1%	1.8%	13.9%	1.5%	1.3%	0.834	0.769
60	84.3%	2.5%	15.7%	2.1%	1.9%	0.822	0.754
48	81.8%	3.8%	18.2%	3.3%	3.1%	0.817	0.747
36	78.0%	9.8%	22.0%	8.9%	8.5%	0.819	0.751
24	68.2%	33.3%	31.8%	31.4%	30.5%	0.847	0.789
12	34.9%	34.9%	65.1%	34.2%	33.9%	0.899	0.861
Total		100.0%					

NOTES:

(2) = 1 / Section 6, Exhibit 2, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	0	0		0	0
6/30/82-83	106	425	1.000	106	425
6/30/83-84	255	1,019	1.000	255	1,019
6/30/84-85	814	3,255	1.000	814	3,255
6/30/85-86	1,077	4,307	1.000	1,077	4,307
6/30/86-87	644	644	1.000	644	644
6/30/87-88	71	1,071	0.806	57	863
6/30/88-89	2,444	9,776	0.775	1,894	7,576
6/30/89-90	2,770	11,079	0.745	2,064	8,256
6/30/90-91	1,508	6,034	0.717	1,081	4,323
6/30/91-92	3,346	13,384	0.689	2,305	9,221
6/30/92-93	1,976	7,904	0.662	1,309	5,236
6/30/93-94	787	787	0.637	501	501
6/30/94-95	1,386	1,386	0.765	1,060	1,060
6/30/95-96	1,915	8,728	0.807	1,546	7,045
6/30/96-97	845	4,805	0.822	695	3,952
6/30/97-98	2,419	12,279	0.826	1,997	10,139
6/30/98-99	1,778	1,778	0.823	1,464	1,464
6/30/99-00	1,834	1,834	0.845	1,550	1,550
6/30/00-01	2,585	2,585	0.862	2,229	2,229
6/30/01-02	3,067	7,587	0.854	2,618	6,476
6/30/02-03	3,801	8,221	0.831	3,157	6,828
6/30/03-04	9,528	24,828	0.886	8,441	21,995
6/30/04-05	9,075	22,025	0.904	8,200	19,903
6/30/05-06	19,856	46,106	0.889	17,645	40,973
6/30/06-07	17,574	21,574	0.863	15,169	18,622
6/30/07-08	31,313	79,513	0.870	27,229	69,143
6/30/08-09	36,110	64,510	0.849	30,670	54,792
6/30/09-10	38,172	61,522	0.841	32,121	51,769
6/30/10-11	53,072	74,272	0.834	44,240	61,912
6/30/11-12	54,993	77,843	0.822	45,230	64,023
6/30/12-13	59,575	87,425	0.817	48,685	71,444
6/30/13-14	71,548	97,198	0.819	58,599	79,608
6/30/14-15	54,532	129,232	0.847	46,199	109,484
6/30/15-16	249,220	307,120	0.899	224,153	276,229
Total	739,994	1,202,054		635,003	1,026,263
			(7) Total Discount Factor:	0.858	0.854

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	0	0
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	0	0
(11) Discounted Value at 4%:	0	0

NOTES:
(2), (3) From Section 6, Exhibit 2, Page 1, Columns 8, 9
(4) From Section 6, Exhibit 2, Page 9, Column 7
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

University of Massachusetts (Medical Center) - Cluster 4
Medical

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	0	0		0	0
6/30/82-83	106	425	1.000	106	425
6/30/83-84	255	1,019	1.000	255	1,019
6/30/84-85	814	3,255	1.000	814	3,255
6/30/85-86	1,077	4,307	1.000	1,077	4,307
6/30/86-87	644	644	1.000	644	644
6/30/87-88	71	1,071	0.726	52	777
6/30/88-89	2,444	9,776	0.685	1,673	6,694
6/30/89-90	2,770	11,079	0.646	1,789	7,157
6/30/90-91	1,508	6,034	0.609	919	3,677
6/30/91-92	3,346	13,384	0.575	1,924	7,694
6/30/92-93	1,976	7,904	0.542	1,072	4,287
6/30/93-94	787	787	0.512	403	403
6/30/94-95	1,386	1,386	0.685	950	950
6/30/95-96	1,915	8,728	0.741	1,420	6,471
6/30/96-97	845	4,805	0.761	643	3,656
6/30/97-98	2,419	12,279	0.765	1,849	9,388
6/30/98-99	1,778	1,778	0.760	1,352	1,352
6/30/99-00	1,834	1,834	0.789	1,448	1,448
6/30/00-01	2,585	2,585	0.811	2,098	2,098
6/30/01-02	3,067	7,587	0.799	2,450	6,062
6/30/02-03	3,801	8,221	0.767	2,915	6,306
6/30/03-04	9,528	24,828	0.842	8,027	20,915
6/30/04-05	9,075	22,025	0.866	7,857	19,070
6/30/05-06	19,856	46,106	0.844	16,761	38,920
6/30/06-07	17,574	21,574	0.808	14,207	17,441
6/30/07-08	31,313	79,513	0.818	25,599	65,004
6/30/08-09	36,110	64,510	0.790	28,511	50,934
6/30/09-10	38,172	61,522	0.779	29,740	47,932
6/30/10-11	53,072	74,272	0.769	40,798	57,096
6/30/11-12	54,993	77,843	0.754	41,465	58,694
6/30/12-13	59,575	87,425	0.747	44,529	65,345
6/30/13-14	71,548	97,198	0.751	53,702	72,954
6/30/14-15	54,532	129,232	0.789	43,049	102,019
6/30/15-16	249,220	307,120	0.861	214,455	264,278
Total	739,994	1,202,054		594,550	958,666
			(7) Total Discount Factor:	0.803	0.798

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	0	0
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	0	0
(11) Discounted Value at 6%:	0	0

NOTES:
(2), (3) From Section 6, Exhibit 2, Page 1, Columns 8, 9
(4) From Section 6, Exhibit 2, Page 9, Column 8
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

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		3,019,826			3,026,686	3,110,861	6,860	91,035		
6/30/82-83		743,272	744,237		758,137	773,003	14,865	29,731		
6/30/83-84		917,731	918,859		936,086	954,440	18,355	36,709		
6/30/84-85	357,749	1,492,038	1,493,914	1,494,858	1,521,879	1,551,720	29,841	59,682	0.425	0.434
6/30/85-86	380,112	1,868,907	1,871,377	1,872,225	1,906,285	1,943,663	37,378	74,756	0.502	0.511
6/30/86-87	423,770	2,766,457	3,034,871	2,770,122	2,770,000	3,035,000	3,543	268,543	0.654	0.716
6/30/87-88	480,405	4,396,842	5,223,872	4,402,290	4,484,779	4,836,527	87,937	439,684	0.934	1.007
6/30/88-89	495,261	1,515,210	1,518,270	1,520,048	1,545,514	1,590,971	30,304	75,761	0.312	0.321
6/30/89-90	502,691	3,850,424	4,209,379	3,873,121	3,927,432	4,042,945	77,008	192,521	0.781	0.804
6/30/90-91	482,143	1,393,607	1,403,314	1,403,272	1,403,000	1,403,000	9,393	9,393	0.291	0.291
6/30/91-92	492,539	1,393,466	1,518,923	1,405,076	1,405,000	1,519,000	11,534	125,534	0.285	0.308
6/30/92-93	524,541	1,147,496	1,162,264	1,162,135	1,170,446	1,204,871	22,950	57,375	0.223	0.230
6/30/93-94	584,853	1,155,338	1,171,171	1,171,017	1,171,000	1,213,105	15,662	57,767	0.200	0.207
6/30/94-95	587,701	1,682,205	1,708,390	1,707,998	1,708,000	1,708,000	25,795	25,795	0.291	0.291
6/30/95-96	614,868	1,269,047	1,291,441	1,291,271	1,294,428	1,332,499	25,381	63,452	0.211	0.217
6/30/96-97	700,686	1,178,539	1,203,397	1,203,303	1,203,000	1,263,150	24,461	84,611	0.172	0.180
6/30/97-98	684,415	2,199,781	2,264,863	2,262,295	2,262,000	2,265,000	62,219	65,219	0.331	0.331
6/30/98-99	707,796	1,420,573	1,482,880	1,481,587	1,482,000	1,498,000	61,427	77,427	0.209	0.212
6/30/99-00	760,477	1,182,336	1,249,123	1,250,032	1,249,000	1,250,000	66,664	67,664	0.164	0.164
6/30/00-01	811,600	1,647,034	1,782,350	1,779,612	1,780,000	1,782,000	132,966	134,966	0.219	0.220
6/30/01-02	835,038	2,415,025	2,668,461	2,658,236	2,658,000	2,668,000	242,975	252,975	0.318	0.320
6/30/02-03	825,340	1,288,379	1,468,605	1,468,308	1,468,000	1,483,000	179,621	194,621	0.178	0.180
6/30/03-04	849,216	1,490,601	1,721,221	1,720,356	1,720,000	1,738,000	229,399	247,399	0.203	0.205
6/30/04-05	992,508	1,023,563	1,204,494	1,307,594	1,204,000	1,321,000	180,437	297,437	0.121	0.133
6/30/05-06	962,878	1,407,147	1,706,707	1,725,682	1,707,000	1,812,000	299,853	404,853	0.177	0.188
6/30/06-07	1,032,930	968,708	1,196,237	1,361,751	1,196,000	1,362,000	227,292	393,292	0.116	0.132
6/30/07-08	1,063,597	2,468,417	3,058,268	2,972,317	2,972,000	3,058,000	503,583	589,583	0.279	0.288
6/30/08-09	1,073,805	1,783,260	2,357,802	2,348,509	2,231,550	2,358,000	448,290	574,740	0.208	0.220
6/30/09-10	1,084,749	2,855,152	3,984,208	3,608,775	3,428,550	3,984,000	573,398	1,128,848	0.316	0.367
6/30/10-11	1,134,164	2,165,610	3,241,052	3,142,177	2,984,900	3,241,000	819,290	1,075,390	0.263	0.286
6/30/11-12	1,202,674	2,127,299	3,531,398	3,325,271	3,158,750	3,531,000	1,031,451	1,403,701	0.263	0.294
6/30/12-13	1,284,741	1,511,941	2,869,345	3,034,178	2,725,550	3,034,000	1,213,609	1,522,059	0.212	0.236
6/30/13-15	1,346,902	1,420,894	3,437,598	3,454,617	3,266,100	3,524,000	1,845,206	2,103,106	0.242	0.262
6/30/14-15	1,404,093	935,315	3,367,926	3,457,210	3,368,000	3,630,000	2,432,685	2,694,685	0.240	0.259
6/30/15-16	1,454,612	552,170	4,436,982	3,996,712	3,997,000	4,437,000	3,444,830	3,884,830	0.275	0.305
Total	26,138,853	60,653,610	75,503,199	71,631,955	75,090,072	79,458,754	14,436,462	18,805,144		
Tot 6/30/84-16	26,138,853	55,972,781	73,840,103	71,631,955	70,369,163	74,620,450	14,396,382	18,647,669	0.269	0.285

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) Sum of Section 7, Exhibit 1, Page 2, Column 3 and Section 7, Exhibit 1, Page 9, Column 8

(4) From Section 7, Exhibit 1, Page 2, Column 8

(5) From Section 7, Exhibit 1, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Accident Year	Payroll (000's)	Paid Loss Excluding Lump Sum	Paid LDF	Adjstmnt for Extra Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim	Average Age
All Prior Yrs		3,004,076							0	0		
6/30/82-83		716,272	1.001	1.000	717,237	27,000	744,237		0	0		
6/30/83-84		837,731	1.001	1.000	838,859	80,000	918,859		0	0		
6/30/84-85	357,749	1,393,062	1.001	1.000	1,394,938	98,976	1,493,914	0.418	0	0		
6/30/85-86	380,112	1,833,907	1.001	1.000	1,836,377	35,000	1,871,377	0.492	0	0		
6/30/86-87	423,770	2,644,957	1.001	1.100	2,913,371	121,500	3,034,871	0.716	1	1	268,414	89
6/30/87-88	480,405	4,101,999	1.001	1.200	4,929,029	294,843	5,223,872	1.087	2	1	827,030	76
6/30/88-89	495,261	1,302,910	1.002	1.000	1,305,970	212,300	1,518,270	0.307	0	0		
6/30/89-90	502,691	3,320,712	1.007	1.100	3,679,667	529,712	4,209,379	0.837	1	0		
6/30/90-91	482,143	1,160,107	1.008	1.000	1,169,814	233,500	1,403,314	0.291	0	0		
6/30/91-92	492,539	1,137,283	1.009	1.100	1,262,740	256,183	1,518,923	0.308	1	1	125,457	55
6/30/92-93	524,541	986,496	1.010	1.000	996,741	165,523	1,162,264	0.222	0	0		
6/30/93-94	584,853	996,338	1.011	1.000	1,007,692	163,479	1,171,171	0.200	1	1	11,354	56
6/30/94-95	587,701	1,313,000	1.012	1.000	1,329,290	379,100	1,708,390	0.291	1	1	16,290	78
6/30/95-96	614,868	927,586	1.014	1.000	940,973	350,468	1,291,441	0.210	0	0		
6/30/96-97	700,686	923,657	1.020	1.000	941,672	261,725	1,203,397	0.172	1	0		
6/30/97-98	684,415	1,934,781	1.030	1.000	1,992,242	272,621	2,264,863	0.331	2	2	28,730	82
6/30/98-99	707,796	1,215,323	1.045	1.000	1,270,552	212,327	1,482,880	0.210	1	1	55,229	69
6/30/99-00	760,477	844,236	1.066	1.000	899,782	349,341	1,249,123	0.164	0	0		
6/30/00-01	811,600	1,373,532	1.091	1.000	1,498,330	284,020	1,782,350	0.220	1	1	124,798	65
6/30/01-02	835,038	1,971,775	1.120	1.000	2,207,912	460,549	2,668,461	0.320	1	1	236,137	71
6/30/02-03	825,340	1,115,879	1.155	1.000	1,288,759	179,846	1,468,605	0.178	1	1	172,880	65
6/30/03-04	849,216	1,167,101	1.186	1.000	1,384,458	336,763	1,721,221	0.203	2	0		
6/30/04-05	992,508	825,463	1.209	1.000	997,803	206,691	1,204,494	0.121	0	0		
6/30/05-06	962,878	1,206,474	1.240	1.000	1,496,451	210,257	1,706,707	0.177	2	2	144,988	62
6/30/06-07	1,032,930	783,708	1.277	1.000	1,000,834	195,403	1,196,237	0.116	0	0		
6/30/07-08	1,063,597	1,687,167	1.320	1.000	2,227,273	830,995	3,058,268	0.288	3	2	270,053	68
6/30/08-09	1,073,805	1,453,260	1.366	1.000	1,985,776	372,025	2,357,802	0.220	5	5	106,503	67
6/30/09-10	1,084,749	2,299,652	1.425	1.000	3,277,115	707,093	3,984,208	0.367	8	7	139,637	61
6/30/10-11	1,134,164	1,599,427	1.524	1.000	2,437,310	803,742	3,241,052	0.286	7	5	167,577	59
6/30/11-12	1,202,674	1,727,037	1.656	1.000	2,860,754	670,644	3,531,398	0.294	15	7	161,959	60
6/30/12-13	1,284,741	1,207,494	1.830	1.000	2,209,893	659,452	2,869,345	0.223	17	11	91,127	58
6/30/13-15	1,346,902	1,248,894	2.187	1.000	2,731,366	706,232	3,437,598	0.255	43	18	82,360	53
6/30/14-15	1,404,093	935,315	3.013	1.000	2,817,699	550,226	3,367,926	0.240	90	41	45,912	54
6/30/15-16	1,454,612	552,170	6.621	1.000	3,655,994	780,989	4,436,982	0.305		93	33,374	50
Total	26,138,853	51,748,781			63,504,673	11,998,526	75,503,199		206	202		

NOTES:
(2) Provided by Commonwealth of Massachusetts
(3), (4) From Section 7, Exhibit 1, Page 7
(5) Based on information from the MA WCRIB
(6) = (3) x (4) x (5)
(7) From Section 7, Exhibit 1, Page 9, Column 13
(8) = (6) + (7)
(9) = (8) / (2) / 10
(10), (11) Provided by Commonwealth of Massachusetts
(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss Excluding Lump Sum	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	357,749	0.586	1,393,062	1.001	1,395,882	98,976	1,494,858	0.418	0.390
6/30/85-86	380,112	0.649	1,833,907	1.001	1,837,225	35,000	1,872,225	0.493	0.483
6/30/86-87	423,770	0.643	2,644,957	1.001	2,648,622	121,500	2,770,122	0.654	0.625
6/30/87-88	480,405	0.843	4,101,999	1.001	4,107,447	294,843	4,402,290	0.916	0.855
6/30/88-89	495,261	0.417	1,302,910	1.002	1,307,748	212,300	1,520,048	0.307	0.264
6/30/89-90	502,691	0.618	3,320,712	1.007	3,343,409	529,712	3,873,121	0.770	0.665
6/30/90-91	482,143	0.242	1,160,107	1.008	1,169,772	233,500	1,403,272	0.291	0.243
6/30/91-92	492,539	0.254	1,137,283	1.009	1,148,893	256,183	1,405,076	0.285	0.233
6/30/92-93	524,541	0.188	986,496	1.010	996,612	165,523	1,162,135	0.222	0.190
6/30/93-94	584,853	0.170	996,338	1.011	1,007,539	163,479	1,171,017	0.200	0.172
6/30/94-95	587,701	0.221	1,313,000	1.012	1,328,899	379,100	1,707,998	0.291	0.226
6/30/95-96	614,868	0.151	927,586	1.014	940,803	350,468	1,291,271	0.210	0.153
6/30/96-97	700,686	0.134	923,657	1.020	941,578	261,725	1,203,303	0.172	0.134
6/30/97-98	684,415	0.278	1,934,781	1.030	1,989,674	272,621	2,262,295	0.331	0.291
6/30/98-99	707,796	0.175	1,215,323	1.045	1,269,260	212,327	1,481,587	0.209	0.179
6/30/99-00	760,477	0.120	844,236	1.066	900,692	349,341	1,250,032	0.164	0.118
6/30/00-01	811,600	0.181	1,373,532	1.091	1,495,591	284,020	1,779,612	0.219	0.184
6/30/01-02	835,038	0.253	1,971,775	1.120	2,197,687	460,549	2,658,236	0.318	0.263
6/30/02-03	825,340	0.156	1,115,879	1.155	1,288,462	179,846	1,468,308	0.178	0.156
6/30/03-04	849,216	0.162	1,167,101	1.186	1,383,592	336,763	1,720,356	0.203	0.163
6/30/04-05	992,508	0.161	825,463	1.209	1,100,903	206,691	1,307,594	0.132	0.111
6/30/05-06	962,878	0.166	1,206,474	1.240	1,515,426	210,257	1,725,682	0.179	0.157
6/30/06-07	1,032,930	0.171	783,708	1.277	1,166,348	195,403	1,361,751	0.132	0.113
6/30/07-08	1,063,597	0.176	1,687,167	1.320	2,141,322	830,995	2,972,317	0.279	0.201
6/30/08-09	1,073,805	0.182	1,453,260	1.366	1,976,484	372,025	2,348,509	0.219	0.184
6/30/09-10	1,084,749	0.186	2,299,652	1.425	2,901,682	707,093	3,608,775	0.333	0.267
6/30/10-11	1,134,164	0.190	1,599,427	1.524	2,338,435	803,742	3,142,177	0.277	0.206
6/30/11-12	1,202,674	0.195	1,727,037	1.656	2,654,627	670,644	3,325,271	0.276	0.221
6/30/12-13	1,284,741	0.200	1,207,494	1.830	2,374,726	659,452	3,034,178	0.236	0.185
6/30/13-15	1,346,902	0.205	1,248,894	2.187	2,748,385	706,232	3,454,617	0.256	0.204
6/30/14-15	1,404,093	0.210	935,315	3.013	2,906,984	550,226	3,457,210	0.246	0.207
6/30/15-16	1,454,612	0.216	552,170	6.621	3,215,723	780,989	3,996,712	0.275	0.221
Total	26,138,853		47,190,702		59,740,429	11,891,526	71,631,955		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 7, Exhibit 1, Page 4, Column 11

(4) From Section 7, Exhibit 1, Page 2, Column 3

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

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) From Section 7, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Exp Ult Loss Excluding Lump Sum	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.586	0.586
6/30/85-86									0.649	0.649
6/30/86-87									0.643	0.643
6/30/87-88									0.843	0.843
6/30/88-89									0.417	0.417
6/30/89-90									0.618	0.618
6/30/90-91	482,143	1,169,814	0.243	0.969	0.235	1.673	0.393	0.136	0.242	0.242
6/30/91-92	492,539	1,262,740	0.256	1.063	0.272	1.641	0.447	0.126	0.254	0.254
6/30/92-93	524,541	996,741	0.190	1.239	0.235	1.608	0.379	0.110	0.188	0.188
6/30/93-94	584,853	1,007,692	0.172	1.223	0.211	1.577	0.332	0.114	0.167	0.170
6/30/94-95	587,701	1,329,290	0.226	1.212	0.274	1.546	0.424	0.117	0.214	0.221
6/30/95-96	614,868	940,973	0.153	1.202	0.184	1.516	0.279	0.121	0.152	0.151
6/30/96-97	700,686	941,672	0.134	1.190	0.160	1.486	0.238	0.124	0.135	0.134
6/30/97-98	684,415	1,992,242	0.291	1.175	0.342	1.457	0.498	0.129	0.272	0.278
6/30/98-99	707,796	1,270,552	0.180	1.160	0.208	1.428	0.297	0.133	0.174	0.175
6/30/99-00	760,477	899,782	0.118	1.141	0.135	1.400	0.189	0.138	0.124	0.120
6/30/00-01	811,600	1,498,330	0.185	1.112	0.205	1.373	0.282	0.144	0.182	0.181
6/30/01-02	835,038	2,207,912	0.264	1.090	0.288	1.346	0.388	0.150	0.255	0.253
6/30/02-03	825,340	1,288,759	0.156	1.086	0.170	1.319	0.224	0.153	0.157	0.156
6/30/03-04	849,216	1,384,458	0.163	1.086	0.177	1.294	0.229	0.157	0.167	0.162
6/30/04-05	992,508	997,803	0.101	1.080	0.109	1.268	0.138	0.161	0.165	0.161
6/30/05-06	962,878	1,496,451	0.155	1.069	0.166	1.243	0.206	0.166	0.170	0.166
6/30/06-07	1,032,930	1,000,834	0.097	1.057	0.102	1.219	0.125	0.171	0.175	0.171
6/30/07-08	1,063,597	2,227,273	0.209	1.045	0.219	1.195	0.262	0.176	0.181	0.176
6/30/08-09	1,073,805	1,985,776	0.185	1.033	0.191	1.172	0.224	0.182	0.186	0.182
6/30/09-10	1,084,749	3,277,115	0.302	1.029	0.311	1.149	0.357	0.186	0.191	0.186
6/30/10-11	1,134,164	2,437,310	0.215	1.031	0.221	1.126	0.249	0.190	0.194	0.190
6/30/11-12	1,202,674	2,860,754	0.238	1.024	0.244	1.104	0.269	0.195	0.200	0.195
6/30/12-13	1,284,741	2,209,893	0.172	1.015	0.175	1.082	0.189	0.200	0.206	0.200
6/30/13-15	1,346,902	2,731,366	0.203	1.011	0.205	1.061	0.218	0.205	0.210	0.205
6/30/14-15	1,404,093	2,817,699	0.201	1.006	0.202	1.040	0.210	0.210	0.216	0.210
6/30/15-16	1,454,612	3,655,994	0.251	1.000	0.251	1.020	0.256	0.216		0.216
Total	23,498,866	45,889,224								

Trend Last 4 (ex 15-16):	-3.9%	Avg 3 (ex 15-16):	0.205
Trend Last 8 (ex 15-16):	-2.2%	Avg 5 (ex 15-16):	0.227
Trend Last 12 (ex 15-16):	4.4%	Avg 10 (ex 15-16):	0.231
Prior Selected Trend:	2.0%	Prior Sel Avg:	0.220
Selected Trend:	2.0%	Sel. Loss Cost:	0.220

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 7, Exhibit 1, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCRIB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.950
(2)	Credibility		16%
(3)	Average Pmt Trend Statewide		0.960
(4)	Credibility Weighted Trend		0.958
		(Low)	(High)
(5)	Selected Range	0.949	0.968
(6)	Incremental Paid for 2016	0	0
(7)	Estimated Reserve	0	0
(8)	Paid to Date (82 & Prior)	3,004,076	3,004,076
(9)	Est Ult Paid for 1982 & Prior	3,004,076	3,004,076

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	2,287	17,340
(11)	Projected Number of Years	4	7
(12)	Estimated Reserve	9,146	121,380
(13)	Paid to Date (82 & Prior)	3,004,076	3,004,076
(14)	Est Ult Paid for 1982 & Prior	3,013,223	3,125,456
(14a)	Paid Counts During Fiscal Year	0	0
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	3,010,936	3,095,111
(16)	Lump Sum Ultimates	15,750	15,750
(17)	Ult Loss Including Lump Sums	**3,026,686**	**3,110,861**
(18)	Implied Tail	1.002	1.030
(19)	Ult Loss Inc Lump Sums @ 6/15	3,071,846	3,184,383

NOTES:

(1) From Section 7, Exhibit 1, Page 6
(2) = (Average of Section 7, Exhibit 1, Page 6, Column 3 / 3,000,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 7, Exhibit 1, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 7, Exhibit 1, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) From Section 7, Exhibit 1, Page 9, Column 13
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	96,383	11.476			
1993	2	98,686	11.500	1.024		
1994	3	90,507	11.413	0.917		
1995	4	91,599	11.425	1.012		
1996	5	82,524	11.321	0.901		
1997	6	95,179	11.464	1.153		
1998	7	100,117	11.514	1.052		
1999	8	101,445	11.527	1.013		
2000	9	91,541	11.425	0.902	n =	23
2001	10	95,087	11.463	1.039	S(x) =	46,069
2002	11	101,860	11.531	1.071	S(x-sq) =	92,277,219
2003	12	103,466	11.547	1.016	S(xy) =	519,929
2004	13	103,217	11.545	0.998	S(y) =	260
2005	14	106,270	11.574	1.030	D =	23,276
2006	15	111,087	11.618	1.045	slope =	-0.045
2007	16	115,666	11.658	1.041	Avg Trend =	0.955
2008	17	120,810	11.702	1.044		
2009	18	85,560	11.357	0.708		
2010	19	71,175	11.173	0.832		
2011	20	70,876	11.169	0.996		
2012	21	42,013	10.646	0.593		
2013	22	45,160	10.718	1.075		
2014	23	6,860	8.833	0.152		
2015	24	0				
2016	25	0				
					Selected Trend:	**0.950**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2014: 0.152 = 6860 / 45160

Commonwealth of Massachusetts Workers Compensation
Massachusetts Colleges & Universities - Cluster 4
INDEMNITY
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	54,010	142,576	208,148	264,888	314,931	357,219	371,053	469,928	488,830	527,760	553,935	571,859	597,183	632,418	652,652	668,547	668,547	676,026	716,272	716,272	716,272	716,272	716,272	716,272	716,272	716,272	716,272	716,272	716,272	716,272	716,272	716,272	716,272	716,272
June-84	99,917	266,707	383,604	485,764	576,711	646,670	708,919	756,240	783,256	798,348	807,607	799,910	809,636	819,761	830,411	841,202	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	837,731	
June-85	145,363	376,000	561,409	702,017	806,337	944,094	1,041,045	1,113,616	1,165,340	1,204,638	1,251,307	1,274,495	1,298,633	1,324,024	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	1,393,062	
June-86	146,844	393,892	560,427	714,824	852,275	1,013,300	1,126,822	1,223,737	1,303,796	1,350,669	1,397,048	1,447,454	1,502,391	1,555,201	1,632,671	1,697,735	1,756,102	1,781,294	1,805,911	1,830,855	1,833,907	1,833,907	1,833,907	1,833,907	1,833,907	1,833,907	1,833,907	1,833,907	1,833,907	1,833,907	1,833,907	1,833,907		
June-87	205,350	542,065	782,031	964,915	1,140,809	1,261,213	1,366,787	1,443,695	1,510,844	1,568,560	1,627,834	1,689,585	1,754,007	1,801,170	1,862,691	1,928,482	1,995,204	2,043,636	2,086,293	2,127,530	2,170,638	2,215,734	2,269,157	2,341,746	2,389,183	2,436,751	2,486,729	2,537,563	2,590,111	2,644,957				
June-88	264,730	647,871	957,840	1,332,415	1,600,031	1,789,064	2,016,553	2,143,780	2,273,154	2,384,070	2,485,765	2,581,511	2,687,118	2,803,766	2,927,359	3,052,144	3,156,171	3,229,466	3,302,225	3,377,918	3,456,925	3,541,131	3,624,626	3,707,957	3,794,835	3,883,619	3,973,595	4,049,675	4,101,999					
June-89	203,700	458,930	663,759	873,071	1,047,827	1,143,271	1,198,464	1,232,178	1,250,874	1,282,165	1,292,717	1,298,047	1,302,239	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910	1,302,910						
June-90	251,034	593,345	877,389	1,070,415	1,170,169	1,310,507	1,405,772	1,541,316	1,646,975	1,785,002	1,902,032	2,022,921	2,130,629	2,240,435	2,354,155	2,465,796	2,583,494	2,694,389	2,807,976	2,928,761	3,000,834	3,057,656	3,117,154	3,198,892	3,277,762	3,320,712	3,320,712							
June-91	210,725	476,992	661,310	747,971	826,820	877,501	964,982	1,043,288	1,062,987	1,078,493	1,092,473	1,107,416	1,121,900	1,136,365	1,154,741	1,159,007	1,160,107	1,160,107	1,160,107	1,160,107	1,160,107	1,160,107	1,160,107	1,160,107	1,160,107	1,160,107								
June-92	230,185	473,793	612,524	709,857	752,262	788,923	831,701	862,151	886,987	914,044	968,299	997,727	1,032,093	1,067,423	1,093,472	1,120,923	1,133,758	1,133,853	1,135,353	1,135,353	1,135,353	1,136,695	1,136,695	1,136,799	1,137,283									
June-93	250,714	541,198	609,220	695,349	761,795	896,967	969,498	986,209	986,209	986,209	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496										
June-94	142,078	335,638	434,332	540,452	602,360	665,759	700,338	683,894	702,764	722,297	742,006	760,225	779,419	799,569	819,773	841,452	863,666	885,787	907,933	930,019	952,106	974,192	996,338											
June-95	115,982	327,962	450,743	510,570	656,919	704,734	751,757	811,410	863,231	899,192	899,252	902,615	916,017	958,344	1,001,523	1,046,791	1,090,356	1,133,473	1,179,286	1,223,263	1,267,764	1,313,000												
June-96	206,256	426,449	543,267	632,734	711,202	763,750	825,421	867,895	906,744	927,586	927,586	927,586	927,586	927,586	927,586	927,586	927,586	927,586	927,586	927,586	927,586													
June-97	184,229	328,446	444,786	555,024	612,566	653,987	680,550	699,551	720,522	739,692	759,525	784,015	805,205	826,592	851,586	873,746	896,010	918,427	923,657	923,657														
June-98	204,733	326,969	438,428	556,503	656,266	750,818	946,526	1,035,878	1,116,871	1,200,899	1,288,861	1,378,390	1,471,075	1,560,882	1,640,371	1,713,867	1,786,522	1,860,045	1,934,781															
June-99	178,965	393,824	642,327	727,290	775,010	801,143	828,610	857,804	888,093	943,651	979,256	1,011,764	1,044,136	1,077,612	1,111,519	1,145,659	1,180,206	1,215,323																
June-00	277,497	570,937	719,211	779,101	816,241	839,009	844,236	844,236	844,236	844,236	844,236	844,236	844,236	844,236	844,236	844,236	844,236																	
June-01	211,269	540,991	786,054	907,942	982,546	1,034,355	1,086,105	1,123,788	1,153,822	1,184,076	1,214,203	1,245,356	1,276,910	1,308,682	1,340,850	1,373,532																		
June-02	189,348	645,495	949,546	1,190,744	1,315,603	1,438,839	1,509,596	1,578,992	1,633,082	1,686,943	1,742,639	1,799,055	1,855,859	1,913,344	1,971,775																			
June-03	291,166	554,149	689,280	758,177	839,325	895,935	923,456	950,915	977,016	1,004,005	1,031,413	1,059,708	1,087,564	1,115,879																				
June-04	217,692	487,010	658,712	817,060	1,008,366	1,101,139	1,150,675	1,163,453	1,163,453	1,163,453	1,163,453	1,167,101	1,167,101																					
June-05	230,521	418,799	624,539	726,139	780,814	805,681	824,654	825,393	825,463	825,463	825,463	825,463																						
June-06	295,643	638,840	855,565	960,239	1,005,254	1,031,933	1,059,134	1,097,733	1,118,317	1,164,085	1,206,474																							
June-07	271,385	517,910	631,652	710,911	719,279	741,612	769,416	783,708	783,708	783,708																								
June-08	266,597	683,370	951,226	1,163,168	1,327,356	1,479,040	1,567,518	1,628,952	1,687,167																									
June-09	286,738	569,698	809,591	1,006,874	1,150,080	1,267,290	1,367,159	1,453,260																										
June-10	418,176	997,028	1,315,276	1,658,156	1,884,889	2,102,819	2,299,652																											
June-11	441,106	954,293	1,366,571	1,466,786	1,533,060	1,599,427																												
June-12	412,473	870,425	1,295,826	1,604,006	1,727,037																													
June-13	360,464	710,865	979,073	1,207,494																														
June-14	466,274	972,487	1,248,894																															
June-15	513,416	935,315																																
June-16	552,170																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.640	1.460	1.273	1.189	1.134	1.039	1.266	1.040	1.080	1.050	1.032	1.044	1.059	1.032	1.024	1.000	1.011	1.060	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-84	2.669	1.438	1.266	1.187	1.121	1.096	1.067	1.036	1.019	1.012	0.990	1.012	1.013	1.013	1.013	0.996	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
June-85	2.587	1.493	1.250	1.149	1.171	1.103	1.070	1.046	1.034	1.039	1.019	1.019	1.020	1.052	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
June-86	2.682	1.423	1.275	1.192	1.189	1.112	1.086	1.065	1.036	1.034	1.036	1.038	1.035	1.050	1.040	1.034	1.014	1.014	1.014	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
June-87	2.640	1.443	1.234	1.182	1.106	1.084	1.056	1.047	1.038	1.038	1.038	1.038	1.027	1.034	1.035	1.035	1.024	1.021	1.020	1.020	1.021	1.024	1.032	1.020	1.020	1.021	1.020	1.021	1.021				
June-88	2.447	1.478	1.391	1.201	1.118	1.127	1.063	1.060	1.049	1.043	1.039	1.041	1.043	1.044	1.043	1.034	1.023	1.023	1.023	1.023	1.024	1.024	1.023	1.023	1.023	1.023	1.019	1.013					
June-89	2.253	1.446	1.315	1.200	1.091	1.048	1.028	1.015	1.025	1.008	1.004	1.003	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
June-90	2.364	1.479	1.220	1.093	1.120	1.073	1.096	1.069	1.084	1.066	1.064	1.053	1.052	1.051	1.047	1.048	1.043	1.042	1.043	1.025	1.019	1.019	1.026	1.025	1.013	1.000							
June-91	2.264	1.386	1.131	1.105	1.061	1.100	1.081	1.019	1.015	1.013	1.014	1.013	1.013	1.016	1.004	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
June-92	2.058	1.293	1.159	1.060	1.049	1.054	1.037	1.029	1.031	1.059	1.030	1.034	1.034	1.024	1.025	1.011	1.000	1.001	1.000	1.000	1.001	1.000	1.000	1.000									
June-93	2.159	1.126	1.141	1.096	1.177	1.081	1.017	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	2.362	1.294	1.244	1.115	1.105	1.052	0.977	1.028	1.028	1.027	1.025	1.025	1.026	1.025	1.026	1.026	1.026	1.025	1.024	1.024	1.023	1.023											
June-95	2.828	1.374	1.133	1.287	1.073	1.067	1.079	1.064	1.042	1.000	1.004	1.015	1.046	1.045	1.045	1.042	1.040	1.040	1.037	1.036	1.036												
June-96	2.068	1.274	1.165	1.124	1.074	1.081	1.051	1.045	1.023	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
June-97	1.783	1.354	1.248	1.104	1.068	1.041	1.028	1.030	1.027	1.027	1.032	1.027	1.027	1.030	1.026	1.025	1.025	1.006	1.000														
June-98	1.597	1.341	1.269	1.179	1.144	1.261	1.094	1.078	1.075	1.073	1.069	1.067	1.061	1.051	1.045	1.042	1.041	1.040															
June-99	2.201	1.631	1.132	1.066	1.034	1.034	1.035	1.035	1.063	1.038	1.033	1.032	1.032	1.031	1.031	1.030	1.030																
June-00	2.057	1.260	1.083	1.048	1.028	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																	
June-01	2.561	1.453	1.155	1.082	1.053	1.050	1.035	1.027	1.026	1.025	1.026	1.025	1.025	1.025	1.024																		
June-02	3.409	1.471	1.254	1.105	1.094	1.049	1.046	1.034	1.033	1.033	1.032	1.032	1.031	1.031																			
June-03	1.903	1.244	1.100	1.107	1.067	1.031	1.030	1.027	1.028	1.027	1.027	1.026	1.026																				
June-04	2.237	1.353	1.240	1.234	1.092	1.045	1.011	1.000	1.000	1.000	1.003	1.000																					
June-05	1.817	1.491	1.163	1.075	1.032	1.024	1.001	1.000	1.000	1.000	1.000																						
June-06	2.161	1.339	1.122	1.047	1.027	1.026	1.036	1.019	1.041	1.036																							
June-07	1.908	1.220	1.125	1.012	1.031	1.037	1.019	1.000	1.000																								
June-08	2.563	1.392	1.223	1.141	1.114	1.060	1.039	1.036																									
June-09	1.987	1.421	1.244	1.142	1.102	1.079	1.063																										
June-10	2.384	1.319	1.261	1.137	1.116	1.094																											
June-11	2.163	1.432	1.073	1.045	1.043																												
June-12	2.110	1.489	1.238	1.077																													
June-13	1.972	1.377	1.233																														
June-14	2.086	1.284																															
June-15	1.822																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.265	1.384	1.205	1.126	1.091	1.070	1.052	1.033	1.032	1.027	1.022	1.025	1.027	1.028	1.023	1.018	1.016	1.017	1.011	1.009	1.010	1.007	1.007	1.007	1.006	1.005	1.006	1.006	1.004	1.000	1.000	1.000	1.000	
Latest 5	2.031	1.380	1.210	1.108	1.081	1.059	1.032	1.011	1.014	1.019	1.018	1.017	1.023	1.028	1.025	1.020	1.027	1.022	1.012	1.012	1.012	1.008	1.005	1.010	1.011	1.009	1.008	1.007	1.004					
Latest 3	1.960	1.383	1.181	1.086	1.087	1.077	1.040	1.018	1.014	1.012	1.010	1.019	1.027	1.018	1.018	1.024	1.032	1.015	1.012	1.020	1.020	1.008	1.000	1.008	1.004	1.008	1.013	1.011	1.007	1.000	1.000			
Volume Wtd																																		
All Yrs	2.198	1.380	1.204	1.121	1.091	1.072	1.050	1.035	1.034	1.030	1.026	1.028	1.029	1.031	1.026	1.023	1.019	1.019	1.015	1.013	1.013	1.011	1.013	1.012	1.011	1.009	1.010	1.009	1.007	1.000	1.000	1.000	1.000	
Latest 5	2.025	1.377	1.204	1.105	1.087	1.066	1.036	1.014	1.015	1.021	1.020	1.019	1.025	1.030	1.028	1.024	1.030	1.026	1.013	1.013	1.012	1.011	1.011	1.016	1.015	1.011	1.012	1.010	1.007					
Latest 3	1.954	1.380	1.175	1.088	1.088	1.079	1.044	1.022	1.017	1.013	1.011	1.021	1.028	1.022	1.020	1.029	1.034	1.022	1.015	1.022	1.021	1.007	1.000	1.014	1.007	1.011	1.016	1.012	1.009	1.000	1.000			

Dev Factor Selection																																		
Industry 1	2.869	1.531	1.210	1.100	1.034	1.024	1.017	1.007	1.008	1.005	1.005	1.013	1.002	1.003	1.004	1.004	1.003	1.003																
Industry 2		1.813	1.291	1.118	1.066	1.025	1.021	1.011	1.007	1.003	1.008	1.005	1.005	1.003	1.003	1.004	1.006	1.002	1.004	1.004														
Prior	*2.223*	*1.406*	*1.195*	*1.101*	*1.088*	*1.060*	*1.036*	*1.035*	*1.035*	*1.029*	*1.027*	*1.025*	*1.027*	*1.031*	*1.027*	*1.030*	*1.019*	*1.015*	*1.010*	*1.005*	*1.002*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.005*	*1.001*	*1.000*	*1.000*	*1.000*	*1.000*	*1.002*	
Selected	2.198	1.377	1.195	1.105	1.087	1.069	1.043	1.035	1.034	1.030	1.026	1.019	1.027	1.031	1.026	1.024	1.019	1.015	1.010	1.005	1.002	1.001	1.001	1.001	1.001	1.001	1.005	1.001	1.000	1.000	1.000	1.000	1.000	1.001
FacToUlt	6.621	3.013	2.187	1.830	1.656	1.524	1.425	1.366	1.320	1.277	1.240	1.209	1.186	1.155	1.120	1.091	1.066	1.045	1.030	1.020	1.014	1.012	1.011	1.010	1.009	1.008	1.007	1.002	1.001	1.001	1.001	1.001	1.001	1.001
Percent of Ult	15.1%	33.2%	45.7%	54.6%	60.4%	65.6%	70.2%	73.2%	75.8%	78.3%	80.6%	82.7%	84.3%	86.6%	89.3%	91.7%	93.8%	95.7%	97.1%	98.1%	98.6%	98.8%	98.9%	99.0%	99.1%	99.2%	99.3%	99.8%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	3,071,846	3,184,383	3,026,686	3,110,861	(45,160)	-1.5%	(73,522)	-2.3%
6/30/82-83	758,137	773,003	758,137	773,003	0	0.0%	0	0.0%
6/30/83-84	936,086	954,440	936,086	954,440	0	0.0%	0	0.0%
6/30/84-85	1,521,879	1,551,720	1,521,879	1,551,720	0	0.0%	0	0.0%
6/30/85-86	1,906,285	1,943,663	1,906,285	1,943,663	0	0.0%	0	0.0%
6/30/86-87	2,716,000	2,975,000	2,770,000	3,035,000	54,000	2.0%	60,000	2.0%
6/30/87-88	4,431,408	4,778,970	4,484,779	4,836,527	53,371	1.2%	57,557	1.2%
6/30/88-89	1,545,514	1,590,971	1,545,514	1,590,971	0	0.0%	0	0.0%
6/30/89-90	3,927,432	4,042,945	3,927,432	4,042,945	0	0.0%	0	0.0%
6/30/90-91	1,405,000	1,405,000	1,403,000	1,403,000	(2,000)	-0.1%	(2,000)	-0.1%
6/30/91-92	1,413,000	1,527,000	1,405,000	1,519,000	(8,000)	-0.6%	(8,000)	-0.5%
6/30/92-93	1,170,446	1,204,871	1,170,446	1,204,871	0	0.0%	0	0.0%
6/30/93-94	1,150,000	1,189,851	1,171,000	1,213,105	21,000	1.8%	23,254	2.0%
6/30/94-95	1,665,000	1,666,000	1,708,000	1,708,000	43,000	2.6%	42,000	2.5%
6/30/95-96	1,294,428	1,332,499	1,294,428	1,332,499	0	0.0%	0	0.0%
6/30/96-97	1,213,000	1,273,650	1,203,000	1,263,150	(10,000)	-0.8%	(10,500)	-0.8%
6/30/97-98	2,216,000	2,220,000	2,262,000	2,265,000	46,000	2.1%	45,000	2.0%
6/30/98-99	1,469,000	1,485,000	1,482,000	1,498,000	13,000	0.9%	13,000	0.9%
6/30/99-00	1,277,000	1,279,000	1,249,000	1,250,000	(28,000)	-2.2%	(29,000)	-2.3%
6/30/00-01	1,792,000	1,796,000	1,780,000	1,782,000	(12,000)	-0.7%	(14,000)	-0.8%
6/30/01-02	2,673,000	2,686,000	2,658,000	2,668,000	(15,000)	-0.6%	(18,000)	-0.7%
6/30/02-03	1,479,000	1,516,000	1,468,000	1,483,000	(11,000)	-0.7%	(33,000)	-2.2%
6/30/03-04	1,765,000	1,854,000	1,720,000	1,738,000	(45,000)	-2.5%	(116,000)	-6.3%
6/30/04-05	1,245,000	1,367,000	1,204,000	1,321,000	(41,000)	-3.3%	(46,000)	-3.4%
6/30/05-06	1,719,000	1,836,000	1,707,000	1,812,000	(12,000)	-0.7%	(24,000)	-1.3%
6/30/06-07	1,248,000	1,441,000	1,196,000	1,362,000	(52,000)	-4.2%	(79,000)	-5.5%
6/30/07-08	2,925,000	3,018,000	2,972,000	3,058,000	47,000	1.6%	40,000	1.3%
6/30/08-09	2,171,700	2,298,000	2,231,550	2,358,000	59,850	2.8%	60,000	2.6%
6/30/09-10	3,430,450	3,999,000	3,428,550	3,984,000	(1,900)	-0.1%	(15,000)	-0.4%
6/30/10-11	3,110,300	3,406,000	2,984,900	3,241,000	(125,400)	-4.0%	(165,000)	-4.8%
6/30/11-12	3,078,000	3,477,000	3,158,750	3,531,000	80,750	2.6%	54,000	1.6%
6/30/12-13	2,669,500	3,084,000	2,725,550	3,034,000	56,050	2.1%	(50,000)	-1.6%
6/30/13-15	3,574,850	3,861,000	3,266,100	3,524,000	(308,750)	-8.6%	(337,000)	-8.7%
6/30/14-15	3,795,000	4,195,000	3,368,000	3,630,000	(427,000)	-11.3%	(565,000)	-13.5%
6/30/15-16								
Total	71,763,262	76,211,966	71,093,072	75,021,754	(670,189)	-0.9%	(1,190,212)	-1.6%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 7, Exhibit 1, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Calculation of Ultimate Lump Sum Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Accident Year	Paid Loss Excluding Lump Sum	Implied Cumulative LDF	Ult Loss Excluding Lump Sum	Selected Incr Lump Sum % Outstdg	Cumulative Lump Sum % Outstdg	Total Lump Sum Outstdg	Paid Lump Sum to Date	Est Ult Lump Sum - Incr Method	Ultimate Lump Sum Percentage	Lump Sum LDF	Est Ult Lump Sum - Paid Method	Selected Est Ultimate Lump Sums	Prior Est Ultimate Lump Sums
All Prior Yrs	3,004,076	1.016	3,053,023	0.0%	0.0%	0	15,750	15,750	0.5%	1.000	15,750	15,750	15,750
6/30/82-83	716,272	1.001	717,237	0.0%	0.0%	0	27,000	27,000	3.8%	1.000	27,000	27,000	27,000
6/30/83-84	837,731	1.001	838,859	0.0%	0.0%	0	80,000	80,000	9.5%	1.000	80,000	80,000	80,000
6/30/84-85	1,393,062	1.001	1,394,938	0.0%	0.0%	0	98,976	98,976	7.1%	1.000	98,976	98,976	98,976
6/30/85-86	1,833,907	1.001	1,836,377	0.0%	0.0%	0	35,000	35,000	1.9%	1.000	35,000	35,000	35,000
6/30/86-87	2,644,957	1.101	2,913,371	0.0%	0.0%	0	121,500	121,500	4.2%	1.000	121,500	121,500	121,500
6/30/87-88	4,101,999	1.202	4,929,029	0.0%	0.0%	0	294,843	294,843	6.0%	1.000	294,843	294,843	294,843
6/30/88-89	1,302,910	1.002	1,305,970	0.0%	0.0%	0	212,300	212,300	16.3%	1.000	212,300	212,300	212,300
6/30/89-90	3,320,712	1.108	3,679,667	0.0%	0.0%	0	529,712	529,712	14.4%	1.000	529,712	529,712	529,712
6/30/90-91	1,160,107	1.008	1,169,814	0.0%	0.0%	0	233,500	233,500	20.0%	1.000	233,500	233,500	233,500
6/30/91-92	1,137,283	1.110	1,262,740	0.0%	0.0%	0	256,183	256,183	20.3%	1.000	256,183	256,183	263,220
6/30/92-93	986,496	1.010	996,741	0.1%	0.1%	997	161,000	161,997	16.3%	1.050	169,050	165,523	165,524
6/30/93-94	996,338	1.011	1,007,692	0.0%	0.1%	1,008	159,000	160,008	15.9%	1.050	166,950	163,479	163,468
6/30/94-95	1,313,000	1.012	1,329,290	0.0%	0.1%	1,329	369,205	370,534	27.9%	1.050	387,665	379,100	379,078
6/30/95-96	927,586	1.014	940,973	0.0%	0.1%	941	341,461	342,402	36.4%	1.050	358,534	350,468	350,471
6/30/96-97	923,657	1.020	941,672	0.0%	0.1%	942	254,882	255,824	27.2%	1.050	267,626	261,725	261,730
6/30/97-98	1,934,781	1.030	1,992,242	0.0%	0.1%	1,992	265,000	266,992	13.4%	1.050	278,250	272,621	274,403
6/30/98-99	1,215,323	1.045	1,270,552	0.0%	0.1%	1,271	205,250	206,521	16.3%	1.063	218,134	212,327	212,517
6/30/99-00	844,236	1.066	899,782	0.0%	0.1%	900	338,100	339,000	37.7%	1.064	359,682	349,341	350,322
6/30/00-01	1,373,532	1.091	1,498,330	0.1%	0.2%	2,997	273,502	276,499	18.5%	1.066	291,542	284,020	284,442
6/30/01-02	1,971,775	1.120	2,207,912	0.0%	0.2%	4,416	443,250	447,666	20.3%	1.068	473,432	460,549	461,229
6/30/02-03	1,115,879	1.155	1,288,759	0.0%	0.2%	2,578	172,500	175,078	13.6%	1.070	184,614	179,846	180,207
6/30/03-04	1,167,101	1.186	1,384,458	0.0%	0.2%	2,769	323,500	326,269	23.6%	1.073	347,258	336,763	337,468
6/30/04-05	825,463	1.209	997,803	0.0%	0.2%	1,996	198,100	200,096	20.1%	1.077	213,286	206,691	207,224
6/30/05-06	1,206,474	1.240	1,496,451	0.0%	0.2%	2,993	200,673	203,666	13.6%	1.081	216,848	210,257	212,860
6/30/06-07	783,708	1.277	1,000,834	0.1%	0.3%	3,496	185,000	188,496	18.8%	1.094	202,310	195,403	198,844
6/30/07-08	1,687,167	1.320	2,227,273	0.3%	0.7%	15,165	781,250	796,415	35.8%	1.108	865,575	830,995	760,905
6/30/08-09	1,453,260	1.366	1,985,776	0.7%	1.4%	27,941	330,000	357,941	18.0%	1.170	386,110	372,025	322,448
6/30/09-10	2,299,652	1.425	3,277,115	2.3%	3.7%	120,103	555,500	675,603	20.6%	1.330	738,584	707,093	797,838
6/30/10-11	1,599,427	1.524	2,437,310	2.5%	6.2%	150,599	566,183	716,782	29.4%	1.573	890,702	803,742	866,872
6/30/11-12	1,727,037	1.656	2,860,754	1.6%	7.7%	221,369	400,262	621,631	21.7%	1.798	719,658	670,644	551,105
6/30/12-13	1,207,494	1.830	2,209,893	3.5%	11.2%	248,424	304,447	552,870	25.0%	2.516	766,033	659,452	675,798
6/30/13-15	1,248,894	2.187	2,731,366	5.1%	16.4%	447,367	172,000	619,367	22.7%	4.611	793,096	706,232	881,321
6/30/14-15	935,315	3.013	2,817,699	5.3%	21.7%	611,363	0	611,363	21.7%	12.007	0	550,226	697,891
6/30/15-16	552,170	6.621	3,655,994	2.0%	23.7%	867,765	0	867,765	23.7%	26.363	0	780,989	
Total	51,748,781		66,557,697			2,740,717	8,904,829	11,645,546	17.5%		11,199,703	12,014,276	11,505,765

NOTES:

(2) From Section 7, Exhibit 1, Page 2, Column 3
(3) = (4) / (2)
(4) From Section 7, Exhibit 1, Page 2, Column 6
(5) From Section 7, Exhibit 1, Page 11
(6) Downward sum of (5)
(7) = (6) x (4)
(8) From Section 7, Exhibit 1, Page 10
(9) = (7) + (8)
(10) = (9) / (4)
(11) From Section 7, Exhibit 1, Page 12
(12) = (8) x (11)
(13) Selected based on (9) and (12)
(14) From Aon analysis as of June 30, 2013

Commonwealth of Massachusetts Workers Compensation
Massachusetts Colleges & Universities - Cluster 4
INDEMNITY
Lump Sum Development
Incremental Lump Sum Payments

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0	2,750	13,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-83	0	0	0	0	0	0	0	0	12,000	0	0	0	0	0	15,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	0	0	0	0	0	0	0	46,500	16,000	0	0	17,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Jun-85	0	0	0	19,976	0	5,000	0	7,500	15,000	51,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Jun-86	0	0	0	0	0	0	0	0	35,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Jun-87	0	0	0	0	0	27,500	0	20,000	30,000	0	0	0	0	44,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Jun-88	0	0	22,500	0	37,000	30,000	82,000	43,343	15,000	31,000	0	0	0	0	0	0	0	17,000	17,000	0	0	0	0	0	0	0	0	0						
Jun-89	0	33,000	0	6,800	0	67,500	0	30,000	0	0	75,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
Jun-90	0	0	25,211	30,000	35,001	76,500	30,000	0	53,000	0	0	0	0	0	0	0	0	0	0	0	33,333	33,333	33,333	0	180,000	0	0								
Jun-91	0	0	48,000	32,500	0	0	0	73,000	0	0	0	0	0	0	0	25,000	30,000	25,000	0	0	0	0	0	0	0	0									
Jun-92	0	0	15,000	89,500	0	0	0	12,000	0	20,000	9,683	0	0	0	0	0	75,000	35,000	0	0	0	0	0	0	0										
Jun-93	0	62,500	18,000	31,500	37,000	0	0	12,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
Jun-94	3,000	0	25,000	15,000	16,000	65,000	0	35,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Jun-95	0	105,500	102,500	54,800	40,405	22,500	0	0	20,625	22,875	0	0	0	0	0	0	0	0	0	0	0	0													
Jun-96	22,500	97,000	10,000	15,500	70,461	20,000	0	0	40,000	66,000	0	0	0	0	0	0	0	0	0	0	0														
Jun-97	0	49,500	113,000	12,382	20,000	30,000	0	0	0	0	0	0	0	0	0	0	0	0	30,000	0															
Jun-98	0	80,000	90,000	25,000	25,000	0	0	40,000	0	0	0	0	5,000	0	0	0	0	0	0																
Jun-99	0	6,250	10,000	92,000	65,000	0	0	0	0	0	32,000	0	0	0	0	0	0	0																	
Jun-00	0	95,000	136,850	12,000	44,250	20,000	30,000	0	0	0	0	0	0	0	0	0	0																		
Jun-01	27,500	2,500	62,500	74,001	47,000	0	10,001	50,000	0	0	0	0	0	0	0	0																			
Jun-02	48,000	18,250	64,500	112,500	75,000	105,000	20,000	0	0	0	0	0	0	0	0																				
Jun-03	0	52,500	30,000	45,000	0	35,000	0	10,000	0	0	0	0	0	0																					
Jun-04	0	7,000	0	22,000	87,500	32,000	100,000	75,000	0	0	0	0	0																						
Jun-05	0	15,000	38,600	45,000	49,500	20,000	30,000	0	0	0	0	0																							
Jun-06	0	30,000	20,000	75,000	75,673	0	0	0	0	0	0																								
Jun-07	0	40,000	75,000	35,000	0	0	20,000	15,000	0	0																									
Jun-08	0	33,000	183,500	27,500	74,750	82,500	168,333	128,333	83,333																										
Jun-09	0	35,000	30,000	60,000	70,000	0	55,000	80,000																											
Jun-10	0	71,500	174,000	140,000	40,000	122,000	8,000																												
Jun-11	0	25,000	293,500	146,183	92,500	9,000																													
Jun-12	0	0	17,500	222,000	160,762																														
Jun-13	72,000	0	130,000	102,447																															
Jun-14	87,000	10,000	75,000																																
Jun-15	0	0																																	
Jun-16	0																																		

Cumulative Lump Sum Payments

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0	2,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750
Jun-83	0	0	0	0	0	0	0	0	12,000	12,000	12,000	12,000	12,000	12,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000		
Jun-84	0	0	0	0	0	0	0	46,500	62,500	62,500	62,500	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000			
Jun-85	0	0	0	19,976	19,976	24,976	24,976	32,476	47,476	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976			
Jun-86	0	0	0	0	0	0	0	0	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000				
Jun-87	0	0	0	0	0	27,500	27,500	47,500	77,500	77,500	77,500	77,500	77,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500				
Jun-88	0	0	22,500	22,500	59,500	89,500	171,500	214,843	229,843	260,843	260,843	260,843	260,843	260,843	260,843	260,843	260,843	277,843	294,843	294,843	294,843	294,843	294,843	294,843	294,843	294,843	294,843	294,843	294,843						
Jun-89	0	33,000	33,000	39,800	39,800	107,300	107,300	137,300	137,300	137,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300							
Jun-90	0	0	25,211	55,211	90,212	166,712	196,712	196,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	283,045	316,379	349,712	349,712	529,712	529,712	529,712								
Jun-91	0	0	48,000	80,500	80,500	80,500	80,500	153,500	153,500	153,500	153,500	153,500	153,500	153,500	153,500	178,500	208,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500									
Jun-92	0	0	15,000	104,500	104,500	104,500	104,500	116,500	116,500	136,500	146,183	146,183	146,183	146,183	146,183	146,183	221,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183									
Jun-93	0	62,500	80,500	112,000	149,000	149,000	149,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000					
Jun-94	3,000	3,000	28,000	43,000	59,000	124,000	124,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000						
Jun-95	0	105,500	208,000	262,800	303,205	325,705	325,705	325,705	346,330	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205							
Jun-96	22,500	119,500	129,500	145,000	215,461	235,461	235,461	235,461	275,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461								
Jun-97	0	49,500	162,500	174,882	194,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	254,882	254,882											
Jun-98	0	80,000	170,000	195,000	220,000	220,000	220,000	260,000	260,000	260,000	260,000	260,000	260,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000											
Jun-99	0	6,250	16,250	108,250	173,250	173,250	173,250	173,250	173,250	173,250	205,250	205,250	205,250	205,250	205,250	205,250	205,250	205,250	205,250	205,250															
Jun-00	0	95,000	231,850	243,850	288,100	308,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100														
Jun-01	27,500	30,000	92,500	166,501	213,501	213,501	223,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502															
Jun-02	48,000	66,250	130,750	243,250	318,250	423,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250															
Jun-03	0	52,500	82,500	127,500	127,500	162,500	162,500	172,500	172,500	172,500	172,500	172,500	172,500	172,500	172,500	172,500	172,500	172,500	172,500	172,500															
Jun-04	0	7,000	7,000	29,000	116,500	148,500	248,500	323,500	323,500	323,500	323,500	323,500	323,500	323,500	323,500	323,500	323,500	323,500	323,500	323,500															
Jun-05	0	15,000	53,600	98,600	148,100	168,100	198,100	198,100	198,100	198,100	198,100	198,100	198,100	198,100	198,100	198,100	198,100	198,100	198,100	198,100															
Jun-06	0	30,000	50,000	125,000	200,673	200,673	200,673	200,673	200,673	200,673	200,673	200,673	200,673	200,673	200,673	200,673	200,673	200,673	200,673	200,673															
Jun-07	0	40,000	115,000	150,000	150,000	150,000	170,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000															
Jun-08	0	33,000	216,500	244,000	318,750	401,250	569,583	697,917	781,250																										
Jun-09	0	35,000	65,000	125,000	195,000	195,000	250,000	330,000																											
Jun-10	0	71,500	245,500	385,500	425,500	547,500	555,500																												
Jun-11	0	25,000	318,500	464,683	557,183	566,183																													
Jun-12	0	0	17,500	239,500	400,262																														
Jun-13	72,000	72,000	202,000	304,447																															
Jun-14	87,000	97,000	172,000																																
Jun-15	0	0																																	
Jun-16	0																																		

Commonwealth of Massachusetts Workers Compensation
Massachusetts Colleges & Universities - Cluster 4
INDEMNITY
Lump Sum Development
Incremental Lump Sums as a % of Ultimate Losses Excluding Lump Sums

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-83	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-84	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.055	0.019	0.000	0.000	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-85	0.000	0.000	0.000	0.014	0.000	0.004	0.000	0.005	0.011	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.007	0.010	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.000	0.005	0.000	0.008	0.006	0.017	0.009	0.003	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
Jun-89	0.000	0.025	0.000	0.005	0.000	0.052	0.000	0.023	0.000	0.000	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.000	0.007	0.008	0.010	0.021	0.008	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.009	0.009	0.000	0.049	0.000	0.000								
Jun-91	0.000	0.000	0.041	0.028	0.000	0.000	0.000	0.062	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	0.026	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000									
Jun-92	0.000	0.000	0.012	0.071	0.000	0.000	0.000	0.010	0.000	0.016	0.008	0.000	0.000	0.000	0.000	0.000	0.059	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.000	0.063	0.018	0.032	0.037	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000											
Jun-94	0.003	0.000	0.025	0.015	0.016	0.065	0.000	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000												
Jun-95	0.000	0.079	0.077	0.041	0.030	0.017	0.000	0.000	0.016	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.024	0.103	0.011	0.016	0.075	0.021	0.000	0.000	0.043	0.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000														
Jun-97	0.000	0.053	0.120	0.013	0.021	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032	0.000															
Jun-98	0.000	0.040	0.045	0.013	0.013	0.000	0.000	0.020	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.005	0.008	0.072	0.051	0.000	0.000	0.000	0.000	0.000	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000																	
Jun-00	0.000	0.106	0.152	0.013	0.049	0.022	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
Jun-01	0.018	0.002	0.042	0.049	0.031	0.000	0.007	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																			
Jun-02	0.022	0.008	0.029	0.051	0.034	0.048	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																				
Jun-03	0.000	0.041	0.023	0.035	0.000	0.027	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000																					
Jun-04	0.000	0.005	0.000	0.016	0.063	0.023	0.072	0.054	0.000	0.000	0.000	0.000	0.000																						
Jun-05	0.000	0.015	0.039	0.045	0.050	0.020	0.030	0.000	0.000	0.000	0.000	0.000																							
Jun-06	0.000	0.020	0.013	0.050	0.051	0.000	0.000	0.000	0.000	0.000	0.000																								
Jun-07	0.000	0.040	0.075	0.035	0.000	0.000	0.020	0.015	0.000	0.000																									
Jun-08	0.000	0.015	0.082	0.012	0.034	0.037	0.076	0.058	0.037																										
Jun-09	0.000	0.018	0.015	0.030	0.035	0.000	0.028	0.040																											
Jun-10	0.000	0.022	0.053	0.043	0.012	0.037	0.002																												
Jun-11	0.000	0.010	0.120	0.060	0.038	0.004																													
Jun-12	0.000	0.000	0.006	0.078	0.056																														
Jun-13	0.033	0.000	0.059	0.046																															
Jun-14	0.032	0.004	0.027																																
Jun-15	0.000	0.000																																	
Jun-16	0.000																																		

Averages		*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
Simple Avg																																			
All Yrs (ex P)	0.004	0.020	0.035	0.029	0.024	0.015	0.011	0.017	0.007	0.006	0.004	0.001	0.000	0.001	0.001	0.001	0.005	0.003	0.002	0.000	0.001	0.001	0.001	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Latest 5	0.013	0.003	0.053	0.051	0.035	0.016	0.025	0.023	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.002	0.000	0.010	0.000	0.000	0.000	0.000	0.000					
Latest 3	0.011	0.001	0.031	0.061	0.035	0.014	0.035	0.038	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Olympic Avg																																			
All Yrs (ex P)	0.003	0.018	0.032	0.028	0.023	0.014	0.009	0.015	0.006	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Latest 10	0.004	0.011	0.045	0.041	0.034	0.019	0.021	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.011	0.001	0.046	0.050	0.036	0.014	0.017	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					

Dev Factor Selection

Prior	*NA*	*0.021*	*0.050*	*0.044*	*0.024*	*0.015*	*0.030*	*0.025*	*0.006*	*0.003*	*0.002*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*		
Selected	NA	0.020	0.053	0.051	0.035	0.016	0.025	0.023	0.007	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FacToUlt	NA	0.237	0.217	0.164	0.112	0.077	0.062	0.037	0.014	0.007	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000

Commonwealth of Massachusetts Workers Compensation
Massachusetts Colleges & Universities - Cluster 4
INDEMNITY
Paid Loss Development
Paid Loss - Lump Sum only

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0	2,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750	15,750
Jun-83	0	0	0	0	0	0	0	0	12,000	12,000	12,000	12,000	12,000	12,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	
Jun-84	0	0	0	0	0	0	0	46,500	62,500	62,500	62,500	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000		
Jun-85	0	0	0	19,976	19,976	24,976	24,976	32,476	47,476	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976	98,976			
Jun-86	0	0	0	0	0	0	0	0	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000				
Jun-87	0	0	0	0	0	27,500	27,500	47,500	77,500	77,500	77,500	77,500	77,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500	121,500					
Jun-88	0	0	22,500	22,500	59,500	89,500	171,500	214,843	229,843	260,843	260,843	260,843	260,843	260,843	260,843	260,843	260,843	260,843	277,843	294,843	294,843	294,843	294,843	294,843	294,843	294,843	294,843	294,843	294,843						
Jun-89	0	33,000	33,000	39,800	39,800	107,300	107,300	137,300	137,300	137,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300	212,300							
Jun-90	0	0	25,211	55,211	90,212	166,712	196,712	196,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	249,712	283,045	316,379	349,712	349,712	529,712	529,712	529,712								
Jun-91	0	0	48,000	80,500	80,500	80,500	80,500	153,500	153,500	153,500	153,500	153,500	153,500	153,500	153,500	153,500	178,500	208,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500									
Jun-92	0	0	15,000	104,500	104,500	104,500	104,500	116,500	116,500	136,500	146,183	146,183	146,183	146,183	146,183	146,183	221,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183										
Jun-93	0	62,500	80,500	112,000	149,000	149,000	149,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000	161,000											
Jun-94	3,000	3,000	28,000	43,000	59,000	124,000	124,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000												
Jun-95	0	105,500	208,000	262,800	303,205	325,705	325,705	325,705	346,330	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205													
Jun-96	22,500	119,500	129,500	145,000	215,461	235,461	235,461	235,461	275,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461														
Jun-97	0	49,500	162,500	174,882	194,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	224,882	254,882	254,882														
Jun-98	0	80,000	170,000	195,000	220,000	220,000	220,000	260,000	260,000	260,000	260,000	260,000	260,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000															
Jun-99	0	6,250	16,250	108,250	173,250	173,250	173,250	173,250	173,250	173,250	205,250	205,250	205,250	205,250	205,250	205,250	205,250	205,250	205,250																
Jun-00	0	95,000	231,850	243,850	288,100	308,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100	338,100																	
Jun-01	27,500	30,000	92,500	166,501	213,501	213,501	223,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502	273,502																			
Jun-02	48,000	66,250	130,750	243,250	318,250	423,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250	443,250																				
Jun-03	0	52,500	82,500	127,500	127,500	162,500	162,500	172,500	172,500	172,500	172,500	172,500	172,500	172,500																					
Jun-04	0	7,000	7,000	29,000	116,500	148,500	248,500	323,500	323,500	323,500	323,500	323,500	323,500																						
Jun-05	0	15,000	53,600	98,600	148,100	168,100	198,100	198,100	198,100	198,100	198,100	198,100																							
Jun-06	0	30,000	50,000	125,000	200,673	200,673	200,673	200,673	200,673	200,673	200,673																								
Jun-07	0	40,000	115,000	150,000	150,000	150,000	170,000	185,000	185,000	185,000																									
Jun-08	0	33,000	216,500	244,000	318,750	401,250	569,583	697,917	781,250																										
Jun-09	0	35,000	65,000	125,000	195,000	195,000	250,000	330,000																											
Jun-10	0	71,500	245,500	385,500	425,500	547,500	555,500																												
Jun-11	0	25,000	318,500	464,683	557,183	566,183																													
Jun-12	0	0	17,500	239,500	400,262																														
Jun-13	72,000	72,000	202,000	304,447																															
Jun-14	87,000	97,000	172,000																																
Jun-15	0	0																																	
Jun-16	0																																		

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
All Prior Yrs														5.727	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Jun-83									1.000	1.000	1.000	1.000	1.000	2.250	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Jun-84								1.344	1.000	1.000	1.280	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-85				1.000	1.250	1.000	1.300	1.462	2.085	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Jun-86									1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Jun-87					1.000	1.727	1.632	1.000	1.000	1.000	1.000	1.568	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Jun-88			1.000	2.644	1.504	1.916	1.253	1.070	1.135	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.065	1.061	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
Jun-89		1.000	1.206	1.000	2.696	1.000	1.280	1.000	1.000	1.546	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
Jun-90			2.190	1.634	1.848	1.180	1.000	1.269	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.133	1.118	1.105	1.000	1.515	1.000	1.000									
Jun-91			1.677	1.000	1.000	1.000	1.907	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.163	1.168	1.120	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
Jun-92			6.967	1.000	1.000	1.000	1.115	1.000	1.172	1.071	1.000	1.000	1.000	1.000	1.000	1.513	1.158	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93		1.288	1.391	1.330	1.000	1.000	1.081	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
Jun-94	1.000	9.333	1.536	1.372	2.102	1.000	1.282	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95		1.972	1.263	1.154	1.074	1.000	1.000	1.063	1.066	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	5.311	1.084	1.120	1.486	1.093	1.000	1.000	1.170	1.240	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000															
Jun-97		3.283	1.076	1.114	1.154	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.133	1.000																
Jun-98		2.125	1.147	1.128	1.000	1.000	1.182	1.000	1.000	1.000	1.000	1.019	1.000	1.000	1.000	1.000	1.000	1.000																	
Jun-99		2.600	6.662	1.600	1.000	1.000	1.000	1.000	1.000	1.185	1.000	1.000	1.000	1.000	1.000	1.000	1.000																		
Jun-00		2.441	1.052	1.181	1.069	1.097	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																			
Jun-01	1.091	3.083	1.800	1.282	1.000	1.047	1.224	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																			
Jun-02	1.380	1.974	1.860	1.308	1.330	1.047	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																					
Jun-03		1.571	1.545	1.000	1.275	1.000	1.062	1.000	1.000	1.000	1.000	1.000	1.000																						
Jun-04		1.000	4.143	4.017	1.275	1.673	1.302	1.000	1.000	1.000	1.000	1.000																							
Jun-05		3.573	1.840	1.502	1.135	1.178	1.000	1.000	1.000	1.000	1.000																								
Jun-06		1.667	2.500	1.605	1.000	1.000	1.000	1.000	1.000	1.000																									
Jun-07		2.875	1.304	1.000	1.000	1.133	1.088	1.000	1.000																										
Jun-08		6.561	1.127	1.306	1.259	1.420	1.225	1.119																											
Jun-09		1.857	1.923	1.560	1.000	1.282	1.320																												
Jun-10		3.434	1.570	1.104	1.287	1.015																													
Jun-11		12.740	1.459	1.199	1.016																														
Jun-12			13.686	1.671																															
Jun-13	1.000	2.806	1.507																																
Jun-14	1.115	1.773																																	
Jun-15																																			

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Simple Avg																																			
All Yrs (ex P)	1.816	3.184	2.483	1.431	1.255	1.120	1.181	1.089	1.068	1.033	1.012	1.001	1.027	1.063	1.009	1.038	1.020	1.012	1.000	1.010	1.009	1.009	1.000	1.051	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		5.188	4.029	1.368	1.112	1.170	1.127	1.024	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.027	1.000	1.000	1.000	1.021	1.000	1.103	1.000	1.000	1.000	1.000	1.000						
Latest 3		2.289	5.551	1.325	1.101	1.239	1.211	1.040	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.044	1.000	1.000	1.000	1.000	1.000	1.172	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Volume Wtd																																			
All Yrs (ex P)		2.604	1.558	1.290	1.161	1.111	1.136	1.060	1.039	1.024	1.004	1.001	1.010	1.004	1.007	1.030	1.024	1.015	1.000	1.013	1.014	1.017	1.000	1.105	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		3.599	1.790	1.300	1.130	1.168	1.161	1.052	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.022	1.000	1.000	1.000	1.030	1.000	1.134	1.000	1.000	1.000	1.000	1.000	1.000					
Latest 3		2.317	1.875	1.269	1.111	1.202	1.226	1.077	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.036	1.000	1.000	1.000	1.000	1.000	1.214	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			

Dev Factor Selection	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Prior	*2.196*	*2.682*	*1.782*	*1.328*	*1.143*	*1.183*	*1.127*	*1.026*	*1.014*	*1.012*	*1.004*	*1.003*	*1.003*	*1.002*	*1.002*	*1.002*	*1.001*	*1.013*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.050*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Selected	2.196	2.604	1.833	1.399	1.143	1.183	1.136	1.056	1.013	1.012	1.004	1.003	1.003	1.002	1.002	1.002	1.001	1.012	1.000	1.000	1.000	1.000	1.000	1.050	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FacToUlt	26.363	12.007	4.611	2.516	1.798	1.573	1.330	1.170	1.108	1.094	1.081	1.077	1.073	1.070	1.068	1.066	1.064	1.063	1.050	1.050	1.050	1.050	1.050	1.050	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Percent of Ult	3.8%	8.3%	21.7%	39.7%	55.6%	63.6%	75.2%	85.5%	90.3%	91.4%	92.5%	92.9%	93.2%	93.4%	93.6%	93.8%	94.0%	94.1%	95.2%	95.2%	95.2%	95.2%	95.2%	95.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative Paid Loss	Incremental Paid Loss	Percent	Pres Value of Increm.	Pres Value of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
420	100.0%	0.1%	0.0%	0.0%	0.0%	1.000	1.000
408	99.9%	0.0%	0.1%	0.0%	0.0%	0.981	0.971
396	99.9%	0.0%	0.1%	0.0%	0.0%	0.943	0.916
384	99.9%	0.0%	0.1%	0.0%	0.0%	0.907	0.864
372	99.9%	0.0%	0.1%	0.0%	0.0%	0.872	0.816
360	99.9%	0.0%	0.1%	0.0%	0.0%	0.838	0.769
348	99.9%	0.1%	0.1%	0.0%	0.0%	0.806	0.726
336	99.8%	0.5%	0.2%	0.2%	0.1%	0.863	0.807
324	99.3%	0.1%	0.7%	0.0%	0.0%	0.932	0.904
312	99.2%	0.1%	0.8%	0.0%	0.0%	0.906	0.867
300	99.1%	0.1%	0.9%	0.0%	0.0%	0.883	0.834
288	99.0%	0.1%	1.0%	0.0%	0.0%	0.862	0.805
276	98.9%	0.1%	1.1%	0.0%	0.0%	0.842	0.778
264	98.8%	0.2%	1.2%	0.1%	0.1%	0.823	0.753
252	98.6%	0.5%	1.4%	0.2%	0.1%	0.818	0.746
240	98.1%	1.0%	1.9%	0.5%	0.3%	0.836	0.773
228	97.1%	1.5%	2.9%	0.7%	0.5%	0.863	0.811
216	95.7%	1.8%	4.3%	0.9%	0.7%	0.881	0.834
204	93.8%	2.2%	6.2%	1.1%	0.8%	0.886	0.841
192	91.7%	2.4%	8.3%	1.3%	1.0%	0.886	0.840
180	89.3%	2.7%	10.7%	1.5%	1.2%	0.880	0.832
168	86.6%	2.3%	13.4%	1.3%	1.0%	0.873	0.823
156	84.3%	1.6%	15.7%	1.0%	0.8%	0.860	0.804
144	82.7%	2.1%	17.3%	1.3%	1.1%	0.841	0.778
132	80.6%	2.3%	19.4%	1.5%	1.3%	0.828	0.760
120	78.3%	2.6%	21.7%	1.8%	1.5%	0.815	0.744
108	75.8%	2.6%	24.2%	1.8%	1.6%	0.805	0.730
96	73.2%	3.0%	26.8%	2.2%	1.9%	0.794	0.716
84	70.2%	4.6%	29.8%	3.5%	3.1%	0.785	0.705
72	65.6%	5.3%	34.4%	4.2%	3.8%	0.785	0.706
60	60.4%	5.7%	39.6%	4.8%	4.4%	0.785	0.706
48	54.6%	8.9%	45.4%	7.8%	7.3%	0.783	0.705
36	45.7%	12.5%	54.3%	11.4%	10.8%	0.790	0.715
24	33.2%	18.1%	66.8%	17.1%	16.6%	0.801	0.730
12	15.1%	15.1%	84.9%	14.8%	14.7%	0.815	0.749
Total		100.0%					

NOTES:

(2) = 1 / Section 7, Exhibit 1, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	6,860	91,035		6,350	84,264
6/30/82-83	14,865	29,731	0.981	14,577	29,154
6/30/83-84	18,355	36,709	0.943	17,306	34,612
6/30/84-85	29,841	59,682	0.907	27,054	54,107
6/30/85-86	37,378	74,756	0.872	32,584	65,167
6/30/86-87	3,543	268,543	0.838	2,970	225,094
6/30/87-88	87,937	439,684	0.806	70,874	354,370
6/30/88-89	30,304	75,761	0.863	26,138	65,346
6/30/89-90	77,008	192,521	0.932	71,779	179,447
6/30/90-91	9,393	9,393	0.906	8,513	8,513
6/30/91-92	11,534	125,534	0.883	10,186	110,859
6/30/92-93	22,950	57,375	0.862	19,778	49,445
6/30/93-94	15,662	57,767	0.842	13,187	48,639
6/30/94-95	25,795	25,795	0.823	21,239	21,239
6/30/95-96	25,381	63,452	0.818	20,759	51,897
6/30/96-97	24,461	84,611	0.836	20,454	70,752
6/30/97-98	62,219	65,219	0.863	53,725	56,316
6/30/98-99	61,427	77,427	0.881	54,108	68,201
6/30/99-00	66,664	67,664	0.886	59,098	59,984
6/30/00-01	132,966	134,966	0.886	117,752	119,524
6/30/01-02	242,975	252,975	0.880	213,835	222,636
6/30/02-03	179,621	194,621	0.873	156,891	169,993
6/30/03-04	229,399	247,399	0.860	197,363	212,849
6/30/04-05	180,437	297,437	0.841	151,786	250,208
6/30/05-06	299,853	404,853	0.828	248,134	335,023
6/30/06-07	227,292	393,292	0.815	185,342	320,704
6/30/07-08	503,583	589,583	0.805	405,274	474,485
6/30/08-09	448,290	574,740	0.794	355,770	456,123
6/30/09-10	573,398	1,128,848	0.785	450,142	886,195
6/30/10-11	819,290	1,075,390	0.785	642,921	843,890
6/30/11-12	1,031,451	1,403,701	0.785	809,179	1,101,212
6/30/12-13	1,213,609	1,522,059	0.783	950,148	1,191,637
6/30/13-15	1,845,206	2,103,106	0.790	1,458,116	1,661,914
6/30/14-15	2,432,685	2,694,685	0.801	1,949,139	2,159,062
6/30/15-16	3,444,830	3,884,830	0.815	2,808,222	3,166,909
Total	14,436,462	18,805,144		11,650,692	15,209,769
(7) Total Discount Factor:				0.807	0.809

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	6,860	91,035
(9) Projected Number of Years:	4	4
(10) Projected Paid Loss per Year:	1,715	22,759
(11) Discounted Value at 4%:	6,350	84,264

NOTES:
(2), (3) From Section 7, Exhibit 1, Page 1, Columns 8, 9
(4) From Section 7, Exhibit 1, Page 13, Column 7
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	6,860	91,035		6,121	81,227
6/30/82-83	14,865	29,731	0.971	14,439	28,877
6/30/83-84	18,355	36,709	0.916	16,818	33,637
6/30/84-85	29,841	59,682	0.864	25,796	51,591
6/30/85-86	37,378	74,756	0.816	30,482	60,965
6/30/86-87	3,543	268,543	0.769	2,726	206,604
6/30/87-88	87,937	439,684	0.726	63,825	319,123
6/30/88-89	30,304	75,761	0.807	24,448	61,120
6/30/89-90	77,008	192,521	0.904	69,607	174,017
6/30/90-91	9,393	9,393	0.867	8,142	8,142
6/30/91-92	11,534	125,534	0.834	9,622	104,720
6/30/92-93	22,950	57,375	0.805	18,468	46,171
6/30/93-94	15,662	57,767	0.778	12,181	44,930
6/30/94-95	25,795	25,795	0.753	19,421	19,421
6/30/95-96	25,381	63,452	0.746	18,946	47,364
6/30/96-97	24,461	84,611	0.773	18,900	65,377
6/30/97-98	62,219	65,219	0.811	50,431	52,863
6/30/98-99	61,427	77,427	0.834	51,241	64,588
6/30/99-00	66,664	67,664	0.841	56,098	56,939
6/30/00-01	132,966	134,966	0.840	111,664	113,343
6/30/01-02	242,975	252,975	0.832	202,121	210,440
6/30/02-03	179,621	194,621	0.823	147,753	160,092
6/30/03-04	229,399	247,399	0.804	184,539	199,019
6/30/04-05	180,437	297,437	0.778	140,423	231,478
6/30/05-06	299,853	404,853	0.760	227,875	307,670
6/30/06-07	227,292	393,292	0.744	169,128	292,649
6/30/07-08	503,583	589,583	0.730	367,797	430,607
6/30/08-09	448,290	574,740	0.716	320,992	411,534
6/30/09-10	573,398	1,128,848	0.705	404,451	796,242
6/30/10-11	819,290	1,075,390	0.706	578,351	759,137
6/30/11-12	1,031,451	1,403,701	0.706	728,646	991,614
6/30/12-13	1,213,609	1,522,059	0.705	855,531	1,072,973
6/30/13-15	1,845,206	2,103,106	0.715	1,319,975	1,504,465
6/30/14-15	2,432,685	2,694,685	0.730	1,776,975	1,968,355
6/30/15-16	3,444,830	3,884,830	0.749	2,581,010	2,910,677
Total	14,436,462	18,805,144		10,634,944	13,887,971
(7) Total Discount Factor:				0.737	0.739

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	6,860	91,035
(9) Projected Number of Years:	4	4
(10) Projected Paid Loss per Year:	1,715	22,759
(11) Discounted Value at 6%:	6,121	81,227

NOTES:
(2), (3) From Section 7, Exhibit 1, Page 1, Columns 8, 9
(4) From Section 7, Exhibit 1, Page 13, Column 8
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

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

Calculation of Fiscal Year 7/01/16 - 17 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/16 - 06/30/17	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/16 - 06/30/17		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior yrs	3,365,141	3,451,302	3,358,281	6,860	93,021				0	0	0.0%	0.0%
6/30/82-83	811,448	826,578	796,317	15,131	30,261	97.2%	1.0%	36.1%	5,460	10,920	36.1%	36.1%
6/30/83-84	963,997	982,491	945,504	18,493	36,987	97.1%	1.0%	35.1%	6,488	12,977	35.1%	35.1%
6/30/84-85	1,635,334	1,665,739	1,604,929	30,405	60,810	97.2%	1.0%	36.2%	11,004	22,007	36.2%	36.2%
6/30/85-86	2,292,554	2,331,854	2,253,254	39,300	78,600	97.5%	1.0%	39.2%	15,415	30,829	39.2%	39.2%
6/30/86-87	3,010,455	3,276,651	3,005,715	4,740	270,936	95.6%	1.0%	22.8%	1,081	61,790	22.8%	22.8%
6/30/87-88	5,157,779	5,509,527	5,068,799	88,980	440,728	95.0%	1.0%	20.1%	17,919	88,754	20.1%	20.1%
6/30/88-89	1,972,514	2,017,971	1,941,224	31,290	76,746	97.3%	1.0%	36.9%	11,557	28,347	36.9%	36.9%
6/30/89-90	4,475,432	4,591,945	4,397,880	77,552	194,065	97.0%	1.0%	33.4%	25,889	64,785	33.4%	33.4%
6/30/90-91	1,876,000	1,876,000	1,866,079	9,921	9,921	99.5%	0.2%	37.8%	3,752	3,752	37.8%	37.8%
6/30/91-92	2,207,000	2,321,000	2,194,019	12,981	126,981	96.9%	0.7%	22.6%	2,940	28,756	22.6%	22.6%
6/30/92-93	1,679,326	1,716,282	1,653,844	25,482	62,438	97.4%	0.7%	27.0%	6,889	16,880	27.0%	27.0%
6/30/93-94	1,820,164	1,865,499	1,801,273	18,891	64,226	97.7%	0.7%	31.0%	5,864	19,936	31.0%	31.0%
6/30/94-95	2,272,355	2,275,163	2,243,753	28,603	31,410	98.7%	0.7%	53.0%	15,172	16,661	53.0%	53.0%
6/30/95-96	1,879,180	1,920,160	1,850,889	28,290	69,271	97.4%	1.0%	38.9%	11,017	26,976	38.9%	38.9%
6/30/96-97	2,033,130	2,097,410	1,982,659	50,471	114,751	96.0%	1.5%	37.5%	18,927	43,032	37.5%	37.5%
6/30/97-98	2,709,000	2,717,480	2,631,730	77,270	85,750	97.0%	1.5%	49.9%	38,582	42,816	49.9%	49.9%
6/30/98-99	1,858,000	1,878,770	1,779,998	78,002	98,772	95.3%	2.0%	42.3%	32,977	41,758	42.3%	42.3%
6/30/99-00	1,763,000	1,764,000	1,668,934	94,066	95,066	94.6%	2.0%	37.3%	35,084	35,456	37.3%	37.3%
6/30/00-01	2,382,000	2,384,000	2,211,564	170,436	172,436	92.8%	2.0%	27.8%	47,382	47,938	27.8%	27.8%
6/30/01-02	3,233,000	3,244,000	2,948,826	284,174	295,174	91.1%	3.0%	33.5%	95,310	99,000	33.5%	33.5%
6/30/02-03	2,105,980	2,134,000	1,886,518	219,462	247,482	89.0%	3.0%	27.2%	59,783	67,416	27.2%	27.2%
6/30/03-04	2,463,820	2,497,000	2,181,485	282,335	315,515	87.9%	3.0%	24.9%	70,283	78,542	24.9%	24.9%
6/30/04-05	1,924,300	2,070,000	1,682,922	241,378	387,078	84.3%	3.0%	19.1%	46,024	73,805	19.1%	19.1%
6/30/05-06	2,562,540	2,689,000	2,189,940	372,600	499,060	83.4%	3.0%	18.1%	67,345	90,201	18.1%	18.1%
6/30/06-07	1,933,940	2,132,000	1,635,104	298,836	496,896	80.4%	3.0%	15.3%	45,809	76,169	15.3%	15.3%
6/30/07-08	3,973,560	4,094,000	3,372,149	601,411	721,851	83.6%	3.0%	18.3%	109,999	132,028	18.3%	18.3%
6/30/08-09	3,337,970	3,517,000	2,783,888	554,082	733,112	81.2%	2.4%	12.6%	70,088	92,735	12.6%	12.6%
6/30/09-10	4,578,090	5,193,000	3,877,582	700,509	1,315,419	79.4%	4.0%	19.4%	135,813	255,031	19.4%	19.4%
6/30/10-11	4,187,360	4,512,000	3,214,638	972,722	1,297,362	73.9%	5.5%	20.9%	203,652	271,620	20.9%	20.9%
6/30/11-12	4,200,490	4,598,000	2,978,695	1,221,795	1,619,305	67.7%	6.2%	19.2%	234,437	310,711	19.2%	19.2%
6/30/12-13	3,671,990	4,035,000	2,249,203	1,422,787	1,785,797	58.4%	9.0%	21.6%	307,577	386,052	21.6%	21.6%
6/30/13-15	4,478,360	4,771,000	2,319,865	2,158,495	2,451,135	50.2%	8.2%	16.5%	355,372	403,552	16.5%	16.5%
6/30/14-15	4,433,000	4,772,000	1,585,979	2,847,021	3,186,021	34.5%	15.7%	24.0%	682,147	763,372	24.0%	24.0%
6/30/15-16	5,391,000	6,033,870	1,004,578	4,386,422	5,029,292	17.6%	16.9%	20.5%	898,065	1,029,684	20.5%	20.5%
Total	98,639,209	103,761,692	81,168,017	17,471,192	22,593,675				3,695,102	4,774,289	21.1%	21.1%

NOTES:

(2) Exhibit 1, Page 1, Column (4) + Exhibit 2, Page 1, Column (4)
(3) Exhibit 1, Page 1, Column (5) + Exhibit 2, Page 1, Column (5)
(4) Exhibit 1, Page 1, Column (2) + Exhibit 2, Page 1, Column (2)
(5) = (2) - (4)
(6) = (3) - (4)
(7) = (4) / Average of Columns (2), (3)
(8) = (7) - Prior Year's (7)
(9) = (8) / (1.00 - (7))
(10) = (5) * (9)
(11) = (6) * (9)
(12) = (10) / (5)
(13) = (11) / (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Paid Loss	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		338,455			338,455	340,441	0	1,986		
6/30/82-83		53,045	53,120		53,310	53,575	265	530		
6/30/83-84		27,773	27,812		27,912	28,051	139	278		
6/30/84-85	357,749	112,891	113,051	113,138	113,455	114,020	564	1,129	0.032	0.032
6/30/85-86	380,112	384,347	384,890	385,071	386,269	388,190	1,922	3,843	0.102	0.102
6/30/86-87	423,770	239,258	239,597	239,749	240,455	241,651	1,196	2,393	0.057	0.057
6/30/87-88	480,405	671,957	672,906	673,123	673,000	673,000	1,043	1,043	0.140	0.140
6/30/88-89	495,261	426,014	426,617	426,860	427,000	427,000	986	986	0.086	0.086
6/30/89-90	502,691	547,456	548,230	548,528	548,000	549,000	544	1,544	0.109	0.109
6/30/90-91	482,143	472,472	473,441	473,439	473,000	473,000	528	528	0.098	0.098
6/30/91-92	492,539	800,553	802,196	802,178	802,000	802,000	1,447	1,447	0.163	0.163
6/30/92-93	524,541	506,348	508,830	508,813	508,880	511,411	2,532	5,063	0.097	0.097
6/30/93-94	584,853	645,934	650,575	650,517	649,164	652,394	3,230	6,459	0.111	0.112
6/30/94-95	587,701	561,548	571,714	571,608	564,355	567,163	2,808	5,615	0.096	0.097
6/30/95-96	614,868	581,842	595,264	595,107	584,752	587,661	2,909	5,818	0.095	0.096
6/30/96-97	700,686	804,120	826,028	825,524	830,130	834,260	26,010	30,140	0.118	0.119
6/30/97-98	684,415	431,949	447,411	447,674	447,000	452,480	15,051	20,531	0.065	0.066
6/30/98-99	707,796	359,425	375,793	376,520	376,000	380,770	16,575	21,345	0.053	0.054
6/30/99-00	760,477	486,598	513,844	514,317	514,000	514,000	27,402	27,402	0.068	0.068
6/30/00-01	811,600	564,530	602,102	602,454	602,000	602,000	37,470	37,470	0.074	0.074
6/30/01-02	835,038	533,801	575,021	575,793	575,000	576,000	41,199	42,199	0.069	0.069
6/30/02-03	825,340	598,138	650,769	651,105	637,980	651,000	39,842	52,862	0.077	0.079
6/30/03-04	849,216	690,884	759,192	758,933	743,820	759,000	52,936	68,116	0.088	0.089
6/30/04-05	992,508	659,359	735,418	748,569	720,300	749,000	60,941	89,641	0.073	0.075
6/30/05-06	962,878	782,793	877,457	873,386	855,540	877,000	72,747	94,207	0.089	0.091
6/30/06-07	1,032,930	666,396	752,666	769,647	737,940	770,000	71,544	103,604	0.071	0.075
6/30/07-08	1,063,597	903,732	1,036,038	1,022,185	1,001,560	1,036,000	97,828	132,268	0.094	0.097
6/30/08-09	1,073,805	1,000,628	1,158,591	1,128,986	1,106,420	1,159,000	105,792	158,372	0.103	0.108
6/30/09-10	1,084,749	1,022,429	1,208,662	1,172,855	1,149,540	1,209,000	127,111	186,571	0.106	0.111
6/30/10-11	1,134,164	1,049,028	1,271,108	1,227,367	1,202,460	1,271,000	153,432	221,972	0.106	0.112
6/30/11-12	1,202,674	851,396	1,062,586	1,066,525	1,041,740	1,067,000	190,344	215,604	0.087	0.089
6/30/12-13	1,284,741	737,262	955,594	1,001,443	946,440	1,001,000	209,178	263,738	0.074	0.078
6/30/13-14	1,346,902	898,971	1,246,755	1,237,119	1,212,260	1,247,000	313,289	348,029	0.090	0.093
6/30/14-15	1,404,093	650,664	1,064,816	1,142,164	1,065,000	1,142,000	414,336	491,336	0.076	0.081
6/30/15-16	1,454,612	452,409	1,612,583	1,394,279	1,394,000	1,596,870	941,591	1,144,461	0.096	0.110
Total	26,138,853	20,514,407	23,800,676	23,524,975	23,549,137	24,302,938	3,034,730	3,788,531		
Tot 6/30/84-16	26,138,853	20,095,134	23,719,744	23,524,975	23,129,460	23,880,871	3,034,326	3,785,737	0.088	0.091

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(4) From Section 7, Exhibit 2, Page 2, Column 8

(5) From Section 7, Exhibit 2, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Accident Year	Payroll (000's)	Paid Loss	Paid LDF	Adjustment for Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim
All Prior Yrs		338,455							0	0	
6/30/82-83		53,045	1.001	1.000	53,120	N/A	53,120		0	0	
6/30/83-84		27,773	1.001	1.000	27,812	N/A	27,812		0	0	
6/30/84-85	357,749	112,891	1.001	1.000	113,051	N/A	113,051	0.032	0	0	
6/30/85-86	380,112	384,347	1.001	1.000	384,890	N/A	384,890	0.101	0	0	
6/30/86-87	423,770	239,258	1.001	1.000	239,597	N/A	239,597	0.057	0	1	338
6/30/87-88	480,405	671,957	1.001	1.000	672,906	N/A	672,906	0.140	1	1	950
6/30/88-89	495,261	426,014	1.001	1.000	426,617	N/A	426,617	0.086	0	0	
6/30/89-90	502,691	547,456	1.001	1.000	548,230	N/A	548,230	0.109	0	0	
6/30/90-91	482,143	472,472	1.002	1.000	473,441	N/A	473,441	0.098	0	0	
6/30/91-92	492,539	800,553	1.002	1.000	802,196	N/A	802,196	0.163	1	1	1,643
6/30/92-93	524,541	506,348	1.005	1.000	508,830	N/A	508,830	0.097	0	0	
6/30/93-94	584,853	645,934	1.007	1.000	650,575	N/A	650,575	0.111	2	2	2,320
6/30/94-95	587,701	561,548	1.018	1.000	571,714	N/A	571,714	0.097	2	1	10,166
6/30/95-96	614,868	581,842	1.023	1.000	595,264	N/A	595,264	0.097	0	0	
6/30/96-97	700,686	804,120	1.027	1.000	826,028	N/A	826,028	0.118	3	2	10,954
6/30/97-98	684,415	431,949	1.036	1.000	447,411	N/A	447,411	0.065	1	0	
6/30/98-99	707,796	359,425	1.046	1.000	375,793	N/A	375,793	0.053	2	0	
6/30/99-00	760,477	486,598	1.056	1.000	513,844	N/A	513,844	0.068	0	0	
6/30/00-01	811,600	564,530	1.067	1.000	602,102	N/A	602,102	0.074	0	2	18,786
6/30/01-02	835,038	533,801	1.077	1.000	575,021	N/A	575,021	0.069	1	0	
6/30/02-03	825,340	598,138	1.088	1.000	650,769	N/A	650,769	0.079	3	2	26,315
6/30/03-04	849,216	690,884	1.099	1.000	759,192	N/A	759,192	0.089	0	2	34,154
6/30/04-05	992,508	659,359	1.115	1.000	735,418	N/A	735,418	0.074	2	2	38,030
6/30/05-06	962,878	782,793	1.121	1.000	877,457	N/A	877,457	0.091	4	4	23,666
6/30/06-07	1,032,930	666,396	1.129	1.000	752,666	N/A	752,666	0.073	3	2	43,135
6/30/07-08	1,063,597	903,732	1.146	1.000	1,036,038	N/A	1,036,038	0.097	5	5	26,461
6/30/08-09	1,073,805	1,000,628	1.158	1.000	1,158,591	N/A	1,158,591	0.108	8	5	31,593
6/30/09-10	1,084,749	1,022,429	1.182	1.000	1,208,662	N/A	1,208,662	0.111	15	11	16,930
6/30/10-11	1,134,164	1,049,028	1.212	1.000	1,271,108	N/A	1,271,108	0.112	13	11	20,189
6/30/11-12	1,202,674	851,396	1.248	1.000	1,062,586	N/A	1,062,586	0.088	26	11	19,199
6/30/12-13	1,284,741	737,262	1.296	1.000	955,594	N/A	955,594	0.074	52	24	9,097
6/30/13-14	1,346,902	898,971	1.387	1.000	1,246,755	N/A	1,246,755	0.093	184	53	6,562
6/30/14-15	1,404,093	650,664	1.637	1.000	1,064,816	N/A	1,064,816	0.076	257	128	3,236
6/30/15-16	1,454,612	452,409	3.564	1.000	1,612,583	N/A	1,612,583	0.111		227	5,111
Total	26,138,853	20,514,407			23,800,676		23,800,676		585	497	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 4/1/14 filing. Consideration for development beyond 252 months made in selection of LDF's.

(6) = (3) x (4) x (5)

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	357,749	0.049	112,891	1.001	113,138	N/A	113,138	0.032	0.032
6/30/85-86	380,112	0.135	384,347	1.001	385,071	N/A	385,071	0.101	0.101
6/30/86-87	423,770	0.082	239,258	1.001	239,749	N/A	239,749	0.057	0.057
6/30/87-88	480,405	0.172	671,957	1.001	673,123	N/A	673,123	0.140	0.140
6/30/88-89	495,261	0.121	426,014	1.001	426,860	N/A	426,860	0.086	0.086
6/30/89-90	502,691	0.151	547,456	1.001	548,528	N/A	548,528	0.109	0.109
6/30/90-91	482,143	0.098	472,472	1.002	473,439	N/A	473,439	0.098	0.098
6/30/91-92	492,539	0.161	800,553	1.002	802,178	N/A	802,178	0.163	0.163
6/30/92-93	524,541	0.096	506,348	1.005	508,813	N/A	508,813	0.097	0.097
6/30/93-94	584,853	0.110	645,934	1.007	650,517	N/A	650,517	0.111	0.111
6/30/94-95	587,701	0.096	561,548	1.018	571,608	N/A	571,608	0.097	0.097
6/30/95-96	614,868	0.096	581,842	1.023	595,107	N/A	595,107	0.097	0.097
6/30/96-97	700,686	0.115	804,120	1.027	825,524	N/A	825,524	0.118	0.118
6/30/97-98	684,415	0.066	431,949	1.036	447,674	N/A	447,674	0.065	0.065
6/30/98-99	707,796	0.055	359,425	1.046	376,520	N/A	376,520	0.053	0.053
6/30/99-00	760,477	0.069	486,598	1.056	514,317	N/A	514,317	0.068	0.068
6/30/00-01	811,600	0.075	564,530	1.067	602,454	N/A	602,454	0.074	0.074
6/30/01-02	835,038	0.070	533,801	1.077	575,793	N/A	575,793	0.069	0.069
6/30/02-03	825,340	0.079	598,138	1.088	651,105	N/A	651,105	0.079	0.079
6/30/03-04	849,216	0.089	690,884	1.099	758,933	N/A	758,933	0.089	0.089
6/30/04-05	992,508	0.087	659,359	1.115	748,569	N/A	748,569	0.075	0.075
6/30/05-06	962,878	0.087	782,793	1.121	873,386	N/A	873,386	0.091	0.091
6/30/06-07	1,032,930	0.087	666,396	1.129	769,647	N/A	769,647	0.075	0.075
6/30/07-08	1,063,597	0.087	903,732	1.146	1,022,185	N/A	1,022,185	0.096	0.096
6/30/08-09	1,073,805	0.088	1,000,628	1.158	1,128,986	N/A	1,128,986	0.105	0.105
6/30/09-10	1,084,749	0.090	1,022,429	1.182	1,172,855	N/A	1,172,855	0.108	0.108
6/30/10-11	1,134,164	0.090	1,049,028	1.212	1,227,367	N/A	1,227,367	0.108	0.108
6/30/11-12	1,202,674	0.090	851,396	1.248	1,066,525	N/A	1,066,525	0.089	0.089
6/30/12-13	1,284,741	0.090	737,262	1.296	1,001,443	N/A	1,001,443	0.078	0.078
6/30/13-14	1,346,902	0.090	898,971	1.387	1,237,119	N/A	1,237,119	0.092	0.092
6/30/14-15	1,404,093	0.090	650,664	1.637	1,142,164	N/A	1,142,164	0.081	0.081
6/30/15-16	1,454,612	0.090	452,409	3.564	1,394,279	N/A	1,394,279	0.096	0.096
Total	26,138,853		20,095,134		23,524,975		23,524,975		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 7, Exhibit 2, Page 4, Column 11

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

(5) From Section 7, Exhibit 2, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Expected Ult Loss	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.049	0.049
6/30/85-86									0.135	0.135
6/30/86-87									0.082	0.082
6/30/87-88									0.172	0.172
6/30/88-89									0.121	0.121
6/30/89-90									0.151	0.151
6/30/90-91	482,143	473,441	0.098	1.194	0.117	1.000	0.117	0.075	0.098	0.098
6/30/91-92	492,539	802,196	0.163	1.189	0.194	1.000	0.194	0.076	0.160	0.161
6/30/92-93	524,541	508,830	0.097	1.189	0.115	1.000	0.115	0.076	0.097	0.096
6/30/93-94	584,853	650,575	0.111	1.178	0.131	1.000	0.131	0.076	0.107	0.110
6/30/94-95	587,701	571,714	0.097	1.170	0.114	1.000	0.114	0.077	0.095	0.096
6/30/95-96	614,868	595,264	0.097	1.155	0.112	1.000	0.112	0.078	0.096	0.096
6/30/96-97	700,686	826,028	0.118	1.137	0.134	1.000	0.134	0.079	0.113	0.115
6/30/97-98	684,415	447,411	0.065	1.135	0.074	1.000	0.074	0.079	0.067	0.066
6/30/98-99	707,796	375,793	0.053	1.135	0.060	1.000	0.060	0.079	0.056	0.055
6/30/99-00	760,477	513,844	0.068	1.135	0.077	1.000	0.077	0.079	0.070	0.069
6/30/00-01	811,600	602,102	0.074	1.109	0.082	1.000	0.082	0.081	0.076	0.075
6/30/01-02	835,038	575,021	0.069	1.101	0.076	1.000	0.076	0.082	0.071	0.070
6/30/02-03	825,340	650,769	0.079	1.073	0.085	1.000	0.085	0.084	0.080	0.079
6/30/03-04	849,216	759,192	0.089	1.046	0.094	1.000	0.094	0.086	0.090	0.089
6/30/04-05	992,508	735,418	0.074	1.036	0.077	1.000	0.077	0.087	0.097	0.087
6/30/05-06	962,878	877,457	0.091	1.032	0.094	1.000	0.094	0.087	0.097	0.087
6/30/06-07	1,032,930	752,666	0.073	1.032	0.075	1.000	0.075	0.087	0.097	0.087
6/30/07-08	1,063,597	1,036,038	0.097	1.032	0.101	1.000	0.101	0.087	0.097	0.087
6/30/08-09	1,073,805	1,158,591	0.108	1.027	0.111	1.000	0.111	0.088	0.097	0.088
6/30/09-10	1,084,749	1,208,662	0.111	1.000	0.111	1.000	0.111	0.090	0.100	0.090
6/30/10-11	1,134,164	1,271,108	0.112	1.000	0.112	1.000	0.112	0.090	0.100	0.090
6/30/11-12	1,202,674	1,062,586	0.088	1.000	0.088	1.000	0.088	0.090	0.100	0.090
6/30/12-13	1,284,741	955,594	0.074	1.000	0.074	1.000	0.074	0.090	0.100	0.090
6/30/13-14	1,346,902	1,246,755	0.093	1.000	0.093	1.000	0.093	0.090	0.100	0.090
6/30/14-15	1,404,093	1,064,816	0.076	1.000	0.076	1.000	0.076	0.090	0.100	0.090
6/30/15-16	1,454,612	1,612,583	0.111	1.000	0.111	1.000	0.111	0.090		0.090
Total	23,498,866	21,334,453								

Trend Last 4 (ex 15-16):	-2.4%	Avg 3 (ex 15-16):	0.081
Trend Last 8 (ex 15-16):	-5.0%	Avg 5 (ex 15-16):	0.089
Trend Last 12 (ex 15-16):	-0.4%	Avg 10 (ex 15-16):	0.094
Prior Selected Trend:	0.0%	Prior Sel Avg:	0.100
Selected Trend:	0.0%	Sel. Loss Cost:	0.090

NOTES:
(2) Provided by Commonwealth of Massachusetts
(3) From Section 7, Exhibit 2, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCIRB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.970	
(2)	Credibility		22%	
(3)	Average Pmt Trend Statewide		0.950	
(4)	Credibility Weighted Trend		0.954	
		(Low)		(High)
(5)	Selected Range	0.945		0.964
(6)	Incremental Paid for 2016	0		0
(7)	Estimated Reserve	0		0
(8)	Paid to Date (82 & Prior)	338,455		338,455
(9)	Est Ult Paid for 1982 & Prior	338,455		338,455

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	0	567
(11)	Projected Number of Years	3	7
(12)	Estimated Reserve	0	3,972
(13)	Paid to Date (82 & Prior)	338,455	338,455
(14)	Est Ult Paid for 1982 & Prior	338,455	342,427
(14a)	Paid Counts During Fiscal Year	0	0

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	338,455	340,441
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**338,455**	**340,441**
(18)	Implied Tail	1.000	1.006
(19)	Ult Loss Inc Lump Sums @ 6/15	339,306	344,312

NOTES:

(1) From Section 7, Exhibit 2, Page 6
(2) = (Average of Section 7, Exhibit 2, Page 6, Column 3 / 175,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 7, Exhibit 2, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 7, Exhibit 2, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) Lump Sums are considered in Indemnity analysis (Section 1)
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	31,197	10.348			
1993	2	17,697	9.781	0.567		
1994	3	8,752	9.077	0.495		
1995	4	6,932	8.844	0.792		
1996	5	3,727	8.223	0.538		
1997	6	2,222	7.706	0.596		
1998	7	9,087	9.115	4.090		
1999	8	5,853	8.675	0.644		
2000	9	12,069	9.398	2.062	n =	22
2001	10	7,279	8.893	0.603	S(x) =	44,055
2002	11	8,308	9.025	1.141	S(x-sq) =	88,221,023
2003	12	8,142	9.005	0.980	S(xy) =	395,139
2004	13	19,519	9.879	2.397	S(y) =	197
2005	14	7,873	8.971	0.403	D =	19,481
2006	15	11,471	9.348	1.457	slope =	-0.032
2007	16	10,042	9.215	0.875	Avg Trend =	0.968
2008	17	8,213	9.014	0.818		
2009	18	9,432	9.152	1.148		
2010	19	7,136	8.873	0.757		
2011	20	10,399	9.249	1.457		
2012	21	3,318	8.107	0.319		
2013	22	1,702	7.440	0.513		
2014	23	0				
2015	24	0				
2016	25	0				
					Selected Trend:	**0.970**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2013: 0.513 = 1702 / 3318

Commonwealth of Massachusetts Workers Compensation
Massachusetts Colleges & Universities - Cluster 4
MEDICAL
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	5,425	13,479	21,113	27,654	30,220	32,596	38,756	40,003	49,390	49,452	49,902	49,902	49,902	52,680	52,680	52,680	52,680	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045	53,045
June-84	3,642	9,520	14,025	17,952	20,550	23,119	24,788	27,281	27,458	27,458	27,458	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	
June-85	13,476	35,975	51,552	65,364	72,959	79,579	86,331	95,092	106,398	110,557	111,969	111,969	112,255	112,573	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891	112,891		
June-86	33,919	90,663	130,143	159,111	250,739	286,799	294,926	297,883	299,398	302,212	307,822	320,541	325,361	342,239	344,332	347,860	364,047	376,849	380,765	383,694	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347			
June-87	33,322	88,558	133,068	167,433	202,414	217,655	221,836	226,928	230,316	231,634	233,141	233,163	235,329	236,440	236,440	236,440	236,440	237,211	237,211	237,211	237,211	237,211	238,056	238,056	238,056	238,056	238,056	238,056	238,056	239,258				
June-88	59,518	204,414	290,147	350,533	381,836	423,661	513,908	554,667	558,927	578,241	580,791	582,947	585,666	587,383	588,760	590,429	611,904	620,480	621,465	623,581	623,951	627,240	627,525	631,767	636,396	638,704	641,961	665,538	671,957					
June-89	62,198	211,475	294,554	322,576	356,178	387,366	391,897	394,643	397,103	398,291	400,332	413,505	414,824	415,958	415,958	424,869	425,154	425,154	425,154	425,154	425,154	425,154	425,840	425,973	426,014	426,014	426,014	426,014						
June-90	50,219	295,860	408,825	438,277	465,544	487,856	501,254	508,956	511,410	519,157	521,054	521,523	523,073	526,415	531,243	532,370	532,613	534,177	535,910	537,636	540,156	540,156	541,381	543,131	547,456	547,456	547,456							
June-91	73,392	311,241	360,552	400,955	419,114	437,552	445,905	451,717	456,911	463,872	466,034	467,206	468,330	470,247	472,258	472,472	472,472	472,472	472,472	472,472	472,472	472,472	472,472	472,472	472,472	472,472								
June-92	221,188	477,478	560,364	598,339	631,891	641,232	646,926	650,216	653,117	658,289	666,600	671,991	681,366	690,612	701,403	710,623	719,185	728,531	738,270	747,976	759,027	768,431	778,806	790,246	800,553									
June-93	150,073	407,193	449,884	478,264	489,794	496,554	498,030	498,889	501,701	503,184	504,152	505,509	506,348	506,348	506,348	506,348	506,348	506,348	506,348	506,348	506,348	506,348	506,348	506,348										
June-94	156,060	302,215	335,354	369,121	403,159	421,734	441,218	452,877	461,708	470,189	479,925	489,958	504,404	513,367	522,984	528,697	539,677	552,169	567,707	583,321	603,468	622,024	645,934											
June-95	109,792	244,835	298,417	304,966	313,919	317,775	323,966	336,940	345,737	404,548	417,872	419,186	507,915	517,682	526,590	533,675	537,590	548,842	549,714	552,788	553,266	561,548												
June-96	187,362	423,531	463,708	493,442	512,072	523,060	559,979	563,249	572,255	575,372	578,197	581,714	581,842	581,842	581,842	581,842	581,842	581,842	581,842	581,842	581,842													
June-97	169,255	306,866	359,926	403,511	440,040	450,988	458,674	483,346	503,475	519,848	535,734	556,260	578,975	602,453	632,460	672,797	707,292	751,693	784,391	804,120														
June-98	130,372	302,957	339,295	363,480	383,927	388,726	391,919	417,459	417,733	418,585	421,666	427,310	427,449	428,766	428,839	429,419	429,419	431,949	431,949															
June-99	97,937	205,527	246,679	296,667	310,533	318,692	324,215	326,063	327,858	331,461	334,241	334,867	336,644	336,644	338,914	356,188	359,425	359,425																
June-00	149,711	324,594	408,387	446,980	464,695	474,595	478,979	480,612	480,853	482,147	483,486	483,486	483,486	485,189	486,598	486,598	486,598																	
June-01	146,796	329,001	398,588	483,338	524,021	540,381	553,789	559,032	562,148	562,831	562,932	563,168	564,300	564,300	564,300	564,530																		
June-02	113,531	244,127	383,389	485,433	511,686	522,029	525,064	528,876	530,895	532,387	533,222	533,611	533,769	533,801	533,801																			
June-03	68,006	374,633	451,946	472,102	486,597	492,733	520,395	535,451	548,996	558,702	571,378	580,801	592,448	598,138																				
June-04	226,665	540,314	613,339	657,569	676,213	687,448	689,931	690,265	690,426	690,599	690,599	690,599	690,884																					
June-05	267,264	502,730	569,792	616,429	634,553	643,543	651,061	654,330	656,278	658,062	658,406	659,359																						
June-06	266,086	533,067	604,845	688,237	700,485	712,078	725,521	746,165	766,110	772,551	782,793																							
June-07	237,774	472,669	580,019	596,123	625,421	633,211	640,381	648,441	650,946	666,396																								
June-08	254,702	609,536	722,745	829,701	850,544	872,814	886,112	897,837	903,732																									
June-09	295,106	650,179	756,525	816,761	864,784	890,799	963,239	1,000,628																										
June-10	419,730	775,749	865,851	909,378	969,822	1,003,582	1,022,429																											
June-11	454,614	843,137	950,680	997,564	1,027,642	1,049,028																												
June-12	330,317	676,973	804,310	841,448	851,396																													
June-13	291,036	557,666	662,793	737,262																														
June-14	380,527	800,583	898,971																															
June-15	425,720	650,664																																
June-16	452,409																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.485	1.566	1.310	1.093	1.079	1.189	1.032	1.235	1.001	1.009	1.000	1.000	1.056	1.000	1.000	1.000	1.007	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-84	2.614	1.473	1.280	1.145	1.125	1.072	1.101	1.006	1.000	1.000	1.011	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
June-85	2.670	1.433	1.268	1.116	1.091	1.085	1.101	1.119	1.039	1.013	1.000	1.003	1.003	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
June-86	2.673	1.435	1.223	1.576	1.144	1.028	1.010	1.005	1.009	1.019	1.041	1.015	1.052	1.006	1.010	1.047	1.035	1.010	1.008	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
June-87	2.658	1.503	1.258	1.209	1.075	1.019	1.023	1.015	1.006	1.007	1.000	1.009	1.005	1.000	1.000	1.000	1.003	1.000	1.000	1.000	1.000	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.005					
June-88	3.434	1.419	1.208	1.089	1.110	1.213	1.079	1.008	1.035	1.004	1.004	1.005	1.003	1.002	1.003	1.036	1.014	1.002	1.003	1.001	1.005	1.000	1.007	1.007	1.004	1.005	1.037	1.010						
June-89	3.400	1.393	1.095	1.104	1.088	1.012	1.007	1.006	1.003	1.005	1.033	1.003	1.003	1.000	1.021	1.001	1.000	1.000	1.000	1.000	1.000	1.002	1.000	1.000	1.000	1.000	1.000							
June-90	5.891	1.382	1.072	1.062	1.048	1.027	1.015	1.005	1.015	1.004	1.001	1.003	1.006	1.009	1.002	1.000	1.003	1.003	1.003	1.005	1.000	1.002	1.003	1.008	1.000	1.000								
June-91	4.241	1.158	1.112	1.045	1.044	1.019	1.013	1.011	1.015	1.005	1.003	1.002	1.004	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
June-92	2.159	1.174	1.068	1.056	1.015	1.009	1.005	1.004	1.008	1.013	1.008	1.014	1.014	1.016	1.013	1.012	1.013	1.013	1.013	1.015	1.012	1.014	1.015	1.013										
June-93	2.713	1.105	1.063	1.024	1.014	1.003	1.002	1.006	1.003	1.002	1.003	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
June-94	1.937	1.110	1.101	1.092	1.046	1.046	1.026	1.019	1.018	1.021	1.021	1.029	1.018	1.019	1.011	1.021	1.023	1.028	1.028	1.035	1.031	1.038												
June-95	2.230	1.219	1.022	1.029	1.012	1.019	1.040	1.026	1.170	1.033	1.003	1.212	1.019	1.017	1.013	1.007	1.021	1.002	1.006	1.001	1.015													
June-96	2.260	1.095	1.064	1.038	1.021	1.071	1.006	1.016	1.005	1.005	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
June-97	1.813	1.173	1.121	1.091	1.025	1.017	1.054	1.042	1.033	1.031	1.038	1.041	1.041	1.050	1.064	1.051	1.063	1.043	1.025															
June-98	2.324	1.120	1.071	1.056	1.012	1.008	1.065	1.001	1.002	1.007	1.013	1.000	1.003	1.000	1.001	1.000	1.006	1.000																
June-99	2.099	1.200	1.203	1.047	1.026	1.017	1.006	1.006	1.011	1.008	1.002	1.005	1.000	1.007	1.051	1.009	1.000																	
June-00	2.168	1.258	1.095	1.040	1.021	1.009	1.003	1.001	1.003	1.003	1.000	1.000	1.004	1.003	1.000	1.000																		
June-01	2.241	1.212	1.213	1.084	1.031	1.025	1.009	1.006	1.001	1.000	1.000	1.002	1.000	1.000	1.000																			
June-02	2.150	1.570	1.266	1.054	1.020	1.006	1.007	1.004	1.003	1.002	1.001	1.000	1.000	1.000																				
June-03	5.509	1.206	1.045	1.031	1.013	1.056	1.029	1.025	1.018	1.023	1.016	1.020	1.010																					
June-04	2.384	1.135	1.072	1.028	1.017	1.004	1.000	1.000	1.000	1.000	1.000	1.000																						
June-05	1.881	1.133	1.082	1.029	1.014	1.012	1.005	1.003	1.003	1.001	1.001																							
June-06	2.003	1.135	1.138	1.018	1.017	1.019	1.028	1.027	1.008	1.013																								
June-07	1.988	1.227	1.028	1.049	1.012	1.011	1.013	1.004	1.024																									
June-08	2.393	1.186	1.148	1.025	1.026	1.015	1.013	1.007																										
June-09	2.203	1.164	1.080	1.059	1.030	1.081	1.039																											
June-10	1.848	1.116	1.050	1.066	1.035	1.019																												
June-11	1.855	1.128	1.049	1.030	1.021																													
June-12	2.049	1.188	1.046	1.012																														
June-13	1.916	1.189	1.112																															
June-14	2.104	1.123																																
June-15	1.528																																	

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.540	1.248	1.128	1.080	1.042	1.040	1.027	1.023	1.017	1.009	1.009	1.017	1.011	1.007	1.010	1.010	1.011	1.006	1.006	1.004	1.005	1.005	1.002	1.003	1.000	1.001	1.005	1.002	1.001	1.000	1.000	1.000	1.000	
Latest 5	1.890	1.149	1.068	1.038	1.025	1.029	1.020	1.008	1.011	1.008	1.004	1.005	1.003	1.002	1.023	1.012	1.018	1.015	1.012	1.010	1.012	1.011	1.004	1.006	1.001	1.001	1.007	1.002	1.001					
Latest 3	1.849	1.167	1.069	1.036	1.029	1.038	1.022	1.012	1.012	1.005	1.006	1.007	1.003	1.001	1.017	1.003	1.023	1.014	1.010	1.012	1.015	1.017	1.005	1.007	1.000	1.002	1.012	1.003	1.002	1.000	1.000			
Volume Wtd																																		
All Yrs	2.178	1.186	1.096	1.055	1.031	1.031	1.021	1.012	1.016	1.009	1.009	1.017	1.010	1.009	1.012	1.013	1.014	1.009	1.008	1.006	1.007	1.008	1.004	1.005	1.001	1.001	1.013	1.004	1.001	1.000	1.000	1.000	1.000	
Latest 5	1.875	1.145	1.065	1.039	1.026	1.030	1.021	1.008	1.010	1.008	1.004	1.005	1.003	1.002	1.024	1.015	1.022	1.017	1.013	1.011	1.013	1.012	1.005	1.007	1.001	1.001	1.013	1.004	1.001					
Latest 3	1.831	1.163	1.066	1.037	1.028	1.038	1.023	1.012	1.011	1.005	1.005	1.007	1.003	1.001	1.013	1.003	1.031	1.019	1.012	1.012	1.016	1.018	1.007	1.008	1.000	1.002	1.018	1.005	1.002	1.000	1.000			

Dev Factor Selection																																		
Industry 1	1.937	1.138	1.051	1.025	1.014	1.013	1.011	1.011	1.011	1.011	1.011	1.010	1.010	1.008	1.007	1.006	1.006	1.005																
Industry 2		1.271	1.076	1.031	1.019	1.013	1.010	1.010	1.011	1.009	1.010	1.014	1.012	1.008	1.007	1.008	1.006	1.005	1.005	1.006														
Prior	*2.220*	*1.180*	*1.070*	*1.045*	*1.030*	*1.025*	*1.012*	*1.010*	*1.015*	*1.005*	*1.005*	*1.015*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.006*	*1.004*	*1.004*	*1.003*	*1.002*	*1.002*	*1.000*	*1.001*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.002*	
Selected	2.178	1.180	1.070	1.039	1.030	1.025	1.021	1.010	1.015	1.008	1.005	1.015	1.010	1.010	1.010	1.010	1.010	1.009	1.008	1.004	1.005	1.011	1.002	1.003	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001
FacToUlt	3.564	1.637	1.387	1.296	1.248	1.212	1.182	1.158	1.146	1.129	1.121	1.115	1.099	1.088	1.077	1.067	1.056	1.046	1.036	1.027	1.023	1.018	1.007	1.005	1.002	1.002	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001
Percent of Ult	28.1%	61.1%	72.1%	77.2%	80.1%	82.5%	84.6%	86.4%	87.2%	88.5%	89.2%	89.7%	91.0%	91.9%	92.8%	93.8%	94.7%	95.6%	96.5%	97.3%	97.7%	98.2%	99.3%	99.5%	99.8%	99.8%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	339,306	344,312	338,455	340,441	(851)	-0.3%	(3,871)	-1.1%
6/30/82-83	53,310	53,575	53,310	53,575	0	0.0%	0	0.0%
6/30/83-84	27,912	28,051	27,912	28,051	0	0.0%	0	0.0%
6/30/84-85	113,455	114,020	113,455	114,020	0	0.0%	0	0.0%
6/30/85-86	386,269	388,190	386,269	388,190	0	0.0%	0	0.0%
6/30/86-87	239,246	240,437	240,455	241,651	1,208	0.5%	1,214	0.5%
6/30/87-88	667,000	667,000	673,000	673,000	6,000	0.9%	6,000	0.9%
6/30/88-89	427,000	427,000	427,000	427,000	0	0.0%	0	0.0%
6/30/89-90	549,000	549,000	548,000	549,000	(1,000)	-0.2%	0	0.0%
6/30/90-91	474,000	474,000	473,000	473,000	(1,000)	-0.2%	(1,000)	-0.2%
6/30/91-92	794,000	794,000	802,000	802,000	8,000	1.0%	8,000	1.0%
6/30/92-93	508,880	511,411	508,880	511,411	0	0.0%	0	0.0%
6/30/93-94	628,000	628,000	649,164	652,394	21,164	3.4%	24,394	3.9%
6/30/94-95	561,000	561,000	564,355	567,163	3,355	0.6%	6,163	1.1%
6/30/95-96	584,752	587,661	584,752	587,661	0	0.0%	0	0.0%
6/30/96-97	808,020	812,040	830,130	834,260	22,110	2.7%	22,220	2.7%
6/30/97-98	447,000	452,480	447,000	452,480	0	0.0%	0	0.0%
6/30/98-99	376,000	380,770	376,000	380,770	0	0.0%	0	0.0%
6/30/99-00	514,000	515,000	514,000	514,000	0	0.0%	(1,000)	-0.2%
6/30/00-01	602,000	603,000	602,000	602,000	0	0.0%	(1,000)	-0.2%
6/30/01-02	575,000	576,000	575,000	576,000	0	0.0%	0	0.0%
6/30/02-03	645,000	646,000	637,980	651,000	(7,020)	-1.1%	5,000	0.8%
6/30/03-04	763,000	763,000	743,820	759,000	(19,180)	-2.5%	(4,000)	-0.5%
6/30/04-05	731,000	753,000	720,300	749,000	(10,700)	-1.5%	(4,000)	-0.5%
6/30/05-06	862,000	869,000	855,540	877,000	(6,460)	-0.7%	8,000	0.9%
6/30/06-07	737,000	768,000	737,940	770,000	940	0.1%	2,000	0.3%
6/30/07-08	1,006,460	1,016,730	1,001,560	1,036,000	(4,900)	-0.5%	19,270	1.9%
6/30/08-09	1,083,880	1,103,850	1,106,420	1,159,000	22,540	2.1%	55,150	5.0%
6/30/09-10	1,150,520	1,179,090	1,149,540	1,209,000	(980)	-0.1%	29,910	2.5%
6/30/10-11	1,209,320	1,243,440	1,202,460	1,271,000	(6,860)	-0.6%	27,560	2.2%
6/30/11-12	1,053,500	1,091,970	1,041,740	1,067,000	(11,760)	-1.1%	(24,970)	-2.3%
6/30/12-13	887,880	997,920	946,440	1,001,000	58,560	6.6%	3,080	0.3%
6/30/13-14	1,266,160	1,299,870	1,212,260	1,247,000	(53,900)	-4.3%	(52,870)	-4.1%
6/30/14-15	1,366,100	1,525,000	1,065,000	1,142,000	(301,100)	-22.0%	(383,000)	-25.1%
6/30/15-16								
Total	22,436,970	22,963,817	22,155,137	22,706,068	(281,833)	-1.3%	(257,750)	-1.1%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 7, Exhibit 2, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	0.1%	0.0%	0.0%	0.0%	1.000	1.000
408	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
396	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
384	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
372	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
360	99.9%	0.0%	0.1%	0.0%	0.0%	1.000	1.000
348	99.9%	0.0%	0.1%	0.0%	0.0%	0.806	0.726
336	99.9%	0.0%	0.1%	0.0%	0.0%	0.775	0.685
324	99.9%	0.1%	0.1%	0.0%	0.0%	0.745	0.646
312	99.8%	0.0%	0.2%	0.0%	0.0%	0.799	0.722
300	99.8%	0.3%	0.2%	0.1%	0.1%	0.768	0.681
288	99.5%	0.2%	0.5%	0.1%	0.1%	0.879	0.833
276	99.3%	1.1%	0.7%	0.4%	0.3%	0.888	0.845
264	98.2%	0.5%	1.8%	0.2%	0.1%	0.930	0.901
252	97.7%	0.4%	2.3%	0.2%	0.1%	0.912	0.876
240	97.3%	0.8%	2.7%	0.4%	0.3%	0.893	0.848
228	96.5%	0.9%	3.5%	0.4%	0.3%	0.887	0.840
216	95.6%	0.9%	4.4%	0.5%	0.3%	0.879	0.829
204	94.7%	0.9%	5.3%	0.5%	0.4%	0.869	0.816
192	93.8%	0.9%	6.2%	0.5%	0.4%	0.858	0.800
180	92.8%	0.9%	7.2%	0.5%	0.4%	0.845	0.783
168	91.9%	0.9%	8.1%	0.5%	0.4%	0.832	0.765
156	91.0%	1.3%	9.0%	0.8%	0.6%	0.818	0.747
144	89.7%	0.4%	10.3%	0.3%	0.2%	0.812	0.739
132	89.2%	0.7%	10.8%	0.4%	0.4%	0.789	0.709
120	88.5%	1.3%	11.5%	0.9%	0.8%	0.771	0.686
108	87.2%	0.9%	12.8%	0.6%	0.5%	0.766	0.681
96	86.4%	1.8%	13.6%	1.3%	1.1%	0.752	0.663
84	84.6%	2.1%	15.4%	1.6%	1.4%	0.753	0.665
72	82.5%	2.4%	17.5%	1.9%	1.7%	0.754	0.668
60	80.1%	3.0%	19.9%	2.5%	2.3%	0.756	0.672
48	77.2%	5.0%	22.8%	4.4%	4.1%	0.760	0.678
36	72.1%	11.0%	27.9%	10.0%	9.5%	0.776	0.699
24	61.1%	33.1%	38.9%	31.2%	30.3%	0.812	0.748
12	28.1%	28.1%	71.9%	27.5%	27.2%	0.873	0.828
Total		100.0%					

NOTES:

(2) = 1 / Section 7, Exhibit 2, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	0	1,986		0	1,874
6/30/82-83	265	530	1.000	265	530
6/30/83-84	139	278	1.000	139	278
6/30/84-85	564	1,129	1.000	564	1,129
6/30/85-86	1,922	3,843	1.000	1,922	3,843
6/30/86-87	1,196	2,393	1.000	1,196	2,393
6/30/87-88	1,043	1,043	0.806	841	841
6/30/88-89	986	986	0.775	764	764
6/30/89-90	544	1,544	0.745	405	1,150
6/30/90-91	528	528	0.799	422	422
6/30/91-92	1,447	1,447	0.768	1,111	1,111
6/30/92-93	2,532	5,063	0.879	2,225	4,450
6/30/93-94	3,230	6,459	0.888	2,868	5,735
6/30/94-95	2,808	5,615	0.930	2,610	5,221
6/30/95-96	2,909	5,818	0.912	2,654	5,308
6/30/96-97	26,010	30,140	0.893	23,219	26,905
6/30/97-98	15,051	20,531	0.887	13,347	18,206
6/30/98-99	16,575	21,345	0.879	14,571	18,764
6/30/99-00	27,402	27,402	0.869	23,824	23,824
6/30/00-01	37,470	37,470	0.858	32,139	32,139
6/30/01-02	41,199	42,199	0.845	34,809	35,654
6/30/02-03	39,842	52,862	0.832	33,129	43,956
6/30/03-04	52,936	68,116	0.818	43,294	55,709
6/30/04-05	60,941	89,641	0.812	49,463	72,757
6/30/05-06	72,747	94,207	0.789	57,376	74,302
6/30/06-07	71,544	103,604	0.771	55,191	79,923
6/30/07-08	97,828	132,268	0.766	74,959	101,348
6/30/08-09	105,792	158,372	0.752	79,577	119,128
6/30/09-10	127,111	186,571	0.753	95,702	140,469
6/30/10-11	153,432	221,972	0.754	115,726	167,422
6/30/11-12	190,344	215,604	0.756	143,923	163,023
6/30/12-13	209,178	263,738	0.760	158,981	200,448
6/30/13-14	313,289	348,029	0.776	243,110	270,068
6/30/14-15	414,336	491,336	0.812	336,624	399,182
6/30/15-16	941,591	1,144,461	0.873	821,812	998,875
Total	3,034,730	3,788,531		2,468,762	3,077,152
			(7) Total Discount Factor:	0.814	0.812

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	0	1,986
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	0	662
(11) Discounted Value at 4%:	0	1,874

NOTES:
(2), (3) From Section 7, Exhibit 2, Page 1, Columns 8, 9
(4) From Section 7, Exhibit 2, Page 9, Column 7
(5) = (2) x (4)
(6) = (3) x (4)
(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)
(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

Massachusetts Colleges & Universities - Cluster 4
Medical

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	0	1,986		0	1,823
6/30/82-83	265	530	1.000	265	530
6/30/83-84	139	278	1.000	139	278
6/30/84-85	564	1,129	1.000	564	1,129
6/30/85-86	1,922	3,843	1.000	1,922	3,843
6/30/86-87	1,196	2,393	1.000	1,196	2,393
6/30/87-88	1,043	1,043	0.726	757	757
6/30/88-89	986	986	0.685	675	675
6/30/89-90	544	1,544	0.646	351	997
6/30/90-91	528	528	0.722	381	381
6/30/91-92	1,447	1,447	0.681	985	985
6/30/92-93	2,532	5,063	0.833	2,109	4,219
6/30/93-94	3,230	6,459	0.845	2,728	5,456
6/30/94-95	2,808	5,615	0.901	2,531	5,061
6/30/95-96	2,909	5,818	0.876	2,548	5,096
6/30/96-97	26,010	30,140	0.848	22,057	25,559
6/30/97-98	15,051	20,531	0.840	12,640	17,243
6/30/98-99	16,575	21,345	0.829	13,745	17,701
6/30/99-00	27,402	27,402	0.816	22,362	22,362
6/30/00-01	37,470	37,470	0.800	29,981	29,981
6/30/01-02	41,199	42,199	0.783	32,254	33,037
6/30/02-03	39,842	52,862	0.765	30,479	40,440
6/30/03-04	52,936	68,116	0.747	39,541	50,880
6/30/04-05	60,941	89,641	0.739	45,057	66,276
6/30/05-06	72,747	94,207	0.709	51,564	66,775
6/30/06-07	71,544	103,604	0.686	49,113	71,121
6/30/07-08	97,828	132,268	0.681	66,599	90,045
6/30/08-09	105,792	158,372	0.663	70,149	105,015
6/30/09-10	127,111	186,571	0.665	84,575	124,137
6/30/10-11	153,432	221,972	0.668	102,535	148,338
6/30/11-12	190,344	215,604	0.672	127,849	144,815
6/30/12-13	209,178	263,738	0.678	141,735	178,704
6/30/13-14	313,289	348,029	0.699	219,086	243,380
6/30/14-15	414,336	491,336	0.748	309,854	367,437
6/30/15-16	941,591	1,144,461	0.828	779,262	947,157
Total	3,034,730	3,788,531		2,267,590	2,824,027
			(7) Total Discount Factor:	0.747	0.745

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	0	1,986
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	0	662
(11) Discounted Value at 6%:	0	1,823

NOTES:

(2), (3) From Section 7, Exhibit 2, Page 1, Columns 8, 9

(4) From Section 7, Exhibit 2, Page 9, Column 8

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

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		44,815,321			50,048,966	54,165,542	5,233,645	9,350,221		
6/30/82-83		5,610,779	5,786,696		5,642,028	6,076,030	31,249	465,251		
6/30/83-84		8,043,745	8,300,363		8,092,853	8,715,381	49,109	671,636		
6/30/84-85	732,729	16,773,011	17,381,872	17,141,874	17,142,000	17,382,000	368,989	608,989	2.339	2.372
6/30/85-86	787,208	19,971,541	20,806,842	20,508,039	20,508,000	20,807,000	536,459	835,459	2.605	2.643
6/30/86-87	902,483	20,737,429	21,750,806	21,433,058	21,433,000	21,751,000	695,571	1,013,571	2.375	2.410
6/30/87-88	1,366,586	28,179,557	29,811,621	29,504,182	29,504,000	30,408,000	1,324,443	2,228,443	2.159	2.225
6/30/88-89	1,486,478	25,919,133	27,670,252	27,201,589	27,202,000	28,224,000	1,282,867	2,304,867	1.830	1.899
6/30/89-90	1,494,463	24,499,038	26,477,192	26,192,384	26,192,000	27,007,000	1,692,962	2,507,962	1.753	1.807
6/30/90-91	1,405,560	21,258,828	23,267,955	23,066,963	23,067,000	23,733,000	1,808,172	2,474,172	1.641	1.689
6/30/91-92	1,364,510	13,005,904	14,447,061	14,313,980	14,314,000	15,169,000	1,308,096	2,163,096	1.049	1.112
6/30/92-93	1,347,359	9,768,994	11,846,757	10,970,943	10,971,000	11,847,000	1,202,006	2,078,006	0.814	0.879
6/30/93-94	1,424,410	10,758,946	12,173,293	12,141,771	12,142,000	12,417,000	1,383,054	1,658,054	0.852	0.872
6/30/94-95	1,497,829	9,637,268	11,025,256	10,994,369	10,994,000	11,577,000	1,356,732	1,939,732	0.734	0.773
6/30/95-96	1,582,635	10,098,555	11,794,469	11,748,990	11,749,000	12,384,000	1,650,445	2,285,445	0.742	0.782
6/30/96-97	1,979,748	10,209,410	12,042,746	12,009,202	12,009,000	12,645,000	1,799,590	2,435,590	0.607	0.639
6/30/97-98	1,917,994	8,812,898	10,443,385	10,435,394	10,435,000	10,966,000	1,622,102	2,153,102	0.544	0.572
6/30/98-99	2,081,524	9,168,500	11,102,092	11,093,205	11,093,000	11,657,000	1,924,500	2,488,500	0.533	0.560
6/30/99-00	2,207,243	10,556,959	13,095,421	13,057,129	13,057,000	13,750,000	2,500,041	3,193,041	0.592	0.623
6/30/00-01	2,201,008	9,945,469	12,577,284	12,553,598	12,554,000	13,206,000	2,608,531	3,260,531	0.570	0.600
6/30/01-02	2,292,592	10,342,579	13,224,756	13,217,396	13,217,000	13,886,000	2,874,421	3,543,421	0.577	0.606
6/30/02-03	2,260,534	10,040,968	13,138,386	13,133,104	13,133,000	13,795,000	3,092,032	3,754,032	0.581	0.610
6/30/03-04	2,255,942	9,100,288	12,134,945	12,162,455	12,135,000	12,771,000	3,034,712	3,670,712	0.538	0.566
6/30/04-05	2,309,083	10,648,179	14,380,219	14,430,704	14,380,000	14,431,000	3,731,821	3,782,821	0.623	0.625
6/30/05-06	2,480,693	10,038,318	13,824,646	14,533,021	13,825,000	14,533,000	3,786,682	4,494,682	0.557	0.586
6/30/06-07	2,612,577	9,024,881	12,860,602	14,188,112	12,861,000	14,188,000	3,836,119	5,163,119	0.492	0.543
6/30/07-08	2,783,717	12,662,746	18,577,815	18,827,558	17,649,000	18,828,000	4,986,255	6,165,255	0.634	0.676
6/30/08-09	2,750,907	13,055,802	19,872,157	19,849,919	19,651,500	19,891,872	6,595,698	6,836,070	0.714	0.723
6/30/09-10	2,806,048	12,685,571	20,023,803	20,491,796	19,022,800	20,512,492	6,337,229	7,826,921	0.678	0.731
6/30/10-11	2,942,638	14,025,061	23,757,018	23,427,198	23,192,730	23,780,757	9,167,669	9,755,696	0.788	0.808
6/30/11-12	3,006,849	13,643,247	25,543,836	24,819,894	24,571,800	25,620,632	10,928,553	11,977,385	0.817	0.852
6/30/12-13	3,138,905	10,480,943	22,620,292	24,054,007	22,393,800	24,078,054	11,912,857	13,597,111	0.713	0.767
6/30/13-14	3,311,947	10,710,980	28,587,677	28,541,303	27,684,770	28,588,000	16,973,790	17,877,020	0.836	0.863
6/30/14-15	3,511,622	7,650,206	28,909,424	30,037,445	28,041,730	30,037,000	20,391,524	22,386,794	0.799	0.855
6/30/15-16	3,491,558	3,764,594	31,962,776	31,971,299	31,323,740	31,971,000	27,559,146	28,206,406	0.897	0.916
Total	67,735,377	475,645,648	601,219,716	588,051,881	641,232,718	670,798,760	165,587,070	195,153,113		
Tot 6/30/84-16	67,735,377	417,175,803	587,132,657	588,051,881	577,448,870	601,841,807	160,273,067	184,666,004	0.853	0.889

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) Sum of Section 8, Exhibit 1, Page 2, Column 3 and Section 8, Exhibit 1, Page 9, Column 8

(4) From Section 8, Exhibit 1, Page 2, Column 8

(5) From Section 8, Exhibit 1, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Accident Year	Payroll (000's)	Paid Loss Excluding Lump Sum	Paid LDF	Adjstmnt for Extra Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim	Average Age
All Prior Yrs		43,155,107							14	13		83
6/30/82-83		5,567,029	1.021	1.010	5,742,727	43,969	5,786,696		1	0		
6/30/83-84		7,560,195	1.023	1.010	7,814,395	485,968	8,300,363		1	1	254,200	69
6/30/84-85	732,729	16,026,507	1.027	1.010	16,631,636	750,237	17,381,872	2.372	1	1	605,129	
6/30/85-86	787,208	18,865,007	1.034	1.010	19,694,776	1,112,066	20,806,842	2.643	3	3	276,590	79
6/30/86-87	902,483	19,217,565	1.042	1.010	20,223,343	1,527,463	21,750,806	2.410	6	6	167,630	74
6/30/87-88	1,366,586	26,108,153	1.052	1.010	27,729,860	2,081,761	29,811,621	2.181	8	8	202,713	70
6/30/88-89	1,486,478	22,992,900	1.065	1.010	24,729,387	2,940,864	27,670,252	1.861	9	8	217,061	74
6/30/89-90	1,494,463	21,783,413	1.079	1.010	23,746,618	2,730,575	26,477,192	1.772	7	7	280,458	67
6/30/90-91	1,405,560	18,761,226	1.095	1.010	20,755,342	2,512,614	23,267,955	1.655	6	5	398,823	74
6/30/91-92	1,364,510	11,664,168	1.112	1.010	13,095,224	1,351,837	14,447,061	1.059	5	5	286,211	69
6/30/92-93	1,347,359	8,541,121	1.129	1.100	10,607,771	1,238,987	11,846,757	0.879	4	3	688,883	71
6/30/93-94	1,424,410	9,452,424	1.148	1.000	10,847,527	1,325,767	12,173,293	0.855	7	6	232,517	73
6/30/94-95	1,497,829	8,105,050	1.168	1.000	9,463,455	1,561,801	11,025,256	0.736	6	3	452,802	74
6/30/95-96	1,582,635	8,752,873	1.190	1.000	10,413,560	1,380,909	11,794,469	0.745	4	4	415,172	70
6/30/96-97	1,979,748	8,300,591	1.214	1.000	10,080,350	1,962,396	12,042,746	0.608	4	4	444,940	61
6/30/97-98	1,917,994	6,410,703	1.242	1.000	7,959,506	2,483,879	10,443,385	0.544	1	1	1,548,802	73
6/30/98-99	2,081,524	7,070,436	1.260	1.000	8,912,271	2,189,821	11,102,092	0.533	4	5	368,367	53
6/30/99-00	2,207,243	8,663,410	1.282	1.000	11,104,628	1,990,793	13,095,421	0.593	5	4	610,304	64
6/30/00-01	2,201,008	8,343,041	1.304	1.000	10,882,072	1,695,212	12,577,284	0.571	7	6	423,172	59
6/30/01-02	2,292,592	8,337,160	1.331	1.000	11,092,745	2,132,010	13,224,756	0.577	8	4	688,896	49
6/30/02-03	2,260,534	8,243,468	1.359	1.000	11,204,334	1,934,052	13,138,386	0.581	7	6	493,478	51
6/30/03-04	2,255,942	7,438,524	1.388	1.000	10,328,354	1,806,592	12,134,945	0.538	5	5	577,966	55
6/30/04-05	2,309,083	8,305,978	1.424	1.000	11,831,481	2,548,738	14,380,219	0.623	6	7	503,643	61
6/30/05-06	2,480,693	7,637,818	1.464	1.000	11,181,868	2,642,778	13,824,646	0.557	6	5	708,810	59
6/30/06-07	2,612,577	7,150,792	1.503	1.000	10,746,991	2,113,611	12,860,602	0.492	8	6	599,366	48
6/30/07-08	2,783,717	10,074,097	1.551	1.000	15,622,837	2,954,978	18,577,815	0.667	13	6	924,790	59
6/30/08-09	2,750,907	10,514,184	1.605	1.000	16,870,524	3,001,633	19,872,157	0.722	22	17	373,902	55
6/30/09-10	2,806,048	9,913,357	1.671	1.000	16,567,855	3,455,948	20,023,803	0.714	28	18	369,694	49
6/30/10-11	2,942,638	11,281,886	1.763	1.000	19,890,617	3,866,401	23,757,018	0.807	43	28	307,455	51
6/30/11-12	3,006,849	11,447,181	1.904	1.000	21,791,512	3,752,324	25,543,836	0.850	76	49	211,109	51
6/30/12-13	3,138,905	9,109,069	2.115	1.000	19,267,894	3,352,398	22,620,292	0.721	99	66	153,922	49
6/30/13-14	3,311,947	9,677,378	2.487	1.000	24,068,152	4,519,525	28,587,677	0.863	242	111	129,647	52
6/30/14-15	3,511,622	7,330,865	3.372	1.000	24,718,790	4,190,634	28,909,424	0.823	562	245	70,971	46
6/30/15-16	3,491,558	3,743,094	7.242	1.000	27,109,007	4,853,769	31,962,776	0.915		550	42,483	44
Total	67,735,377	415,545,774			522,727,406	78,492,310	601,219,716		1,228	1,216		

NOTES:
(2) Provided by Commonwealth of Massachusetts
(3), (4) From Section 8, Exhibit 1, Page 7
(5) Based on information from the MA WCRIB
(6) = (3) x (4) x (5)
(7) From Section 8, Exhibit 1, Page 9, Column 13
(8) = (6) + (7)
(9) = (8) / (2) / 10
(10), (11) Provided by Commonwealth of Massachusetts
(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss Excluding Lump Sum	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	732,729	1.863	16,026,507	1.027	16,391,638	750,237	17,141,874	2.339	2.237
6/30/85-86	787,208	2.072	18,865,007	1.034	19,395,972	1,112,066	20,508,039	2.605	2.464
6/30/86-87	902,483	1.895	19,217,565	1.042	19,905,595	1,527,463	21,433,058	2.375	2.206
6/30/87-88	1,366,586	1.960	26,108,153	1.052	27,422,421	2,081,761	29,504,182	2.159	2.007
6/30/88-89	1,486,478	1.400	22,992,900	1.065	24,260,725	2,940,864	27,201,589	1.830	1.632
6/30/89-90	1,494,463	1.528	21,783,413	1.079	23,461,809	2,730,575	26,192,384	1.753	1.570
6/30/90-91	1,405,560	1.466	18,761,226	1.095	20,554,349	2,512,614	23,066,963	1.641	1.462
6/30/91-92	1,364,510	0.948	11,664,168	1.112	12,962,143	1,351,837	14,313,980	1.049	0.950
6/30/92-93	1,347,359	0.773	8,541,121	1.129	9,731,956	1,238,987	10,970,943	0.814	0.722
6/30/93-94	1,424,410	0.744	9,452,424	1.148	10,816,004	1,325,767	12,141,771	0.852	0.759
6/30/94-95	1,497,829	0.617	8,105,050	1.168	9,432,568	1,561,801	10,994,369	0.734	0.630
6/30/95-96	1,582,635	0.640	8,752,873	1.190	10,368,082	1,380,909	11,748,990	0.742	0.655
6/30/96-97	1,979,748	0.500	8,300,591	1.214	10,046,806	1,962,396	12,009,202	0.607	0.507
6/30/97-98	1,917,994	0.413	6,410,703	1.242	7,951,515	2,483,879	10,435,394	0.544	0.415
6/30/98-99	2,081,524	0.426	7,070,436	1.260	8,903,383	2,189,821	11,093,205	0.533	0.428
6/30/99-00	2,207,243	0.495	8,663,410	1.282	11,066,336	1,990,793	13,057,129	0.592	0.501
6/30/00-01	2,201,008	0.490	8,343,041	1.304	10,858,386	1,695,212	12,553,598	0.570	0.493
6/30/01-02	2,292,592	0.483	8,337,160	1.331	11,085,386	2,132,010	13,217,396	0.577	0.484
6/30/02-03	2,260,534	0.495	8,243,468	1.359	11,199,052	1,934,052	13,133,104	0.581	0.495
6/30/03-04	2,255,942	0.462	7,438,524	1.388	10,355,863	1,806,592	12,162,455	0.539	0.459
6/30/04-05	2,309,083	0.520	8,305,978	1.424	11,881,965	2,548,738	14,430,704	0.625	0.515
6/30/05-06	2,480,693	0.541	7,637,818	1.464	11,890,243	2,642,778	14,533,021	0.586	0.479
6/30/06-07	2,612,577	0.563	7,150,792	1.503	12,074,501	2,113,611	14,188,112	0.543	0.462
6/30/07-08	2,783,717	0.586	10,074,097	1.551	15,872,580	2,954,978	18,827,558	0.676	0.570
6/30/08-09	2,750,907	0.611	10,514,184	1.605	16,848,285	3,001,633	19,849,919	0.722	0.612
6/30/09-10	2,806,048	0.632	9,913,357	1.671	17,035,848	3,455,948	20,491,796	0.730	0.607
6/30/10-11	2,942,638	0.650	11,281,886	1.763	19,560,797	3,866,401	23,427,198	0.796	0.665
6/30/11-12	3,006,849	0.674	11,447,181	1.904	21,067,570	3,752,324	24,819,894	0.825	0.701
6/30/12-13	3,138,905	0.700	9,109,069	2.115	20,701,609	3,352,398	24,054,007	0.766	0.660
6/30/13-14	3,311,947	0.724	9,677,378	2.487	24,021,778	4,519,525	28,541,303	0.862	0.725
6/30/14-15	3,511,622	0.750	7,330,865	3.372	25,846,811	4,190,634	30,037,445	0.855	0.736
6/30/15-16	3,491,558	0.777	3,743,094	7.242	27,117,531	4,853,769	31,971,299	0.916	0.777
Total	67,735,377		359,263,443		510,089,508	77,962,373	588,051,881		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 8, Exhibit 1, Page 4, Column 11

(4) From Section 8, Exhibit 1, Page 2, Column 3

(5) From Section 8, Exhibit 1, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) From Section 8, Exhibit 1, Page 9, Column 13

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Exp Ult Loss Excluding Lump Sum	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									1.863	1.863
6/30/85-86									2.072	2.072
6/30/86-87									1.895	1.895
6/30/87-88									1.960	1.960
6/30/88-89									1.400	1.400
6/30/89-90									1.528	1.528
6/30/90-91	1,405,560	20,755,342	1.477	0.969	1.430	2.157	3.085	0.383	1.486	1.466
6/30/91-92	1,364,510	13,095,224	0.960	1.063	1.020	2.094	2.135	0.360	0.955	0.948
6/30/92-93	1,347,359	10,607,771	0.787	1.239	0.976	2.033	1.983	0.318	0.782	0.773
6/30/93-94	1,424,410	10,847,527	0.762	1.223	0.932	1.974	1.839	0.331	0.748	0.744
6/30/94-95	1,497,829	9,463,455	0.632	1.212	0.766	1.916	1.467	0.344	0.623	0.617
6/30/95-96	1,582,635	10,413,560	0.658	1.202	0.791	1.860	1.472	0.358	0.643	0.640
6/30/96-97	1,979,748	10,080,350	0.509	1.190	0.606	1.806	1.095	0.372	0.507	0.500
6/30/97-98	1,917,994	7,959,506	0.415	1.175	0.488	1.754	0.855	0.388	0.419	0.413
6/30/98-99	2,081,524	8,912,271	0.428	1.160	0.497	1.702	0.845	0.405	0.427	0.426
6/30/99-00	2,207,243	11,104,628	0.503	1.141	0.574	1.653	0.949	0.424	0.498	0.495
6/30/00-01	2,201,008	10,882,072	0.494	1.112	0.550	1.605	0.882	0.448	0.494	0.490
6/30/01-02	2,292,592	11,092,745	0.484	1.090	0.528	1.558	0.822	0.471	0.495	0.483
6/30/02-03	2,260,534	11,204,334	0.496	1.086	0.539	1.513	0.815	0.487	0.506	0.495
6/30/03-04	2,255,942	10,328,354	0.458	1.086	0.497	1.469	0.730	0.501	0.471	0.462
6/30/04-05	2,309,083	11,831,481	0.512	1.080	0.553	1.426	0.789	0.520	0.496	0.520
6/30/05-06	2,480,693	11,181,868	0.451	1.069	0.482	1.384	0.667	0.541	0.522	0.541
6/30/06-07	2,612,577	10,746,991	0.411	1.057	0.435	1.344	0.584	0.563	0.548	0.563
6/30/07-08	2,783,717	15,622,837	0.561	1.045	0.587	1.305	0.766	0.586	0.577	0.586
6/30/08-09	2,750,907	16,870,524	0.613	1.033	0.634	1.267	0.803	0.611	0.607	0.611
6/30/09-10	2,806,048	16,567,855	0.590	1.029	0.608	1.230	0.747	0.632	0.633	0.632
6/30/10-11	2,942,638	19,890,617	0.676	1.031	0.697	1.194	0.832	0.650	0.658	0.650
6/30/11-12	3,006,849	21,791,512	0.725	1.024	0.742	1.159	0.860	0.674	0.689	0.674
6/30/12-13	3,138,905	19,267,894	0.614	1.015	0.623	1.126	0.701	0.700	0.723	0.700
6/30/13-14	3,311,947	24,068,152	0.727	1.011	0.734	1.093	0.803	0.724	0.755	0.724
6/30/14-15	3,511,622	24,718,790	0.704	1.006	0.708	1.061	0.751	0.750	0.788	0.750
6/30/15-16	3,491,558	27,109,007	0.776	1.000	0.776	1.030	0.800	0.777		0.777
Total	60,965,431	376,414,665								

Trend Last 4 (ex 15-16):	0.2%	Avg 3 (ex 15-16):	0.752
Trend Last 8 (ex 15-16):	2.6%	Avg 5 (ex 15-16):	0.789
Trend Last 12 (ex 15-16):	4.1%	Avg 10 (ex 15-16):	0.751
Prior Selected Trend:	4.0%	Prior Sel Avg:	0.820
Selected Trend:	3.0%	Sel. Loss Cost:	0.800

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 8, Exhibit 1, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCRIB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.950	
(2)	Credibility		60%	
(3)	Average Pmt Trend Statewide		0.960	
(4)	Credibility Weighted Trend		0.954	
		(Low)		(High)
(5)	Selected Range	0.951		0.975
(6)	Incremental Paid for 2016	482,894		482,894
(7)	Estimated Reserve	9,406,995		18,832,847
(8)	Paid to Date (82 & Prior)	43,155,107		43,155,107
(9)	Est Ult Paid for 1982 & Prior	52,562,102		61,987,953

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	547,352	590,037
(11)	Projected Number of Years	7	7
(12)	Estimated Reserve	3,831,461	4,130,258
(13)	Paid to Date (82 & Prior)	43,155,107	42,672,213
(14)	Est Ult Paid for 1982 & Prior	46,986,568	46,802,472
(14a)	Paid Counts During Fiscal Year	13	14

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	48,380,451	52,497,027
(16)	Lump Sum Ultimates	1,668,515	1,668,515
(17)	Ult Loss Including Lump Sums	**50,048,966**	**54,165,542**
(18)	Implied Tail	1.121	1.216
(19)	Ult Loss Inc Lump Sums @ 6/15	50,188,598	54,601,930

NOTES:

(1) From Section 8, Exhibit 1, Page 6
(2) = (Average of Section 8, Exhibit 1, Page 6, Column 3 / 3,000,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 8, Exhibit 1, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 8, Exhibit 1, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) From Section 8, Exhibit 1, Page 9, Column 13
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	1,836,769	14.424			
1993	2	1,798,132	14.402	0.979		
1994	3	1,805,622	14.406	1.004		
1995	4	1,547,567	14.252	0.857		
1996	5	1,421,249	14.167	0.918		
1997	6	1,347,840	14.114	0.948		
1998	7	1,296,821	14.075	0.962		
1999	8	1,188,256	13.988	0.916		
2000	9	1,366,125	14.127	1.150	n =	25
2001	10	1,385,608	14.142	1.014	S(x) =	50,100
2002	11	1,127,515	13.936	0.814	S(x-sq) =	100,401,700
2003	12	1,046,115	13.861	0.928	S(xy) =	691,662
2004	13	1,007,259	13.823	0.963	S(y) =	345
2005	14	889,985	13.699	0.884	D =	32,500
2006	15	854,725	13.659	0.960	slope =	-0.053
2007	16	901,012	13.711	1.054	Avg Trend =	0.947
2008	17	757,677	13.538	0.841		
2009	18	716,898	13.483	0.946		
2010	19	794,268	13.585	1.108		
2011	20	682,924	13.434	0.860		
2012	21	659,520	13.399	0.966		
2013	22	610,950	13.323	0.926		
2014	23	572,165	13.257	0.937		
2015	24	586,996	13.283	1.026		
2016	25	482,894	13.088	0.823		
					Selected Trend:	**0.950**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 0.823 = 482894 / 586996

Commonwealth of Massachusetts Workers Compensation
All Other - Clusters 5-17 & 95
INDEMNITY
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	231,024	575,253	850,794	1,079,038	1,313,630	1,547,045	1,752,282	2,008,011	2,253,139	2,495,680	2,697,289	2,900,500	3,128,719	3,307,827	3,431,589	3,539,243	3,710,205	3,863,378	3,993,953	4,130,963	4,277,923	4,408,084	4,548,681	4,684,745	4,831,991	4,987,790	5,125,598	5,253,262	5,365,011	5,438,336	5,513,211	5,568,431	5,567,029	5,567,029
June-84	474,232	1,177,837	1,738,838	2,206,285	2,688,699	3,194,391	3,593,923	3,979,171	4,253,324	4,483,497	4,692,563	4,887,962	5,105,946	5,268,212	5,510,171	5,713,715	5,953,029	6,114,581	6,330,589	6,551,091	6,749,135	6,911,821	7,056,179	7,158,846	7,234,716	7,305,169	7,339,786	7,374,258	7,408,772	7,445,202	7,482,504	7,520,670	7,560,195	
June-85	977,090	2,372,578	3,464,586	4,349,747	5,275,439	6,134,761	6,920,369	7,655,499	8,408,427	8,983,219	9,607,477	10,145,930	10,640,204	11,178,862	11,641,664	12,100,236	12,599,733	13,016,766	13,426,358	13,778,892	14,131,892	14,427,029	14,710,082	14,949,032	15,141,235	15,309,397	15,476,853	15,650,018	15,828,834	15,902,384	15,963,360	16,026,507		
June-86	1,346,949	3,307,907	4,829,702	6,090,487	7,340,375	8,352,083	9,113,471	9,830,455	10,384,747	11,054,823	11,652,485	12,298,057	12,995,823	13,464,328	13,904,681	14,437,279	14,899,857	15,315,399	15,687,156	16,043,093	16,396,498	16,749,018	17,081,069	17,430,688	17,722,515	17,979,439	18,192,658	18,367,288	18,528,274	18,693,051	18,865,007			
June-87	1,601,233	3,880,011	5,503,885	7,082,566	8,405,662	9,270,533	9,956,299	10,556,456	11,085,673	11,623,420	12,106,294	12,632,595	13,327,657	13,820,597	14,335,672	14,795,690	15,267,959	15,661,703	15,953,801	16,321,920	16,607,046	16,861,857	17,127,747	17,450,228	17,735,296	18,028,041	18,331,993	18,621,372	18,914,419	19,217,565				
June-88	2,137,513	5,007,777	7,745,041	10,041,912	12,075,717	13,478,064	14,314,633	15,200,521	15,990,897	16,687,795	17,326,343	17,991,163	18,710,472	19,340,236	19,962,128	20,594,429	21,200,720	21,738,131	22,267,656	22,756,365	23,248,699	23,645,371	23,973,193	24,351,090	24,721,300	25,061,227	25,402,296	25,751,197	26,108,153					
June-89	1,712,857	5,080,303	7,663,780	9,679,037	11,203,387	12,173,513	13,105,806	13,862,567	14,433,962	15,035,025	15,605,979	16,156,892	16,752,699	17,314,807	17,864,824	18,333,675	18,761,144	19,180,530	19,588,446	20,011,654	20,402,670	20,798,618	21,197,603	21,577,022	21,928,411	22,287,434	22,650,460	22,992,900						
June-90	2,296,897	5,721,042	8,298,538	10,219,139	11,305,744	12,281,818	13,134,163	13,878,235	14,556,408	15,345,419	15,898,180	16,435,568	16,919,598	17,383,167	17,777,202	18,153,288	18,514,019	18,829,999	19,129,560	19,445,117	19,770,540	20,083,209	20,405,842	20,740,230	21,078,475	21,425,424	21,783,413							
June-91	1,963,238	4,739,981	6,742,583	8,047,589	9,308,882	10,318,373	10,933,284	11,411,152	12,022,048	12,546,665	13,141,453	13,738,283	14,329,913	14,888,135	15,354,127	15,837,750	16,311,134	16,689,475	17,129,945	17,375,269	17,615,173	17,862,598	18,129,844	18,364,459	18,577,053	18,761,226								
June-92	1,567,027	3,199,073	4,248,177	5,126,895	5,548,304	5,823,625	6,278,092	6,617,495	6,955,659	7,247,236	7,617,889	7,987,140	8,298,781	8,572,496	8,940,354	9,365,337	9,715,209	10,024,920	10,338,595	10,607,880	10,865,629	11,121,672	11,298,499	11,478,454	11,664,168									
June-93	1,093,248	2,645,187	3,492,766	4,149,352	4,610,531	4,966,351	5,148,147	5,423,620	5,783,566	6,064,338	6,275,882	6,484,665	6,664,357	6,833,263	7,010,090	7,177,333	7,331,914	7,520,747	7,748,152	7,957,233	8,148,509	8,300,461	8,427,178	8,541,121										
June-94	1,108,341	2,442,329	3,499,107	4,117,213	4,786,813	5,345,023	5,784,388	6,350,297	6,596,878	6,855,808	7,108,040	7,401,172	7,629,538	7,841,336	8,036,532	8,208,058	8,388,758	8,566,268	8,735,517	8,920,103	9,094,927	9,272,603	9,452,424											
June-95	1,320,706	2,682,119	3,617,627	4,377,145	4,799,858	5,146,590	5,470,951	5,690,639	5,928,230	6,125,266	6,322,277	6,510,106	6,695,050	6,862,701	7,023,885	7,185,394	7,342,550	7,524,723	7,689,350	7,855,113	7,982,201	8,105,050												
June-96	1,108,821	2,267,039	3,245,140	3,817,977	4,427,598	4,928,644	5,324,160	5,709,230	6,066,925	6,359,154	6,633,555	6,919,769	7,184,823	7,415,770	7,649,372	7,874,542	8,065,046	8,199,310	8,329,411	8,584,454	8,752,873													
June-97	1,085,126	2,350,834	3,458,998	4,440,774	5,289,243	5,991,102	6,443,225	6,730,818	6,877,491	7,036,406	7,147,793	7,354,650	7,473,882	7,593,508	7,713,847	7,874,055	7,998,711	8,115,077	8,205,201	8,300,591														
June-98	760,353	2,208,225	3,319,672	3,933,784	4,535,498	4,913,580	5,187,189	5,377,292	5,538,593	5,683,480	5,803,895	5,909,062	5,992,596	6,108,804	6,223,326	6,269,462	6,315,915	6,362,921	6,410,703															
June-99	1,160,394	2,519,810	3,441,432	4,263,196	4,763,871	5,080,496	5,423,838	5,694,351	5,858,839	6,093,043	6,235,873	6,377,337	6,494,424	6,587,838	6,682,288	6,778,115	6,925,083	7,070,436																
June-00	1,478,087	3,369,760	4,601,283	5,433,894	6,170,827	6,679,071	7,051,320	7,313,676	7,476,289	7,629,742	7,749,526	7,893,815	8,042,197	8,192,773	8,347,186	8,503,330	8,663,410																	
June-01	1,609,875	3,605,278	4,700,879	5,525,999	6,126,399	6,527,511	6,768,096	7,002,422	7,073,145	7,226,294	7,426,582	7,654,033	7,849,861	8,020,910	8,190,421	8,343,041																		
June-02	1,821,131	4,134,238	5,441,659	6,321,376	6,748,539	7,056,349	7,305,019	7,488,627	7,707,068	7,893,060	8,009,207	8,123,218	8,235,728	8,305,377	8,337,160																			
June-03	2,185,619	4,646,586	6,055,662	6,651,765	7,013,996	7,231,292	7,459,850	7,624,463	7,742,363	7,842,222	7,917,384	8,045,457	8,162,493	8,243,468																				
June-04	1,753,076	3,756,461	4,930,176	5,714,500	6,081,077	6,318,306	6,512,915	6,733,332	6,893,294	7,027,971	7,170,376	7,302,807	7,438,524																					
June-05	1,819,778	3,933,297	5,289,170	6,002,168	6,318,763	6,666,265	7,108,767	7,449,646	7,676,782	7,893,608	8,127,072	8,305,978																						
June-06	1,788,326	3,829,026	4,910,437	5,443,647	5,995,523	6,675,753	7,041,075	7,199,757	7,277,714	7,519,741	7,637,818																							
June-07	1,734,963	3,632,388	4,091,097	4,999,633	5,805,615	6,226,124	6,546,082	6,722,055	6,991,701	7,150,792																								
June-08	2,020,827	4,505,431	6,126,330	7,479,871	8,430,592	9,094,716	9,567,218	9,850,781	10,074,097																									
June-09	1,952,179	4,646,609	6,562,837	7,998,181	8,997,984	9,939,858	10,332,984	10,514,184																										
June-10	2,633,117	5,635,921	7,589,725	8,649,349	9,377,427	9,682,440	9,913,357																											
June-11	3,051,305	6,236,233	8,335,371	9,693,865	10,723,507	11,281,886																												
June-12	3,091,255	6,520,051	8,927,094	10,508,623	11,447,181																													
June-13	3,164,952	6,219,894	8,032,100	9,109,069																														
June-14	3,352,283	7,306,365	9,677,378																															
June-15	3,469,231	7,330,865																																
June-16	3,743,094																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.490	1.479	1.268	1.217	1.178	1.133	1.146	1.122	1.108	1.081	1.075	1.079	1.057	1.037	1.031	1.048	1.041	1.034	1.034	1.036	1.030	1.032	1.030	1.031	1.032	1.028	1.025	1.021	1.014	1.014	1.010	1.000	1.000
June-84	2.484	1.476	1.269	1.219	1.188	1.125	1.107	1.069	1.054	1.047	1.042	1.045	1.032	1.046	1.037	1.042	1.027	1.035	1.035	1.030	1.024	1.021	1.015	1.011	1.010	1.005	1.005	1.005	1.005	1.005	1.005	1.005	
June-85	2.428	1.460	1.255	1.213	1.163	1.128	1.106	1.098	1.068	1.069	1.056	1.049	1.051	1.041	1.039	1.041	1.033	1.031	1.026	1.026	1.021	1.020	1.016	1.013	1.011	1.011	1.011	1.011	1.005	1.004	1.004		
June-86	2.456	1.460	1.261	1.205	1.138	1.091	1.079	1.056	1.065	1.054	1.055	1.057	1.036	1.033	1.038	1.032	1.028	1.024	1.023	1.022	1.021	1.020	1.020	1.017	1.014	1.012	1.010	1.009	1.009	1.009			
June-87	2.423	1.419	1.287	1.187	1.103	1.074	1.060	1.050	1.049	1.042	1.043	1.055	1.037	1.037	1.032	1.032	1.026	1.019	1.023	1.017	1.015	1.016	1.019	1.016	1.017	1.017	1.016	1.016	1.016				
June-88	2.343	1.547	1.297	1.203	1.116	1.062	1.062	1.052	1.044	1.038	1.038	1.040	1.034	1.032	1.032	1.029	1.025	1.024	1.022	1.022	1.017	1.014	1.016	1.015	1.014	1.014	1.014	1.014					
June-89	2.966	1.509	1.263	1.157	1.087	1.077	1.058	1.041	1.042	1.038	1.035	1.037	1.034	1.032	1.026	1.023	1.022	1.021	1.022	1.020	1.019	1.019	1.018	1.016	1.016	1.016	1.015						
June-90	2.491	1.451	1.231	1.106	1.086	1.069	1.057	1.049	1.054	1.036	1.034	1.029	1.027	1.023	1.021	1.020	1.017	1.016	1.016	1.017	1.016	1.016	1.016	1.016	1.016	1.017							
June-91	2.414	1.422	1.194	1.157	1.108	1.060	1.044	1.054	1.044	1.047	1.045	1.043	1.039	1.031	1.031	1.030	1.023	1.026	1.014	1.014	1.014	1.015	1.013	1.012	1.010								
June-92	2.041	1.328	1.207	1.082	1.050	1.078	1.054	1.051	1.042	1.051	1.048	1.039	1.033	1.043	1.048	1.037	1.032	1.031	1.026	1.024	1.024	1.016	1.016	1.016									
June-93	2.420	1.320	1.188	1.111	1.077	1.037	1.054	1.066	1.049	1.035	1.033	1.028	1.025	1.026	1.024	1.022	1.026	1.030	1.027	1.024	1.019	1.015	1.014										
June-94	2.204	1.433	1.177	1.163	1.117	1.082	1.098	1.039	1.039	1.037	1.041	1.031	1.028	1.025	1.021	1.022	1.021	1.020	1.021	1.020	1.020	1.019											
June-95	2.031	1.349	1.210	1.097	1.072	1.063	1.040	1.042	1.033	1.032	1.030	1.028	1.025	1.023	1.023	1.022	1.025	1.022	1.022	1.016	1.015												
June-96	2.045	1.431	1.177	1.160	1.113	1.080	1.072	1.063	1.048	1.043	1.043	1.038	1.032	1.032	1.029	1.024	1.017	1.016	1.031	1.020													
June-97	2.166	1.471	1.284	1.191	1.133	1.075	1.045	1.022	1.023	1.016	1.029	1.016	1.016	1.016	1.021	1.016	1.015	1.011	1.012														
June-98	2.904	1.503	1.185	1.153	1.083	1.056	1.037	1.030	1.026	1.021	1.018	1.014	1.019	1.019	1.007	1.007	1.007	1.008															
June-99	2.172	1.366	1.239	1.117	1.066	1.068	1.050	1.029	1.040	1.023	1.023	1.018	1.014	1.014	1.014	1.022	1.021																
June-00	2.280	1.365	1.181	1.136	1.082	1.056	1.037	1.022	1.021	1.016	1.019	1.019	1.019	1.019	1.019	1.019																	
June-01	2.239	1.304	1.176	1.109	1.065	1.037	1.035	1.010	1.022	1.028	1.031	1.026	1.022	1.021	1.019																		
June-02	2.270	1.316	1.162	1.068	1.046	1.035	1.025	1.029	1.024	1.015	1.014	1.014	1.008	1.004																			
June-03	2.126	1.303	1.098	1.054	1.031	1.032	1.022	1.015	1.013	1.010	1.016	1.015	1.010																				
June-04	2.143	1.312	1.159	1.064	1.039	1.031	1.034	1.024	1.020	1.020	1.018	1.019																					
June-05	2.161	1.345	1.135	1.053	1.055	1.066	1.048	1.030	1.028	1.030	1.022																						
June-06	2.141	1.282	1.109	1.101	1.113	1.055	1.023	1.011	1.033	1.016																							
June-07	2.094	1.126	1.222	1.161	1.072	1.051	1.027	1.040	1.023																								
June-08	2.229	1.360	1.221	1.127	1.079	1.052	1.030	1.023																									
June-09	2.380	1.412	1.219	1.125	1.105	1.040	1.018																										
June-10	2.140	1.347	1.140	1.084	1.033	1.024																											
June-11	2.044	1.337	1.163	1.106	1.052																												
June-12	2.109	1.369	1.177	1.089																													
June-13	1.965	1.291	1.134																														
June-14	2.180	1.325																															
June-15	2.113																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.276	1.382	1.203	1.134	1.091	1.066	1.054	1.044	1.040	1.035	1.035	1.034	1.028	1.028	1.027	1.027	1.024	1.023	1.024	1.022	1.020	1.019	1.017	1.016	1.016	1.015	1.014	1.013	1.010	1.008	1.006	1.003	1.000	
Latest 5	2.082	1.334	1.167	1.106	1.068	1.044	1.029	1.026	1.023	1.018	1.020	1.018	1.015	1.015	1.016	1.018	1.017	1.015	1.022	1.021	1.018	1.016	1.015	1.015	1.015	1.015	1.013	1.011	1.010					
Latest 3	2.086	1.328	1.158	1.093	1.063	1.038	1.025	1.025	1.028	1.022	1.019	1.016	1.013	1.015	1.017	1.016	1.014	1.011	1.021	1.018	1.018	1.017	1.014	1.015	1.014	1.016	1.015	1.013	1.010	1.006	1.005			
Volume Wtd																																		
All Yrs	2.233	1.373	1.198	1.128	1.086	1.062	1.051	1.042	1.040	1.035	1.036	1.034	1.029	1.028	1.028	1.027	1.024	1.023	1.022	1.021	1.019	1.017	1.017	1.015	1.015	1.014	1.013	1.012	1.010	1.007	1.005	1.003	1.000	
Latest 5	2.084	1.333	1.165	1.105	1.067	1.043	1.028	1.025	1.023	1.018	1.020	1.018	1.015	1.015	1.016	1.018	1.017	1.016	1.022	1.021	1.018	1.016	1.016	1.015	1.015	1.015	1.013	1.012	1.010					
Latest 3	2.089	1.329	1.159	1.093	1.062	1.038	1.024	1.024	1.028	1.022	1.019	1.016	1.013	1.015	1.017	1.016	1.015	1.012	1.021	1.019	1.018	1.017	1.014	1.015	1.014	1.015	1.015	1.013	1.010	1.006	1.005			

Dev Factor Selection																																		
Industry 1	2.869	1.531	1.210	1.100	1.034	1.024	1.017	1.007	1.008	1.005	1.005	1.013	1.002	1.003	1.004	1.004	1.003	1.003																
Industry 2		1.813	1.291	1.118	1.066	1.025	1.021	1.011	1.007	1.003	1.008	1.005	1.005	1.003	1.003	1.004	1.006	1.002	1.004	1.004														
Prior	*2.151*	*1.356*	*1.183*	*1.120*	*1.082*	*1.056*	*1.044*	*1.034*	*1.032*	*1.028*	*1.028*	*1.026*	*1.023*	*1.023*	*1.020*	*1.018*	*1.017*	*1.020*	*1.025*	*1.020*	*1.019*	*1.017*	*1.017*	*1.016*	*1.016*	*1.015*	*1.013*	*1.012*	*1.009*	*1.008*	*1.008*	*1.008*	*1.027*	
Selected	2.148	1.356	1.176	1.111	1.080	1.055	1.042	1.035	1.032	1.027	1.028	1.026	1.022	1.022	1.020	1.018	1.017	1.015	1.022	1.021	1.019	1.017	1.016	1.016	1.015	1.015	1.014	1.013	1.009	1.008	1.006	1.004	1.002	1.021
FacToUlt	7.242	3.372	2.487	2.115	1.904	1.763	1.671	1.605	1.551	1.503	1.464	1.424	1.388	1.359	1.331	1.304	1.282	1.260	1.242	1.214	1.190	1.168	1.148	1.129	1.112	1.095	1.079	1.065	1.052	1.042	1.034	1.027	1.023	1.021
Percent of Ult	13.8%	29.7%	40.2%	47.3%	52.5%	56.7%	59.8%	62.3%	64.5%	66.5%	68.3%	70.2%	72.0%	73.6%	75.2%	76.7%	78.0%	79.3%	80.5%	82.3%	84.1%	85.6%	87.1%	88.6%	90.0%	91.3%	92.7%	93.9%	95.1%	96.0%	96.7%	97.3%	97.7%	97.9%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	50,188,598	54,601,930	50,048,966	54,165,542	(139,631)	-0.3%	(436,388)	-0.8%
6/30/82-83	5,671,498	6,107,767	5,642,028	6,076,030	(29,470)	-0.5%	(31,737)	-0.5%
6/30/83-84	8,140,603	8,766,803	8,092,853	8,715,381	(47,749)	-0.6%	(51,422)	-0.6%
6/30/84-85	17,282,000	17,573,000	17,142,000	17,382,000	(140,000)	-0.8%	(191,000)	-1.1%
6/30/85-86	20,610,000	20,970,000	20,508,000	20,807,000	(102,000)	-0.5%	(163,000)	-0.8%
6/30/86-87	21,437,000	21,810,000	21,433,000	21,751,000	(4,000)	0.0%	(59,000)	-0.3%
6/30/87-88	29,699,000	30,788,000	29,504,000	30,408,000	(195,000)	-0.7%	(380,000)	-1.2%
6/30/88-89	27,304,000	28,561,000	27,202,000	28,224,000	(102,000)	-0.4%	(337,000)	-1.2%
6/30/89-90	26,333,000	27,315,000	26,192,000	27,007,000	(141,000)	-0.5%	(308,000)	-1.1%
6/30/90-91	23,378,000	24,171,000	23,067,000	23,733,000	(311,000)	-1.3%	(438,000)	-1.8%
6/30/91-92	14,437,000	15,302,000	14,314,000	15,169,000	(123,000)	-0.9%	(133,000)	-0.9%
6/30/92-93	11,123,000	12,595,000	10,971,000	11,847,000	(152,000)	-1.4%	(748,000)	-5.9%
6/30/93-94	12,232,000	12,888,000	12,142,000	12,417,000	(90,000)	-0.7%	(471,000)	-3.7%
6/30/94-95	11,126,000	11,727,000	10,994,000	11,577,000	(132,000)	-1.2%	(150,000)	-1.3%
6/30/95-96	11,751,000	12,402,000	11,749,000	12,384,000	(2,000)	0.0%	(18,000)	-0.1%
6/30/96-97	12,246,000	12,915,000	12,009,000	12,645,000	(237,000)	-1.9%	(270,000)	-2.1%
6/30/97-98	10,638,000	11,198,000	10,435,000	10,966,000	(203,000)	-1.9%	(232,000)	-2.1%
6/30/98-99	11,197,000	11,788,000	11,093,000	11,657,000	(104,000)	-0.9%	(131,000)	-1.1%
6/30/99-00	13,218,000	13,950,000	13,057,000	13,750,000	(161,000)	-1.2%	(200,000)	-1.4%
6/30/00-01	12,748,000	13,440,000	12,554,000	13,206,000	(194,000)	-1.5%	(234,000)	-1.7%
6/30/01-02	13,622,000	14,346,000	13,217,000	13,886,000	(405,000)	-3.0%	(460,000)	-3.2%
6/30/02-03	13,491,000	14,205,000	13,133,000	13,795,000	(358,000)	-2.7%	(410,000)	-2.9%
6/30/03-04	12,454,000	13,079,000	12,135,000	12,771,000	(319,000)	-2.6%	(308,000)	-2.4%
6/30/04-05	14,506,000	14,729,000	14,380,000	14,431,000	(126,000)	-0.9%	(298,000)	-2.0%
6/30/05-06	14,090,000	14,575,000	13,825,000	14,533,000	(265,000)	-1.9%	(42,000)	-0.3%
6/30/06-07	13,154,000	14,351,000	12,861,000	14,188,000	(293,000)	-2.2%	(163,000)	-1.1%
6/30/07-08	18,169,000	19,165,000	17,649,000	18,828,000	(520,000)	-2.9%	(337,000)	-1.8%
6/30/08-09	20,050,470	20,688,668	19,651,500	19,891,872	(398,970)	-2.0%	(796,796)	-3.9%
6/30/09-10	19,786,600	20,971,951	19,022,800	20,512,492	(763,800)	-3.9%	(459,459)	-2.2%
6/30/10-11	24,024,330	25,076,051	23,192,730	23,780,757	(831,600)	-3.5%	(1,295,294)	-5.2%
6/30/11-12	25,713,270	27,255,228	24,571,800	25,620,632	(1,141,470)	-4.4%	(1,634,596)	-6.0%
6/30/12-13	22,547,300	24,933,768	22,393,800	24,078,054	(153,500)	-0.7%	(855,714)	-3.4%
6/30/13-14	27,694,400	29,693,268	27,684,770	28,588,000	(9,630)	0.0%	(1,105,268)	-3.7%
6/30/14-15	29,103,250	31,977,828	28,041,730	30,037,000	(1,061,520)	-3.6%	(1,940,828)	-6.1%
6/30/15-16								
Total	619,165,318	653,916,262	609,908,978	638,827,760	(9,256,340)	-1.5%	(15,088,501)	-2.3%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 8, Exhibit 1, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Calculation of Ultimate Lump Sum Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Accident Year	Paid Loss Excluding Lump Sum	Implied Cumulative LDF	Ult Loss Excluding Lump Sum	Selected Incr Lump Sum % Outstdg	Cumulative Lump Sum % Outstdg	Total Lump Sum Outstdg	Paid Lump Sum to Date	Est Ult Lump Sum - Incr Method	Ultimate Lump Sum Percentage	Lump Sum LDF	Est Ult Lump Sum - Paid Method	Selected Est Ultimate Lump Sums	Prior Est Ultimate Lump Sums
All Prior Yrs	43,155,107	1.169	50,438,739	0.0%	0.0%	0	1,660,214	1,660,214	3.3%	1.010	1,676,816	1,668,515	1,676,816
6/30/82-83	5,567,029	1.032	5,742,727	0.0%	0.0%	0	43,750	43,750	0.8%	1.010	44,188	43,969	44,188
6/30/83-84	7,560,195	1.034	7,814,395	0.0%	0.0%	0	483,550	483,550	6.2%	1.010	488,386	485,968	488,386
6/30/84-85	16,026,507	1.038	16,631,636	0.0%	0.0%	0	746,504	746,504	4.5%	1.010	753,969	750,237	753,969
6/30/85-86	18,865,007	1.044	19,694,776	0.0%	0.0%	0	1,106,534	1,106,534	5.6%	1.010	1,117,599	1,112,066	1,117,599
6/30/86-87	19,217,565	1.052	20,223,343	0.0%	0.0%	0	1,519,864	1,519,864	7.5%	1.010	1,535,063	1,527,463	1,535,063
6/30/87-88	26,108,153	1.062	27,729,860	0.0%	0.0%	0	2,071,404	2,071,404	7.5%	1.010	2,092,118	2,081,761	2,092,118
6/30/88-89	22,992,900	1.076	24,729,387	0.0%	0.0%	0	2,926,233	2,926,233	11.8%	1.010	2,955,495	2,940,864	2,956,988
6/30/89-90	21,783,413	1.090	23,746,618	0.0%	0.0%	0	2,715,625	2,715,625	11.4%	1.011	2,745,524	2,730,575	2,745,553
6/30/90-91	18,761,226	1.106	20,755,342	0.0%	0.0%	0	2,497,602	2,497,602	12.0%	1.012	2,527,626	2,512,614	2,528,956
6/30/91-92	11,664,168	1.123	13,095,224	0.0%	0.0%	0	1,341,736	1,341,736	10.2%	1.015	1,361,938	1,351,837	1,360,642
6/30/92-93	8,541,121	1.242	10,607,771	0.0%	0.0%	0	1,227,873	1,227,873	11.6%	1.018	1,250,100	1,238,987	1,252,440
6/30/93-94	9,452,424	1.148	10,847,527	0.1%	0.1%	10,848	1,306,522	1,317,370	12.1%	1.021	1,334,163	1,325,767	1,341,249
6/30/94-95	8,105,050	1.168	9,463,455	0.1%	0.2%	18,927	1,532,218	1,551,145	16.4%	1.026	1,572,458	1,561,801	1,577,082
6/30/95-96	8,752,873	1.190	10,413,560	0.1%	0.3%	28,208	1,345,682	1,373,890	13.2%	1.031	1,387,928	1,380,909	1,294,344
6/30/96-97	8,300,591	1.214	10,080,350	0.1%	0.4%	37,385	1,908,819	1,946,204	19.3%	1.037	1,978,588	1,962,396	1,993,228
6/30/97-98	6,410,703	1.242	7,959,506	0.1%	0.5%	38,217	2,402,195	2,440,412	30.7%	1.052	2,527,347	2,483,879	2,513,936
6/30/98-99	7,070,436	1.260	8,912,271	0.1%	0.6%	51,704	2,098,064	2,149,768	24.1%	1.063	2,229,874	2,189,821	2,205,686
6/30/99-00	8,663,410	1.282	11,104,628	0.1%	0.7%	75,527	1,893,548	1,969,076	17.7%	1.063	2,012,510	1,990,793	2,006,986
6/30/00-01	8,343,041	1.304	10,882,072	0.1%	0.8%	84,896	1,602,428	1,687,324	15.5%	1.063	1,703,100	1,695,212	1,722,934
6/30/01-02	8,337,160	1.331	11,092,745	0.2%	1.0%	108,725	2,005,419	2,114,144	19.1%	1.072	2,149,877	2,132,010	2,167,291
6/30/02-03	8,243,468	1.359	11,204,334	0.2%	1.2%	132,227	1,797,500	1,929,727	17.2%	1.078	1,938,378	1,934,052	1,970,783
6/30/03-04	7,438,524	1.388	10,328,354	0.2%	1.4%	141,212	1,661,764	1,802,976	17.5%	1.089	1,810,207	1,806,592	1,842,355
6/30/04-05	8,305,978	1.424	11,831,481	0.2%	1.6%	184,188	2,342,201	2,526,389	21.4%	1.098	2,571,088	2,548,738	2,592,248
6/30/05-06	7,637,818	1.464	11,181,868	0.2%	1.8%	196,439	2,400,500	2,596,939	23.2%	1.120	2,688,618	2,642,778	2,544,032
6/30/06-07	7,150,792	1.503	10,746,991	0.1%	1.9%	203,982	1,874,089	2,078,071	19.3%	1.147	2,149,151	2,113,611	2,071,407
6/30/07-08	10,074,097	1.551	15,622,837	0.1%	2.0%	317,098	2,588,648	2,905,746	18.6%	1.161	3,004,210	2,954,978	3,013,533
6/30/08-09	10,514,184	1.605	16,870,524	0.5%	2.5%	419,727	2,541,618	2,961,344	17.6%	1.197	3,041,922	3,001,633	2,981,923
6/30/09-10	9,913,357	1.671	16,567,855	1.1%	3.6%	598,959	2,772,214	3,371,173	20.3%	1.277	3,540,724	3,455,948	3,330,011
6/30/10-11	11,281,886	1.763	19,890,617	1.4%	5.0%	1,004,438	2,743,175	3,747,613	18.8%	1.453	3,985,189	3,866,401	4,087,992
6/30/11-12	11,447,181	1.904	21,791,512	1.9%	6.9%	1,503,904	2,196,065	3,699,969	17.0%	1.732	3,804,679	3,752,324	4,210,727
6/30/12-13	9,109,069	2.115	19,267,894	3.3%	10.2%	1,966,407	1,371,874	3,338,281	17.3%	2.454	3,366,515	3,352,398	2,922,641
6/30/13-14	9,677,378	2.487	24,068,152	3.4%	13.6%	3,278,688	1,033,602	4,312,290	17.9%	4.573	4,726,760	4,519,525	3,967,704
6/30/14-15	7,330,865	3.372	24,718,790	2.7%	16.3%	4,037,562	319,341	4,356,902	17.6%	12.602	4,024,365	4,190,634	4,421,543
6/30/15-16	3,743,094	7.242	27,109,007	1.5%	17.8%	4,832,269	21,500	4,853,769	17.9%	55.312	1,189,200	4,853,769	
Total	415,545,774		573,166,145			19,271,534	60,099,874	79,371,408	13.8%		77,285,673	80,160,825	75,332,351

NOTES:

(2) From Section 8, Exhibit 1, Page 2, Column 3
(3) = (4) / (2)
(4) From Section 8, Exhibit 1, Page 2, Column 6
(5) From Section 8, Exhibit 1, Page 11
(6) Downward sum of (5)
(7) = (6) x (4)
(8) From Section 8, Exhibit 1, Page 10
(9) = (7) + (8)
(10) = (9) / (4)
(11) From Section 8, Exhibit 1, Page 12
(12) = (8) x (11)
(13) Selected based on (9) and (12)
(14) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts Workers Compensation
All Other - Clusters 5-17 & 95
INDEMNITY
Lump Sum Development
Incremental Lump Sum Payments

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0	0	0	0	0	0	0	22,500	0	0	137,500	40,000	80,500	250,234	367,000	139,604	85,000	0	57,500	55,001	30,000	12,250	84,000	140,000	66,000	0	78,125	0	0	7,500	7,500	0	0	0	0
Jun-83	0	0	0	0	0	0	0	0	0	0	35,000	7,750	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	0	0	0	0	0	0	91,600	53,250	15,000	55,000	59,700	57,000	0	57,000	0	0	0	85,000	0	0	0	0	0	10,000	0	0	0	0	0	0	0	0	0	0	
Jun-85	0	0	0	30,000	3,000	52,500	34,554	34,000	58,000	215,750	30,200	92,500	50,000	40,000	0	49,000	32,000	0	25,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Jun-86	0	0	12,000	40,559	73,500	32,500	75,000	175,399	179,500	0	92,000	20,000	50,000	0	0	0	0	30,000	55,000	64,000	16,000	45,000	58,275	87,801	0	0	0	0	0	0	0	0			
Jun-87	0	25,000	130,000	100,666	150,501	60,866	192,525	168,500	91,501	59,806	28,000	0	12,500	65,000	50,000	164,999	50,000	80,000	80,000	10,000	0	0	0	0	0	0	0	0	0	0	0				
Jun-88	0	49,000	40,808	39,958	205,752	408,847	243,000	223,039	268,000	62,000	75,000	30,000	61,000	0	0	0	155,000	20,000	0	100,000	90,000	0	0	0	0	0	0	0	0	0					
Jun-89	0	69,855	143,500	275,776	374,100	341,500	255,000	238,502	222,500	170,500	146,000	30,000	123,000	40,000	25,000	0	63,500	185,000	50,000	110,000	62,500	0	0	0	0	0	0	0	0						
Jun-90	0	114,301	281,968	342,440	535,751	231,565	150,800	494,500	46,300	140,000	0	157,000	0	15,000	0	25,000	106,000	60,000	0	15,000	0	0	0	0	0	0	0								
Jun-91	3,500	73,750	373,500	399,501	281,850	319,500	203,500	25,001	143,000	0	10,000	54,000	0	0	10,000	153,000	72,500	255,000	120,000	0	0	0	0	0	0	0								
Jun-92	12,000	110,012	182,635	135,586	76,000	151,001	0	112,000	76,500	98,000	105,000	20,000	13,500	86,268	20,867	20,867	86,500	35,000	0	0	0	0	0	0	0										
Jun-93	6,000	137,948	181,424	231,001	158,000	58,000	49,000	16,000	77,000	85,000	0	55,000	0	0	0	0	50,000	40,000	35,000	35,000	0	0	13,500	0											
Jun-94	9,500	273,155	204,001	189,365	168,500	29,001	28,000	96,000	0	14,000	0	230,000	65,000	0	0	0	0	0	0	0	0	0	0												
Jun-95	185,350	223,402	371,000	281,000	90,965	116,600	17,000	0	0	62,000	58,400	34,000	0	80,000	0	12,500	0	0	0	0	0	1													
Jun-96	6,000	246,050	463,500	224,701	104,430	25,501	3,000	40,000	0	1	35,000	62,500	0	18,400	16,600	0	0	0	0	0	99,999													
Jun-97	23,365	498,701	322,500	317,501	204,000	108,251	0	105,000	106,501	60,000	83,000	0	0	0	40,000	40,000	0	0	0	0															
Jun-98	287,037	356,948	285,460	504,000	281,500	83,000	69,535	88,965	20,000	0	10,000	202,750	75,000	69,000	69,000	0	0	0	0																
Jun-99	203,500	124,500	487,181	242,900	185,982	168,001	201,000	120,000	65,000	170,000	20,000	65,000	0	0	0	45,000	0	0																	
Jun-00	97,731	486,478	307,037	269,800	93,500	190,999	184,884	110,118	53,001	76,000	24,000	0	0	0	0	0	0																		
Jun-01	10,000	182,428	335,500	71,500	244,500	251,000	145,000	220,000	80,000	0	0	0	62,500	0	0	0																			
Jun-02	0	114,545	362,081	283,539	440,001	286,251	109,000	265,000	25,001	50,000	50,000	15,000	0	5,000	1																				
Jun-03	0	77,201	596,801	430,835	218,160	255,001	75,000	65,000	6,000	6,000	7,500	60,000	1	1																					
Jun-04	47,500	25,277	294,987	520,000	358,000	189,000	27,000	100,000	100,000	0	0	0	0																						
Jun-05	6,157	60,866	417,500	949,001	378,677	150,000	105,000	105,000	150,000	0	0	20,000																							
Jun-06	0	159,500	370,000	715,000	208,000	359,500	359,500	89,000	0	0	140,000																								
Jun-07	26,000	238,583	574,002	426,500	153,002	153,002	120,000	90,000	28,000	65,000																									
Jun-08	0	282,500	346,648	610,000	610,000	174,962	459,538	62,000	43,000																										
Jun-09	250,000	140,000	501,500	501,500	370,926	384,000	186,001	207,691																											
Jun-10	0	385,501	385,501	536,711	679,197	380,304	405,000																												
Jun-11	307,191	319,191	604,218	357,283	873,292	282,000																													
Jun-12	0	294,800	409,461	1,071,604	420,200																														
Jun-13	37,000	127,500	406,096	801,278																															
Jun-14	15,000	6,251	1,012,351																																
Jun-15	0	319,341																																	
Jun-16	21,500																																		

Cumulative Lump Sum Payments

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	22,500	22,500	22,500	160,000	200,000	280,500	530,734	897,734	1,037,338	1,122,338	1,122,338	1,179,838	1,234,839	1,264,839	1,277,089	1,361,089	1,501,089	1,567,089	1,567,089	1,645,214	1,645,214	1,645,214	1,652,714	1,660,214	1,660,214	1,660,214	1,660,214	1,660,214
Jun-83	0	0	0	0	0	0	0	0	0	0	35,000	42,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750		
Jun-84	0	0	0	0	0	0	91,600	144,850	159,850	214,850	274,550	331,550	331,550	388,550	388,550	388,550	388,550	473,550	473,550	473,550	473,550	473,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550		
Jun-85	0	0	0	30,000	33,000	85,500	120,054	154,054	212,054	427,804	458,004	550,504	600,504	640,504	640,504	689,504	721,504	721,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504		
Jun-86	0	0	12,000	52,559	126,059	158,559	233,559	408,958	588,458	588,458	680,458	700,458	750,458	750,458	750,458	750,458	750,458	780,458	835,458	899,458	915,458	960,458	1,018,733	1,106,534	1,106,534	1,106,534	1,106,534	1,106,534	1,106,534	1,106,534	1,106,534				
Jun-87	0	25,000	155,000	255,666	406,167	467,033	659,558	828,058	919,559	979,365	1,007,365	1,007,365	1,019,865	1,084,865	1,134,865	1,299,864	1,349,864	1,429,864	1,509,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864					
Jun-88	0	49,000	89,808	129,766	335,518	744,365	987,365	1,210,404	1,478,404	1,540,404	1,615,404	1,645,404	1,706,404	1,706,404	1,706,404	1,706,404	1,861,404	1,881,404	1,881,404	1,981,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404						
Jun-89	0	69,855	213,355	489,131	863,231	1,204,731	1,459,731	1,698,233	1,920,733	2,091,233	2,237,233	2,267,233	2,390,233	2,430,233	2,455,233	2,455,233	2,518,733	2,703,733	2,753,733	2,863,733	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233								
Jun-90	0	114,301	396,269	738,709	1,274,460	1,506,025	1,656,825	2,151,325	2,197,625	2,337,625	2,337,625	2,494,625	2,494,625	2,509,625	2,509,625	2,534,625	2,640,625	2,700,625	2,700,625	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625									
Jun-91	3,500	77,250	450,750	850,251	1,132,101	1,451,601	1,655,101	1,680,102	1,823,102	1,823,102	1,833,102	1,887,102	1,887,102	1,887,102	1,897,102	2,050,102	2,122,602	2,377,602	2,497,602	2,497,602	2,497,602	2,497,602	2,497,602	2,497,602	2,497,602	2,497,602									
Jun-92	12,000	122,012	304,647	440,233	516,233	667,234	667,234	779,234	855,734	953,734	1,058,734	1,078,734	1,092,234	1,178,502	1,199,369	1,220,236	1,306,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736										
Jun-93	6,000	143,948	325,372	556,373	714,373	772,373	821,373	837,373	914,373	999,373	999,373	1,054,373	1,054,373	1,054,373	1,054,373	1,054,373	1,104,373	1,144,373	1,179,373	1,214,373	1,214,373	1,214,373	1,227,873	1,227,873											
Jun-94	9,500	282,655	486,656	676,021	844,521	873,522	901,522	997,522	997,522	1,011,522	1,011,522	1,241,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522												
Jun-95	185,350	408,752	779,752	1,060,752	1,151,717	1,268,317	1,285,317	1,285,317	1,285,317	1,347,317	1,405,717	1,439,717	1,439,717	1,519,717	1,519,717	1,532,217	1,532,217	1,532,217	1,532,217	1,532,217	1,532,217	1,532,218													
Jun-96	6,000	252,050	715,550	940,251	1,044,681	1,070,182	1,073,182	1,113,182	1,113,182	1,113,183	1,148,183	1,210,683	1,210,683	1,229,083	1,245,683	1,245,683	1,245,683	1,245,683	1,245,683	1,245,683	1,345,682														
Jun-97	23,365	522,066	844,566	1,162,067	1,366,067	1,474,318	1,474,318	1,579,318	1,685,819	1,745,819	1,828,819	1,828,819	1,828,819	1,828,819	1,868,819	1,908,819	1,908,819	1,908,819	1,908,819	1,908,819															
Jun-98	287,037	643,985	929,445	1,433,445	1,714,945	1,797,945	1,867,480	1,956,445	1,976,445	1,976,445	1,986,445	2,189,195	2,264,195	2,333,195	2,402,195	2,402,195	2,402,195	2,402,195	2,402,195																
Jun-99	203,500	328,000	815,181	1,058,081	1,244,063	1,412,064	1,613,064	1,733,064	1,798,064	1,968,064	1,988,064	2,053,064	2,053,064	2,053,064	2,053,064	2,098,064	2,098,064	2,098,064																	
Jun-00	97,731	584,209	891,246	1,161,046	1,254,546	1,445,545	1,630,429	1,740,547	1,793,548	1,869,548	1,893,548	1,893,548	1,893,548	1,893,548	1,893,548	1,893,548	1,893,548																		
Jun-01	10,000	192,428	527,928	599,428	843,928	1,094,928	1,239,928	1,459,928	1,539,928	1,539,928	1,539,928	1,539,928	1,602,428	1,602,428	1,602,428	1,602,428																			
Jun-02	0	114,545	476,626	760,165	1,200,166	1,486,417	1,595,417	1,860,417	1,885,418	1,935,418	1,985,418	2,000,418	2,000,418	2,005,418	2,005,419																				
Jun-03	0	77,201	674,002	1,104,837	1,322,997	1,577,998	1,652,998	1,717,998	1,723,998	1,729,998	1,737,498	1,797,498	1,797,499	1,797,500																					
Jun-04	47,500	72,777	367,764	887,764	1,245,764	1,434,764	1,461,764	1,561,764	1,661,764	1,661,764	1,661,764	1,661,764	1,661,764																						
Jun-05	6,157	67,023	484,523	1,433,524	1,812,201	1,962,201	2,067,201	2,172,201	2,322,201	2,322,201	2,322,201	2,342,201																							
Jun-06	0	159,500	529,500	1,244,500	1,452,500	1,812,000	2,171,500	2,260,500	2,260,500	2,260,500	2,400,500																								
Jun-07	26,000	264,583	838,585	1,265,085	1,418,087	1,571,089	1,691,089	1,781,089	1,809,089	1,874,089																									
Jun-08	0	282,500	629,148	1,239,148	1,849,148	2,024,110	2,483,648	2,545,648	2,588,648																										
Jun-09	250,000	390,000	891,500	1,393,000	1,763,926	2,147,926	2,333,927	2,541,618																											
Jun-10	0	385,501	771,002	1,307,713	1,986,910	2,367,214	2,772,214																												
Jun-11	307,191	626,381	1,230,599	1,587,882	2,461,175	2,743,175																													
Jun-12	0	294,800	704,261	1,775,865	2,196,065																														
Jun-13	37,000	164,500	570,596	1,371,874																															
Jun-14	15,000	21,251	1,033,602																																
Jun-15	0	319,341																																	
Jun-16	21,500																																		

Commonwealth of Massachusetts Workers Compensation
All Other - Clusters 5-17 & 95
INDEMNITY
Lump Sum Development
Incremental Lump Sums as a % of Ultimate Losses Excluding Lump Sums

Acc Yr Ending	*0-12*	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
All Prior Yrs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.001	0.002	0.005	0.007	0.003	0.002	0.000	0.001	0.001	0.001	0.000	0.002	0.003	0.001	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-83	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-84	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.007	0.002	0.007	0.008	0.007	0.000	0.007	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-85	0.000	0.000	0.000	0.002	0.000	0.003	0.002	0.002	0.003	0.013	0.002	0.006	0.003	0.002	0.000	0.003	0.002	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.001	0.002	0.004	0.002	0.004	0.009	0.009	0.000	0.005	0.001	0.003	0.000	0.000	0.000	0.000	0.002	0.003	0.003	0.001	0.002	0.003	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.001	0.006	0.005	0.007	0.003	0.010	0.008	0.005	0.003	0.001	0.000	0.001	0.003	0.002	0.008	0.002	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.002	0.001	0.001	0.007	0.015	0.009	0.008	0.010	0.002	0.003	0.001	0.002	0.000	0.000	0.000	0.006	0.001	0.000	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
Jun-89	0.000	0.003	0.006	0.011	0.015	0.014	0.010	0.010	0.009	0.007	0.006	0.001	0.005	0.002	0.001	0.000	0.003	0.007	0.002	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.005	0.012	0.014	0.023	0.010	0.006	0.021	0.002	0.006	0.000	0.007	0.000	0.001	0.000	0.001	0.004	0.003	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000								
Jun-91	0.000	0.004	0.018	0.019	0.014	0.015	0.010	0.001	0.007	0.000	0.000	0.003	0.000	0.000	0.000	0.007	0.003	0.012	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000									
Jun-92	0.001	0.008	0.014	0.010	0.006	0.012	0.000	0.009	0.006	0.007	0.008	0.002	0.001	0.007	0.002	0.002	0.007	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.001	0.013	0.017	0.022	0.015	0.005	0.005	0.002	0.007	0.008	0.000	0.005	0.000	0.000	0.000	0.000	0.005	0.004	0.003	0.003	0.000	0.000	0.001	0.000											
Jun-94	0.001	0.025	0.019	0.017	0.016	0.003	0.003	0.009	0.000	0.001	0.000	0.021	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000												
Jun-95	0.020	0.024	0.039	0.030	0.010	0.012	0.002	0.000	0.000	0.007	0.006	0.004	0.000	0.008	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.001	0.024	0.045	0.022	0.010	0.002	0.000	0.004	0.000	0.000	0.003	0.006	0.000	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.010														
Jun-97	0.002	0.049	0.032	0.031	0.020	0.011	0.000	0.010	0.011	0.006	0.008	0.000	0.000	0.000	0.004	0.004	0.000	0.000	0.000	0.000															
Jun-98	0.036	0.045	0.036	0.063	0.035	0.010	0.009	0.011	0.003	0.000	0.001	0.025	0.009	0.009	0.009	0.000	0.000	0.000	0.000																
Jun-99	0.023	0.014	0.055	0.027	0.021	0.019	0.023	0.013	0.007	0.019	0.002	0.007	0.000	0.000	0.000	0.000	0.000	0.000																	
Jun-00	0.009	0.044	0.028	0.024	0.008	0.017	0.017	0.010	0.005	0.007	0.002	0.000	0.000	0.000	0.000	0.000	0.000																		
Jun-01	0.001	0.017	0.031	0.007	0.022	0.023	0.013	0.020	0.007	0.000	0.000	0.000	0.006	0.000	0.000	0.000																			
Jun-02	0.000	0.010	0.033	0.026	0.040	0.026	0.010	0.024	0.002	0.005	0.005	0.001	0.000	0.000	0.000																				
Jun-03	0.000	0.007	0.053	0.038	0.019	0.023	0.007	0.006	0.001	0.001	0.001	0.005	0.000	0.000																					
Jun-04	0.005	0.002	0.029	0.050	0.035	0.018	0.003	0.010	0.010	0.000	0.000	0.000	0.000																						
Jun-05	0.001	0.005	0.035	0.080	0.032	0.013	0.009	0.009	0.013	0.000	0.000	0.002																							
Jun-06	0.000	0.014	0.033	0.064	0.019	0.032	0.032	0.008	0.000	0.000	0.013																								
Jun-07	0.002	0.022	0.053	0.040	0.014	0.014	0.011	0.008	0.003	0.006																									
Jun-08	0.000	0.018	0.022	0.039	0.039	0.011	0.029	0.004	0.003																										
Jun-09	0.015	0.008	0.030	0.030	0.022	0.023	0.011	0.012																											
Jun-10	0.000	0.023	0.023	0.032	0.041	0.023	0.024																												
Jun-11	0.015	0.016	0.030	0.018	0.044	0.014																													
Jun-12	0.000	0.014	0.019	0.049	0.019																														
Jun-13	0.002	0.007	0.021	0.042																															
Jun-14	0.001	0.000	0.042																																
Jun-15	0.000	0.012																																	
Jun-16	0.000																																		

Averages		*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*
Simple Avg																																			
All Yrs (ex P)	0.004	0.013	0.024	0.026	0.019	0.013	0.010	0.009	0.005	0.004	0.003	0.005	0.002	0.002	0.001	0.002	0.002	0.003	0.001	0.001	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Latest 5	0.001	0.010	0.027	0.034	0.033	0.017	0.022	0.008	0.006	0.001	0.004	0.002	0.001	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Latest 3	0.000	0.006	0.027	0.036	0.035	0.020	0.022	0.008	0.002	0.002	0.004	0.002	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Olympic Avg																																			
All Yrs (ex P)	0.003	0.012	0.024	0.025	0.018	0.013	0.009	0.008	0.005	0.004	0.003	0.004	0.001	0.002	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Latest 10	0.002	0.014	0.030	0.043	0.028	0.019	0.014	0.010	0.005	0.002	0.002	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.011	0.025	0.035	0.034	0.017	0.022	0.008	0.005	0.000	0.002	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					

Dev Factor Selection

Prior	*NA*	*0.015*	*0.023*	*0.032*	*0.031*	*0.019*	*0.013*	*0.011*	*0.005*	*0.001*	*0.001*	*0.002*	*0.002*	*0.002*	*0.002*	*0.002*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	
Selected	NA	0.015	0.027	0.034	0.033	0.019	0.014	0.011	0.005	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FacToUlt	NA	0.178	0.163	0.136	0.102	0.069	0.050	0.036	0.025	0.020	0.019	0.018	0.016	0.014	0.012	0.010	0.008	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Commonwealth of Massachusetts Workers Compensation
All Other - Clusters 5-17 & 95
INDEMNITY
Paid Loss Development
Paid Loss - Lump Sum only

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*
All Prior Yrs	0	0	0	0	0	0	0	22,500	22,500	22,500	160,000	200,000	280,500	530,734	897,734	1,037,338	1,122,338	1,122,338	1,179,838	1,234,839	1,264,839	1,277,089	1,361,089	1,501,089	1,567,089	1,567,089	1,645,214	1,645,214	1,645,214	1,652,714	1,660,214	1,660,214	1,660,214	1,660,214	1,660,214
Jun-83	0	0	0	0	0	0	0	0	0	0	35,000	42,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	43,750	
Jun-84	0	0	0	0	0	0	91,600	144,850	159,850	214,850	274,550	331,550	331,550	388,550	388,550	388,550	388,550	473,550	473,550	473,550	473,550	473,550	473,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550		
Jun-85	0	0	0	30,000	33,000	85,500	120,054	154,054	212,054	427,804	458,004	550,504	600,504	640,504	640,504	689,504	721,504	721,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504			
Jun-86	0	0	12,000	52,559	126,059	158,559	233,559	408,958	588,458	588,458	680,458	700,458	750,458	750,458	750,458	750,458	750,458	780,458	835,458	899,458	915,458	960,458	1,018,733	1,106,534	1,106,534	1,106,534	1,106,534	1,106,534	1,106,534	1,106,534	1,106,534				
Jun-87	0	25,000	155,000	255,666	406,167	467,033	659,558	828,058	919,559	979,365	1,007,365	1,007,365	1,019,865	1,084,865	1,134,865	1,299,864	1,349,864	1,429,864	1,509,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864	1,519,864					
Jun-88	0	49,000	89,808	129,766	335,518	744,365	987,365	1,210,404	1,478,404	1,540,404	1,615,404	1,645,404	1,706,404	1,706,404	1,706,404	1,706,404	1,861,404	1,881,404	1,881,404	1,881,404	1,981,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404						
Jun-89	0	69,855	213,355	489,131	863,231	1,204,731	1,459,731	1,698,233	1,920,733	2,091,233	2,237,233	2,267,233	2,390,233	2,430,233	2,455,233	2,455,233	2,518,733	2,703,733	2,753,733	2,863,733	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233							
Jun-90	0	114,301	396,269	738,709	1,274,460	1,506,025	1,656,825	2,151,325	2,197,625	2,337,625	2,337,625	2,494,625	2,494,625	2,509,625	2,509,625	2,534,625	2,640,625	2,700,625	2,700,625	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625								
Jun-91	3,500	77,250	450,750	850,251	1,132,101	1,451,601	1,655,101	1,680,102	1,823,102	1,823,102	1,833,102	1,887,102	1,887,102	1,887,102	1,897,102	2,050,102	2,122,602	2,377,602	2,497,602	2,497,602	2,497,602	2,497,602	2,497,602	2,497,602	2,497,602	2,497,602	2,497,602									
Jun-92	12,000	122,012	304,647	440,233	516,233	667,234	667,234	779,234	855,734	953,734	1,058,734	1,078,734	1,092,234	1,178,502	1,199,369	1,220,236	1,306,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736										
Jun-93	6,000	143,948	325,372	556,373	714,373	772,373	821,373	837,373	914,373	999,373	999,373	1,054,373	1,054,373	1,054,373	1,054,373	1,054,373	1,104,373	1,144,373	1,179,373	1,214,373	1,214,373	1,214,373	1,227,873	1,227,873											
Jun-94	9,500	282,655	486,656	676,021	844,521	873,522	901,522	997,522	997,522	1,011,522	1,011,522	1,241,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522	1,306,522													
Jun-95	185,350	408,752	779,752	1,060,752	1,151,717	1,268,317	1,285,317	1,285,317	1,285,317	1,347,317	1,405,717	1,439,717	1,439,717	1,519,717	1,519,717	1,532,217	1,532,217	1,532,217	1,532,217	1,532,217	1,532,217	1,532,217	1,532,218													
Jun-96	6,000	252,050	715,550	940,251	1,044,681	1,070,182	1,073,182	1,113,182	1,113,182	1,113,183	1,148,183	1,210,683	1,210,683	1,229,083	1,245,683	1,245,683	1,245,683	1,245,683	1,245,683	1,245,683	1,345,682															
Jun-97	23,365	522,066	844,566	1,162,067	1,366,067	1,474,318	1,474,318	1,579,318	1,685,819	1,745,819	1,828,819	1,828,819	1,828,819	1,828,819	1,868,819	1,908,819	1,908,819	1,908,819	1,908,819	1,908,819																
Jun-98	287,037	643,985	929,445	1,433,445	1,714,945	1,797,945	1,867,480	1,956,445	1,976,445	1,976,445	1,986,445	2,189,195	2,264,195	2,333,195	2,402,195	2,402,195	2,402,195	2,402,195	2,402,195																	
Jun-99	203,500	328,000	815,181	1,058,081	1,244,063	1,412,064	1,613,064	1,733,064	1,798,064	1,968,064	1,988,064	2,053,064	2,053,064	2,053,064	2,053,064	2,098,064	2,098,064	2,098,064																		
Jun-00	97,731	584,209	891,246	1,161,046	1,254,546	1,445,545	1,630,429	1,740,547	1,793,548	1,869,548	1,893,548	1,893,548	1,893,548	1,893,548	1,893,548	1,893,548	1,893,548																			
Jun-01	10,000	192,428	527,928	599,428	843,928	1,094,928	1,239,928	1,459,928	1,539,928	1,539,928	1,539,928	1,539,928	1,602,428	1,602,428	1,602,428	1,602,428																			
Jun-02	0	114,545	476,626	760,165	1,200,166	1,486,417	1,595,417	1,860,417	1,885,418	1,935,418	1,985,418	2,000,418	2,000,418	2,005,418	2,005,419																					
Jun-03	0	77,201	674,002	1,104,837	1,322,997	1,577,998	1,652,998	1,717,998	1,723,998	1,729,998	1,737,498	1,797,498	1,797,499	1,797,500																					
Jun-04	47,500	72,777	367,764	887,764	1,245,764	1,434,764	1,461,764	1,561,764	1,661,764	1,661,764	1,661,764	1,661,764	1,661,764																					
Jun-05	6,157	67,023	484,523	1,433,524	1,812,201	1,962,201	2,067,201	2,172,201	2,322,201	2,322,201	2,322,201	2,342,201																					
Jun-06	0	159,500	529,500	1,244,500	1,452,500	1,812,000	2,171,500	2,260,500	2,260,500	2,260,500	2,400,500																							
Jun-07	26,000	264,583	838,585	1,265,085	1,418,087	1,571,089	1,691,089	1,781,089	1,809,089	1,874,089																								
Jun-08	0	282,500	629,148	1,239,148	1,849,148	2,024,110	2,483,648	2,545,648	2,588,648																									
Jun-09	250,000	390,000	891,500	1,393,000	1,763,926	2,147,926	2,333,927	2,541,618																										
Jun-10	0	385,501	771,002	1,307,713	1,986,910	2,367,214	2,772,214																											
Jun-11	307,191	626,381	1,230,599	1,587,882	2,461,175	2,743,175																												
Jun-12	0	294,800	704,261	1,775,865	2,196,065																													
Jun-13	37,000	164,500	570,596	1,371,874																														
Jun-14	15,000	21,251	1,033,602																															
Jun-15	0	319,341																																
Jun-16	21,500																																	

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
All Prior Yrs								1.000	1.000	7.111	1.250	1.403	1.892	1.691	1.156	1.082	1.000	1.051	1.047	1.024	1.010	1.066	1.103	1.044	1.000	1.050	1.000	1.000	1.005	1.005	1.000	1.000	1.000	1.000	
Jun-83											1.221	1.023	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-84							1.581	1.104	1.344	1.278	1.208	1.000	1.172	1.000	1.000	1.000	1.219	1.000	1.000	1.000	1.000	1.000	1.021	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-85				1.100	2.591	1.404	1.283	1.376	2.017	1.071	1.202	1.091	1.067	1.000	1.077	1.046	1.000	1.035	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Jun-86			4.380	2.398	1.258	1.473	1.751	1.439	1.000	1.156	1.029	1.071	1.000	1.000	1.000	1.000	1.040	1.070	1.077	1.018	1.049	1.061	1.086	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Jun-87		6.200	1.649	1.589	1.150	1.412	1.255	1.111	1.065	1.029	1.000	1.012	1.064	1.046	1.145	1.038	1.059	1.056	1.007	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Jun-88		1.833	1.445	2.586	2.219	1.326	1.226	1.221	1.042	1.049	1.019	1.037	1.000	1.000	1.000	1.091	1.011	1.000	1.053	1.045	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Jun-89		3.054	2.293	1.765	1.396	1.212	1.163	1.131	1.089	1.070	1.013	1.054	1.017	1.010	1.000	1.026	1.073	1.018	1.040	1.022	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
Jun-90		3.467	1.864	1.725	1.182	1.100	1.298	1.022	1.064	1.000	1.067	1.000	1.006	1.000	1.010	1.042	1.023	1.000	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
Jun-91	22.071	5.835	1.886	1.331	1.282	1.140	1.015	1.085	1.000	1.005	1.029	1.000	1.000	1.005	1.081	1.035	1.120	1.050	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
Jun-92	10.168	2.497	1.445	1.173	1.293	1.000	1.168	1.098	1.115	1.110	1.019	1.013	1.079	1.018	1.017	1.071	1.027	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93	23.991	2.260	1.710	1.284	1.081	1.063	1.019	1.092	1.093	1.000	1.055	1.000	1.000	1.000	1.000	1.047	1.036	1.031	1.030	1.000	1.000	1.011	1.000												
Jun-94	29.753	1.722	1.389	1.249	1.034	1.032	1.106	1.000	1.014	1.000	1.227	1.052	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95	2.205	1.908	1.360	1.086	1.101	1.013	1.000	1.000	1.048	1.043	1.024	1.000	1.056	1.000	1.008	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	42.008	2.839	1.314	1.111	1.024	1.003	1.037	1.000	1.000	1.031	1.054	1.000	1.015	1.014	1.000	1.000	1.000	1.000	1.000	1.080															
Jun-97	22.344	1.618	1.376	1.176	1.079	1.000	1.071	1.067	1.036	1.048	1.000	1.000	1.000	1.022	1.021	1.000	1.000	1.000	1.000																
Jun-98	2.244	1.443	1.542	1.196	1.048	1.039	1.048	1.010	1.000	1.005	1.102	1.034	1.030	1.030	1.000	1.000	1.000	1.000																	
Jun-99	1.612	2.485	1.298	1.176	1.135	1.142	1.074	1.038	1.095	1.010	1.033	1.000	1.000	1.000	1.022	1.000	1.000																		
Jun-00	5.978	1.526	1.303	1.081	1.152	1.128	1.068	1.030	1.042	1.013	1.000	1.000	1.000	1.000	1.000	1.000																			
Jun-01	19.243	2.744	1.135	1.408	1.297	1.132	1.177	1.055	1.000	1.000	1.000	1.041	1.000	1.000	1.000																				
Jun-02		4.161	1.595	1.579	1.239	1.073	1.166	1.013	1.027	1.026	1.008	1.000	1.002	1.000																					
Jun-03		8.730	1.639	1.197	1.193	1.048	1.039	1.003	1.003	1.004	1.035	1.000	1.000																						
Jun-04	1.532	5.053	2.414	1.403	1.152	1.019	1.068	1.064	1.000	1.000	1.000	1.000																							
Jun-05	10.886	7.229	2.959	1.264	1.083	1.054	1.051	1.069	1.000	1.000	1.009																								
Jun-06		3.320	2.350	1.167	1.248	1.198	1.041	1.000	1.000	1.062																									
Jun-07	10.176	3.169	1.509	1.121	1.108	1.076	1.053	1.016	1.036																										
Jun-08		2.227	1.970	1.492	1.095	1.227	1.025	1.017																											
Jun-09	1.560	2.286	1.563	1.266	1.218	1.087	1.089																												
Jun-10		2.000	1.696	1.519	1.191	1.171																													
Jun-11	2.039	1.965	1.290	1.550	1.115																														
Jun-12		2.389	2.522	1.237																															
Jun-13	4.446	3.469	2.404																																
Jun-14	1.417	48.638																																	
Jun-15																																			

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*408-420*	*To Ult*
Simple Avg																																			
All Yrs (ex P)	11.871	4.860	1.832	1.401	1.258	1.137	1.149	1.082	1.089	1.044	1.059	1.020	1.024	1.007	1.020	1.022	1.036	1.016	1.014	1.012	1.004	1.006	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Latest 5	2.634	11.692	1.895	1.413	1.145	1.152	1.052	1.033	1.008	1.018	1.010	1.008	1.001	1.006	1.009	1.000	1.000	1.000	1.006	1.016	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Latest 3	2.931	18.165	2.072	1.435	1.175	1.162	1.056	1.011	1.012	1.021	1.014	1.000	1.001	1.000	1.007	1.000	1.000	1.000	1.000	1.027	1.000	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Volume Wtd																																			
All Yrs (ex P)	4.603	2.544	1.677	1.310	1.167	1.112	1.095	1.052	1.040	1.029	1.037	1.016	1.015	1.008	1.018	1.023	1.031	1.015	1.015	1.013	1.002	1.004	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Latest 5	3.971	2.888	1.784	1.404	1.145	1.154	1.052	1.031	1.007	1.020	1.010	1.007	1.001	1.007	1.009	1.000	1.000	1.000	1.005	1.015	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Latest 3	9.713	4.804	1.890	1.422	1.168	1.161	1.055	1.011	1.010	1.022	1.014	1.000	1.001	1.000	1.008	1.000	1.000	1.000	1.000	1.024	1.000	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			

Dev Factor Selection																																			
Prior	*4.389*	*2.756*	*1.818*	*1.414*	*1.201*	*1.131*	*1.059*	*1.038*	*1.012*	*1.012*	*1.020*	*1.012*	*1.010*	*1.010*	*1.009*	*1.000*	*1.000*	*1.010*	*1.015*	*1.005*	*1.005*	*1.005*	*1.003*	*1.003*	*1.003*	*1.001*	*1.001*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.020*	
Selected	4.389	2.756	1.864	1.416	1.193	1.137	1.067	1.031	1.012	1.024	1.020	1.008	1.010	1.006	1.009	1.000	1.000	1.010	1.015	1.005	1.005	1.005	1.003	1.003	1.003	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.010
FacToUlt	55.312	12.602	4.573	2.454	1.732	1.453	1.277	1.197	1.161	1.147	1.120	1.098	1.089	1.078	1.072	1.063	1.063	1.063	1.052	1.037	1.031	1.026	1.021	1.018	1.015	1.012	1.011	1.010	1.010	1.010	1.010	1.010	1.010	1.010	
Percent of Ult	1.8%	7.9%	21.9%	40.8%	57.7%	68.8%	78.3%	83.6%	86.2%	87.2%	89.3%	91.1%	91.8%	92.7%	93.3%	94.1%	94.1%	94.1%	95.0%	96.5%	97.0%	97.4%	97.9%	98.2%	98.5%	98.8%	98.9%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative Paid Loss	Incremental Paid Loss		Pres Value of Increm.	Pres Value of Increm.	Discount Factor At:	
Maturity	Development	Development	Percent Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
420	100.0%	2.1%	0.0%	0.5%	0.3%	1.000	1.000
408	97.9%	0.2%	2.1%	0.1%	0.0%	0.981	0.971
396	97.7%	0.4%	2.3%	0.1%	0.1%	0.946	0.921
384	97.3%	0.6%	2.7%	0.2%	0.1%	0.920	0.884
372	96.7%	0.8%	3.3%	0.2%	0.1%	0.902	0.858
360	96.0%	0.9%	4.0%	0.3%	0.2%	0.889	0.841
348	95.1%	1.2%	4.9%	0.4%	0.2%	0.877	0.825
336	93.9%	1.3%	6.1%	0.4%	0.3%	0.870	0.816
324	92.7%	1.4%	7.3%	0.5%	0.3%	0.861	0.804
312	91.3%	1.3%	8.7%	0.5%	0.3%	0.852	0.792
300	90.0%	1.4%	10.0%	0.5%	0.3%	0.841	0.777
288	88.6%	1.4%	11.4%	0.6%	0.4%	0.829	0.762
276	87.1%	1.5%	12.9%	0.6%	0.4%	0.818	0.747
264	85.6%	1.6%	14.4%	0.7%	0.5%	0.807	0.732
252	84.1%	1.7%	15.9%	0.8%	0.5%	0.796	0.719
240	82.3%	1.8%	17.7%	0.8%	0.6%	0.786	0.707
228	80.5%	1.2%	19.5%	0.6%	0.4%	0.777	0.695
216	79.3%	1.3%	20.7%	0.7%	0.5%	0.761	0.674
204	78.0%	1.3%	22.0%	0.7%	0.5%	0.746	0.656
192	76.7%	1.5%	23.3%	0.8%	0.6%	0.733	0.639
180	75.2%	1.6%	24.8%	0.9%	0.7%	0.721	0.625
168	73.6%	1.6%	26.4%	0.9%	0.7%	0.711	0.613
156	72.0%	1.8%	28.0%	1.1%	0.9%	0.700	0.600
144	70.2%	1.9%	29.8%	1.2%	1.0%	0.692	0.591
132	68.3%	1.8%	31.7%	1.2%	1.0%	0.684	0.582
120	66.5%	2.1%	33.5%	1.4%	1.2%	0.675	0.571
108	64.5%	2.2%	35.5%	1.5%	1.3%	0.668	0.564
96	62.3%	2.5%	37.7%	1.9%	1.6%	0.662	0.557
84	59.8%	3.1%	40.2%	2.4%	2.1%	0.658	0.553
72	56.7%	4.2%	43.3%	3.4%	3.0%	0.657	0.554
60	52.5%	5.3%	47.5%	4.4%	4.0%	0.663	0.563
48	47.3%	7.1%	52.7%	6.2%	5.8%	0.672	0.575
36	40.2%	10.6%	59.8%	9.6%	9.1%	0.685	0.593
24	29.7%	15.8%	70.3%	14.9%	14.5%	0.707	0.621
12	13.8%	13.8%	86.2%	13.5%	13.4%	0.735	0.657
Total		100.0%					

NOTES:

(2) = 1 / Section 8, Exhibit 1, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	5,233,645	9,350,221		4,577,268	8,177,564
6/30/82-83	31,249	465,251	0.981	30,642	456,216
6/30/83-84	49,109	671,636	0.946	46,461	635,429
6/30/84-85	368,989	608,989	0.920	339,477	560,281
6/30/85-86	536,459	835,459	0.902	483,748	753,369
6/30/86-87	695,571	1,013,571	0.889	618,172	900,787
6/30/87-88	1,324,443	2,228,443	0.877	1,161,856	1,954,883
6/30/88-89	1,282,867	2,304,867	0.870	1,116,319	2,005,638
6/30/89-90	1,692,962	2,507,962	0.861	1,458,195	2,160,178
6/30/90-91	1,808,172	2,474,172	0.852	1,540,385	2,107,751
6/30/91-92	1,308,096	2,163,096	0.841	1,099,567	1,818,268
6/30/92-93	1,202,006	2,078,006	0.829	996,776	1,723,208
6/30/93-94	1,383,054	1,658,054	0.818	1,130,982	1,355,861
6/30/94-95	1,356,732	1,939,732	0.807	1,094,207	1,564,397
6/30/95-96	1,650,445	2,285,445	0.796	1,313,708	1,819,150
6/30/96-97	1,799,590	2,435,590	0.786	1,414,806	1,914,818
6/30/97-98	1,622,102	2,153,102	0.777	1,259,979	1,672,437
6/30/98-99	1,924,500	2,488,500	0.761	1,463,657	1,892,601
6/30/99-00	2,500,041	3,193,041	0.746	1,865,601	2,382,737
6/30/00-01	2,608,531	3,260,531	0.733	1,911,348	2,389,088
6/30/01-02	2,874,421	3,543,421	0.721	2,073,367	2,555,928
6/30/02-03	3,092,032	3,754,032	0.711	2,197,771	2,668,311
6/30/03-04	3,034,712	3,670,712	0.700	2,124,131	2,569,296
6/30/04-05	3,731,821	3,782,821	0.692	2,581,633	2,616,915
6/30/05-06	3,786,682	4,494,682	0.684	2,590,314	3,074,627
6/30/06-07	3,836,119	5,163,119	0.675	2,588,627	3,484,092
6/30/07-08	4,986,255	6,165,255	0.668	3,331,011	4,118,629
6/30/08-09	6,595,698	6,836,070	0.662	4,364,629	4,523,692
6/30/09-10	6,337,229	7,826,921	0.658	4,167,448	5,147,090
6/30/10-11	9,167,669	9,755,696	0.657	6,026,715	6,413,277
6/30/11-12	10,928,553	11,977,385	0.663	7,244,066	7,939,292
6/30/12-13	11,912,857	13,597,111	0.672	8,000,293	9,131,384
6/30/13-14	16,973,790	17,877,020	0.685	11,632,450	12,251,450
6/30/14-15	20,391,524	22,386,794	0.707	14,420,923	15,831,982
6/30/15-16	27,559,146	28,206,406	0.735	20,263,515	20,739,428
Total	165,587,070	195,153,113		118,530,049	141,310,054
(7) Total Discount Factor:				0.716	0.724

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	5,233,645	9,350,221
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	747,664	1,335,746
(11) Discounted Value at 4%:	4,577,268	8,177,564

NOTES:

(2), (3) From Section 8, Exhibit 1, Page 1, Columns 8, 9

(4) From Section 8, Exhibit 1, Page 13, Column 7

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	5,233,645	9,350,221		4,298,956	7,680,342
6/30/82-83	31,249	465,251	0.971	30,352	451,892
6/30/83-84	49,109	671,636	0.921	45,230	618,582
6/30/84-85	368,989	608,989	0.884	326,105	538,213
6/30/85-86	536,459	835,459	0.858	460,432	717,058
6/30/86-87	695,571	1,013,571	0.841	584,654	851,944
6/30/87-88	1,324,443	2,228,443	0.825	1,092,763	1,838,630
6/30/88-89	1,282,867	2,304,867	0.816	1,046,704	1,880,564
6/30/89-90	1,692,962	2,507,962	0.804	1,361,512	2,016,951
6/30/90-91	1,808,172	2,474,172	0.792	1,431,646	1,958,961
6/30/91-92	1,308,096	2,163,096	0.777	1,016,067	1,680,191
6/30/92-93	1,202,006	2,078,006	0.762	915,756	1,583,143
6/30/93-94	1,383,054	1,658,054	0.747	1,032,894	1,238,270
6/30/94-95	1,356,732	1,939,732	0.732	993,529	1,420,457
6/30/95-96	1,650,445	2,285,445	0.719	1,186,441	1,642,918
6/30/96-97	1,799,590	2,435,590	0.707	1,271,468	1,720,823
6/30/97-98	1,622,102	2,153,102	0.695	1,126,995	1,495,920
6/30/98-99	1,924,500	2,488,500	0.674	1,296,930	1,677,013
6/30/99-00	2,500,041	3,193,041	0.656	1,639,697	2,094,214
6/30/00-01	2,608,531	3,260,531	0.639	1,667,160	2,083,865
6/30/01-02	2,874,421	3,543,421	0.625	1,797,428	2,215,766
6/30/02-03	3,092,032	3,754,032	0.613	1,894,775	2,300,444
6/30/03-04	3,034,712	3,670,712	0.600	1,820,635	2,202,195
6/30/04-05	3,731,821	3,782,821	0.591	2,204,415	2,234,541
6/30/05-06	3,786,682	4,494,682	0.582	2,204,040	2,616,132
6/30/06-07	3,836,119	5,163,119	0.571	2,191,987	2,950,245
6/30/07-08	4,986,255	6,165,255	0.564	2,812,575	3,477,608
6/30/08-09	6,595,698	6,836,070	0.557	3,675,897	3,809,860
6/30/09-10	6,337,229	7,826,921	0.553	3,506,816	4,331,163
6/30/10-11	9,167,669	9,755,696	0.554	5,082,375	5,408,366
6/30/11-12	10,928,553	11,977,385	0.563	6,147,982	6,738,015
6/30/12-13	11,912,857	13,597,111	0.575	6,845,437	7,813,253
6/30/13-14	16,973,790	17,877,020	0.593	10,062,601	10,598,064
6/30/14-15	20,391,524	22,386,794	0.621	12,664,671	13,903,883
6/30/15-16	27,559,146	28,206,406	0.657	18,100,378	18,525,487
Total	165,587,070	195,153,113		103,837,303	124,314,973
			(7) Total Discount Factor:	0.627	0.637

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	5,233,645	9,350,221
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	747,664	1,335,746
(11) Discounted Value at 6%:	4,298,956	7,680,342

NOTES:

(2), (3) From Section 8, Exhibit 1, Page 1, Columns 8, 9

(4) From Section 8, Exhibit 1, Page 13, Column 8

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Total Indemnity (Including Lump Sums) + Medical

Calculation of Fiscal Year 7/01/16 - 17 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/16 - 06/30/17	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/16 - 06/30/17		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	53,234,712	57,473,665	47,866,782	5,367,930	9,606,883				458,749	504,624	8.5%	5.3%
6/30/82-83	6,154,168	6,596,609	6,122,919	31,249	473,690	96.0%	1.5%	37.9%	11,837	179,425	37.9%	37.9%
6/30/83-84	8,883,666	9,520,832	8,834,558	49,109	686,274	96.0%	1.5%	37.5%	18,436	257,632	37.5%	37.5%
6/30/84-85	18,265,956	18,530,196	17,896,968	368,989	633,228	97.3%	1.5%	55.1%	203,210	348,732	55.1%	55.1%
6/30/85-86	22,417,405	22,745,190	21,863,363	554,042	881,827	96.8%	1.5%	47.2%	261,395	416,043	47.2%	47.2%
6/30/86-87	23,152,360	23,496,280	22,436,028	716,332	1,060,252	96.2%	1.5%	39.4%	282,136	417,593	39.4%	39.4%
6/30/87-88	32,737,750	33,693,530	31,364,250	1,373,500	2,329,280	94.4%	1.5%	26.9%	369,628	626,841	26.9%	26.9%
6/30/88-89	30,846,000	31,907,470	29,478,902	1,367,098	2,428,568	94.0%	1.5%	24.8%	339,032	602,270	24.8%	24.8%
6/30/89-90	30,151,000	31,010,640	28,350,547	1,800,453	2,660,093	92.7%	1.5%	20.6%	370,309	547,116	20.6%	20.6%
6/30/90-91	26,670,000	27,373,040	24,747,357	1,922,643	2,625,683	91.6%	1.1%	13.3%	256,563	350,379	13.3%	13.3%
6/30/91-92	17,204,000	18,088,910	15,790,726	1,413,274	2,298,184	89.5%	2.1%	20.0%	282,226	458,940	20.0%	20.0%
6/30/92-93	13,571,000	14,474,010	12,261,919	1,309,081	2,212,091	87.4%	1.5%	11.9%	156,396	264,279	11.9%	11.9%
6/30/93-94	15,210,000	15,517,700	13,686,943	1,523,057	1,830,757	89.1%	1.5%	13.7%	209,314	251,601	13.7%	13.7%
6/30/94-95	13,642,000	14,252,490	12,150,866	1,491,134	2,101,624	87.1%	1.5%	11.6%	173,659	244,758	11.6%	11.6%
6/30/95-96	13,954,000	14,611,050	12,178,011	1,775,989	2,433,039	85.3%	1.5%	10.2%	180,794	247,681	10.2%	10.2%
6/30/96-97	14,957,000	15,622,480	12,967,818	1,989,182	2,654,662	84.8%	0.5%	3.0%	59,108	78,883	3.0%	3.0%
6/30/97-98	12,611,000	13,167,800	10,833,033	1,777,967	2,334,767	84.0%	0.8%	4.8%	85,566	112,363	4.8%	4.8%
6/30/98-99	13,876,000	14,470,860	11,739,233	2,136,767	2,731,627	82.8%	1.2%	7.1%	151,841	194,113	7.1%	7.1%
6/30/99-00	16,408,000	17,135,520	13,614,664	2,793,336	3,520,856	81.2%	1.6%	8.8%	244,776	308,527	8.8%	8.8%
6/30/00-01	15,950,000	16,637,980	12,992,730	2,957,270	3,645,250	79.7%	1.4%	7.1%	209,706	258,492	7.1%	7.1%
6/30/01-02	16,412,000	17,122,040	13,131,100	3,280,900	3,990,940	78.3%	2.0%	9.2%	302,597	368,084	9.2%	9.2%
6/30/02-03	16,815,000	17,518,870	13,206,989	3,608,011	4,311,881	76.9%	1.4%	6.0%	216,214	258,394	6.0%	6.0%
6/30/03-04	15,802,000	16,482,750	12,176,541	3,625,459	4,306,209	75.4%	1.5%	6.1%	221,437	263,016	6.1%	6.1%
6/30/04-05	19,280,000	19,890,000	15,049,591	4,230,409	4,840,409	76.8%	2.0%	8.6%	365,359	418,041	8.6%	8.6%
6/30/05-06	17,925,000	19,012,000	13,482,687	4,442,313	5,529,313	73.0%	2.0%	7.4%	329,105	409,635	7.4%	7.4%
6/30/06-07	18,661,000	20,675,000	14,021,772	4,639,228	6,653,228	71.3%	1.7%	6.0%	276,563	396,626	6.0%	6.0%
6/30/07-08	22,549,000	24,223,000	16,652,007	5,896,993	7,570,993	71.2%	0.1%	0.3%	17,876	22,951	0.3%	0.3%
6/30/08-09	25,051,500	25,640,872	17,278,586	7,772,914	8,362,286	68.2%	3.0%	9.5%	741,075	797,267	9.5%	9.5%
6/30/09-10	24,522,800	26,496,492	16,934,668	7,588,132	9,561,824	66.4%	1.8%	5.3%	402,946	507,753	5.3%	5.3%
6/30/10-11	29,492,730	30,606,757	18,813,318	10,679,412	11,793,439	62.6%	3.8%	10.1%	1,079,030	1,191,590	10.1%	10.1%
6/30/11-12	31,071,800	32,611,632	18,386,464	12,685,336	14,225,168	57.7%	4.9%	11.5%	1,460,138	1,637,380	11.5%	11.5%
6/30/12-13	28,493,800	30,613,054	14,387,054	14,106,746	16,226,000	48.7%	9.1%	17.7%	2,490,967	2,865,185	17.7%	17.7%
6/30/13-14	34,684,770	36,055,000	14,933,850	19,750,920	21,121,150	42.2%	6.5%	11.2%	2,208,147	2,361,338	11.2%	11.2%
6/30/14-15	35,541,730	38,104,000	11,203,989	24,337,741	26,900,011	30.4%	11.8%	17.0%	4,126,138	4,560,537	17.0%	17.0%
6/30/15-16	39,623,740	41,704,000	5,771,246	33,852,494	35,932,754	14.2%	16.2%	18.9%	6,404,650	6,798,220	18.9%	18.9%
Total	775,822,888	813,081,719	582,607,478	193,215,409	230,474,241				24,966,925	29,526,308	12.9%	12.8%

NOTES:

(2) Exhibit 1, Page 1, Column (4) + Exhibit 2, Page 1, Column (4)
(3) Exhibit 1, Page 1, Column (5) + Exhibit 2, Page 1, Column (5)
(4) Exhibit 1, Page 1, Column (2) + Exhibit 2, Page 1, Column (2)
(5) = (2) - (4)
(6) = (3) - (4)
(7) = (4) / Average of Columns (2), (3)
(8) = (7) - Prior Year's (7)
(9) = (8) / (1.00 - (7))
(10) = (5) * (9)
(11) = (6) * (9)
(12) = (10) / (5)
(13) = (11) / (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Indemnity

Allocation of Outstanding Reserve to MassDOT Agencies

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
		Aon	Aon	Outstanding	Outstanding	**MassDOT Allocation - Method 1**					**MassDOT Allocation - Method 2**					**MassDOT Allocation - Method 3**					MassDOT	MassDOT	All Other	All Other
Accident		Selected Ult	Selected Ult	Losses	Losses	Paid Counts	MassDOT	MassDOT /	MassDOT OS	MassDOT OS	Total Paid	MassDOT	MassDOT /	MassDOT OS	MassDOT OS	Total Payroll	MassDOT	MassDOT /	MassDOT OS	MassDOT OS	Outstanding	Outstanding	Outstanding	Outstanding
Year	Paid Loss	(Low)	(High)	(Low)	(High)	7/1/15-16	7/1/15-16	Paid Counts	(Low)	(High)	7/1/15-16	7/1/15-16	Total Paid	(Low)	(High)	($000)	($000)	Total Payroll	(Low)	(High)	(Low)	(High)	(Low)	(High)
All Prior Yrs	44,815,321	50,048,966	54,165,542	5,233,645	9,350,221	13					482,894								343,179	613,110	114,393	204,370	5,119,252	9,145,851
6/30/82-83	5,610,779	5,642,028	6,076,030	31,249	465,251	0					0								2,049	30,507	683	10,169	30,566	455,082
6/30/83-84	8,043,745	8,092,853	8,715,381	49,109	671,636	1					39,525								3,220	44,040	1,073	14,680	48,035	656,956
6/30/84-85	16,773,011	17,142,000	17,382,000	368,989	608,989	1	1	100.0%	368,989	608,989	63,147	63,147	100.0%	368,989	608,989				24,195	39,932	139,126	229,618	229,862	379,371
6/30/85-86	19,971,541	20,508,000	20,807,000	536,459	835,459	3	1	33.3%	178,820	278,486	171,956	64,661	37.6%	201,726	314,160				35,177	54,782	138,574	215,810	397,885	619,650
6/30/86-87	20,737,429	21,433,000	21,751,000	695,571	1,013,571	6	1	16.7%	115,929	168,929	303,145	64,661	21.3%	148,364	216,193				45,610	66,462	103,301	150,528	592,270	863,044
6/30/87-88	28,179,557	29,504,000	30,408,000	1,324,443	2,228,443	8	1	12.5%	165,555	278,555	356,955	48,835	13.7%	181,198	304,875				86,846	146,123	144,533	243,184	1,179,910	1,985,259
6/30/88-89	25,919,133	27,202,000	28,224,000	1,282,867	2,304,867	8	1	12.5%	160,358	288,108	342,440	37,377	10.9%	140,022	251,571				84,120	151,134	128,167	230,271	1,154,700	2,074,596
6/30/89-90	24,499,038	26,192,000	27,007,000	1,692,962	2,507,962	7	1	14.3%	241,852	358,280	357,989	56,377	15.7%	266,614	394,963				111,010	164,451	206,492	305,898	1,486,470	2,202,064
6/30/90-91	21,258,828	23,067,000	23,733,000	1,808,172	2,474,172	5	1	20.0%	361,634	494,834	184,174	40,164	21.8%	394,322	539,562				118,565	162,236	291,507	398,877	1,516,665	2,075,294
6/30/91-92	13,005,904	14,314,000	15,169,000	1,308,096	2,163,096	5					185,715								85,774	141,838	28,591	47,279	1,279,505	2,115,817
6/30/92-93	9,768,994	10,971,000	11,847,000	1,202,006	2,078,006	3	1	33.3%	400,669	692,669	113,944	32,164	28.2%	339,298	586,572				78,818	136,258	272,928	471,833	929,078	1,606,172
6/30/93-94	10,758,946	12,142,000	12,417,000	1,383,054	1,658,054	6	2	33.3%	461,018	552,685	179,821	42,321	23.5%	325,499	390,220				90,689	108,721	208,094	249,471	1,174,960	1,408,583
6/30/94-95	9,637,268	10,994,000	11,577,000	1,356,732	1,939,732	3					122,850								88,963	127,191	29,654	42,397	1,327,077	1,897,334
6/30/95-96	10,098,555	11,749,000	12,384,000	1,650,445	2,285,445	4					268,417								108,223	149,861	36,074	49,954	1,614,371	2,235,492
6/30/96-97	10,209,410	12,009,000	12,645,000	1,799,590	2,435,590	4					95,390								118,002	159,706	39,334	53,235	1,760,256	2,382,354
6/30/97-98	8,812,898	10,435,000	10,966,000	1,622,102	2,153,102	1					47,782					1,917,994	137,500	7.2%	116,287	154,354	116,287	154,354	1,505,814	1,998,747
6/30/98-99	9,168,500	11,093,000	11,657,000	1,924,500	2,488,500	5					145,353					2,081,524	136,688	6.6%	126,377	163,413	63,188	81,707	1,861,311	2,406,793
6/30/99-00	10,556,959	13,057,000	13,750,000	2,500,041	3,193,041	4					160,080					2,207,243	137,892	6.2%	156,184	199,478	156,184	199,478	2,343,857	2,993,564
6/30/00-01	9,945,469	12,554,000	13,206,000	2,608,531	3,260,531	6	1	16.7%	434,755	543,422	152,620	21,970	14.4%	375,503	469,359	2,201,008	145,149	6.6%	172,023	215,020	327,427	409,267	2,281,104	2,851,264
6/30/01-02	10,342,579	13,217,000	13,886,000	2,874,421	3,543,421	4	1	25.0%	718,605	885,855	31,784	19	0.1%	1,742	2,147	2,292,592	140,223	6.1%	175,810	216,728	88,776	109,438	2,785,645	3,433,983
6/30/02-03	10,040,968	13,133,000	13,795,000	3,092,032	3,754,032	6	1	16.7%	515,339	625,672	80,976	307	0.4%	11,722	14,232	2,260,534	140,250	6.2%	191,839	232,911	239,633	290,938	2,852,399	3,463,094
6/30/03-04	9,100,288	12,135,000	12,771,000	3,034,712	3,670,712	5					135,718					2,255,942	137,408	6.1%	184,842	223,580	184,842	223,580	2,849,870	3,447,132
6/30/04-05	10,648,179	14,380,000	14,431,000	3,731,821	3,782,821	7					198,906					2,309,083	145,033	6.3%	234,395	237,598	78,132	79,199	3,653,689	3,703,621
6/30/05-06	10,038,318	13,825,000	14,533,000	3,786,682	4,494,682	5					258,077					2,480,693	156,390	6.3%	238,724	283,358	159,149	188,906	3,627,532	4,305,776
6/30/06-07	9,024,881	12,861,000	14,188,000	3,836,119	5,163,119	6	2	33.3%	1,278,706	1,721,040	224,092	35,537	15.9%	608,344	818,784	2,612,577	157,146	6.0%	230,741	310,560	356,609	479,968	3,479,510	4,683,151
6/30/07-08	12,662,746	17,649,000	18,828,000	4,986,255	6,165,255	6	1	16.7%	831,042	1,027,542	266,317	51,148	19.2%	957,649	1,184,086	2,783,717	168,663	6.1%	302,112	373,547	478,422	591,545	4,507,832	5,573,709
6/30/08-09	13,055,802	19,651,500	19,891,872	6,595,698	6,836,070	17	3	17.6%	1,163,947	1,206,365	388,891	46,790	12.0%	793,578	822,498	2,750,907	180,456	6.6%	432,668	448,437	613,123	635,468	5,982,575	6,200,602
6/30/09-10	12,685,571	19,022,800	20,512,492	6,337,229	7,826,921	18	1	5.6%	352,068	434,829	635,917	159,326	25.1%	1,587,761	1,960,996	2,806,048	203,138	7.2%	458,769	566,612	536,790	662,973	5,800,439	7,163,948
6/30/10-11	14,025,061	23,192,730	23,780,757	9,167,669	9,755,696	28	2	7.1%	654,834	696,835	840,379	84,132	10.0%	917,799	976,668	2,942,638	197,766	6.7%	616,134	655,653	729,589	776,385	8,438,081	8,979,311
6/30/11-12	13,643,247	24,571,800	25,620,632	10,928,553	11,977,385	49	4	8.2%	892,127	977,746	1,358,758	36,971	2.7%	297,357	325,894	3,006,849	207,447	6.9%	753,978	826,339	647,820	709,993	10,280,733	11,267,392
6/30/12-13	10,480,943	22,393,800	24,078,054	11,912,857	13,597,111	66	5	7.6%	902,489	1,030,084	1,878,246	79,813	4.2%	506,217	577,786	3,138,905	217,415	6.9%	825,140	941,799	744,615	849,890	11,168,242	12,747,221
6/30/13-14	10,710,980	27,684,770	28,588,000	16,973,790	17,877,020	111	10	9.0%	1,529,170	1,610,542	3,383,364	262,443	7.8%	1,316,635	1,386,697	3,311,947	232,120	7.0%	1,189,620	1,252,923	1,376,246	1,449,480	15,597,544	16,427,540
6/30/14-15	7,650,206	28,041,730	30,037,000	20,391,524	22,386,794	245	26	10.6%	2,163,998	2,375,741	4,180,975	479,954	11.5%	2,340,840	2,569,886	3,511,622	248,813	7.1%	1,444,825	1,586,198	1,911,697	2,098,753	18,479,827	20,288,041
6/30/15-16	3,764,594	31,323,740	31,971,000	27,559,146	28,206,406	550	31	5.6%	1,553,334	1,589,816	3,764,594	274,586	7.3%	2,010,141	2,057,351	3,491,558	226,897	6.5%	1,790,918	1,832,980	1,553,334	1,589,816	26,005,812	26,616,590
Total	475,645,648	641,232,718	670,798,760	165,587,070	195,153,113	1,216	98	8.1%	15,445,238	18,447,026	21,401,193	1,982,704	9.3%	14,091,320	16,773,492						12,244,391	14,498,713	153,342,679	180,654,399

Sel. FY97 & Prior	6.6%

NOTES:

(2), (7), (8), (12), (13), (17). (18) Provided by Commonwealth of Massachusetts
(3) From Section 8, Exhibit 1, Page 1, Column 6
(4) From Section 8, Exhibit 1, Page 1, Column 7
(5) = (3) - (2)
(6) = (4) - (2)
(9) = (8) / (7)
(10) = (9) * (5)
(11) = (9) * (6)

(14) = (13) / (12)
(15) = (14) * (5)
(16) = (14) * (6)
(19) = (18) / (17)
(20) = (19) * (5)
(21) = (19) * (6)

(22) Selected judgementally based on (10), (15), (20)
(23) Selected judgementally based on (11), (16). (21)
(24) = (5) - (22)
(25) = (6) - (23)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2015

All Other - Clusters 5-17 & 95
Indemnity

Allocation of Outstanding Reserve to MassDOT Agencies

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
						MassDOT Allocation - Method 1					**MassDOT Allocation - Method 2**					**MassDOT Allocation - Method 3**								
Accident Year	Paid Loss	Aon Selected Ult (Low)	Aon Selected Ult (High)	Outstanding Losses (Low)	Outstanding Losses (High)	Paid Counts 7/1/14-15	MassDOT 7/1/14-15	MassDOT / Paid Counts	MassDOT OS (Low)	MassDOT OS (High)	Total Paid 7/1/14-15	MassDOT 7/1/14-15	MassDOT / Total Paid	MassDOT OS (Low)	MassDOT OS (High)	Total Payroll ($000)	MassDOT ($000)	MassDOT / Total Payroll	MassDOT OS (Low)	MassDOT OS (High)	MassDOT Outstanding (Low)	MassDOT Outstanding (High)	All Other Outstanding (Low)	All Other Outstanding (High)
All Prior Yrs	44,332,427	50,188,598	54,601,930	5,856,170	10,269,502	14					586,996	0	0.0%	0	0				384,190	673,724	128,063	224,575	5,728,107	10,044,928
6/30/82-83	5,610,779	5,671,498	6,107,767	60,719	496,988	1					-1,402								3,983	32,605	1,328	10,868	59,391	486,120
6/30/83-84	8,004,220	8,140,603	8,766,803	136,383	762,583	1					38,165								8,947	50,029	2,982	16,676	133,400	745,907
6/30/84-85	16,709,864	17,282,000	17,573,000	572,136	863,136	1	1	100.0%	572,136	863,136	60,976	60,976	100.0%	572,136	863,136				37,535	56,625	215,735	325,462	356,401	537,674
6/30/85-86	19,799,584	20,610,000	20,970,000	810,416	1,170,416	3	1	33.3%	270,139	390,139	164,776	62,438	37.9%	307,087	443,500				53,167	76,784	210,131	303,474	600,285	866,941
6/30/86-87	20,434,283	21,437,000	21,810,000	1,002,717	1,375,717	6	1	16.7%	167,119	229,286	293,047	62,438	21.3%	213,643	293,116				65,783	90,253	148,848	204,218	853,868	1,171,498
6/30/87-88	27,822,601	29,699,000	30,788,000	1,876,399	2,965,399	8	1	12.5%	234,550	370,675	348,901	47,157	13.5%	253,609	400,796				123,100	194,543	203,753	322,005	1,672,646	2,643,394
6/30/88-89	25,576,693	27,304,000	28,561,000	1,727,307	2,984,307	9	2	22.2%	383,846	663,179	363,025	36,354	10.0%	172,976	298,855				113,319	195,783	223,380	385,939	1,503,927	2,598,368
6/30/89-90	24,141,049	26,333,000	27,315,000	2,191,951	3,173,951	7	1	14.3%	313,136	453,422	346,949	54,439	15.7%	343,931	498,013				143,801	208,225	266,956	386,553	1,924,995	2,787,398
6/30/90-91	21,074,655	23,378,000	24,171,000	2,303,345	3,096,345	6	1	16.7%	383,891	516,058	212,593	38,782	18.2%	420,188	564,851				151,109	203,134	318,396	428,014	1,984,949	2,668,331
6/30/91-92	12,820,189	14,437,000	15,302,000	1,616,811	2,481,811	5					179,955								106,070	162,817	35,357	54,272	1,581,454	2,427,538
6/30/92-93	9,655,051	11,123,000	12,595,000	1,467,949	2,939,949	4	1	25.0%	366,987	734,987	140,217	31,641	22.6%	331,250	663,414				96,304	192,873	264,847	530,425	1,203,102	2,409,524
6/30/93-94	10,579,125	12,232,000	12,888,000	1,652,875	2,308,875	7	2	28.6%	472,250	659,679	177,675	41,635	23.4%	387,319	541,040				108,436	151,472	247,878	346,256	1,404,998	1,962,619
6/30/94-95	9,514,418	11,126,000	11,727,000	1,611,582	2,212,582	6	1	16.7%	268,597	368,764	127,088	2,492	2.0%	31,606	43,393				105,727	145,155	135,310	185,771	1,476,272	2,026,811
6/30/95-96	9,830,137	11,751,000	12,402,000	1,920,863	2,571,863	4					255,043								126,017	168,725	42,006	56,242	1,878,857	2,515,621
6/30/96-97	10,114,020	12,246,000	12,915,000	2,131,980	2,800,980	4					90,124								139,867	183,756	46,622	61,252	2,085,358	2,739,728
6/30/97-98	8,765,116	10,638,000	11,198,000	1,872,884	2,432,884	1					47,007					1,917,994	137,500	7.2%	134,266	174,412	134,266	174,412	1,738,618	2,258,472
6/30/98-99	9,023,147	11,197,000	11,788,000	2,173,853	2,764,853	4					146,968					2,081,524	136,688	6.6%	142,751	181,561	71,376	90,780	2,102,477	2,674,073
6/30/99-00	10,396,879	13,218,000	13,950,000	2,821,121	3,553,121	5	1	20.0%	564,224	710,624	156,145	259	0.2%	4,675	5,888	2,207,243	137,892	6.2%	176,243	221,973	176,243	221,973	2,644,878	3,331,148
6/30/00-01	9,792,849	12,748,000	13,440,000	2,955,151	3,647,151	7	1	14.3%	422,164	521,022	169,511	21,613	12.8%	376,787	465,018	2,201,008	145,149	6.6%	194,882	240,517	331,278	408,852	2,623,873	3,238,299
6/30/01-02	10,310,795	13,622,000	14,346,000	3,311,205	4,035,205	8	1	12.5%	413,901	504,401	74,649	69	0.1%	3,066	3,736	2,292,592	140,223	6.1%	202,525	246,808	102,796	125,272	3,208,409	3,909,933
6/30/02-03	9,959,991	13,491,000	14,205,000	3,531,009	4,245,009	7					117,037					2,260,534	140,250	6.2%	219,074	263,373	73,025	87,791	3,457,984	4,157,218
6/30/03-04	8,964,571	12,454,000	13,079,000	3,489,429	4,114,429	5	1	20.0%	697,886	822,886	132,430	840	0.6%	22,126	26,090	2,255,942	137,408	6.1%	212,538	250,607	212,538	250,607	3,276,891	3,863,823
6/30/04-05	10,449,274	14,506,000	14,729,000	4,056,727	4,279,727	6					233,465					2,309,083	145,033	6.3%	254,802	268,809	84,934	89,603	3,971,792	4,190,124
6/30/05-06	9,780,241	14,090,000	14,575,000	4,309,759	4,794,759	6					242,027					2,480,693	156,390	6.3%	271,700	302,276	181,133	201,517	4,128,625	4,593,241
6/30/06-07	8,800,790	13,154,000	14,351,000	4,353,210	5,550,210	8	2	25.0%	1,088,303	1,387,553	297,646	56,454	19.0%	825,670	1,052,704	2,612,577	157,146	6.0%	261,844	333,843	449,786	573,464	3,903,424	4,976,747
6/30/07-08	12,396,429	18,169,000	19,165,000	5,772,571	6,768,571	13	3	23.1%	1,332,132	1,561,978	345,563	102,977	29.8%	1,720,221	2,017,028	2,783,717	168,663	6.1%	349,754	410,101	677,213	794,060	5,095,358	5,974,511
6/30/08-09	12,666,911	20,050,470	20,688,668	7,383,559	8,021,757	22	2	9.1%	671,233	729,251	579,127	64,949	11.2%	828,064	899,638	2,750,907	180,456	6.6%	484,351	526,216	661,216	718,368	6,722,343	7,303,389
6/30/09-10	12,049,654	19,786,600	20,971,951	7,736,946	8,922,297	28	2	7.1%	552,639	637,307	685,317	30,713	4.5%	346,740	399,863	2,806,048	203,138	7.2%	560,099	645,910	486,493	561,027	7,250,453	8,361,271
6/30/10-11	13,184,682	24,024,330	25,076,051	10,839,648	11,891,369	43	5	11.6%	1,260,424	1,382,717	1,902,935	109,394	5.7%	623,136	683,596	2,942,638	197,766	6.7%	728,503	799,186	870,688	955,167	9,968,961	10,936,203
6/30/11-12	12,284,488	25,713,270	27,255,228	13,428,782	14,970,740	76	4	5.3%	706,778	787,934	2,653,133	224,451	8.5%	1,136,053	1,266,500	3,006,849	207,447	6.9%	926,473	1,032,855	923,101	1,029,096	12,505,680	13,941,643
6/30/12-13	8,602,697	22,547,300	24,933,768	13,944,603	16,331,071	99	11	11.1%	1,549,400	1,814,563	2,218,303	170,333	7.7%	1,070,738	1,253,983	3,138,905	217,415	6.9%	965,868	1,131,166	1,195,335	1,399,904	12,749,268	14,931,167
6/30/13-14	7,327,616	27,694,400	29,693,268	20,366,784	22,365,652	242	23	9.5%	1,935,686	2,125,661	3,960,333	357,360	9.0%	1,837,792	2,018,160	3,311,947	232,120	7.0%	1,427,420	1,567,512	1,733,633	1,903,778	18,633,151	20,461,875
6/30/14-15	3,469,231	29,103,250	31,977,828	25,634,019	28,508,597	562	34	6.0%	1,550,813	1,724,719	3,469,231	245,361	7.1%	1,812,964	2,016,269	3,511,622	248,813	7.1%	1,816,278	2,019,953	1,550,813	1,724,719	24,083,207	26,783,878
Total	454,244,455	619,165,318	653,916,262	164,920,864	199,671,807	1,228	102	8.3%	16,178,234	19,959,939	20,814,955	1,823,123	8.8%	13,641,781	16,718,589						12,407,459	15,152,393	152,513,405	184,519,415

Sel. FY97 & Prior	7.1%

NOTES:

(2), (7), (8), (12), (13), (17). (18) Provided by Commonwealth of Massachusetts
(3) From Prior Analysis - Section 8, Exhibit 2, Page 1, Column 6
(4) From Prior Analysis - Section 8, Exhibit 2, Page 1, Column 7
(5) = (3) - (2)
(6) = (4) - (2)
(9) = (8) / (7)
(10) = (9) * (5)
(11) = (9) * (6)
(14) = (13) / (12)
(15) = (14) * (5)
(16) = (14) * (6)
(19) = (18) / (17)
(20) = (19) * (5)
(21) = (19) * (6)
(22) Selected judgementally based on (10), (15), (20)
(23) Selected judgementally based on (11), (16). (21)
(24) = (5) - (22)
(25) = (6) - (23)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Paid Loss	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		3,051,461			3,185,745	3,308,123	134,284	256,662		
6/30/82-83		512,140	515,424		512,140	520,579	0	8,439		
6/30/83-84		790,813	797,477		790,813	805,451	0	14,638		
6/30/84-85	732,729	1,123,956	1,136,828	1,137,147	1,123,956	1,148,196	0	24,239	0.153	0.157
6/30/85-86	787,208	1,891,823	1,919,227	1,919,362	1,909,405	1,938,190	17,582	46,367	0.243	0.246
6/30/86-87	902,483	1,698,600	1,728,375	1,728,140	1,719,360	1,745,280	20,760	46,680	0.191	0.193
6/30/87-88	1,366,586	3,184,694	3,250,241	3,252,767	3,233,750	3,285,530	49,056	100,836	0.237	0.240
6/30/88-89	1,486,478	3,559,769	3,643,936	3,647,321	3,644,000	3,683,470	84,231	123,701	0.245	0.248
6/30/89-90	1,494,463	3,851,508	3,959,091	3,963,592	3,959,000	4,003,640	107,492	152,132	0.265	0.268
6/30/90-91	1,405,560	3,488,529	3,603,902	3,603,312	3,603,000	3,640,040	114,471	151,511	0.256	0.259
6/30/91-92	1,364,510	2,784,822	2,891,307	2,890,466	2,890,000	2,919,910	105,178	135,088	0.212	0.214
6/30/92-93	1,347,359	2,492,925	2,601,189	2,600,140	2,600,000	2,627,010	107,075	134,085	0.193	0.195
6/30/93-94	1,424,410	2,927,997	3,070,432	3,068,291	3,068,000	3,100,700	140,003	172,703	0.215	0.218
6/30/94-95	1,497,829	2,513,597	2,649,053	2,647,573	2,648,000	2,675,490	134,403	161,893	0.177	0.179
6/30/95-96	1,582,635	2,079,457	2,204,666	2,204,852	2,205,000	2,227,050	125,543	147,593	0.139	0.141
6/30/96-97	1,979,748	2,758,408	2,947,895	2,947,815	2,948,000	2,977,480	189,592	219,072	0.149	0.150
6/30/97-98	1,917,994	2,020,135	2,176,177	2,180,329	2,176,000	2,201,800	155,865	181,665	0.113	0.115
6/30/98-99	2,081,524	2,570,732	2,783,146	2,786,079	2,783,000	2,813,860	212,268	243,128	0.134	0.135
6/30/99-00	2,207,243	3,057,706	3,351,342	3,352,401	3,351,000	3,385,520	293,294	327,814	0.152	0.153
6/30/00-01	2,201,008	3,047,261	3,396,092	3,398,327	3,396,000	3,431,980	348,739	384,719	0.154	0.156
6/30/01-02	2,292,592	2,788,520	3,195,406	3,203,976	3,195,000	3,236,040	406,480	447,520	0.139	0.141
6/30/02-03	2,260,534	3,166,021	3,682,410	3,686,748	3,682,000	3,723,870	515,979	557,849	0.163	0.165
6/30/03-04	2,255,942	3,076,253	3,667,449	3,675,491	3,667,000	3,711,750	590,747	635,497	0.163	0.165
6/30/04-05	2,309,083	4,401,412	5,352,224	5,182,242	4,900,000	5,459,000	498,588	1,057,588	0.212	0.236
6/30/05-06	2,480,693	3,444,369	4,283,543	4,391,217	4,100,000	4,479,000	655,631	1,034,631	0.165	0.181
6/30/06-07	2,612,577	4,996,891	6,360,024	6,109,665	5,800,000	6,487,000	803,109	1,490,109	0.222	0.248
6/30/07-08	2,783,717	3,989,261	5,183,607	5,289,376	4,900,000	5,395,000	910,739	1,405,739	0.176	0.194
6/30/08-09	2,750,907	4,222,784	5,609,594	5,636,397	5,400,000	5,749,000	1,177,216	1,526,216	0.196	0.209
6/30/09-10	2,806,048	4,249,098	5,779,800	5,866,477	5,500,000	5,984,000	1,250,902	1,734,902	0.196	0.213
6/30/10-11	2,942,638	4,788,257	6,692,428	6,646,909	6,300,000	6,826,000	1,511,743	2,037,743	0.214	0.232
6/30/11-12	3,006,849	4,743,217	6,853,833	6,839,869	6,500,000	6,991,000	1,756,783	2,247,783	0.216	0.233
6/30/12-13	3,138,905	3,906,111	5,962,464	6,406,395	6,100,000	6,535,000	2,193,889	2,628,889	0.194	0.208
6/30/13-14	3,311,947	4,222,870	7,003,028	7,320,336	7,000,000	7,467,000	2,777,130	3,244,130	0.211	0.225
6/30/14-15	3,511,622	3,553,784	7,344,952	7,909,219	7,500,000	8,067,000	3,946,216	4,513,216	0.214	0.230
6/30/15-16	3,491,558	2,006,652	9,542,353	8,764,793	8,300,000	9,733,000	6,293,348	7,726,348	0.238	0.279
Total	67,735,377	106,961,831	135,138,915	134,257,023	134,590,170	142,282,959	27,628,339	35,321,128		
Tot 6/30/84-16	67,735,377	102,607,417	133,826,014	134,257,023	130,101,471	137,648,806	27,494,055	35,041,389	0.192	0.203

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 8, Exhibit 2, Page 2, Column 3

(4) From Section 8, Exhibit 2, Page 2, Column 8

(5) From Section 8, Exhibit 2, Page 3, Column 8

(6), (7) Selected based on (3), (4), and (5)

(8) = (6) - (3)

(9) = (7) - (3)

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

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Accident Year	Payroll (000's)	Paid Loss	Paid LDF	Adjustment for Tail	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Paid Counts 7/1/14-15	Paid Counts 7/1/15-16	Average Outstanding Claim
All Prior Yrs		3,051,461							3	3	
6/30/82-83		512,140	1.006	1.000	515,424	N/A	515,424		0	0	
6/30/83-84		790,813	1.008	1.000	797,477	N/A	797,477		0	0	
6/30/84-85	732,729	1,123,956	1.011	1.000	1,136,828	N/A	1,136,828	0.155	0	1	12,871
6/30/85-86	787,208	1,891,823	1.014	1.000	1,919,227	N/A	1,919,227	0.244	1	1	27,405
6/30/86-87	902,483	1,698,600	1.018	1.000	1,728,375	N/A	1,728,375	0.192	2	2	14,888
6/30/87-88	1,366,586	3,184,694	1.021	1.000	3,250,241	N/A	3,250,241	0.238	7	5	13,110
6/30/88-89	1,486,478	3,559,769	1.024	1.000	3,643,936	N/A	3,643,936	0.245	6	5	16,833
6/30/89-90	1,494,463	3,851,508	1.028	1.000	3,959,091	N/A	3,959,091	0.265	6	7	15,369
6/30/90-91	1,405,560	3,488,529	1.033	1.000	3,603,902	N/A	3,603,902	0.256	6	7	16,482
6/30/91-92	1,364,510	2,784,822	1.038	1.000	2,891,307	N/A	2,891,307	0.212	2	3	35,495
6/30/92-93	1,347,359	2,492,925	1.043	1.000	2,601,189	N/A	2,601,189	0.193	5	5	21,653
6/30/93-94	1,424,410	2,927,997	1.049	1.000	3,070,432	N/A	3,070,432	0.216	6	7	20,348
6/30/94-95	1,497,829	2,513,597	1.054	1.000	2,649,053	N/A	2,649,053	0.177	10	7	19,351
6/30/95-96	1,582,635	2,079,457	1.060	1.000	2,204,666	N/A	2,204,666	0.139	3	2	62,605
6/30/96-97	1,979,748	2,758,408	1.069	1.000	2,947,895	N/A	2,947,895	0.149	6	4	47,372
6/30/97-98	1,917,994	2,020,135	1.077	1.000	2,176,177	N/A	2,176,177	0.113	6	5	31,209
6/30/98-99	2,081,524	2,570,732	1.083	1.000	2,783,146	N/A	2,783,146	0.134	9	7	30,345
6/30/99-00	2,207,243	3,057,706	1.096	1.000	3,351,342	N/A	3,351,342	0.152	11	11	26,694
6/30/00-01	2,201,008	3,047,261	1.114	1.000	3,396,092	N/A	3,396,092	0.154	11	12	29,069
6/30/01-02	2,292,592	2,788,520	1.146	1.000	3,195,406	N/A	3,195,406	0.139	15	14	29,063
6/30/02-03	2,260,534	3,166,021	1.163	1.000	3,682,410	N/A	3,682,410	0.163	18	15	34,426
6/30/03-04	2,255,942	3,076,253	1.192	1.000	3,667,449	N/A	3,667,449	0.163	20	15	39,413
6/30/04-05	2,309,083	4,401,412	1.216	1.000	5,352,224	N/A	5,352,224	0.232	16	18	52,823
6/30/05-06	2,480,693	3,444,369	1.244	1.000	4,283,543	N/A	4,283,543	0.173	23	18	46,621
6/30/06-07	2,612,577	4,996,891	1.273	1.000	6,360,024	N/A	6,360,024	0.243	23	22	61,961
6/30/07-08	2,783,717	3,989,261	1.299	1.000	5,183,607	N/A	5,183,607	0.186	30	23	51,928
6/30/08-09	2,750,907	4,222,784	1.328	1.000	5,609,594	N/A	5,609,594	0.204	39	27	51,363
6/30/09-10	2,806,048	4,249,098	1.360	1.000	5,779,800	N/A	5,779,800	0.206	44	35	43,734
6/30/10-11	2,942,638	4,788,257	1.398	1.000	6,692,428	N/A	6,692,428	0.227	71	44	43,277
6/30/11-12	3,006,849	4,743,217	1.445	1.000	6,853,833	N/A	6,853,833	0.228	113	63	33,502
6/30/12-13	3,138,905	3,906,111	1.526	1.000	5,962,464	N/A	5,962,464	0.190	204	85	24,192
6/30/13-14	3,311,947	4,222,870	1.658	1.000	7,003,028	N/A	7,003,028	0.211	716	194	14,331
6/30/14-15	3,511,622	3,553,784	2.067	1.000	7,344,952	N/A	7,344,952	0.209	1,047	642	5,905
6/30/15-16	3,491,558	2,006,652	4.755	1.000	9,542,353	N/A	9,542,353	0.273		1,071	7,036
Total	67,735,377	106,961,831			135,138,915		135,138,915		2,479	2,380	

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3), (4) From Section 8, Exhibit 2, Page 7

(5) Based on information from the MA WCRIB 4/1/14 filing. Consideration for development beyond 252 months made in selection of LDF's.

(6) = (3) x (4) x (5)

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

(10), (11) Provided by Commonwealth of Massachusetts

(12) = Maximum of [{(6) - (3)} / (11)] and 0

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accident Year	Payroll (000's)	A Priori Loss Rate	Paid Loss	Paid LDF	Ultimate Loss Excluding Lump Sum	Est Ult Lump Sum Payments	Ultimate Loss Including Lump Sum	Ultimate Loss Cost	Ultimate Loss Cost Excluding Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	732,729	0.159	1,123,956	1.011	1,137,147	N/A	1,137,147	0.155	0.155
6/30/85-86	787,208	0.245	1,891,823	1.014	1,919,362	N/A	1,919,362	0.244	0.244
6/30/86-87	902,483	0.190	1,698,600	1.018	1,728,140	N/A	1,728,140	0.191	0.191
6/30/87-88	1,366,586	0.247	3,184,694	1.021	3,252,767	N/A	3,252,767	0.238	0.238
6/30/88-89	1,486,478	0.255	3,559,769	1.024	3,647,321	N/A	3,647,321	0.245	0.245
6/30/89-90	1,494,463	0.276	3,851,508	1.028	3,963,592	N/A	3,963,592	0.265	0.265
6/30/90-91	1,405,560	0.255	3,488,529	1.033	3,603,312	N/A	3,603,312	0.256	0.256
6/30/91-92	1,364,510	0.210	2,784,822	1.038	2,890,466	N/A	2,890,466	0.212	0.212
6/30/92-93	1,347,359	0.191	2,492,925	1.043	2,600,140	N/A	2,600,140	0.193	0.193
6/30/93-94	1,424,410	0.212	2,927,997	1.049	3,068,291	N/A	3,068,291	0.215	0.215
6/30/94-95	1,497,829	0.175	2,513,597	1.054	2,647,573	N/A	2,647,573	0.177	0.177
6/30/95-96	1,582,635	0.140	2,079,457	1.060	2,204,852	N/A	2,204,852	0.139	0.139
6/30/96-97	1,979,748	0.149	2,758,408	1.069	2,947,815	N/A	2,947,815	0.149	0.149
6/30/97-98	1,917,994	0.116	2,020,135	1.077	2,180,329	N/A	2,180,329	0.114	0.114
6/30/98-99	2,081,524	0.136	2,570,732	1.083	2,786,079	N/A	2,786,079	0.134	0.134
6/30/99-00	2,207,243	0.152	3,057,706	1.096	3,352,401	N/A	3,352,401	0.152	0.152
6/30/00-01	2,201,008	0.155	3,047,261	1.114	3,398,327	N/A	3,398,327	0.154	0.154
6/30/01-02	2,292,592	0.142	2,788,520	1.146	3,203,976	N/A	3,203,976	0.140	0.140
6/30/02-03	2,260,534	0.164	3,166,021	1.163	3,686,748	N/A	3,686,748	0.163	0.163
6/30/03-04	2,255,942	0.165	3,076,253	1.192	3,675,491	N/A	3,675,491	0.163	0.163
6/30/04-05	2,309,083	0.190	4,401,412	1.216	5,182,242	N/A	5,182,242	0.224	0.224
6/30/05-06	2,480,693	0.195	3,444,369	1.244	4,391,217	N/A	4,391,217	0.177	0.177
6/30/06-07	2,612,577	0.199	4,996,891	1.273	6,109,665	N/A	6,109,665	0.234	0.234
6/30/07-08	2,783,717	0.203	3,989,261	1.299	5,289,376	N/A	5,289,376	0.190	0.190
6/30/08-09	2,750,907	0.208	4,222,784	1.328	5,636,397	N/A	5,636,397	0.205	0.205
6/30/09-10	2,806,048	0.218	4,249,098	1.360	5,866,477	N/A	5,866,477	0.209	0.209
6/30/10-11	2,942,638	0.222	4,788,257	1.398	6,646,909	N/A	6,646,909	0.226	0.226
6/30/11-12	3,006,849	0.226	4,743,217	1.445	6,839,869	N/A	6,839,869	0.227	0.227
6/30/12-13	3,138,905	0.231	3,906,111	1.526	6,406,395	N/A	6,406,395	0.204	0.204
6/30/13-14	3,311,947	0.236	4,222,870	1.658	7,320,336	N/A	7,320,336	0.221	0.221
6/30/14-15	3,511,622	0.240	3,553,784	2.067	7,909,219	N/A	7,909,219	0.225	0.225
6/30/15-16	3,491,558	0.245	2,006,652	4.755	8,764,793	N/A	8,764,793	0.251	0.251
Total	67,735,377		102,607,417		134,257,023		134,257,023		

NOTES:

(2) Provided by Commonwealth of Massachusetts

(3) From Section 8, Exhibit 2, Page 4, Column 11

(4) From Section 8, Exhibit 2, Page 2, Column 3

(5) From Section 8, Exhibit 2, Page 2, Column 4

(6) = (4) + [{1 - {1 / (5)}} x (3) x (2) x 10]

(7) Lump Sum Payments are considered in the Indemnity analysis (Section 1)

(8) = (6) + (7)

(9) = (8) / (2) / 10

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Accident Year	Payroll (000's)	Expected Ult Loss	Unadjusted Loss Cost	Benefit Level Factor	Adjusted Loss Cost	Trend Factor	Trended Adjusted Loss Cost	Detrended Selected Loss Cost	Prior Selected Loss Cost	Current Selected Loss Cost
All Prior Yrs										
6/30/82-83										
6/30/83-84										
6/30/84-85									0.159	0.159
6/30/85-86									0.245	0.245
6/30/86-87									0.190	0.190
6/30/87-88									0.247	0.247
6/30/88-89									0.255	0.255
6/30/89-90									0.276	0.276
6/30/90-91	1,405,560	3,603,902	0.256	1.194	0.306	1.673	0.512	0.125	0.256	0.255
6/30/91-92	1,364,510	2,891,307	0.212	1.189	0.252	1.641	0.413	0.128	0.211	0.210
6/30/92-93	1,347,359	2,601,189	0.193	1.189	0.230	1.608	0.369	0.131	0.192	0.191
6/30/93-94	1,424,410	3,070,432	0.216	1.178	0.254	1.577	0.401	0.135	0.212	0.212
6/30/94-95	1,497,829	2,649,053	0.177	1.170	0.207	1.546	0.320	0.138	0.175	0.175
6/30/95-96	1,582,635	2,204,666	0.139	1.155	0.161	1.516	0.244	0.143	0.141	0.140
6/30/96-97	1,979,748	2,947,895	0.149	1.137	0.169	1.486	0.251	0.148	0.150	0.149
6/30/97-98	1,917,994	2,176,177	0.113	1.135	0.129	1.457	0.188	0.151	0.117	0.116
6/30/98-99	2,081,524	2,783,146	0.134	1.135	0.152	1.428	0.217	0.154	0.137	0.136
6/30/99-00	2,207,243	3,351,342	0.152	1.135	0.172	1.400	0.241	0.157	0.153	0.152
6/30/00-01	2,201,008	3,396,092	0.154	1.109	0.171	1.373	0.235	0.164	0.152	0.155
6/30/01-02	2,292,592	3,195,406	0.139	1.101	0.153	1.346	0.207	0.169	0.140	0.142
6/30/02-03	2,260,534	3,682,410	0.163	1.073	0.175	1.319	0.231	0.177	0.163	0.164
6/30/03-04	2,255,942	3,667,449	0.163	1.046	0.170	1.294	0.220	0.185	0.166	0.165
6/30/04-05	2,309,083	5,352,224	0.232	1.036	0.240	1.268	0.304	0.190	0.194	0.190
6/30/05-06	2,480,693	4,283,543	0.173	1.032	0.178	1.243	0.222	0.195	0.199	0.195
6/30/06-07	2,612,577	6,360,024	0.243	1.032	0.251	1.219	0.306	0.199	0.203	0.199
6/30/07-08	2,783,717	5,183,607	0.186	1.032	0.192	1.195	0.230	0.203	0.207	0.203
6/30/08-09	2,750,907	5,609,594	0.204	1.027	0.209	1.172	0.245	0.208	0.212	0.208
6/30/09-10	2,806,048	5,779,800	0.206	1.000	0.206	1.149	0.237	0.218	0.222	0.218
6/30/10-11	2,942,638	6,692,428	0.227	1.000	0.227	1.126	0.256	0.222	0.226	0.222
6/30/11-12	3,006,849	6,853,833	0.228	1.000	0.228	1.104	0.252	0.226	0.231	0.226
6/30/12-13	3,138,905	5,962,464	0.190	1.000	0.190	1.082	0.206	0.231	0.236	0.231
6/30/13-14	3,311,947	7,003,028	0.211	1.000	0.211	1.061	0.224	0.236	0.240	0.236
6/30/14-15	3,511,622	7,344,952	0.209	1.000	0.209	1.040	0.218	0.240	0.245	0.240
6/30/15-16	3,491,558	9,542,353	0.273	1.000	0.273	1.020	0.279	0.245		0.245
Total	60,965,431	118,188,316								

Trend Last 4 (ex 15-16):	-1.5%	Avg 3 (ex 15-16):	0.216
Trend Last 8 (ex 15-16):	0.5%	Avg 5 (ex 15-16):	0.231
Trend Last 12 (ex 15-16):	0.6%	Avg 10 (ex 15-16):	0.239
Prior Selected Trend:	2.0%	Prior Sel Avg:	0.250
Selected Trend:	2.0%	Sel. Loss Cost:	0.250

NOTES:

(2) Provided by Commonwealth of Massachusetts
(3) From Section 8, Exhibit 2, Page 2, Column 6
(4) = (3) / (2) / 10
(5) Based on information from the MA WCIRB
(6) = (4) x (5)
(7) Based on Selected Trend from (6)
(8) = (6) x (7)
(9) = Sel. Loss Cost / [(5) * (7)]
(10) From prior Aon analysis as of June 30, 2015
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.925	
(2)	Credibility		57%	
(3)	Average Pmt Trend Statewide		0.950	
(4)	Credibility Weighted Trend		0.936	
		(Low)		(High)
(5)	Selected Range	0.898		0.955
(6)	Incremental Paid for 2016	11,822		11,822
(7)	Estimated Reserve	104,508		248,129
(8)	Paid to Date (82 & Prior)	3,051,461		3,051,461
(9)	Est Ult Paid for 1982 & Prior	3,155,969		3,299,590

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	32,812	39,574
(11)	Projected Number of Years	5	7
(12)	Estimated Reserve	164,061	277,017
(13)	Paid to Date (82 & Prior)	3,051,461	3,039,639
(14)	Est Ult Paid for 1982 & Prior	3,215,522	3,316,656
(14a)	Paid Counts During Fiscal Year	3	3

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	3,185,745	3,308,123
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**3,185,745**	**3,308,123**
(18)	Implied Tail	1.044	1.084
(19)	Ult Loss Inc Lump Sums @ 6/15	3,310,277	3,548,139

NOTES:

(1) From Section 8, Exhibit 2, Page 6
(2) = (Average of Section 8, Exhibit 2, Page 6, Column 3 / 175,000) ^ 0.5
(3) Average Statewide Trend
(4) = (1) x (2) + (4) x {1 - (2)}
(5) Selected judgmentally based on (4)
(6), (14a) Provided by Commonwealth of Massachusetts
(7) = (6) x (5) / {1 - (5)}
(8), (16) From Section 8, Exhibit 2, Page 2, Column 3
(9) = (7) + (8)
(10) Avg of 3 latest years from Section 8, Exhibit 2, Page 6, Column 3
(11) Selected judgmentally
(12) = (10 x (11)
(14) = (12) + (13)
(15) = Average of (9) and (14)
(16) Lump Sums are considered in Indemnity analysis (Section 1)
(17) = (15) + (16)
(18) = (15) / (8)
(19) From prior Aon analysis as of June 30, 2015

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
Year	X	Incremental Paids	LN	Average Observed Trend		Trend Calculations
1992	1	206,798	12.239			
1993	2	153,285	11.940	0.741		
1994	3	146,363	11.894	0.955		
1995	4	120,472	11.699	0.823		
1996	5	130,279	11.777	1.081		
1997	6	37,349	10.528	0.287		
1998	7	24,406	10.103	0.653		
1999	8	85,275	11.354	3.494		
2000	9	30,381	10.322	0.356	n =	25
2001	10	26,076	10.169	0.858	S(x) =	50,100
2002	11	28,013	10.240	1.074	S(x-sq) =	100,401,700
2003	12	24,232	10.095	0.865	S(xy) =	532,911
2004	13	32,198	10.380	1.329	S(y) =	266
2005	14	42,136	10.649	1.309	D =	32,500
2006	15	33,882	10.431	0.804	slope =	-0.071
2007	16	22,266	10.011	0.657	Avg Trend =	0.929
2008	17	32,986	10.404	1.481		
2009	18	25,370	10.141	0.769		
2010	19	25,142	10.132	0.991		
2011	20	28,691	10.264	1.141		
2012	21	24,383	10.102	0.850		
2013	22	32,108	10.377	1.317		
2014	23	47,672	10.772	1.485		
2015	24	38,942	10.570	0.817		
2016	25	11,822	9.378	0.304		
					Selected Trend:	**0.925**

NOTES:

(3) 2016 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2015

(4) LN [(3)]

(5) Eg. 2016: 0.304 = 11822 / 38942

Commonwealth of Massachusetts Workers Compensation
All Other - Clusters 5-17 & 95
MEDICAL
Paid Loss Development
Paid Loss (Excluding Lump Sum)

Acc Yr Ending	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*
June-83	27,370	65,800	95,928	121,026	146,374	172,082	195,518	223,519	270,937	291,319	312,256	316,614	336,461	401,393	453,214	453,179	457,283	457,468	457,468	457,468	458,118	472,628	476,174	480,561	485,930	491,063	495,741	498,237	501,473	504,586	508,182	512,140	512,140	512,140
June-84	73,019	172,377	253,637	324,243	391,630	438,262	505,877	586,886	610,938	636,458	664,679	683,784	693,120	716,886	724,043	734,862	745,334	749,852	758,667	762,583	783,107	784,865	788,687	788,743	790,813	790,813	790,813	790,813	790,813	790,813	790,813	790,813	790,813	
June-85	91,462	222,608	324,021	409,170	488,686	592,053	702,853	747,423	785,283	911,116	929,832	957,391	968,422	980,992	1,009,751	1,031,712	1,051,061	1,066,218	1,077,726	1,088,791	1,096,356	1,103,232	1,110,832	1,116,052	1,122,649	1,123,312	1,123,581	1,123,581	1,123,821	1,123,821	1,123,821	1,123,956		
June-86	197,516	482,005	708,037	875,864	1,053,127	1,211,316	1,370,683	1,467,692	1,572,492	1,608,200	1,631,069	1,655,833	1,672,723	1,699,156	1,716,974	1,724,323	1,731,547	1,743,355	1,755,277	1,764,089	1,780,012	1,796,528	1,802,048	1,808,935	1,832,489	1,867,039	1,872,692	1,877,988	1,882,106	1,887,118	1,891,823			
June-87	199,777	488,687	761,278	928,992	1,116,174	1,247,272	1,326,215	1,394,678	1,416,827	1,433,554	1,451,102	1,461,072	1,470,676	1,482,961	1,498,691	1,507,156	1,517,732	1,527,729	1,533,186	1,539,237	1,545,443	1,554,224	1,564,621	1,590,009	1,608,659	1,628,722	1,648,308	1,667,330	1,680,369	1,698,600				
June-88	390,619	1,150,212	1,830,796	2,204,311	2,429,489	2,580,235	2,679,602	2,758,965	2,816,870	2,872,713	2,895,135	2,917,336	2,938,306	2,953,260	2,965,159	2,980,478	3,005,909	3,019,968	3,040,247	3,060,774	3,075,967	3,084,408	3,098,971	3,111,109	3,123,843	3,135,852	3,148,456	3,164,976	3,184,694					
June-89	348,632	1,379,611	1,965,598	2,380,914	2,616,790	2,882,836	2,988,159	3,078,524	3,143,724	3,188,707	3,222,672	3,251,157	3,271,467	3,290,603	3,312,237	3,338,112	3,358,373	3,385,594	3,459,727	3,477,288	3,487,596	3,504,078	3,526,921	3,535,629	3,542,709	3,552,709	3,555,290	3,559,769						
June-90	597,392	1,787,214	2,367,627	2,727,013	2,917,488	3,052,042	3,170,650	3,294,118	3,385,084	3,460,338	3,498,784	3,525,521	3,559,539	3,594,665	3,616,129	3,673,092	3,699,660	3,720,191	3,743,464	3,756,545	3,772,853	3,783,930	3,792,543	3,806,458	3,820,503	3,839,007	3,851,508							
June-91	708,625	1,924,338	2,444,979	2,785,515	2,902,296	3,018,419	3,064,528	3,074,954	3,092,506	3,113,710	3,131,050	3,142,716	3,165,865	3,200,123	3,230,691	3,265,408	3,303,782	3,334,465	3,363,420	3,385,556	3,405,270	3,425,312	3,448,838	3,464,204	3,476,999	3,488,529								
June-92	588,418	1,588,370	1,986,839	2,229,495	2,290,208	2,325,875	2,375,312	2,430,547	2,462,691	2,497,761	2,542,769	2,553,772	2,574,534	2,586,268	2,593,937	2,607,986	2,617,238	2,623,319	2,642,357	2,693,544	2,703,064	2,761,452	2,777,670	2,779,948	2,784,822									
June-93	415,674	1,315,738	1,611,871	1,719,235	1,836,642	1,871,759	1,907,504	1,930,526	1,977,226	2,009,894	2,048,320	2,106,226	2,144,269	2,190,485	2,240,879	2,296,700	2,349,467	2,390,884	2,414,691	2,428,953	2,450,534	2,469,958	2,483,916	2,492,925										
June-94	598,740	1,383,736	1,705,173	1,941,862	2,012,247	2,200,199	2,290,696	2,346,328	2,406,956	2,509,745	2,549,583	2,601,202	2,677,455	2,727,826	2,785,899	2,804,943	2,822,448	2,841,619	2,860,084	2,875,638	2,893,152	2,905,592	2,927,997											
June-95	625,005	1,262,191	1,500,916	1,627,990	1,716,166	1,770,565	1,843,652	1,919,317	2,018,626	2,068,939	2,105,461	2,177,442	2,207,352	2,235,130	2,265,454	2,289,441	2,313,135	2,411,441	2,435,367	2,459,756	2,489,028	2,513,597												
June-96	442,026	1,106,672	1,298,637	1,506,086	1,588,152	1,626,688	1,672,734	1,723,992	1,784,200	1,838,291	1,904,595	1,938,999	1,973,969	1,990,646	2,023,635	2,041,150	2,054,604	2,061,273	2,065,137	2,075,119	2,079,457													
June-97	490,343	1,177,901	1,656,955	1,851,037	1,939,610	2,054,998	2,100,197	2,157,406	2,207,438	2,247,927	2,302,138	2,315,796	2,338,520	2,350,446	2,367,170	2,457,338	2,600,718	2,743,595	2,748,674	2,758,408														
June-98	326,869	974,658	1,226,365	1,350,342	1,476,983	1,551,929	1,637,433	1,716,707	1,747,491	1,769,878	1,797,150	1,821,161	1,842,103	1,916,231	1,958,225	1,973,933	1,982,909	2,010,395	2,020,135															
June-99	484,930	1,204,187	1,456,433	1,645,438	1,757,364	1,866,452	1,932,933	2,065,834	2,135,187	2,187,567	2,264,558	2,353,171	2,390,481	2,459,300	2,488,986	2,506,545	2,552,168	2,570,732																
June-00	687,002	1,407,750	1,709,714	1,905,283	2,094,421	2,260,264	2,375,651	2,506,812	2,566,510	2,618,716	2,644,619	2,679,121	2,756,324	2,834,813	2,909,495	3,010,320	3,057,706																	
June-01	555,924	1,355,841	1,668,220	1,965,335	2,137,275	2,265,629	2,333,456	2,389,586	2,477,500	2,581,034	2,640,810	2,693,375	2,747,068	2,824,207	2,893,237	3,047,261																		
June-02	456,844	1,259,496	1,683,493	1,908,166	2,029,871	2,101,432	2,140,880	2,212,890	2,279,178	2,337,107	2,491,961	2,573,704	2,652,321	2,714,782	2,788,520																			
June-03	314,443	1,423,035	2,006,147	2,291,763	2,403,958	2,513,521	2,608,269	2,678,105	2,752,202	2,844,031	2,880,263	2,981,766	3,064,242	3,166,021																				
June-04	598,148	1,733,246	2,216,316	2,434,141	2,548,142	2,669,710	2,729,591	2,840,027	2,905,967	2,953,758	3,003,620	3,047,300	3,076,253																				
June-05	744,557	2,314,627	3,030,458	3,409,706	3,640,720	3,806,314	3,993,880	4,101,306	4,226,019	4,303,783	4,353,333	4,401,412																					
June-06	971,841	2,207,952	2,611,952	2,837,745	3,016,501	3,153,780	3,240,647	3,314,422	3,376,156	3,410,796	3,444,369																						
June-07	1,118,370	3,111,007	3,990,645	4,226,540	4,465,130	4,612,091	4,787,482	4,860,001	4,924,584	4,996,891																							
June-08	1,399,818	2,842,788	3,291,021	3,540,051	3,665,019	3,833,245	3,900,241	3,955,805	3,989,261																								
June-09	1,326,874	2,783,994	3,440,192	3,757,225	3,955,223	4,076,333	4,189,281	4,222,784																									
June-10	1,396,833	3,068,894	3,532,579	3,829,758	4,051,519	4,138,029	4,249,098																										
June-11	1,591,468	3,339,318	3,962,771	4,360,928	4,611,079	4,788,257																											
June-12	1,578,463	3,469,608	4,122,296	4,485,953	4,743,217																												
June-13	1,503,155	3,061,873	3,660,432	3,906,111																													
June-14	1,466,358	3,390,257	4,222,870																														
June-15	1,879,802	3,553,784																															
June-16	2,006,652																																

Age-to-Age Factors

Acc Yr Ending	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*
June-83	2.404	1.458	1.262	1.209	1.176	1.136	1.143	1.212	1.075	1.072	1.014	1.063	1.193	1.129	1.000	1.009	1.000	1.000	1.000	1.001	1.032	1.008	1.009	1.011	1.011	1.010	1.005	1.006	1.006	1.007	1.008	1.000	1.000
June-84	2.361	1.471	1.278	1.208	1.119	1.154	1.160	1.041	1.042	1.044	1.029	1.014	1.034	1.010	1.015	1.014	1.006	1.012	1.005	1.027	1.002	1.005	1.000	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
June-85	2.434	1.456	1.263	1.194	1.212	1.187	1.063	1.051	1.160	1.021	1.030	1.012	1.013	1.029	1.022	1.019	1.014	1.011	1.010	1.007	1.006	1.007	1.005	1.006	1.001	1.000	1.000	1.000	1.000	1.000	1.000		
June-86	2.440	1.469	1.237	1.202	1.150	1.132	1.071	1.071	1.023	1.014	1.015	1.010	1.016	1.010	1.004	1.004	1.007	1.007	1.005	1.009	1.009	1.003	1.004	1.013	1.019	1.003	1.003	1.002	1.003	1.002			
June-87	2.446	1.558	1.220	1.201	1.117	1.063	1.052	1.016	1.012	1.012	1.007	1.007	1.008	1.011	1.006	1.007	1.007	1.004	1.004	1.004	1.006	1.007	1.016	1.012	1.012	1.012	1.012	1.008	1.011				
June-88	2.945	1.592	1.204	1.102	1.062	1.039	1.030	1.021	1.020	1.008	1.008	1.007	1.005	1.004	1.005	1.009	1.005	1.007	1.007	1.005	1.003	1.005	1.004	1.004	1.004	1.004	1.005	1.006					
June-89	3.957	1.425	1.211	1.099	1.102	1.037	1.030	1.021	1.014	1.011	1.009	1.006	1.006	1.007	1.008	1.006	1.008	1.022	1.005	1.003	1.005	1.007	1.002	1.002	1.003	1.001	1.001						
June-90	2.992	1.325	1.152	1.070	1.046	1.039	1.039	1.028	1.022	1.011	1.008	1.010	1.010	1.006	1.016	1.007	1.006	1.006	1.003	1.004	1.003	1.002	1.004	1.004	1.005	1.003							
June-91	2.716	1.271	1.139	1.042	1.040	1.015	1.003	1.006	1.007	1.006	1.004	1.007	1.011	1.010	1.011	1.012	1.009	1.009	1.007	1.006	1.006	1.007	1.004	1.004	1.003								
June-92	2.699	1.251	1.122	1.027	1.016	1.021	1.023	1.013	1.014	1.018	1.004	1.008	1.005	1.003	1.005	1.004	1.002	1.007	1.019	1.004	1.022	1.006	1.001	1.002									
June-93	3.165	1.225	1.067	1.068	1.019	1.019	1.012	1.024	1.017	1.019	1.028	1.018	1.022	1.023	1.025	1.023	1.018	1.010	1.006	1.009	1.008	1.006	1.004										
June-94	2.311	1.232	1.139	1.036	1.093	1.041	1.024	1.026	1.043	1.016	1.020	1.029	1.019	1.021	1.007	1.006	1.007	1.006	1.005	1.006	1.004	1.008											
June-95	2.019	1.189	1.085	1.054	1.032	1.041	1.041	1.052	1.025	1.018	1.034	1.014	1.013	1.014	1.011	1.010	1.042	1.010	1.010	1.012	1.010												
June-96	2.504	1.173	1.160	1.054	1.024	1.028	1.031	1.035	1.030	1.036	1.018	1.018	1.008	1.017	1.009	1.007	1.003	1.002	1.005	1.002													
June-97	2.402	1.407	1.117	1.048	1.059	1.022	1.027	1.023	1.018	1.024	1.006	1.010	1.005	1.007	1.038	1.058	1.055	1.002	1.004														
June-98	2.982	1.258	1.101	1.094	1.051	1.055	1.048	1.018	1.013	1.015	1.013	1.011	1.040	1.022	1.008	1.005	1.014	1.005															
June-99	2.483	1.209	1.130	1.068	1.062	1.036	1.069	1.034	1.025	1.035	1.039	1.016	1.029	1.012	1.007	1.018	1.007																
June-00	2.049	1.215	1.114	1.099	1.079	1.051	1.055	1.024	1.020	1.010	1.013	1.029	1.028	1.026	1.035	1.016																	
June-01	2.439	1.230	1.178	1.087	1.060	1.030	1.024	1.037	1.042	1.023	1.020	1.020	1.028	1.024	1.053																		
June-02	2.757	1.337	1.133	1.064	1.035	1.019	1.034	1.030	1.025	1.066	1.033	1.031	1.024	1.027																			
June-03	4.526	1.410	1.142	1.049	1.046	1.038	1.027	1.028	1.033	1.013	1.035	1.028	1.033																				
June-04	2.898	1.279	1.098	1.047	1.048	1.022	1.040	1.023	1.016	1.017	1.015	1.010																					
June-05	3.109	1.309	1.125	1.068	1.045	1.049	1.027	1.030	1.018	1.012	1.011																						
June-06	2.272	1.183	1.086	1.063	1.046	1.028	1.023	1.019	1.010	1.010																							
June-07	2.782	1.283	1.059	1.056	1.033	1.038	1.015	1.013	1.015																								
June-08	2.031	1.158	1.076	1.035	1.046	1.017	1.014	1.008																									
June-09	2.098	1.236	1.092	1.053	1.031	1.028	1.008																										
June-10	2.197	1.151	1.084	1.058	1.021	1.027																											
June-11	2.098	1.187	1.100	1.057	1.038																												
June-12	2.198	1.188	1.088	1.057																													
June-13	2.037	1.195	1.067																														
June-14	2.312	1.246																															
June-15	1.891																																

Averages	*12-24*	*24-36*	*36-48*	*48-60*	*60-72*	*72-84*	*84-96*	*96-108*	*108-120*	*120-132*	*132-144*	*144-156*	*156-168*	*168-180*	*180-192*	*192-204*	*204-216*	*216-228*	*228-240*	*240-252*	*252-264*	*264-276*	*276-288*	*288-300*	*300-312*	*312-324*	*324-336*	*336-348*	*348-360*	*360-372*	*372-384*	*384-396*	*396-408*	*To Ult*
Simple Avg																																		
All Yrs	2.574	1.299	1.140	1.086	1.066	1.050	1.042	1.035	1.030	1.022	1.018	1.017	1.026	1.021	1.015	1.013	1.012	1.007	1.006	1.007	1.009	1.006	1.005	1.006	1.006	1.004	1.004	1.004	1.004	1.002	1.003	1.000	1.000	
Latest 5	2.107	1.193	1.086	1.052	1.034	1.028	1.017	1.019	1.019	1.023	1.023	1.023	1.028	1.022	1.028	1.021	1.024	1.005	1.006	1.007	1.010	1.006	1.003	1.003	1.005	1.005	1.004	1.003	1.004					
Latest 3	2.080	1.210	1.085	1.058	1.030	1.024	1.012	1.013	1.014	1.013	1.020	1.023	1.028	1.026	1.032	1.013	1.025	1.003	1.006	1.007	1.007	1.006	1.003	1.003	1.004	1.003	1.006	1.005	1.005	1.001	1.003			
Volume Wtd																																		
All Yrs	2.397	1.255	1.115	1.066	1.050	1.037	1.030	1.025	1.023	1.018	1.017	1.015	1.018	1.015	1.016	1.013	1.013	1.008	1.007	1.006	1.007	1.006	1.004	1.005	1.006	1.004	1.004	1.004	1.004	1.002	1.002	1.000	1.000	
Latest 5	2.097	1.194	1.087	1.053	1.034	1.028	1.017	1.018	1.018	1.020	1.021	1.023	1.029	1.023	1.030	1.022	1.026	1.005	1.006	1.007	1.010	1.006	1.003	1.003	1.005	1.004	1.004	1.004	1.004					
Latest 3	2.063	1.210	1.086	1.058	1.030	1.024	1.013	1.013	1.015	1.012	1.019	1.022	1.029	1.026	1.033	1.014	1.026	1.003	1.006	1.007	1.007	1.006	1.003	1.003	1.004	1.003	1.005	1.005	1.005	1.001	1.002			

Dev Factor Selection																																		
Industry 1	1.937	1.138	1.051	1.025	1.014	1.013	1.011	1.011	1.011	1.011	1.011	1.010	1.010	1.008	1.007	1.006	1.006	1.005																
Industry 2		1.271	1.076	1.031	1.019	1.013	1.010	1.010	1.011	1.009	1.010	1.014	1.012	1.008	1.007	1.008	1.006	1.005	1.005	1.006														
Prior	*2.316*	*1.246*	*1.088*	*1.056*	*1.035*	*1.032*	*1.028*	*1.026*	*1.022*	*1.026*	*1.023*	*1.020*	*1.025*	*1.015*	*1.019*	*1.016*	*1.013*	*1.006*	*1.008*	*1.008*	*1.006*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.003*	*1.003*	*1.003*	*1.003*	*1.003*	*1.009*	
Selected	2.301	1.246	1.086	1.056	1.034	1.028	1.024	1.022	1.021	1.023	1.023	1.020	1.025	1.015	1.028	1.017	1.012	1.005	1.008	1.008	1.006	1.005	1.005	1.005	1.005	1.005	1.004	1.003	1.003	1.003	1.003	1.003	1.002	1.006
FacToUlt	4.755	2.067	1.658	1.526	1.445	1.398	1.360	1.328	1.299	1.273	1.244	1.216	1.192	1.163	1.146	1.114	1.096	1.083	1.077	1.069	1.060	1.054	1.049	1.043	1.038	1.033	1.028	1.024	1.021	1.018	1.014	1.011	1.008	1.006
Percent of Ult	21.0%	48.4%	60.3%	65.5%	69.2%	71.5%	73.5%	75.3%	77.0%	78.6%	80.4%	82.2%	83.9%	86.0%	87.3%	89.7%	91.2%	92.4%	92.8%	93.6%	94.3%	94.9%	95.4%	95.8%	96.3%	96.8%	97.3%	97.7%	98.0%	98.3%	98.6%	98.9%	99.2%	99.4%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Comparison of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ultimate Loss		Ultimate Loss		Change in Ultimate Loss		Change in Ultimate Loss	
Accident	As of 6/15		As of 6/16		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	3,310,277	3,548,139	3,185,745	3,308,123	(124,532)	-3.8%	(240,016)	-6.8%
6/30/82-83	512,140	522,115	512,140	520,579	0	0.0%	(1,537)	-0.3%
6/30/83-84	790,813	808,636	790,813	805,451	0	0.0%	(3,184)	-0.4%
6/30/84-85	1,123,821	1,152,596	1,123,956	1,148,196	135	0.0%	(4,401)	-0.4%
6/30/85-86	1,912,390	1,941,220	1,909,405	1,938,190	(2,985)	-0.2%	(3,030)	-0.2%
6/30/86-87	1,708,415	1,734,170	1,719,360	1,745,280	10,945	0.6%	11,110	0.6%
6/30/87-88	3,226,785	3,278,460	3,233,750	3,285,530	6,965	0.2%	7,070	0.2%
6/30/88-89	3,662,000	3,702,660	3,644,000	3,683,470	(18,000)	-0.5%	(19,190)	-0.5%
6/30/89-90	3,974,000	4,018,790	3,959,000	4,003,640	(15,000)	-0.4%	(15,150)	-0.4%
6/30/90-91	3,616,000	3,653,170	3,603,000	3,640,040	(13,000)	-0.4%	(13,130)	-0.4%
6/30/91-92	2,905,000	2,935,060	2,890,000	2,919,910	(15,000)	-0.5%	(15,150)	-0.5%
6/30/92-93	2,609,000	2,636,100	2,600,000	2,627,010	(9,000)	-0.3%	(9,090)	-0.3%
6/30/93-94	3,066,000	3,098,680	3,068,000	3,100,700	2,000	0.1%	2,020	0.1%
6/30/94-95	2,643,000	2,670,440	2,648,000	2,675,490	5,000	0.2%	5,050	0.2%
6/30/95-96	2,222,000	2,244,220	2,205,000	2,227,050	(17,000)	-0.8%	(17,170)	-0.8%
6/30/96-97	2,967,000	2,996,670	2,948,000	2,977,480	(19,000)	-0.6%	(19,190)	-0.6%
6/30/97-98	2,183,000	2,209,880	2,176,000	2,201,800	(7,000)	-0.3%	(8,080)	-0.4%
6/30/98-99	2,807,000	2,838,100	2,783,000	2,813,860	(24,000)	-0.9%	(24,240)	-0.9%
6/30/99-00	3,364,000	3,399,660	3,351,000	3,385,520	(13,000)	-0.4%	(14,140)	-0.4%
6/30/00-01	3,296,000	3,333,000	3,396,000	3,431,980	100,000	3.0%	98,980	3.0%
6/30/01-02	3,139,000	3,181,500	3,195,000	3,236,040	56,000	1.8%	54,540	1.7%
6/30/02-03	3,631,000	3,674,380	3,682,000	3,723,870	51,000	1.4%	49,490	1.3%
6/30/03-04	3,683,000	3,729,930	3,667,000	3,711,750	(16,000)	-0.4%	(18,180)	-0.5%
6/30/04-05	5,000,000	5,491,000	4,900,000	5,459,000	(100,000)	-2.0%	(32,000)	-0.6%
6/30/05-06	4,100,000	4,545,000	4,100,000	4,479,000	0	0.0%	(66,000)	-1.5%
6/30/06-07	5,800,000	6,514,000	5,800,000	6,487,000	0	0.0%	(27,000)	-0.4%
6/30/07-08	5,000,000	5,495,000	4,900,000	5,395,000	(100,000)	-2.0%	(100,000)	-1.8%
6/30/08-09	5,500,000	5,876,000	5,400,000	5,749,000	(100,000)	-1.8%	(127,000)	-2.2%
6/30/09-10	5,600,000	6,076,000	5,500,000	5,984,000	(100,000)	-1.8%	(92,000)	-1.5%
6/30/10-11	6,400,000	6,878,000	6,300,000	6,826,000	(100,000)	-1.6%	(52,000)	-0.8%
6/30/11-12	6,600,000	7,074,000	6,500,000	6,991,000	(100,000)	-1.5%	(83,000)	-1.2%
6/30/12-13	6,300,000	6,789,000	6,100,000	6,535,000	(200,000)	-3.2%	(254,000)	-3.7%
6/30/13-14	7,200,000	7,700,000	7,000,000	7,467,000	(200,000)	-2.8%	(233,000)	-3.0%
6/30/14-15	8,300,000	9,300,000	7,500,000	8,067,000	(800,000)	-9.6%	(1,233,000)	-13.3%
6/30/15-16								
Total	128,151,641	135,045,576	126,290,170	132,549,959	(1,861,472)	-1.5%	(2,495,617)	-1.8%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2015

(4), (5) From Section 8, Exhibit 2, Page 1, Columns 6, 7

(6) = (4) - (2)

(7) = (4) / (2) - 1

(8) = (5) - (3)

(9) = (5) / (3) - 1

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Maturity	Cumulative Paid Loss Development	Incremental Paid Loss Development	Percent Unpaid	Pres Value of Increm. Pmts (4%)	Pres Value of Increm. Pmts (6%)	Discount Factor At: 4%	6%
420	100.0%	0.6%	0.0%	0.2%	0.1%	1.000	1.000
408	99.4%	0.2%	0.6%	0.1%	0.0%	0.981	0.971
396	99.2%	0.3%	0.8%	0.1%	0.0%	0.952	0.929
384	98.9%	0.3%	1.1%	0.1%	0.0%	0.932	0.902
372	98.6%	0.3%	1.4%	0.1%	0.0%	0.914	0.876
360	98.3%	0.3%	1.7%	0.1%	0.1%	0.896	0.851
348	98.0%	0.3%	2.0%	0.1%	0.1%	0.879	0.827
336	97.7%	0.4%	2.3%	0.1%	0.1%	0.862	0.805
324	97.3%	0.5%	2.7%	0.2%	0.1%	0.852	0.791
312	96.8%	0.5%	3.2%	0.2%	0.1%	0.844	0.780
300	96.3%	0.5%	3.7%	0.2%	0.1%	0.833	0.767
288	95.8%	0.5%	4.2%	0.2%	0.1%	0.822	0.752
276	95.4%	0.5%	4.6%	0.2%	0.1%	0.810	0.736
264	94.9%	0.6%	5.1%	0.2%	0.2%	0.797	0.720
252	94.3%	0.7%	5.7%	0.3%	0.2%	0.788	0.709
240	93.6%	0.7%	6.4%	0.3%	0.2%	0.784	0.704
228	92.8%	0.5%	7.2%	0.2%	0.2%	0.777	0.696
216	92.4%	1.1%	7.6%	0.6%	0.4%	0.761	0.675
204	91.2%	1.5%	8.8%	0.8%	0.6%	0.764	0.680
192	89.7%	2.5%	10.3%	1.3%	1.0%	0.771	0.690
180	87.3%	1.3%	12.7%	0.7%	0.6%	0.787	0.713
168	86.0%	2.1%	14.0%	1.2%	1.0%	0.778	0.700
156	83.9%	1.6%	16.1%	1.0%	0.8%	0.778	0.701
144	82.2%	1.8%	17.8%	1.2%	0.9%	0.770	0.690
132	80.4%	1.8%	19.6%	1.2%	1.0%	0.762	0.681
120	78.6%	1.6%	21.4%	1.1%	0.9%	0.754	0.671
108	77.0%	1.7%	23.0%	1.2%	1.0%	0.743	0.656
96	75.3%	1.8%	24.7%	1.3%	1.1%	0.733	0.643
84	73.5%	2.0%	26.5%	1.5%	1.3%	0.723	0.631
72	71.5%	2.3%	28.5%	1.9%	1.7%	0.715	0.621
60	69.2%	3.7%	30.8%	3.1%	2.8%	0.710	0.615
48	65.5%	5.2%	34.5%	4.5%	4.2%	0.714	0.622
36	60.3%	11.9%	39.7%	10.8%	10.3%	0.725	0.638
24	48.4%	27.4%	51.6%	25.8%	25.1%	0.763	0.687
12	21.0%	21.0%	79.0%	20.6%	20.4%	0.819	0.760
Total		100.0%					

NOTES:

(2) = 1 / Section 8, Exhibit 2, Page 2, Column 4

(3) Incremental % based on (2)

(4) = 1 - (2)

(5) = [(3) / 1.04] ^ {[(1) - 6] / 12}

(6) = [(3) / 1.06] ^ {[(1) - 6] / 12}

(7), (8) Discount factor based on (5), (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Outstanding Loss Discounting - 4.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	4.0%	(Low)	(High)
All Prior Yrs	134,284	256,662		121,953	233,093
6/30/82-83	0	8,439	0.981	0	8,275
6/30/83-84	0	14,638	0.952	0	13,933
6/30/84-85	0	24,239	0.932	0	22,599
6/30/85-86	17,582	46,367	0.914	16,069	42,375
6/30/86-87	20,760	46,680	0.896	18,605	41,834
6/30/87-88	49,056	100,836	0.879	43,122	88,638
6/30/88-89	84,231	123,701	0.862	72,640	106,679
6/30/89-90	107,492	152,132	0.852	91,575	129,605
6/30/90-91	114,471	151,511	0.844	96,564	127,810
6/30/91-92	105,178	135,088	0.833	87,643	112,566
6/30/92-93	107,075	134,085	0.822	88,003	110,202
6/30/93-94	140,003	172,703	0.810	113,378	139,860
6/30/94-95	134,403	161,893	0.797	107,175	129,096
6/30/95-96	125,543	147,593	0.788	98,935	116,311
6/30/96-97	189,592	219,072	0.784	148,582	171,686
6/30/97-98	155,865	181,665	0.777	121,118	141,166
6/30/98-99	212,268	243,128	0.761	161,599	185,092
6/30/99-00	293,294	327,814	0.764	224,095	250,471
6/30/00-01	348,739	384,719	0.771	268,815	296,549
6/30/01-02	406,480	447,520	0.787	320,087	352,404
6/30/02-03	515,979	557,849	0.778	401,287	433,850
6/30/03-04	590,747	635,497	0.778	459,653	494,473
6/30/04-05	498,588	1,057,588	0.770	383,753	814,004
6/30/05-06	655,631	1,034,631	0.762	499,913	788,898
6/30/06-07	803,109	1,490,109	0.754	605,890	1,124,184
6/30/07-08	910,739	1,405,739	0.743	676,881	1,044,775
6/30/08-09	1,177,216	1,526,216	0.733	862,572	1,118,292
6/30/09-10	1,250,902	1,734,902	0.723	904,279	1,254,163
6/30/10-11	1,511,743	2,037,743	0.715	1,080,674	1,456,687
6/30/11-12	1,756,783	2,247,783	0.710	1,246,718	1,595,161
6/30/12-13	2,193,889	2,628,889	0.714	1,567,103	1,877,825
6/30/13-14	2,777,130	3,244,130	0.725	2,014,499	2,353,255
6/30/14-15	3,946,216	4,513,216	0.763	3,010,358	3,442,892
6/30/15-16	6,293,348	7,726,348	0.819	5,154,828	6,328,586
Total	27,628,339	35,321,128		21,068,366	26,947,290
			(7) Total Discount Factor:	0.763	0.763

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	134,284	256,662
(9) Projected Number of Years:	5	5
(10) Projected Paid Loss per Year:	26,857	51,332
(11) Discounted Value at 4%:	121,953	233,093

NOTES:

(2), (3) From Section 8, Exhibit 2, Page 1, Columns 8, 9

(4) From Section 8, Exhibit 2, Page 9, Column 7

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted		Discount	Discounted	
Accident	Outstanding Losses		Factor at	Outstanding Losses	
Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	134,284	256,662		116,525	222,717
6/30/82-83	0	8,439	0.971	0	8,197
6/30/83-84	0	14,638	0.929	0	13,604
6/30/84-85	0	24,239	0.902	0	21,852
6/30/85-86	17,582	46,367	0.876	15,394	40,595
6/30/86-87	20,760	46,680	0.851	17,663	39,717
6/30/87-88	49,056	100,836	0.827	40,581	83,416
6/30/88-89	84,231	123,701	0.805	67,775	99,534
6/30/89-90	107,492	152,132	0.791	85,017	120,323
6/30/90-91	114,471	151,511	0.780	89,309	118,207
6/30/91-92	105,178	135,088	0.767	80,649	103,584
6/30/92-93	107,075	134,085	0.752	80,513	100,822
6/30/93-94	140,003	172,703	0.736	103,082	127,158
6/30/94-95	134,403	161,893	0.720	96,807	116,608
6/30/95-96	125,543	147,593	0.709	88,958	104,582
6/30/96-97	189,592	219,072	0.704	133,423	154,170
6/30/97-98	155,865	181,665	0.696	108,442	126,392
6/30/98-99	212,268	243,128	0.675	143,367	164,210
6/30/99-00	293,294	327,814	0.680	199,514	222,996
6/30/00-01	348,739	384,719	0.690	240,694	265,527
6/30/01-02	406,480	447,520	0.713	289,828	319,090
6/30/02-03	515,979	557,849	0.700	361,249	390,563
6/30/03-04	590,747	635,497	0.701	414,069	445,435
6/30/04-05	498,588	1,057,588	0.690	344,002	729,686
6/30/05-06	655,631	1,034,631	0.681	446,327	704,335
6/30/06-07	803,109	1,490,109	0.671	538,492	999,131
6/30/07-08	910,739	1,405,739	0.656	597,622	922,438
6/30/08-09	1,177,216	1,526,216	0.643	756,957	981,366
6/30/09-10	1,250,902	1,734,902	0.631	789,152	1,094,491
6/30/10-11	1,511,743	2,037,743	0.621	939,072	1,265,816
6/30/11-12	1,756,783	2,247,783	0.615	1,080,992	1,383,116
6/30/12-13	2,193,889	2,628,889	0.622	1,365,362	1,636,084
6/30/13-14	2,777,130	3,244,130	0.638	1,770,551	2,068,286
6/30/14-15	3,946,216	4,513,216	0.687	2,710,426	3,099,865
6/30/15-16	6,293,348	7,726,348	0.760	4,782,697	5,871,721
Total	27,628,339	35,321,128		18,894,511	24,165,633
(7) Total Discount Factor:				0.684	0.684

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	134,284	256,662
(9) Projected Number of Years:	5	5
(10) Projected Paid Loss per Year:	26,857	51,332
(11) Discounted Value at 6%:	116,525	222,717

NOTES:

(2), (3) From Section 8, Exhibit 2, Page 1, Columns 8, 9

(4) From Section 8, Exhibit 2, Page 9, Column 8

(5) = (2) x (4)

(6) = (3) x (4)

(7) = Sum of (5) / Sum of (2) and Sum of (6) / Sum of (3)

(10) = (8) / (9)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2016

All Other - Clusters 5-17 & 95
Medical

Allocation of Outstanding Reserve to MassDOT Agencies

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
						MassDOT Allocation - Method 1					**MassDOT Allocation - Method 2**					**MassDOT Allocation - Method 3**					MassDOT	MassDOT	All Other	All Other
Accident		Aon	Aon	Outstanding	Outstanding	Paid Counts	MassDOT	MassDOT /	MassDOT OS	MassDOT OS	Total Paid	MassDOT	MassDOT /	MassDOT OS	MassDOT OS	Total Payroll	MassDOT	MassDOT /	MassDOT OS	MassDOT OS	Outstanding	Outstanding	Outstanding	Outstanding
Year	Paid Loss	Selected Ult (Low)	Selected Ult (High)	Losses (Low)	Losses (High)	7/1/15-16	7/1/15-16	Paid Counts	(Low)	(High)	7/1/15-16	7/1/15-16	Total Paid	(Low)	(High)	($000)	($000)	Total Payroll	(Low)	(High)	(Low)	(High)	(Low)	(High)
All Prior Yrs	3,051,461	3,185,745	3,308,123	134,284	256,662	3					11,822								8,805	16,830	8,805	16,830	125,479	239,832
6/30/82-83	512,140	512,140	520,579	0	8,439	0					0								0	553	0	553	0	7,886
6/30/83-84	790,813	790,813	805,451	0	14,638	0					0								0	960	0	320	0	14,319
6/30/84-85	1,123,956	1,123,956	1,148,196	0	24,239	1					135								0	1,589	0	530	0	23,710
6/30/85-86	1,891,823	1,909,405	1,938,190	17,582	46,367	1					4,704								1,153	3,040	384	1,013	17,198	45,354
6/30/86-87	1,698,600	1,719,360	1,745,280	20,760	46,680	2					18,231								1,361	3,061	454	1,020	20,307	45,660
6/30/87-88	3,184,694	3,233,750	3,285,530	49,056	100,836	5					19,718								3,217	6,612	1,072	2,204	47,984	98,632
6/30/88-89	3,559,769	3,644,000	3,683,470	84,231	123,701	5					4,479								5,523	8,111	1,841	2,704	82,390	120,997
6/30/89-90	3,851,508	3,959,000	4,003,640	107,492	152,132	7	1	14.3%	15,356	21,733	12,501	675	5.4%	5,804	8,214				7,048	9,976	9,403	13,308	98,089	138,824
6/30/90-91	3,488,529	3,603,000	3,640,040	114,471	151,511	7	1	14.3%	16,353	21,644	11,530	1,920	16.7%	19,062	25,230				7,506	9,935	14,307	18,936	100,164	132,575
6/30/91-92	2,784,822	2,890,000	2,919,910	105,178	135,088	3					4,874								6,897	8,858	2,299	2,953	102,879	132,135
6/30/92-93	2,492,925	2,600,000	2,627,010	107,075	134,085	5	1	20.0%	21,415	26,817	9,009	153	1.7%	1,824	2,284				7,021	8,792	10,087	12,631	96,989	121,454
6/30/93-94	2,927,997	3,068,000	3,100,700	140,003	172,703	7	3	42.9%	60,001	74,015	22,405	3,947	17.6%	24,660	30,420				9,180	11,324	9,180	11,324	130,822	161,378
6/30/94-95	2,513,597	2,648,000	2,675,490	134,403	161,893	7	1	14.3%	19,200	23,128	24,569	3,254	13.2%	17,803	21,444				8,813	10,616	15,272	18,396	119,131	143,497
6/30/95-96	2,079,457	2,205,000	2,227,050	125,543	147,593	2					4,337								8,232	9,678	2,744	3,226	122,799	144,367
6/30/96-97	2,758,408	2,948,000	2,977,480	189,592	219,072	4					9,734								12,432	14,365	6,216	7,182	183,376	211,890
6/30/97-98	2,020,135	2,176,000	2,201,800	155,865	181,665	5	1	20.0%	31,173	36,333	9,739	1,327	13.6%	21,234	24,748	1,917,994	137,500	7.2%	11,174	13,023	11,174	13,023	144,692	168,642
6/30/98-99	2,570,732	2,783,000	2,813,860	212,268	243,128	7	1	14.3%	30,324	34,733	18,565	524	2.8%	5,989	6,859	2,081,524	136,688	6.6%	13,939	15,966	22,132	25,349	190,136	217,779
6/30/99-00	3,057,706	3,351,000	3,385,520	293,294	327,814	11	2	18.2%	53,326	59,603	47,385	22,184	46.8%	137,309	153,469	2,207,243	137,892	6.2%	18,323	20,479	18,323	20,479	274,971	307,335
6/30/00-01	3,047,261	3,396,000	3,431,980	348,739	384,719	12	1	8.3%	29,062	32,060	154,025	1,486	1.0%	3,365	3,712	2,201,008	145,149	6.6%	22,998	25,371	18,475	20,381	330,264	364,338
6/30/01-02	2,788,520	3,195,000	3,236,040	406,480	447,520	14	1	7.1%	29,034	31,966	73,738	753	1.0%	4,151	4,570	2,292,592	140,223	6.1%	24,862	27,372	19,349	21,303	387,131	426,217
6/30/02-03	3,166,021	3,682,000	3,723,870	515,979	557,849	15	1	6.7%	34,399	37,190	101,779	11,910	11.7%	60,377	65,276	2,260,534	140,250	6.2%	32,013	34,611	42,263	45,692	473,716	512,156
6/30/03-04	3,076,253	3,667,000	3,711,750	590,747	635,497	15	2	13.3%	78,766	84,733	28,952	3,540	12.2%	72,233	77,705	2,255,942	137,408	6.1%	35,982	38,708	57,374	61,720	533,373	573,777
6/30/04-05	4,401,412	4,900,000	5,459,000	498,588	1,057,588	18	1	5.6%	27,699	58,755	48,079	3,144	6.5%	32,606	69,163	2,309,083	145,033	6.3%	31,316	66,427	30,541	64,782	468,048	992,807
6/30/05-06	3,444,369	4,100,000	4,479,000	655,631	1,034,631	18	2	11.1%	72,848	114,959	33,573	2,482	7.4%	48,465	76,482	2,480,693	156,390	6.3%	41,333	65,226	57,090	90,093	598,541	944,539
6/30/06-07	4,996,891	5,800,000	6,487,000	803,109	1,490,109	22	5	22.7%	182,525	338,661	72,306	27,398	37.9%	304,316	564,635	2,612,577	157,146	6.0%	48,307	89,630	48,307	89,630	754,803	1,400,480
6/30/07-08	3,989,261	4,900,000	5,395,000	910,739	1,405,739	23	1	4.3%	39,597	61,119	33,457	720	2.2%	19,600	30,252	2,783,717	168,663	6.1%	55,181	85,172	47,389	73,146	863,350	1,332,593
6/30/08-09	4,222,784	5,400,000	5,749,000	1,177,216	1,526,216	27	5	18.5%	218,003	282,633	33,503	-720	-2.2%	-25,312	-32,817	2,750,907	180,456	6.6%	77,224	100,118	147,613	191,375	1,029,602	1,334,841
6/30/09-10	4,249,098	5,500,000	5,984,000	1,250,902	1,734,902	35	3	8.6%	107,220	148,706	111,069	11,750	10.6%	132,337	183,541	2,806,048	203,138	7.2%	90,556	125,594	98,888	137,150	1,152,014	1,597,752
6/30/10-11	4,788,257	6,300,000	6,826,000	1,511,743	2,037,743	44	1	2.3%	34,358	46,312	177,178	25	0.0%	209	282	2,942,638	197,766	6.7%	101,600	136,951	67,979	91,632	1,443,764	1,946,111
6/30/11-12	4,743,217	6,500,000	6,991,000	1,756,783	2,247,783	63	6	9.5%	167,313	214,075	257,264	4,683	1.8%	31,976	40,913	3,006,849	207,447	6.9%	121,203	155,078	106,831	136,688	1,649,953	2,111,095
6/30/12-13	3,906,111	6,100,000	6,535,000	2,193,889	2,628,889	85	9	10.6%	232,294	278,353	245,678	9,343	3.8%	83,429	99,971	3,138,905	217,415	6.9%	151,959	182,089	155,894	186,805	2,037,995	2,442,085
6/30/13-14	4,222,870	7,000,000	7,467,000	2,777,130	3,244,130	194	18	9.3%	257,672	301,002	832,614	87,297	10.5%	291,175	340,139	3,311,947	232,120	7.0%	194,637	227,367	247,828	289,503	2,529,302	2,954,627
6/30/14-15	3,553,784	7,500,000	8,067,000	3,946,216	4,513,216	642	48	7.5%	295,044	337,437	1,673,982	206,258	12.3%	486,229	556,092	3,511,622	248,813	7.1%	279,606	319,780	353,626	404,436	3,592,590	4,108,780
6/30/15-16	2,006,652	8,300,000	9,733,000	6,293,348	7,726,348	1,071	83	7.7%	487,720	598,774	2,006,652	175,748	8.8%	551,187	676,693	3,491,558	226,897	6.5%	408,970	502,093	464,212	569,913	5,829,136	7,156,435
Total	106,961,831	134,590,170	142,282,959	27,628,339	35,321,128	2,380	198	8.3%	2,540,703	3,264,739	6,117,587	579,800	9.5%	2,330,026	3,029,278						2,097,351	2,646,230	25,530,987	32,674,898

Sel. FY97 & Prior	6.6%

NOTES:

(2), (7), (8), (12), (13), (17). (18) Provided by Commonwealth of Massachusetts
(3) From Section 8, Exhibit 2, Page 1, Column 6
(4) From Section 8, Exhibit 2, Page 1, Column 7
(5) = (3) - (2)
(6) = (4) - (2)
(9) = (8) / (7)
(10) = (9) * (5)
(11) = (9) * (6)
(14) = (13) / (12)
(15) = (14) * (5)
(16) = (14) * (6)
(19) = (18) / (17)
(20) = (19) * (5)
(21) = (19) * (6)
(22) Selected judgementally based on (10), (15), (20)
(23) Selected judgementally based on (11), (16). (21)
(24) = (5) - (22)
(25) = (6) - (23)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2015

All Other - Clusters 5-17 & 95
Medical

Allocation of Outstanding Reserve to MassDOT Agencies

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
						MassDOT Allocation - Method 1					MassDOT Allocation - Method 2					MassDOT Allocation - Method 3					MassDOT	MassDOT	All Other	All Other
Accident		Aon	Aon	Outstanding	Outstanding																			
Year	Paid Loss	Selected Ult (Low)	Selected Ult (High)	Losses (Low)	Losses (High)	Paid Counts 7/1/14-15	MassDOT 7/1/14-15	MassDOT / Paid Counts	MassDOT OS (Low)	MassDOT OS (High)	Total Paid 7/1/14-15	MassDOT 7/1/14-15	MassDOT / Total Paid	MassDOT OS (Low)	MassDOT OS (High)	Total Payroll ($000)	MassDOT ($000)	MassDOT / Total Payroll	MassDOT OS (Low)	MassDOT OS (High)	Outstanding (Low)	Outstanding (High)	Outstanding (Low)	Outstanding (High)
All Prior Yrs	3,039,639	3,310,277	3,548,139	270,639	508,500	3					38,942								17,755	33,360	17,755	33,360	252,883	475,140
6/30/82-83	512,140	512,140	522,115	0	9,976	0					0								0	654	0	654	0	9,321
6/30/83-84	790,813	790,813	808,636	0	17,823	0					0								0	1,169	0	390	0	17,433
6/30/84-85	1,123,821	1,123,821	1,152,596	0	28,775	0					0								0	1,888	0	629	0	28,146
6/30/85-86	1,887,118	1,912,390	1,941,220	25,272	54,102	1					5,013								1,658	3,549	553	1,183	24,719	52,919
6/30/86-87	1,680,369	1,708,415	1,734,170	28,046	53,801	2					13,039								1,840	3,530	613	1,177	27,433	52,625
6/30/87-88	3,164,976	3,226,785	3,278,460	61,809	113,484	7					16,519								4,055	7,445	1,352	2,482	60,458	111,003
6/30/88-89	3,555,290	3,662,000	3,702,660	106,710	147,370	6	1	16.7%	17,785	24,562	2,581	240	9.3%	9,923	13,703				7,001	9,668	11,569	15,978	95,141	131,392
6/30/89-90	3,839,007	3,974,000	4,018,790	134,993	179,783	6					18,504								8,856	11,795	2,952	3,932	132,041	175,851
6/30/90-91	3,476,999	3,616,000	3,653,170	139,001	176,171	6					12,795								9,119	11,558	3,040	3,853	135,962	172,319
6/30/91-92	2,779,948	2,905,000	2,935,060	125,052	155,112	2					2,279								8,204	10,176	2,735	3,392	122,317	151,720
6/30/92-93	2,483,916	2,609,000	2,636,100	125,084	152,184	5	1	20.0%	25,017	30,437	13,958	370	2.6%	3,313	4,031				8,206	9,984	12,179	14,817	112,905	137,367
6/30/93-94	2,905,592	3,066,000	3,098,680	160,408	193,088	6	3	50.0%	80,204	96,544	12,440	2,227	17.9%	28,714	34,564				10,523	12,667	10,523	12,667	149,885	180,421
6/30/94-95	2,489,028	2,643,000	2,670,440	153,972	181,412	10	2	20.0%	30,794	36,282	29,273	3,294	11.3%	17,324	20,412				10,101	11,901	19,407	22,865	134,565	158,547
6/30/95-96	2,075,119	2,222,000	2,244,220	146,881	169,101	3					9,982								9,636	11,094	3,212	3,698	143,669	165,403
6/30/96-97	2,748,674	2,967,000	2,996,670	218,326	247,996	6					5,079								14,323	16,270	7,162	8,135	211,165	239,861
6/30/97-98	2,010,395	2,183,000	2,209,880	172,605	199,485	6	2	33.3%	57,535	66,495	27,487	1,018	3.7%	6,393	7,388	1,917,994	137,500	7.2%	12,374	14,301	12,374	14,301	160,231	185,184
6/30/98-99	2,552,168	2,807,000	2,838,100	254,832	285,932	9	1	11.1%	28,315	31,770	45,623	611	1.3%	3,413	3,829	2,081,524	136,688	6.6%	16,734	18,776	22,524	25,273	232,308	260,659
6/30/99-00	3,010,320	3,364,000	3,399,660	353,680	389,340	11	2	18.2%	64,305	70,789	100,825	46,857	46.5%	164,368	180,941	2,207,243	137,892	6.2%	22,095	24,323	22,095	24,323	331,584	365,017
6/30/00-01	2,893,237	3,296,000	3,333,000	402,763	439,763	11	3	27.3%	109,845	119,935	69,030	2,008	2.9%	11,717	12,793	2,201,008	145,149	6.6%	26,561	29,001	49,374	53,910	353,389	385,853
6/30/01-02	2,714,782	3,139,000	3,181,500	424,218	466,718	15	2	13.3%	56,562	62,229	62,461	1,001	1.6%	6,800	7,482	2,292,592	140,223	6.1%	25,947	28,546	29,770	32,752	394,448	433,965
6/30/02-03	3,064,242	3,631,000	3,674,380	566,758	610,138	18	1	5.6%	31,487	33,897	82,476	12,138	14.7%	83,410	89,794	2,260,534	140,250	6.2%	35,163	37,855	50,020	53,848	516,738	556,290
6/30/03-04	3,047,300	3,683,000	3,729,930	635,700	682,630	20	4	20.0%	127,140	136,526	43,680	18,017	41.2%	262,209	281,566	2,255,942	137,408	6.1%	38,720	41,578	82,930	89,052	552,770	593,577
6/30/04-05	4,353,333	5,000,000	5,491,000	646,667	1,137,667	16	2	12.5%	80,833	142,208	49,550	5,077	10.2%	66,260	116,569	2,309,083	145,033	6.3%	40,617	71,457	62,570	110,078	584,097	1,027,589
6/30/05-06	3,410,796	4,100,000	4,545,000	689,204	1,134,204	23	2	8.7%	59,931	98,626	34,640	7,920	22.9%	157,588	259,339	2,480,693	156,390	6.3%	43,450	71,504	51,690	85,065	637,514	1,049,139
6/30/06-07	4,924,584	5,800,000	6,514,000	875,416	1,589,416	23	6	26.1%	228,369	414,630	64,583	22,244	34.4%	301,512	547,428	2,612,577	157,146	6.0%	52,656	95,603	52,656	95,603	822,760	1,493,813
6/30/07-08	3,955,805	5,000,000	5,495,000	1,044,195	1,539,195	30	3	10.0%	104,420	153,920	55,564	9,919	17.9%	186,412	274,781	2,783,717	168,663	6.1%	63,267	93,258	83,843	123,589	960,352	1,415,607
6/30/08-09	4,189,281	5,500,000	5,876,000	1,310,719	1,686,719	39	6	15.4%	201,649	259,495	112,948	10,928	9.7%	126,814	163,193	2,750,907	180,456	6.6%	85,981	110,646	143,815	185,071	1,166,903	1,501,648
6/30/09-10	4,138,029	5,600,000	6,076,000	1,461,971	1,937,971	44	2	4.5%	66,453	88,090	86,510	7,717	8.9%	130,417	172,880	2,806,048	203,138	7.2%	105,836	140,295	100,902	133,755	1,361,069	1,804,216
6/30/10-11	4,611,079	6,400,000	6,878,000	1,788,921	2,266,921	71	4	5.6%	100,784	127,714	250,151	2,560	1.0%	18,306	23,197	2,942,638	197,766	6.7%	120,228	152,353	110,506	140,034	1,678,415	2,126,888
6/30/11-12	4,485,953	6,600,000	7,074,000	2,114,047	2,588,047	113	17	15.0%	318,042	389,352	363,657	66,032	18.2%	383,861	469,928	3,006,849	207,447	6.9%	145,851	178,553	145,851	178,553	1,968,196	2,409,494
6/30/12-13	3,660,432	6,300,000	6,789,000	2,639,568	3,128,568	204	21	10.3%	271,720	322,058	598,559	83,433	13.9%	367,930	436,092	3,138,905	217,415	6.9%	182,829	216,699	182,829	216,699	2,456,739	2,911,868
6/30/13-14	3,390,257	7,200,000	7,700,000	3,809,743	4,309,743	716	63	8.8%	335,215	379,209	1,923,899	236,826	12.3%	468,968	530,516	3,311,947	232,120	7.0%	267,008	302,051	334,550	378,457	3,475,193	3,931,286
6/30/14-15	1,879,802	8,300,000	9,300,000	6,420,198	7,420,198	1,047	82	7.8%	502,824	581,143	1,879,802	165,928	8.8%	566,704	654,973	3,511,622	248,813	7.1%	454,898	525,752	494,831	571,905	5,925,367	6,848,293
Total	100,844,244	128,151,641	135,045,576	27,307,397	34,201,332	2,479	230	9.3%	2,899,229	3,665,912	6,031,849	706,366	11.7%	3,372,356	4,305,400						2,126,182	2,641,480	25,181,215	31,559,852

Sel. FY97 & Prior	6.6%

NOTES:

(2), (7), (8), (12), (13), (17). (18) Provided by Commonwealth of Massachusetts
(3) From Prior Analysis - Section 8, Exhibit 2, Page 1, Column 6
(4) From Prior Analysis - Section 8, Exhibit 2, Page 1, Column 7
(5) = (3) - (2)
(6) = (4) - (2)
(9) = (8) / (7)
(10) = (9) * (5)
(11) = (9) * (6)

(14) = (13) / (12)
(15) = (14) * (5)
(16) = (14) * (6)
(19) = (18) / (17)
(20) = (19) * (5)
(21) = (19) * (6)

(22) Selected judgementally based on (10), (15), (20)
(23) Selected judgementally based on (11), (16). (21)
(24) = (5) - (22)
(25) = (6) - (23)