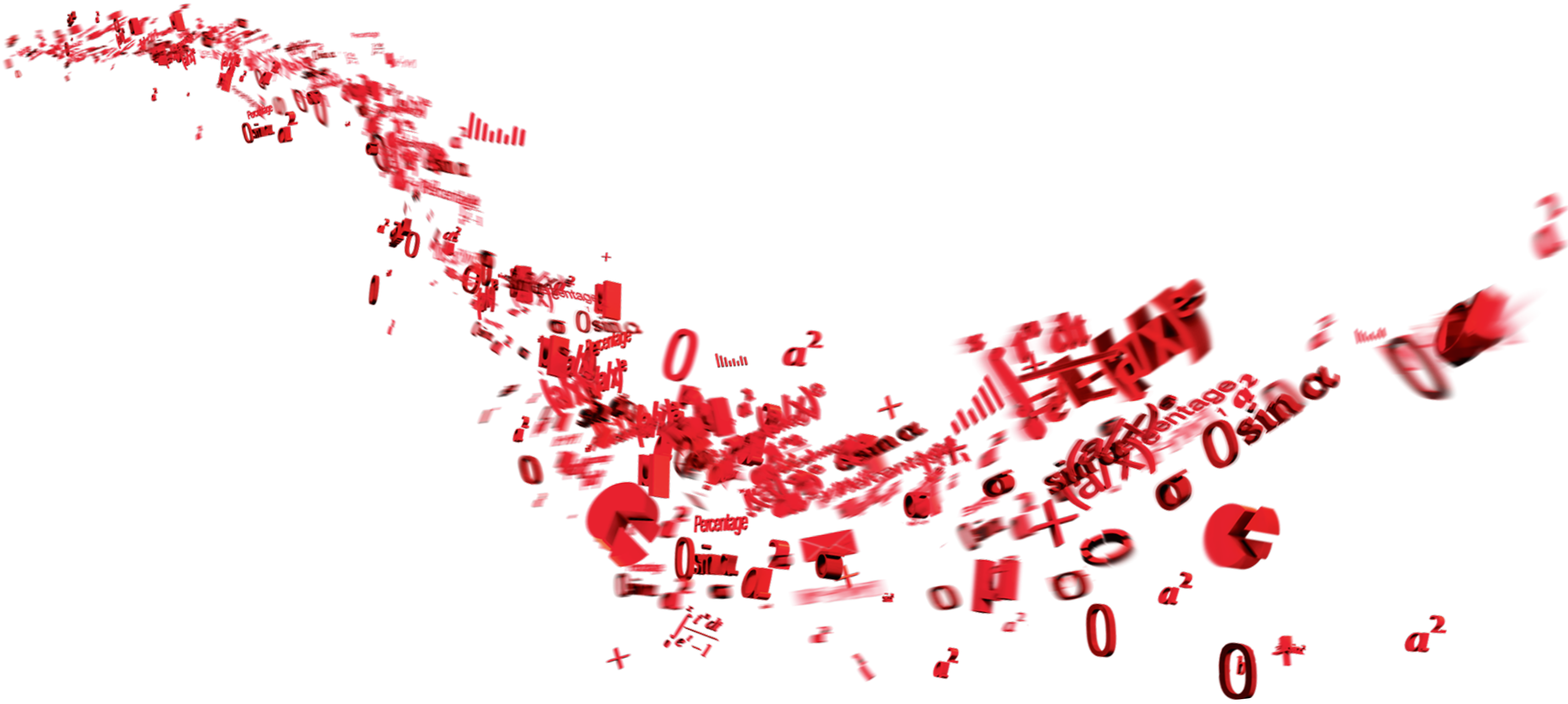

Commonwealth of Massachusetts

Actuarial Estimate of Outstanding Liability

As of June 30, 2020

FINAL REPORT

Issue Date – October 30, 2020

53 State Street, Suite 2201
Boston, MA 02109
tel: 617.457.7648
www.aon.com

Commonwealth of Massachusetts

Workers Compensation

Reserve Analysis at June 30, 2020

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I. Introduction

Purpose

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

Scope

The specific scope of this study is to prepare an independent estimate of the required workers compensation reserves as of June 30, 2020 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")

COVID-19

The estimates provided in this report have not been adjusted for the potential impact of the COVID-19 pandemic. The ultimate short- and long-term impacts of this emerging risk are currently unknown. Consequently, the uncertainty in our estimates is greater than it would otherwise be.

* * * * * *

Vahan A. Mahdasian ACAS, MAAA and Kanika Vats, FCAS, MAAA, MBA 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
Deputy Managing Director & Actuary
+1.617.457.7648
vahan.mahdasian@aon.com

Neil J. Fenton, CRIS
Actuarial Consultant
+1.617.457.7680
neil.fenton@aon.com

Kanika Vats, FCAS, MAAA, MBA
Director & Actuary
+1.212.441.1452
kanika.vats@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. See Introduction for limitations regarding the COVID-19 pandemic.

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 in relation to the actual rates of return achieved by the Commonwealth. We note that the 5yr and 7yr Treasury yields are both currently less than 0.5% and therefore the rates provided by the client are high relative to this benchmark.

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 2019, 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, 2020, 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: **$303.8M to $371.3M**.

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%: **$223.7 to $275.6M** | Discounted at 6%: **$198.7M to $245.5M**

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

Cluster	Undiscounted	Discounted at 4%	Discounted at 6%
DDS	$21.4 - 27.2M	$16.4 - 20.9M	$14.8 - 19.0M
DMH	$25.9 - 33.1M	$19.1 - 24.5M	$17.1 - 22.0M
DOC	$36.9 - 49.9M	$28.4 - 38.3M	$25.7 - 34.6M
UMass - Amherst	$5.8 - 8.0M	$4.7 - 6.4M	$4.3 - 5.9M
UMass - Medical	$2.0 - 3.2M	$1.7 - 2.7M	$1.6 - 2.5M
Other Colleges & Universities	$17.7 - 24.7M	$13.9 - 19.5M	$12.5 - 17.6M
All Other Dept's (incl. MassDOT, excl. MTA)	$194.1 - 225.2M	$139.7 - 163.3M	$122.8 - 144.0M
Total	$303.8 - 371.3M	$223.7 - 275.6M	$198.7 - 245.5M

Total Net Reserves

Based on our review, which utilized loss and exposure data valued as of June 30, 2020 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: **$290.4M to $355.6M**.

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%: **$214.0 - 264.2M** | Discounted at 6%: **$190.2 - 235.5M**

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

Cluster	Undiscounted	Discounted at 4%	Discounted at 6%
DDS	$21.4 - 27.2M	$16.4 - 20.9M	$14.8 - 19.0M
DMH	$25.9 - 33.1M	$19.1 - 24.5M	$17.1 - 22.0M
DOC	$36.9 - 49.9M	$28.4 - 38.3M	$25.7 - 34.6M
UMass - Amherst	$5.8 - 8.0M	$4.7 - 6.4M	$4.3 - 5.9M
UMass - Medical	$2.0 - 3.2M	$1.7 - 2.7M	$1.6 - 2.5M
Other Colleges & Universities	$17.7 - 24.7M	$13.9 - 19.5M	$12.5 - 17.6M
All Other Dept's (excl. MassDOT & MTA)	$180.7 - 209.6M	$130.0 - 152.0M	$114.3 - 134.0M
Total	$290.4 - 355.6M	$214.0 - 264.2M	$190.2 - 235.5M

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 6.9% 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	6.9%	$13.4 - 15.7M	$9.7 - 11.4M	$8.5 - 10.0M
Non-MassDOT Agencies	5	93.1%	$180.7 - 209.6M	$130.0 - 152.0M	$114.3 - 134.0M
Total			$194.1 - 225.2M	$139.7 - 163.3M	$122.8 - 144.0M

Fiscal Year 2020 Loss Rates

The cost of the workers compensation program as measured by the estimated FY2020 loss rates (losses per $100 payroll) varied significantly by cluster.

As shown in the table below, overall rates decreased by 0.3% when compared to the prior year

Cluster	Payroll (000)	Average Ult Loss	Average FY20 Loss Rate	Prior Loss Rate	% Change
DDS	311,058	4,198,664	1.350	1.569	-14.0%
DMH	222,496	7,475,050	3.360	3.186	5.5%
DOC	368,720	12,807,235	3.473	2.798	24.1%
UMass - Amherst	664,701	1,847,925	0.278	0.305	-8.7%
UMass - Medical	424,565	717,550	0.169	0.225	-25.0%
Other Colleges & Univ's	1,508,678	4,081,975	0.271	0.313	-13.4%
All Other Dept's (excl. MTA)	3,752,730	40,160,643	1.070	1.115	-4.0%
Total	7,252,948	71,289,042	0.983	0.986	-0.3%

All Other Departments – Fiscal Year 2020 Loss Rates

In the table below, we have estimated, the composition of the All Other Departments FY2020 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 FY20 Loss Rate	Prior Loss Rate	% Change
MassDOT (excl. MTA)	247,944	2,826,644	1.140	1.311	-13.1%
Non-MassDOT	3,504,786	37,333,999	1.065	1.103	-3.4%
Total	3,752,730	40,160,643	1.070	1.115	-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 **$14.0M to $19.9M**.

Discounted at 4%: **$11.2M to $15.9M** | Discounted at 6%: **$10.3M to $14.6M**

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	$5.8 - 8.0M	$4.7 - 6.4M	$4.3 - 5.9M
UMass - Medical	$2.0 - 3.2M	$1.7 - 2.7M	$1.6 - 2.5M
UMass - Dartmouth	$2.0 - 2.7M	$1.5 - 2.2M	$1.4 - 2.0M
University of Lowell	$2.6 - 3.6M	$2.0 - 2.9M	$1.8 - 2.6M
UMass - Boston	$1.7 - 2.3M	$1.3 - 1.8M	$1.2 - 1.7M
Total UMass	$14.0 - 19.9M	$11.2 - 15.9M	$10.3 - 14.6M

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, 2020 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, 2019) to derive cumulative paid figures as of June 30, 2020 found in this report.

Exposure

Exposure information for FY2020, 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 where appropriate.

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 2020 implies an “open” claim and will remain open during fiscal year 2020. 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 FY2020 were provided by the Commonwealth. For the FY2020 non-MTA element of the MassDOT payroll in Cluster 5, MTA-only payroll was estimated and 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 2019-20 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 2021 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 - FY2019	MassDOT (excl. MTA) Reserve Allocation as of 06/30/19
MassDOT - FY2020	MassDOT (excl. MTA) Reserve Allocation as of 06/30/20

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 FY2020 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 6/30/20

Page MassDOT FY2019 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 2019 and based on loss data valued as of 6/30/19.

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IX. Exhibits

Commonwealth of Massachusetts

Workers Compensation

Reserve Analysis at June 30, 2020

Table of Contents

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

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			18,694,970	21,798,437
Medical			2,695,267	5,399,429
Total			21,390,237	27,197,866
Department of Mental Health	2	Section 3		
Indemnity			21,890,837	27,931,339
Medical			3,980,500	5,184,314
Total			25,871,337	33,115,652
Department of Corrections	3	Section 4		
Indemnity			27,765,844	35,733,549
Medical			9,145,738	14,159,659
Total			36,911,582	49,893,208
UMass - Amherst	4	Section 5		
Indemnity			4,296,462	5,985,682
Medical			1,511,044	2,030,061
Total			5,807,507	8,015,742
UMass - Medical School	4	Section 6		
Indemnity			1,591,128	2,287,505
Medical			427,103	882,977
Total			2,018,231	3,170,482
Other Colleges & Universities	4	Section 7		
Indemnity			14,619,201	20,376,276
Medical			3,051,665	4,333,228
Total			17,670,866	24,709,504
All Others	5-17 & 95	Section 8		
Indemnity			162,238,799	187,491,924
Medical			31,880,648	37,741,632
Total			194,119,446	225,233,556
Grand Total		Section 1		
Indemnity			251,097,240	301,604,710
Medical			52,691,967	69,731,299
Total			303,789,206	371,336,010

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

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			14,423,218	16,910,453
Medical			1,967,837	4,002,630
Total			16,391,056	20,913,083
Department of Mental Health	2	Section 3		
Indemnity			15,910,235	20,402,797
Medical			3,142,143	4,096,228
Total			19,052,378	24,499,025
Department of Corrections	3	Section 4		
Indemnity			21,497,746	27,596,672
Medical			6,905,857	10,746,804
Total			28,403,603	38,343,476
UMass - Amherst	4	Section 5		
Indemnity			3,437,290	4,769,572
Medical			1,223,323	1,635,509
Total			4,660,613	6,405,081
UMass - Medical School	4	Section 6		
Indemnity			1,325,272	1,903,240
Medical			369,981	753,097
Total			1,695,253	2,656,338
Other Colleges & Universities	4	Section 7		
Indemnity			11,448,384	16,032,253
Medical			2,408,918	3,443,520
Total			13,857,302	19,475,773
All Others	5-17 & 95	Section 8		
Indemnity			115,756,701	135,041,871
Medical			23,904,082	28,281,409
Total			139,660,782	163,323,280
Grand Total		Section 1		
Indemnity			183,798,846	222,656,858
Medical			39,922,141	52,959,197
Total			223,720,987	275,616,055

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

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			13,025,863	15,302,119
Medical			1,799,757	3,651,439
Total			14,825,620	18,953,558
Department of Mental Health	2	Section 3		
Indemnity			14,198,891	18,236,834
Medical			2,860,128	3,729,251
Total			17,059,019	21,966,086
Department of Corrections	3	Section 4		
Indemnity			19,466,333	24,951,710
Medical			6,188,018	9,653,281
Total			25,654,350	34,604,991
UMass - Amherst	4	Section 5		
Indemnity			3,161,132	4,377,453
Medical			1,124,012	1,499,520
Total			4,285,144	5,876,973
UMass - Medical School	4	Section 6		
Indemnity			1,229,257	1,763,862
Medical			347,857	703,379
Total			1,577,114	2,467,241
Other Colleges & Universities	4	Section 7		
Indemnity			10,336,186	14,504,062
Medical			2,184,137	3,131,505
Total			12,520,323	17,635,567
All Others	5-17 & 95	Section 8		
Indemnity			101,489,097	118,803,191
Medical			21,319,967	25,209,913
Total			122,809,063	144,013,104
Grand Total		Section 1		
Indemnity			162,906,759	197,939,232
Medical			35,823,875	47,578,288
Total			198,730,634	245,517,520

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

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	Current Ult Loss Estimate less Previous Ult Loss Estimate: High End
Department of Developmental Services	1	Section 2		
Indemnity			297,895	217,691
Medical			112,010	(12,490)
Total			409,905	205,201
Department of Mental Health	2	Section 3		
Indemnity			(64,321)	(949,150)
Medical			281,630	147,455
Total			217,309	(801,695)
Department of Corrections	3	Section 4		
Indemnity			(2,428,170)	(4,317,587)
Medical			(936,724)	(1,488,370)
Total			(3,364,894)	(5,805,957)
UMass - Amherst	4	Section 5		
Indemnity			(26,736)	6,407
Medical			(317,819)	(680,325)
Total			(344,555)	(673,918)
UMass - Medical School	4	Section 6		
Indemnity			(100,300)	(315,590)
Medical			(164,606)	(248,751)
Total			(264,906)	(564,341)
Other Colleges & Universities	4	Section 7		
Indemnity			1,439,261	1,240,065
Medical			(44,477)	(206,746)
Total			1,394,783	1,033,320
All Others	5-17 & 95	Section 8		
Indemnity			(3,625,683)	(9,360,069)
Medical			(2,002,305)	(3,303,450)
Total			(5,627,988)	(12,663,519)
Grand Total		Section 1		
Indemnity			(4,508,054)	(13,478,232)
Medical			(3,072,292)	(5,792,678)
Total			(7,580,347)	(19,270,910)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

Summary of Estimates for 2019-20 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			2,804,329	3,383,000			
Medical			915,000	1,295,000			
Total			3,719,329	4,678,000	4,198,664	311,058	1.350
Department of Mental Health	2	Section 3					
Indemnity			5,183,000	6,951,000			
Medical			1,265,250	1,550,850			
Total			6,448,250	8,501,850	7,475,050	222,496	3.360
Department of Corrections	3	Section 4					
Indemnity			9,029,319	10,504,000			
Medical			2,193,000	3,888,150			
Total			11,222,319	14,392,150	12,807,235	368,720	3.473
UMass - Amherst	4	Section 5					
Indemnity			1,084,650	1,324,000			
Medical			614,000	673,200			
Total			1,698,650	1,997,200	1,847,925	664,701	0.278
UMass - Medical School	4	Section 6					
Indemnity			400,000	556,000			
Medical			204,000	275,100			
Total			604,000	831,100	717,550	424,565	0.169
Other Colleges & Universities	4	Section 7					
Indemnity			2,328,585	3,748,000			
Medical			828,100	1,259,265			
Total			3,156,685	5,007,265	4,081,975	1,508,678	0.271
All Others	5-17 & 95	Section 8					
Indemnity			30,928,000	33,710,286			
Medical			7,600,000	8,083,000			
Total			38,528,000	41,793,286	40,160,643	3,752,730	1.070
Grand Total		Section 1					
Indemnity			51,757,883	60,176,286			
Medical			13,619,350	17,024,565			
Total			65,377,233	77,200,851	71,289,042	7,252,948	0.983

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

Summary of Reserve Estimates by Cluster

Cluster	Cluster / Report Section	Undiscounted Low End	Undiscounted High End	Discounted at 4% Low End	Discounted at 4% High End	Discounted at 6% Low End	Discounted at 6% High End
DDS	1 / 2	21,390,237	27,197,866	16,391,056	20,913,083	14,825,620	18,953,558
DMH	2 / 3	25,871,337	33,115,652	19,052,378	24,499,025	17,059,019	21,966,086
DOC	3 / 4	36,911,582	49,893,208	28,403,603	38,343,476	25,654,350	34,604,991
UMass - Amherst	4 / 5	5,807,507	8,015,742	4,660,613	6,405,081	4,285,144	5,876,973
UMass - Medical	4 / 6	2,018,231	3,170,482	1,695,253	2,656,338	1,577,114	2,467,241
Other Colleges & Universities	4 / 7	17,670,866	24,709,504	13,857,302	19,475,773	12,520,323	17,635,567
All Other Dept's (incl. MassDOT, excl. MTA)	5 / 8	194,119,446	225,233,556	139,660,782	163,323,280	122,809,063	144,013,104
Total		303,789,206	371,336,010	223,720,987	275,616,055	198,730,634	245,517,520

All Other Departments	Cluster / Report Section	Undiscounted Low End	Undiscounted High End	Discounted at 4% Low End	Discounted at 4% High End	Discounted at 6% Low End	Discounted at 6% High End
MassDOT Agencies (excl. MTA)	5 / 8	13,422,210	15,658,133	9,658,386	11,355,623	8,493,506	10,013,451
Non-MassDOT Agencies	5 / 8	180,697,237	209,575,423	130,002,396	151,967,658	114,315,557	133,999,653
Total		194,119,446	225,233,556	139,660,782	163,323,280	122,809,063	144,013,104

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

Summary of Reserve Estimates by College

Cluster	Undiscounted		Discounted at 4%		Discounted at 6%	
	Low End	High End	Low End	High End	Low End	High End
Berkshire Community College	149,827	209,506	117,493	165,130	106,157	149,527
Bridgewater State College	1,345,982	1,882,112	1,055,504	1,483,461	953,667	1,343,293
Bristol Community College	343,885	480,861	269,671	379,009	243,652	343,198
Bunker Hill Community College	436,600	610,506	342,377	481,194	309,344	435,728
Cape Cod Community College	381,501	533,460	299,169	420,468	270,305	380,739
Fitchburg State College	517,340	723,407	405,693	570,182	366,551	516,307
Framingham State College	457,800	640,150	359,002	504,560	324,365	456,885
Greenfield Community College	198,597	277,702	155,737	218,881	140,712	198,200
Holyoke Community College	402,618	562,988	315,729	443,741	285,267	401,814
Mass Bay Community College	311,926	436,172	244,609	343,786	221,009	311,303
Mass College of Art	445,772	623,332	349,570	491,303	315,843	444,882
Mass Maritime Academy	361,568	505,587	283,537	398,498	256,181	360,845
Massachusetts College of Liberal Arts	372,863	521,381	292,395	410,947	264,184	372,118
Massasoit Community College	552,801	772,991	433,500	609,264	391,675	551,696
Middlesex Community College	237,616	332,263	186,336	261,886	168,358	237,142
Mt Wachusett Community College	302,927	423,588	237,552	333,868	214,633	302,322
North Essex Community College	374,003	522,975	293,289	412,203	264,992	373,255
North Shore Community College	359,633	502,881	282,020	396,366	254,810	358,914
Quinsigamond Community College	367,281	513,576	288,018	404,795	260,229	366,547
Roxbury Community College	174,285	243,706	136,672	192,086	123,486	173,937
Salem State College	750,975	1,050,103	588,907	827,680	532,088	749,475
Springfield Tech Community College	422,317	590,533	331,176	465,452	299,224	421,473
UMass (Boston)	1,661,070	2,322,706	1,302,594	1,830,733	1,176,917	1,657,752
UMass (Dartmouth)	1,961,486	2,742,783	1,538,176	2,161,833	1,389,770	1,957,568
University of Lowell	2,598,667	3,633,764	2,037,846	2,864,095	1,841,231	2,593,476
Westfield State College	1,173,024	1,640,261	919,873	1,292,837	831,121	1,170,681
Worcester State College	1,008,505	1,410,212	790,859	1,111,514	714,555	1,006,491
Total	17,670,866	24,709,504	13,857,302	19,475,773	12,520,323	17,635,567

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

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		107,649,546			115,246,301	118,735,048	7,596,755	11,085,502		
6/30/82-83		18,411,516	18,546,418		18,483,747	18,604,800	72,231	193,285		
6/30/83-84		27,035,426	27,793,400		27,289,283	27,671,929	253,857	636,503		
6/30/84-85	1,823,085	40,106,351	40,646,228	40,484,419	40,396,298	40,724,743	289,947	618,392	2.216	2.234
6/30/85-86	1,952,445	52,897,119	53,664,455	53,495,346	53,282,217	53,542,616	385,098	645,497	2.729	2.742
6/30/86-87	2,220,820	60,218,395	61,186,573	61,036,185	60,648,541	60,978,401	430,146	760,006	2.731	2.746
6/30/87-88	2,885,583	87,347,951	89,018,015	88,798,812	88,723,603	89,674,533	1,375,652	2,326,582	3.075	3.108
6/30/88-89	3,098,180	85,949,589	87,849,001	87,565,787	87,596,056	88,543,550	1,646,467	2,593,961	2.827	2.858
6/30/89-90	3,079,763	83,092,045	85,191,430	85,033,500	84,856,827	85,712,047	1,764,782	2,620,002	2.755	2.783
6/30/90-91	2,914,364	68,557,015	70,531,882	70,419,398	69,853,968	70,724,920	1,296,953	2,167,905	2.397	2.427
6/30/91-92	2,880,434	46,881,061	48,355,141	48,273,211	47,981,887	49,014,894	1,100,826	2,133,833	1.666	1.702
6/30/92-93	2,887,238	31,506,854	32,751,673	32,684,197	32,595,051	32,827,117	1,088,198	1,320,263	1.129	1.137
6/30/93-94	3,056,850	35,239,339	36,820,567	36,681,611	36,619,515	37,235,456	1,380,177	1,996,117	1.198	1.218
6/30/94-95	3,158,808	31,191,662	32,724,376	32,681,981	32,432,248	33,214,484	1,240,586	2,022,822	1.027	1.051
6/30/95-96	3,301,791	29,917,752	31,636,206	31,583,659	31,427,111	32,231,217	1,509,359	2,313,465	0.952	0.976
6/30/96-97	3,902,868	30,119,587	32,030,375	31,980,822	31,753,051	32,582,784	1,633,463	2,463,197	0.814	0.835
6/30/97-98	3,776,138	33,595,725	35,838,212	35,766,245	35,159,475	35,973,752	1,563,750	2,378,027	0.931	0.953
6/30/98-99	4,017,530	31,391,858	33,825,548	33,756,378	33,388,271	34,145,673	1,996,413	2,753,814	0.831	0.850
6/30/99-00	4,221,786	35,289,031	38,481,351	38,362,624	37,853,133	38,867,955	2,564,102	3,578,924	0.897	0.921
6/30/00-01	4,310,725	41,608,852	45,590,436	45,422,731	44,811,110	45,862,853	3,202,259	4,254,001	1.040	1.064
6/30/01-02	4,438,755	35,982,795	39,825,855	39,714,655	39,028,117	40,292,023	3,045,323	4,309,228	0.879	0.908
6/30/02-03	4,423,888	35,983,819	40,187,648	40,075,008	39,698,608	40,930,425	3,714,789	4,946,606	0.897	0.925
6/30/03-04	4,482,207	35,866,204	40,391,931	40,279,582	39,740,600	40,680,650	3,874,396	4,814,446	0.887	0.908
6/30/04-05	4,639,517	37,216,861	42,462,758	41,113,915	40,730,870	41,918,800	3,514,009	4,701,939	0.878	0.904
6/30/05-06	4,938,165	32,912,595	37,862,858	37,557,003	36,992,453	38,240,900	4,079,858	5,328,305	0.749	0.774
6/30/06-07	5,183,126	31,478,216	36,834,653	36,889,916	35,693,623	37,698,030	4,215,407	6,219,814	0.689	0.727
6/30/07-08	5,508,425	36,095,385	42,967,044	42,668,884	42,289,794	43,315,016	6,194,408	7,219,631	0.768	0.786
6/30/08-09	5,447,676	35,759,766	43,286,354	42,927,721	42,619,695	43,929,514	6,859,929	8,169,748	0.782	0.806
6/30/09-10	5,525,579	34,602,809	42,580,080	42,615,636	41,912,182	43,581,190	7,309,373	8,978,381	0.759	0.789
6/30/10-11	5,712,303	38,599,752	48,439,546	47,717,633	47,411,576	49,028,616	8,811,824	10,428,864	0.830	0.858
6/30/11-12	5,880,714	37,507,031	48,295,685	47,894,618	47,406,592	49,179,492	9,899,561	11,672,461	0.806	0.836
6/30/12-13	6,162,621	32,340,565	42,549,555	44,369,472	42,513,778	44,752,800	10,173,213	12,412,235	0.690	0.726
6/30/13-14	6,442,136	38,132,030	52,067,818	52,648,786	51,777,700	53,613,628	13,645,670	15,481,598	0.804	0.832
6/30/14-15	6,758,892	41,454,538	59,207,104	59,343,836	58,821,361	60,843,371	17,366,823	19,388,833	0.870	0.900
6/30/15-16	6,843,054	43,140,104	66,135,289	64,518,672	64,365,952	67,498,013	21,225,848	24,357,909	0.941	0.986
6/30/16-17	6,638,078	38,526,109	64,638,684	63,046,685	62,888,836	66,453,300	24,362,727	27,927,191	0.947	1.001
6/30/17-18	6,709,926	30,872,701	62,972,018	62,522,650	61,358,808	65,543,740	30,486,107	34,671,039	0.914	0.977
6/30/18-19	7,024,786	21,876,889	59,666,737	64,167,873	60,347,664	67,350,810	38,470,775	45,473,921	0.859	0.959
6/30/19-20	7,252,948	11,229,087	66,835,399	71,735,946	65,377,233	77,200,851	54,148,145	65,971,764	0.901	1.064
Total	163,501,202	1,627,583,929	1,839,688,303	1,795,835,395	1,931,373,135	1,998,919,939	303,789,206	371,336,010		
Tot 6/30/84-20	163,501,202	1,474,487,441	1,793,348,485	1,795,835,395	1,770,353,805	1,833,908,162	295,866,364	359,420,721	1.083	1.122

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, 2020

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		23,524,623			26,318,836	27,382,074	2,794,214	3,857,452		
6/30/82-83		4,960,536	4,979,706		4,979,550	4,987,269	19,014	26,733		
6/30/83-84		10,360,844	10,839,256		10,462,972	10,585,118	102,128	224,274		
6/30/84-85	181,560	7,574,989	7,624,728	7,627,383	7,584,000	7,640,467	9,011	65,478	4.177	4.208
6/30/85-86	195,247	11,874,262	11,977,708	11,979,434	11,890,000	11,902,000	15,739	27,739	6.090	6.096
6/30/86-87	224,370	15,376,859	15,528,073	15,536,924	15,399,000	15,414,000	22,141	37,141	6.863	6.870
6/30/87-88	262,864	22,652,319	22,918,259	22,902,561	22,901,000	22,920,000	248,681	267,681	8.712	8.719
6/30/88-89	283,884	24,285,748	24,587,493	24,595,578	24,587,000	24,648,670	301,252	362,922	8.661	8.683
6/30/89-90	285,078	18,705,105	18,984,886	19,036,591	18,884,000	18,887,000	178,895	181,895	6.624	6.625
6/30/90-91	267,732	13,798,141	14,045,512	14,043,711	13,930,043	13,933,000	131,902	134,859	5.203	5.204
6/30/91-92	261,442	10,523,200	10,741,029	10,738,105	10,735,269	10,741,000	212,069	217,800	4.106	4.108
6/30/92-93	259,992	5,947,948	6,093,209	6,091,158	5,992,210	6,052,000	44,262	104,052	2.305	2.328
6/30/93-94	257,062	4,771,616	4,904,062	4,902,351	4,846,090	4,894,000	74,474	122,384	1.885	1.904
6/30/94-95	255,854	3,009,689	3,101,854	3,102,232	3,092,570	3,102,000	82,881	92,311	1.209	1.212
6/30/95-96	255,539	4,179,296	4,333,141	4,330,648	4,331,000	4,343,000	151,704	163,704	1.695	1.700
6/30/96-97	270,071	3,349,690	3,477,574	3,477,824	3,379,000	3,401,000	29,310	51,310	1.251	1.259
6/30/97-98	245,367	3,525,901	3,690,134	3,687,504	3,687,000	3,706,000	161,099	180,099	1.503	1.510
6/30/98-99	251,453	3,044,847	3,187,849	3,188,312	3,188,000	3,201,000	143,153	156,153	1.268	1.273
6/30/99-00	255,641	3,438,001	3,631,646	3,628,545	3,628,000	3,650,000	189,999	211,999	1.419	1.428
6/30/00-01	263,918	5,209,553	5,536,257	5,522,516	5,523,000	5,619,000	313,447	409,447	2.093	2.129
6/30/01-02	267,598	3,272,740	3,492,405	3,492,303	3,315,000	3,348,000	42,260	75,260	1.239	1.251
6/30/02-03	274,465	3,928,885	4,254,394	4,247,205	4,247,000	4,273,000	318,115	344,115	1.547	1.557
6/30/03-04	272,384	4,439,113	4,848,176	4,834,846	4,834,000	4,869,000	394,887	429,887	1.775	1.788
6/30/04-05	273,647	3,710,687	4,052,365	4,014,225	3,772,000	3,807,000	61,313	96,313	1.378	1.391
6/30/05-06	285,139	4,049,579	4,462,478	4,404,672	4,405,000	4,489,000	355,421	439,421	1.545	1.574
6/30/06-07	298,516	4,136,171	4,598,232	4,551,266	4,487,250	4,636,000	351,079	499,829	1.503	1.553
6/30/07-08	314,231	3,125,777	3,466,024	3,590,404	3,369,600	3,641,000	243,823	515,223	1.072	1.159
6/30/08-09	302,998	3,628,397	4,094,907	4,124,089	4,025,750	4,155,000	397,353	526,603	1.329	1.371
6/30/09-10	297,252	4,730,189	5,427,806	5,294,184	5,222,400	5,457,000	492,211	726,811	1.757	1.836
6/30/10-11	292,432	3,995,102	4,670,148	4,604,196	4,535,400	4,705,000	540,298	709,898	1.551	1.609
6/30/11-12	295,908	4,346,065	5,129,804	5,038,420	4,964,000	5,160,000	617,935	813,935	1.678	1.744
6/30/12-13	301,541	3,879,062	4,679,343	4,698,200	4,544,900	4,728,000	665,838	848,938	1.507	1.568
6/30/13-14	309,910	4,177,505	5,178,120	5,115,847	4,974,900	5,222,000	797,395	1,044,495	1.605	1.685
6/30/14-15	316,552	4,578,906	5,938,318	5,730,358	5,588,900	5,971,000	1,009,994	1,392,094	1.766	1.886
6/30/15-16	316,565	3,069,387	4,297,921	4,455,521	4,165,000	4,482,000	1,095,613	1,412,613	1.316	1.416
6/30/16-17	292,403	3,266,144	4,830,433	4,802,269	4,671,000	4,860,000	1,404,856	1,593,856	1.597	1.662
6/30/17-18	292,956	2,561,189	4,540,626	4,593,634	4,425,000	4,621,000	1,863,811	2,059,811	1.510	1.577
6/30/18-19	308,002	2,107,579	4,764,675	4,912,266	4,637,000	4,939,000	2,529,421	2,831,421	1.506	1.604
6/30/19-20	311,058	736,089	3,585,942	4,651,693	3,719,329	4,678,000	2,983,240	3,941,911	1.196	1.504
Total	9,900,630	267,851,732	266,494,493	251,546,977	289,241,969	295,049,598	21,390,237	27,197,866		
Tot 6/30/84-20	9,900,630	229,005,730	250,675,531	251,546,977	247,480,611	252,095,137	18,474,881	23,089,407	2.500	2.546

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, 2020

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

Summary of Ultimate Losses

(1) Accident Year	(2) Payroll (000's)	(3) Pd Loss Including Lump Sum	(4) Ult Loss - Paid Loss Method	(5) Ult Loss - Paid BF Method	(6) Aon Selected Ult (Low)	(7) Aon Selected Ult (High)	(8) Outstanding Losses (Low)	(9) Outstanding Losses (High)	(10) Ult Loss Cost (Low)	(11) Ult Loss Cost (High)
All Prior Yrs		21,821,999			23,110,406	23,477,056	1,288,408	1,655,058		
6/30/82-83		3,066,083	3,103,266		3,103,266	3,110,600	37,183	44,517		
6/30/83-84		2,864,047	2,905,685		2,878,598	2,905,554	14,552	41,507		
6/30/84-85	142,561	4,882,362	4,985,848	4,960,731	4,908,000	4,991,010	25,638	108,648	3.443	3.501
6/30/85-86	153,298	4,891,866	5,032,965	5,030,088	4,899,000	4,914,000	7,134	22,134	3.196	3.206
6/30/86-87	176,136	6,911,248	7,146,457	7,158,886	6,924,000	6,998,000	12,752	86,752	3.931	3.973
6/30/87-88	206,319	13,781,010	14,319,385	14,268,686	14,280,369	14,331,416	499,359	550,406	6.921	6.946
6/30/88-89	222,806	14,897,483	15,564,261	15,500,312	15,538,786	15,584,800	641,303	687,317	6.974	6.995
6/30/89-90	223,751	14,256,491	14,976,425	14,912,122	14,892,000	14,977,000	635,509	720,509	6.656	6.694
6/30/90-91	210,162	9,579,422	10,071,216	10,066,632	9,640,000	9,715,155	60,578	135,733	4.587	4.623
6/30/91-92	205,241	5,520,691	5,809,591	5,804,524	5,542,000	5,594,974	21,309	74,284	2.700	2.726
6/30/92-93	176,705	4,961,331	5,250,390	5,242,662	5,243,000	5,262,030	281,669	300,699	2.967	2.978
6/30/93-94	173,075	3,295,259	3,530,774	3,522,822	3,523,000	3,537,630	227,741	242,371	2.036	2.044
6/30/94-95	178,317	3,672,165	3,942,826	3,931,603	3,704,000	3,766,520	31,835	94,355	2.077	2.112
6/30/95-96	175,996	2,736,200	2,924,625	2,916,600	2,765,000	2,839,135	28,800	102,935	1.571	1.613
6/30/96-97	190,083	2,156,401	2,304,508	2,299,017	2,179,000	2,234,330	22,599	77,929	1.146	1.175
6/30/97-98	177,278	3,420,225	3,709,488	3,692,447	3,450,000	3,571,870	29,775	151,645	1.946	2.015
6/30/98-99	189,080	2,594,441	2,794,885	2,785,162	2,748,240	2,758,080	153,799	163,639	1.453	1.459
6/30/99-00	194,494	2,916,057	3,165,752	3,151,790	3,019,360	3,089,770	103,303	173,713	1.552	1.589
6/30/00-01	201,568	4,053,774	4,440,135	4,414,748	4,225,650	4,330,380	171,876	276,606	2.096	2.148
6/30/01-02	203,105	3,225,444	3,558,915	3,540,850	3,396,350	3,478,190	170,906	252,746	1.672	1.713
6/30/02-03	202,515	2,654,226	2,895,450	2,888,760	2,879,020	2,909,000	224,794	254,774	1.422	1.436
6/30/03-04	189,588	4,702,375	5,196,846	5,166,161	4,969,220	5,139,380	266,845	437,005	2.621	2.711
6/30/04-05	186,990	3,658,713	4,057,025	3,873,561	3,874,000	4,057,000	215,287	398,287	2.072	2.170
6/30/05-06	193,254	2,756,568	3,051,393	3,008,014	3,008,000	3,052,000	251,432	295,432	1.556	1.579
6/30/06-07	203,359	2,893,235	3,255,048	3,195,677	3,072,550	3,128,950	179,315	235,715	1.511	1.539
6/30/07-08	212,083	2,305,389	2,602,581	2,667,952	2,507,600	2,572,250	202,211	266,861	1.182	1.213
6/30/08-09	204,679	2,893,148	3,302,225	3,298,596	3,277,000	3,324,000	383,852	430,852	1.601	1.624
6/30/09-10	184,688	1,842,861	2,131,744	2,281,645	2,201,000	2,282,000	358,139	439,139	1.192	1.236
6/30/10-11	169,689	3,273,103	3,868,438	3,771,329	3,771,000	3,868,000	497,897	594,897	2.222	2.279
6/30/11-12	177,399	2,334,587	2,813,895	2,941,683	2,813,000	2,942,000	478,413	607,413	1.586	1.658
6/30/12-13	189,252	3,242,793	4,003,570	4,040,048	4,004,000	4,073,000	761,207	830,207	2.116	2.152
6/30/13-14	199,876	3,820,779	4,887,459	4,910,074	4,870,000	4,969,000	1,049,221	1,148,221	2.437	2.486
6/30/14-15	213,700	4,847,255	6,460,746	6,279,902	6,280,000	6,461,000	1,432,745	1,613,745	2.939	3.023
6/30/15-16	211,829	6,089,091	8,501,366	7,950,574	7,950,000	8,501,000	1,860,909	2,411,909	3.753	4.013
6/30/16-17	203,085	4,981,151	7,605,925	7,281,431	7,281,000	7,606,000	2,299,849	2,624,849	3.585	3.745
6/30/17-18	203,925	3,230,813	5,720,621	6,227,847	5,720,000	6,288,750	2,489,187	3,057,937	2.805	3.084
6/30/18-19	218,060	2,793,139	6,254,988	7,185,978	6,255,000	7,252,300	3,461,861	4,459,161	2.868	3.326
6/30/19-20	222,496	1,456,106	6,387,914	8,358,766	6,448,250	8,501,850	4,992,144	7,045,744	2.898	3.821
Total	6,986,443	195,279,328	202,534,633	198,527,682	221,150,666	228,394,980	25,871,337	33,115,652		
Tot 6/30/84-20	6,986,443	167,527,200	196,525,682	198,527,682	192,058,395	198,901,770	24,531,195	31,374,570	2.749	2.847

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, 2020

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		5,933,425			6,776,172	7,334,829	842,747	1,401,404		
6/30/82-83		2,912,565	2,930,277		2,915,184	2,931,680	2,619	19,115		
6/30/83-84		2,135,674	2,222,911		2,200,950	2,229,896	65,276	94,222		
6/30/84-85	115,258	4,837,061	4,878,137	4,864,835	4,865,377	4,874,000	28,316	36,939	4.221	4.229
6/30/85-86	123,937	6,962,840	7,027,801	7,017,796	7,015,935	7,023,000	53,095	60,160	5.661	5.667
6/30/86-87	142,396	4,532,327	4,579,552	4,583,363	4,577,326	4,584,923	44,999	52,596	3.215	3.220
6/30/87-88	166,792	7,243,858	7,325,890	7,335,646	7,267,699	7,300,185	23,841	56,327	4.357	4.377
6/30/88-89	180,117	8,768,577	8,882,101	8,869,353	8,869,000	8,882,000	100,423	113,423	4.924	4.931
6/30/89-90	180,883	11,489,655	11,655,029	11,652,710	11,652,000	11,656,000	162,345	166,345	6.442	6.444
6/30/90-91	169,902	13,377,556	13,602,454	13,600,498	13,600,000	13,758,900	222,444	381,344	8.005	8.098
6/30/91-92	165,926	6,723,740	6,874,914	6,872,545	6,873,000	6,985,850	149,260	262,110	4.142	4.210
6/30/92-93	174,198	4,516,464	4,628,159	4,625,971	4,623,843	4,627,000	107,379	110,536	2.654	2.656
6/30/93-94	185,946	6,784,946	6,977,738	6,972,005	6,972,000	6,978,000	187,054	193,054	3.749	3.753
6/30/94-95	194,051	7,497,146	7,743,605	7,734,308	7,734,000	7,744,000	236,854	246,854	3.986	3.991
6/30/95-96	205,262	6,876,029	7,151,418	7,139,530	7,139,000	7,152,000	262,971	275,971	3.478	3.484
6/30/96-97	234,073	7,869,817	8,237,535	8,219,254	8,219,000	8,237,000	349,183	367,183	3.511	3.519
6/30/97-98	221,865	10,959,908	11,584,565	11,543,973	11,197,290	11,295,330	237,382	335,422	5.047	5.091
6/30/98-99	256,071	9,676,537	10,323,990	10,280,097	9,969,115	10,057,530	292,577	380,993	3.893	3.928
6/30/99-00	268,486	10,300,738	11,088,666	11,030,019	10,704,314	10,802,590	403,576	501,853	3.987	4.024
6/30/00-01	279,182	13,494,965	14,657,013	14,565,640	14,146,108	14,281,080	651,143	786,115	5.067	5.115
6/30/01-02	283,070	10,861,524	11,894,245	11,820,349	11,462,642	11,895,000	601,117	1,033,476	4.049	4.202
6/30/02-03	289,846	11,021,347	12,179,357	12,098,132	11,747,948	12,179,000	726,601	1,157,653	4.053	4.202
6/30/03-04	293,771	10,013,452	11,141,896	11,067,649	10,749,140	10,792,000	735,689	778,548	3.659	3.674
6/30/04-05	291,382	11,050,330	12,431,518	11,483,565	11,417,110	11,902,300	366,780	851,970	3.918	4.085
6/30/05-06	294,709	7,989,446	9,073,481	8,473,414	8,384,093	8,811,000	394,647	821,554	2.845	2.990
6/30/06-07	289,603	6,938,761	7,971,924	7,479,977	7,392,843	7,934,080	454,083	995,319	2.553	2.740
6/30/07-08	354,668	6,503,977	7,545,411	7,230,454	7,281,794	7,569,090	777,817	1,065,113	2.053	2.134
6/30/08-09	332,413	5,764,684	6,759,506	6,508,601	6,506,485	7,097,800	741,801	1,333,116	1.957	2.135
6/30/09-10	336,338	3,884,514	4,602,082	4,701,957	4,567,502	4,937,650	682,988	1,053,136	1.358	1.468
6/30/10-11	333,783	4,691,548	5,624,138	5,601,219	5,540,256	5,926,300	848,708	1,234,752	1.660	1.775
6/30/11-12	348,187	3,610,499	4,401,760	4,660,895	4,549,772	4,893,950	939,273	1,283,451	1.307	1.406
6/30/12-13	368,022	3,275,963	4,072,090	4,519,409	4,285,388	4,744,800	1,009,425	1,468,837	1.164	1.289
6/30/13-14	390,528	3,970,056	5,048,904	5,473,634	5,225,340	5,747,200	1,255,285	1,777,144	1.338	1.472
6/30/14-15	402,750	5,058,676	6,652,731	6,859,792	6,777,701	7,202,700	1,719,024	2,144,024	1.683	1.788
6/30/15-16	400,013	4,992,597	6,889,230	7,123,158	6,999,772	7,478,950	2,007,175	2,486,353	1.750	1.870
6/30/16-17	352,565	6,373,140	9,570,214	8,862,558	9,237,096	10,147,800	2,863,956	3,774,660	2.620	2.878
6/30/17-18	347,621	3,802,437	6,820,546	6,988,318	6,926,828	7,417,500	3,124,392	3,615,063	1.993	2.134
6/30/18-19	357,324	3,530,903	8,356,087	8,038,454	8,232,844	9,000,750	4,701,941	5,469,847	2.304	2.519
6/30/19-20	368,720	2,684,923	13,885,115	9,665,326	11,222,319	14,392,150	8,537,396	11,707,227	3.044	3.903
Total	9,699,658	268,912,605	307,291,988	295,564,403	305,824,187	318,805,813	36,911,582	49,893,208		
Tot 6/30/84-20	9,699,658	257,930,941	302,138,801	295,564,403	293,931,880	306,309,408	36,000,939	48,378,467	3.030	3.158

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, 2020

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		2,507,044			2,709,224	2,809,849	202,181	302,806		
6/30/82-83		225,530	226,233		229,124	232,147	3,594	6,617		
6/30/83-84		220,938	230,119		224,907	229,969	3,969	9,031		
6/30/84-85	176,924	2,017,397	2,033,635	2,030,757	2,030,953	2,034,952	13,555	17,554	1.148	1.150
6/30/85-86	188,662	1,676,445	1,691,435	1,688,930	1,688,741	1,692,263	12,296	15,818	0.895	0.897
6/30/86-87	212,277	2,738,466	2,766,753	2,761,131	2,761,000	2,767,000	22,534	28,534	1.301	1.303
6/30/87-88	243,118	2,649,762	2,682,753	2,678,961	2,679,000	2,682,000	29,238	32,238	1.102	1.103
6/30/88-89	248,990	2,393,347	2,428,987	2,424,871	2,425,000	2,429,000	31,653	35,653	0.974	0.976
6/30/89-90	250,404	679,355	689,398	693,891	692,000	702,000	12,645	22,645	0.276	0.280
6/30/90-91	235,170	3,036,008	3,094,328	3,093,882	3,067,000	3,092,000	30,992	55,992	1.304	1.315
6/30/91-92	235,607	3,186,780	3,252,488	3,251,458	3,219,000	3,246,000	32,220	59,220	1.366	1.378
6/30/92-93	241,161	712,440	723,357	723,295	717,696	740,317	5,256	27,877	0.298	0.307
6/30/93-94	254,321	1,254,100	1,277,779	1,277,269	1,265,000	1,297,000	10,900	42,900	0.497	0.510
6/30/94-95	256,665	1,067,175	1,090,816	1,090,236	1,074,423	1,111,476	7,248	44,301	0.419	0.433
6/30/95-96	265,739	835,707	855,093	854,710	841,425	870,865	5,718	35,158	0.317	0.328
6/30/96-97	296,336	700,495	721,605	721,283	705,847	730,726	5,352	30,232	0.238	0.247
6/30/97-98	296,982	651,847	668,940	669,044	658,000	678,000	6,153	26,153	0.222	0.228
6/30/98-99	299,530	931,863	960,305	959,698	941,000	976,320	9,137	44,457	0.314	0.326
6/30/99-00	323,627	1,577,004	1,641,327	1,637,690	1,592,000	1,646,000	14,996	68,996	0.492	0.509
6/30/00-01	338,348	1,853,822	1,937,779	1,932,768	1,933,000	1,938,000	79,178	84,178	0.571	0.573
6/30/01-02	329,555	1,340,583	1,396,835	1,394,752	1,395,000	1,397,000	54,417	56,417	0.423	0.424
6/30/02-03	329,179	1,226,127	1,283,398	1,281,619	1,282,000	1,284,685	55,873	58,558	0.389	0.390
6/30/03-04	344,547	414,340	436,651	438,842	436,000	439,000	21,660	24,660	0.127	0.127
6/30/04-05	325,530	912,330	963,225	958,853	959,000	964,000	46,670	51,670	0.295	0.296
6/30/05-06	403,750	640,322	686,567	712,732	686,000	712,000	45,678	71,678	0.170	0.176
6/30/06-07	420,219	658,206	708,665	739,821	708,000	740,000	49,794	81,794	0.168	0.176
6/30/07-08	425,998	977,819	1,060,735	1,066,635	1,048,000	1,078,000	70,181	100,181	0.246	0.253
6/30/08-09	420,566	1,487,798	1,626,604	1,584,892	1,584,000	1,627,000	96,202	139,202	0.377	0.387
6/30/09-10	433,206	1,007,910	1,102,065	1,113,517	1,098,000	1,138,650	90,090	130,740	0.253	0.263
6/30/10-11	444,673	1,414,566	1,574,091	1,536,594	1,536,000	1,595,350	121,434	180,784	0.345	0.359
6/30/11-12	467,753	1,444,445	1,623,394	1,589,207	1,589,000	1,623,000	144,555	178,555	0.340	0.347
6/30/12-13	495,398	1,054,806	1,208,458	1,223,435	1,209,000	1,244,300	154,194	189,494	0.244	0.251
6/30/13-14	518,391	836,249	972,142	1,053,935	972,000	1,074,400	135,751	238,151	0.188	0.207
6/30/14-15	539,631	1,468,572	1,803,357	1,757,419	1,757,000	1,929,240	288,428	460,668	0.326	0.358
6/30/15-16	585,875	1,681,111	2,159,759	2,094,171	2,094,000	2,315,040	412,889	633,929	0.357	0.395
6/30/16-17	594,787	1,344,674	1,898,059	1,887,273	1,874,000	2,078,200	529,326	733,526	0.315	0.349
6/30/17-18	607,484	846,199	1,445,795	1,573,978	1,446,000	1,652,700	599,801	806,501	0.238	0.272
6/30/18-19	656,644	809,559	1,836,436	1,898,965	1,837,000	2,075,575	1,027,441	1,266,016	0.280	0.316
6/30/19-20	664,701	374,343	1,692,909	1,937,455	1,698,650	1,997,200	1,324,307	1,622,857	0.256	0.300
Total	13,371,748	50,855,482	54,452,274	54,333,968	56,662,989	58,871,224	5,807,507	8,015,742		
Tot 6/30/84-20	13,371,748	47,901,970	53,995,923	54,333,968	53,499,733	55,599,258	5,597,763	7,697,288	0.400	0.416

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, 2020

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	327,681		328,340	335,999	774	8,433		
6/30/83-84		1,494,800	1,495,305		1,496,283	1,502,058	1,483	7,258		
6/30/84-85	116,303	1,015,470	1,015,844	1,015,986	1,016,598	1,020,009	1,128	4,539	0.874	0.877
6/30/85-86	123,981	2,733,296	2,734,323	2,734,562	2,735,000	2,735,000	1,704	1,704	2.206	2.206
6/30/86-87	139,388	3,777,375	3,778,705	3,778,710	3,779,000	3,794,919	1,625	17,544	2.711	2.723
6/30/87-88	159,499	3,373,806	3,374,943	3,374,921	3,375,000	3,389,006	1,194	15,200	2.116	2.125
6/30/88-89	180,644	3,112,432	3,113,447	3,113,833	3,115,270	3,125,764	2,838	13,332	1.725	1.730
6/30/89-90	142,494	3,797,545	3,798,811	3,799,315	3,800,827	3,813,801	3,282	16,256	2.667	2.676
6/30/90-91	143,694	1,403,520	1,403,944	1,403,941	1,404,925	1,409,332	1,405	5,812	0.978	0.981
6/30/91-92	155,170	2,187,492	2,188,107	2,188,097	2,189,822	2,195,896	2,330	8,404	1.411	1.415
6/30/92-93	163,283	1,033,363	1,033,648	1,033,642	1,035,977	1,044,458	2,614	11,095	0.634	0.640
6/30/93-94	177,184	2,671,099	2,672,263	2,672,222	2,673,000	2,734,324	1,901	63,226	1.509	1.543
6/30/94-95	188,391	941,284	942,742	942,719	943,906	952,133	2,622	10,849	0.501	0.505
6/30/95-96	201,751	874,675	877,352	877,321	881,507	892,217	6,832	17,542	0.437	0.442
6/30/96-97	231,872	620,228	622,108	622,251	624,614	632,798	4,386	12,570	0.269	0.273
6/30/97-98	232,237	1,043,830	1,052,816	1,052,488	1,050,184	1,064,602	6,355	20,772	0.452	0.458
6/30/98-99	232,075	940,822	948,085	947,972	947,917	954,233	7,094	13,410	0.408	0.411
6/30/99-00	211,819	872,750	885,771	885,083	880,459	887,335	7,710	14,585	0.416	0.419
6/30/00-01	215,099	943,388	956,956	956,347	951,353	958,733	7,965	15,345	0.442	0.446
6/30/01-02	227,797	574,105	583,458	583,445	578,126	586,203	4,020	12,097	0.254	0.257
6/30/02-03	242,008	1,340,099	1,379,637	1,376,791	1,376,000	1,383,700	35,901	43,601	0.569	0.572
6/30/03-04	276,758	1,259,443	1,288,591	1,287,112	1,287,000	1,291,990	27,557	32,547	0.465	0.467
6/30/04-05	260,378	367,518	376,752	384,064	376,000	393,500	8,482	25,982	0.144	0.151
6/30/05-06	317,741	1,167,711	1,203,900	1,191,897	1,192,000	1,223,900	24,289	56,189	0.375	0.385
6/30/06-07	325,922	605,124	625,886	633,321	626,000	634,000	20,876	28,876	0.192	0.195
6/30/07-08	354,130	1,693,364	1,755,049	1,731,442	1,731,000	1,782,350	37,636	88,986	0.489	0.503
6/30/08-09	362,309	966,581	1,009,751	1,007,038	1,004,000	1,035,350	37,419	68,769	0.277	0.286
6/30/09-10	383,298	824,915	866,597	872,137	865,000	888,200	40,085	63,285	0.226	0.232
6/30/10-11	394,924	1,025,472	1,094,596	1,079,161	1,079,000	1,112,150	53,528	86,678	0.273	0.282
6/30/11-12	381,943	1,291,186	1,397,154	1,359,839	1,360,000	1,413,050	68,814	121,864	0.356	0.370
6/30/12-13	384,763	680,762	742,858	758,494	742,000	774,700	61,238	93,938	0.193	0.201
6/30/13-14	364,582	1,100,222	1,226,534	1,189,652	1,189,000	1,250,250	88,778	150,028	0.326	0.343
6/30/14-15	370,543	594,765	685,960	696,708	686,000	711,000	91,235	116,235	0.185	0.192
6/30/15-16	382,602	801,687	972,556	941,852	942,000	987,250	140,313	185,563	0.246	0.258
6/30/16-17	395,324	361,053	466,682	550,656	467,000	563,100	105,947	202,047	0.118	0.142
6/30/17-18	398,722	443,458	718,364	790,614	719,000	802,000	275,542	358,542	0.180	0.201
6/30/18-19	410,826	365,246	793,376	822,376	734,700	833,650	369,454	468,404	0.179	0.203
6/30/19-20	424,565	142,125	579,715	818,071	604,000	831,100	461,875	688,975	0.142	0.196
Total	9,674,021	50,225,388	50,990,269	49,474,080	52,243,618	53,395,869	2,018,231	3,170,482		
Tot 6/30/84-20	9,674,021	46,947,210	49,167,283	49,474,080	48,963,184	50,102,001	2,015,974	3,154,791	0.506	0.518

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, 2020

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			3,361,301	3,373,380	3,020	15,099		
6/30/82-83		796,317	796,619		804,015	819,146	7,698	22,829		
6/30/83-84		945,504	945,850		954,820	973,314	9,316	27,810		
6/30/84-85	357,749	1,604,929	1,605,518	1,605,816	1,620,414	1,650,819	15,485	45,890	0.453	0.461
6/30/85-86	380,112	2,253,254	2,254,080	2,254,363	2,273,096	2,311,243	19,842	57,989	0.598	0.608
6/30/86-87	423,770	3,282,577	3,283,812	3,283,755	3,284,000	3,298,989	1,423	16,413	0.775	0.778
6/30/87-88	480,405	5,069,952	5,071,759	5,071,770	5,072,000	5,091,986	2,048	22,033	1.056	1.060
6/30/88-89	495,261	1,941,224	1,941,844	1,942,189	1,943,000	1,949,786	1,776	8,562	0.392	0.394
6/30/89-90	502,691	4,397,880	4,405,987	4,405,500	4,406,000	4,417,676	8,120	19,796	0.876	0.879
6/30/90-91	482,143	1,866,079	1,871,298	1,871,284	1,872,000	1,880,543	5,921	14,464	0.388	0.390
6/30/91-92	492,539	2,206,449	2,215,069	2,215,016	2,218,796	2,228,514	12,347	22,064	0.450	0.452
6/30/92-93	524,541	1,653,844	1,664,258	1,664,177	1,679,326	1,716,282	25,482	62,438	0.320	0.327
6/30/93-94	584,853	1,980,276	1,995,054	1,994,916	2,000,425	2,053,512	20,149	73,235	0.342	0.351
6/30/94-95	587,701	2,389,735	2,418,351	2,417,766	2,420,349	2,489,175	30,614	99,440	0.412	0.424
6/30/95-96	614,868	1,850,889	1,874,610	1,874,539	1,879,180	1,920,160	28,290	69,271	0.306	0.312
6/30/96-97	700,686	2,090,529	2,131,418	2,131,396	2,135,590	2,200,830	45,061	110,301	0.305	0.314
6/30/97-98	684,415	2,939,046	3,030,406	3,027,161	3,027,000	3,034,400	87,954	95,354	0.442	0.443
6/30/98-99	707,796	1,930,224	2,001,184	2,000,527	2,001,000	2,021,780	70,776	91,556	0.283	0.286
6/30/99-00	760,477	1,668,934	1,733,554	1,735,165	1,734,000	1,747,000	65,066	78,066	0.228	0.230
6/30/00-01	811,600	2,346,467	2,452,544	2,451,532	2,452,000	2,453,000	105,533	106,533	0.302	0.302
6/30/01-02	835,038	3,189,047	3,360,320	3,355,526	3,356,000	3,366,610	166,953	177,563	0.402	0.403
6/30/02-03	825,340	2,070,822	2,207,892	2,209,011	2,193,640	2,225,000	122,818	154,178	0.266	0.270
6/30/03-04	849,216	2,191,465	2,365,143	2,366,704	2,350,240	2,383,000	158,775	191,535	0.277	0.281
6/30/04-05	992,508	1,683,527	1,839,148	1,937,475	1,824,760	1,949,000	141,233	265,473	0.184	0.196
6/30/05-06	962,878	2,435,495	2,716,811	2,735,052	2,689,360	2,838,000	253,865	402,505	0.279	0.295
6/30/06-07	1,032,930	1,651,123	1,865,998	2,030,783	1,850,980	2,031,000	199,857	379,877	0.179	0.197
6/30/07-08	1,063,597	3,684,757	4,220,161	4,154,012	4,132,800	4,220,000	448,043	535,243	0.389	0.397
6/30/08-09	1,073,805	3,112,931	3,652,823	3,620,279	3,472,460	3,654,000	359,529	541,069	0.323	0.340
6/30/09-10	1,084,749	4,543,140	5,447,204	5,133,770	4,912,280	5,447,000	369,140	903,860	0.453	0.502
6/30/10-11	1,134,164	3,610,828	4,349,907	4,295,172	4,118,920	4,350,000	508,092	739,172	0.363	0.384
6/30/11-12	1,202,674	3,209,893	4,031,141	4,020,442	3,847,820	4,034,000	637,927	824,107	0.320	0.335
6/30/12-13	1,284,741	2,883,565	3,722,743	3,860,408	3,573,490	3,861,000	689,925	977,435	0.278	0.301
6/30/13-14	1,346,902	3,215,680	4,374,880	4,423,979	4,190,460	4,489,000	974,780	1,273,320	0.311	0.333
6/30/14-15	1,404,093	3,024,944	4,331,389	4,523,261	4,308,760	4,696,900	1,283,816	1,671,956	0.307	0.335
6/30/15-16	1,454,612	3,537,541	5,514,144	5,283,204	5,257,520	5,520,630	1,719,979	1,983,089	0.361	0.380
6/30/16-17	1,461,588	2,871,232	4,713,139	4,953,183	4,618,740	4,996,730	1,747,508	2,125,498	0.316	0.342
6/30/17-18	1,457,740	2,773,234	5,460,585	5,415,804	5,185,980	5,508,050	2,412,746	2,734,816	0.356	0.378
6/30/18-19	1,500,205	1,483,373	3,950,369	4,751,280	3,783,660	4,792,785	2,300,287	3,309,412	0.252	0.319
6/30/19-20	1,508,678	547,012	3,161,172	4,963,445	3,156,685	5,007,265	2,609,673	4,460,253	0.209	0.332
Total	32,067,064	98,292,001	114,978,181	115,979,663	115,962,867	123,001,505	17,670,866	24,709,504		
Tot 6/30/84-20	32,067,064	93,191,899	113,235,713	115,979,663	110,842,731	117,835,665	17,650,832	24,643,767	0.346	0.367

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, 2020

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		49,048,363			51,514,549	52,902,047	2,466,186	3,853,683		
6/30/82-83		6,122,919	6,182,638		6,124,267	6,187,961	1,348	65,042		
6/30/83-84		9,013,620	9,154,275		9,070,752	9,246,020	57,133	232,400		
6/30/84-85	732,729	18,174,143	18,502,518	18,378,912	18,370,956	18,513,486	196,814	339,344	2.507	2.527
6/30/85-86	787,208	22,505,157	22,946,143	22,790,172	22,780,445	22,965,110	275,288	459,953	2.894	2.917
6/30/86-87	902,483	23,599,543	24,103,221	23,933,415	23,924,215	24,120,570	324,672	521,027	2.651	2.673
6/30/87-88	1,366,586	32,577,244	33,325,026	33,166,267	33,148,535	33,959,940	571,291	1,382,696	2.426	2.485
6/30/88-89	1,486,478	30,550,778	31,330,868	31,119,650	31,118,000	31,923,530	567,222	1,372,752	2.093	2.148
6/30/89-90	1,494,463	29,766,013	30,680,894	30,533,371	30,530,000	31,258,570	763,987	1,492,557	2.043	2.092
6/30/90-91	1,405,560	25,496,290	26,443,130	26,339,450	26,340,000	26,935,990	843,710	1,439,700	1.874	1.916
6/30/91-92	1,364,510	16,532,708	17,273,942	17,203,466	17,204,000	18,022,660	671,292	1,489,952	1.261	1.321
6/30/92-93	1,347,359	12,681,464	13,358,651	13,303,292	13,303,000	13,385,030	621,536	703,566	0.987	0.993
6/30/93-94	1,424,410	14,482,043	15,462,897	15,340,025	15,340,000	15,740,990	857,957	1,258,947	1.077	1.105
6/30/94-95	1,497,829	12,614,468	13,484,182	13,463,116	13,463,000	14,049,180	848,532	1,434,712	0.899	0.938
6/30/95-96	1,582,635	12,564,956	13,619,967	13,590,310	13,590,000	14,213,840	1,025,044	1,648,884	0.859	0.898
6/30/96-97	1,979,748	13,332,428	14,535,628	14,509,797	14,510,000	15,146,100	1,177,572	1,813,672	0.733	0.765
6/30/97-98	1,917,994	11,054,968	12,101,863	12,093,628	12,090,000	12,623,550	1,035,032	1,568,582	0.630	0.658
6/30/98-99	2,081,524	12,273,123	13,609,251	13,594,611	13,593,000	14,176,730	1,319,877	1,903,607	0.653	0.681
6/30/99-00	2,207,243	14,515,549	16,334,635	16,294,332	16,295,000	17,045,260	1,779,451	2,529,711	0.738	0.772
6/30/00-01	2,201,008	13,706,883	15,609,753	15,579,181	15,580,000	16,282,660	1,873,117	2,575,777	0.708	0.740
6/30/01-02	2,292,592	13,519,351	15,539,678	15,527,429	15,525,000	16,221,020	2,005,649	2,701,669	0.677	0.708
6/30/02-03	2,260,534	13,742,312	15,987,519	15,973,489	15,973,000	16,676,040	2,230,688	2,933,728	0.707	0.738
6/30/03-04	2,255,942	12,846,017	15,114,626	15,118,268	15,115,000	15,766,280	2,268,983	2,920,263	0.670	0.699
6/30/04-05	2,309,083	15,833,755	18,742,725	18,462,172	18,508,000	18,846,000	2,674,245	3,012,245	0.802	0.816
6/30/05-06	2,480,693	13,873,474	16,668,226	17,031,223	16,628,000	17,115,000	2,754,526	3,241,526	0.670	0.690
6/30/06-07	2,612,577	14,595,597	17,808,900	18,259,071	17,556,000	18,594,000	2,960,403	3,998,403	0.672	0.712
6/30/07-08	2,783,717	17,804,302	22,317,085	22,227,985	22,219,000	22,452,326	4,414,698	4,648,024	0.798	0.807
6/30/08-09	2,750,907	17,906,227	22,840,538	22,784,226	22,750,000	23,036,364	4,843,773	5,130,137	0.827	0.837
6/30/09-10	2,806,048	17,769,280	23,002,582	23,218,428	23,046,000	23,430,690	5,276,720	5,661,410	0.821	0.835
6/30/10-11	2,942,638	20,589,133	27,258,228	26,829,962	26,831,000	27,471,816	6,241,867	6,882,683	0.912	0.934
6/30/11-12	3,006,849	21,270,356	28,898,536	28,284,131	28,283,000	29,113,492	7,012,644	7,843,136	0.941	0.968
6/30/12-13	3,138,905	17,323,613	24,120,494	25,269,478	24,155,000	25,327,000	6,831,387	8,003,387	0.770	0.807
6/30/13-14	3,311,947	21,011,541	30,379,779	30,481,664	30,356,000	30,861,778	9,344,459	9,850,237	0.917	0.932
6/30/14-15	3,511,622	21,881,419	33,334,603	33,496,396	33,423,000	33,871,531	11,541,581	11,990,112	0.952	0.965
6/30/15-16	3,491,558	22,968,690	37,800,314	36,670,191	36,957,660	38,213,143	13,988,970	15,244,453	1.058	1.094
6/30/16-17	3,338,327	19,328,715	35,554,231	34,709,315	34,740,000	36,201,470	15,411,285	16,872,755	1.041	1.084
6/30/17-18	3,401,479	17,215,372	38,265,481	36,932,454	36,936,000	39,253,740	19,720,628	22,038,368	1.086	1.154
6/30/18-19	3,573,725	10,787,089	33,710,806	36,558,554	34,867,460	38,456,750	24,080,371	27,669,661	0.976	1.076
6/30/19-20	3,752,730	5,288,490	37,542,633	41,341,190	38,528,000	41,793,286	33,239,510	36,504,796	1.027	1.114
Total	81,801,638	696,167,394	842,946,465	830,408,623	890,286,840	921,400,949	194,119,446	225,233,556		
Tot 6/30/84-20	81,801,638	631,982,492	827,609,552	830,408,623	823,577,271	853,064,922	191,594,780	221,082,431	1.007	1.043

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, 2020

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	107,649,546	1.087	116,990,674
6/30/82-83	18,411,516	1.007	18,544,274
6/30/83-84	27,035,426	1.016	27,480,606
6/30/84-85	40,106,351	1.011	40,560,520
6/30/85-86	52,897,119	1.010	53,412,416
6/30/86-87	60,218,395	1.010	60,813,471
6/30/87-88	87,347,951	1.021	89,199,068
6/30/88-89	85,949,589	1.025	88,069,803
6/30/89-90	83,092,045	1.026	85,284,437
6/30/90-91	68,557,015	1.025	70,289,444
6/30/91-92	46,881,061	1.034	48,498,391
6/30/92-93	31,506,854	1.038	32,711,084
6/30/93-94	35,239,339	1.048	36,927,485
6/30/94-95	31,191,662	1.052	32,823,366
6/30/95-96	29,917,752	1.064	31,829,164
6/30/96-97	30,119,587	1.068	32,167,917
6/30/97-98	33,595,725	1.059	35,566,613
6/30/98-99	31,391,858	1.076	33,766,972
6/30/99-00	35,289,031	1.087	38,360,544
6/30/00-01	41,608,852	1.090	45,336,982
6/30/01-02	35,982,795	1.102	39,660,070
6/30/02-03	35,983,819	1.120	40,314,517
6/30/03-04	35,866,204	1.121	40,210,625
6/30/04-05	37,216,861	1.110	41,324,835
6/30/05-06	32,912,595	1.143	37,616,676
6/30/06-07	31,478,216	1.166	36,695,827
6/30/07-08	36,095,385	1.186	42,802,405
6/30/08-09	35,759,766	1.210	43,274,605
6/30/09-10	34,602,809	1.235	42,746,686
6/30/10-11	38,599,752	1.249	48,220,096
6/30/11-12	37,507,031	1.288	48,293,042
6/30/12-13	32,340,565	1.349	43,633,289
6/30/13-14	38,132,030	1.382	52,695,664
6/30/14-15	41,454,538	1.443	59,832,366
6/30/15-16	43,140,104	1.528	65,931,983
6/30/16-17	38,526,109	1.679	64,671,068
6/30/17-18	30,872,701	2.055	63,451,274
6/30/18-19	21,876,889	2.919	63,849,237
6/30/19-20	11,229,087	6.349	71,289,042
Total	1,627,583,929		1,965,146,537

NOTES:

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

(3) = (4) / (2)

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

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	14,546,154	0.24	0.10	34,911	13,819	48,730	22.5%	4,879	38,847	0.8%	149,827	209,506	153,388	202,576
Bridgewater State College	101,191,772	0.24	0.10	242,860	96,132	338,992	83.5%	350,964	348,988	7.6%	1,345,982	1,882,112	1,335,763	1,764,114
Bristol Community College	41,435,287	0.24	0.10	99,445	39,364	138,808	45.3%	29,256	89,163	1.9%	343,885	480,861	206,285	272,437
Bunker Hill Community College	53,954,153	0.24	0.10	129,490	51,256	180,746	51.9%	50,608	113,202	2.5%	436,600	610,506	425,847	562,408
Cape Cod Community College	20,361,439	0.24	0.10	48,867	19,343	68,211	28.9%	174,317	98,916	2.2%	381,501	533,460	356,522	470,852
Fitchburg State College	46,209,030	0.24	0.10	110,902	43,899	154,800	69.8%	125,193	134,137	2.9%	517,340	723,407	573,768	757,764
Framingham State College	49,742,392	0.24	0.10	119,382	47,255	166,637	49.9%	70,513	118,699	2.6%	457,800	640,150	479,557	633,340
Greenfield Community College	15,074,327	0.24	0.10	36,178	14,321	50,499	43.0%	52,811	51,492	1.1%	198,597	277,702	190,495	251,582
Holyoke Community College	34,624,658	0.24	0.10	83,099	32,893	115,993	40.9%	87,639	104,391	2.3%	402,618	562,988	398,754	526,627
Mass Bay Community College	24,331,258	0.24	0.10	58,395	23,115	81,510	32.7%	79,576	80,877	1.8%	311,926	436,172	277,703	366,756
Mass College of Art	34,703,812	0.24	0.10	83,289	32,969	116,258	41.0%	114,605	115,580	2.5%	445,772	623,332	644,397	851,042
Mass Maritime Academy	24,242,623	0.24	0.10	58,182	23,030	81,213	32.7%	119,601	93,748	2.0%	361,568	505,587	348,928	460,822
Massachusetts College of Liberal Arts	23,345,754	0.24	0.10	56,030	22,178	78,208	53.9%	112,498	96,676	2.1%	372,863	521,381	305,682	403,708
Massasoit Community College	36,841,508	0.24	0.10	88,420	34,999	123,419	64.8%	154,140	143,331	3.1%	552,801	772,991	451,475	596,254
Middlesex Community College	42,828,909	0.24	0.10	102,789	40,687	143,477	68.2%	23,380	61,609	1.3%	237,616	332,263	231,193	305,332
Mt Wachusett Community College	27,580,383	0.24	0.10	66,193	26,201	92,394	35.6%	53,433	78,543	1.7%	302,927	423,588	278,666	368,028
North Essex Community College	33,377,868	0.24	0.10	80,107	31,709	111,816	40.0%	74,736	96,972	2.1%	374,003	522,975	331,472	437,768
North Shore Community College	34,540,928	0.24	0.10	82,898	32,814	115,712	40.9%	60,725	93,246	2.0%	359,633	502,881	352,474	465,505
Quinsigamond Community College	43,306,725	0.24	0.10	103,936	41,141	145,078	68.4%	72,208	95,229	2.1%	367,281	513,576	687,698	908,229
Roxbury Community College	14,861,190	0.24	0.10	35,667	14,118	49,785	22.9%	29,725	45,189	1.0%	174,285	243,706	162,424	214,510
Salem State College	87,813,581	0.24	0.10	210,753	83,423	294,175	81.4%	172,061	194,714	4.2%	750,975	1,050,103	880,855	1,163,327
Springfield Tech Community College	34,436,867	0.24	0.10	82,648	32,715	115,364	63.3%	106,093	109,499	2.4%	422,317	590,533	542,412	716,353
UMass (Boston)	209,300,311	0.24	0.10	502,321	198,835	701,156	91.3%	404,839	430,685	9.4%	1,661,070	2,322,706	1,613,115	2,130,407
UMass (Dartmouth)	114,157,764	0.24	0.10	273,979	108,450	382,429	85.1%	530,678	508,577	11.1%	1,961,486	2,742,783	1,821,967	2,406,234
University of Lowell	204,691,103	0.24	0.10	491,259	194,457	685,715	91.1%	672,620	673,786	14.7%	2,598,667	3,633,764	2,289,559	3,023,773
Westfield State College	59,320,267	0.24	0.10	142,369	56,354	198,723	74.8%	339,686	304,143	6.6%	1,173,024	1,640,261	1,081,675	1,428,546
Worcester State College	49,744,590	0.24	0.10	119,387	47,257	166,644	71.3%	299,618	261,487	5.7%	1,008,505	1,410,212	883,446	1,166,749
Total	1,476,564,655			3,543,755	1,402,736			4,366,401	4,581,728		17,670,866	24,709,504	17,305,521	22,855,043

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

Massachusetts Colleges & Universities - Cluster 4

Estimated Loss Costs (Indemnity and Medical Combined)

	(1)	(2)	(3)	(4)	(5)	(6)
Cluster	2020	2019	2018	2017	2016	Coefficient of Variation
Berkshire Community College	0.019	0.015	0.016	0.095	0.022	1.042
Bridgewater State College	0.248	0.381	0.384	0.185	0.544	0.400
Bristol Community College	0.226	0.009	0.034	0.033	0.048	1.259
Bunker Hill Community College	0.001	0.124	0.288	0.053	0.001	1.284
Cape Cod Community College	0.001	0.091	0.103	1.186	3.100	1.478
Fitchburg State College	0.146	0.305	0.665	0.155	0.089	0.860
Framingham State College	0.037	0.084	0.125	0.443	0.033	1.187
Greenfield Community College	0.431	0.400	0.811	0.117	0.009	0.885
Holyoke Community College	0.297	0.142	0.059	0.758	0.010	1.194
Mass Bay Community College	0.098	0.015	0.040	1.268	0.221	1.618
Mass College of Art	0.027	0.294	0.191	1.085	0.076	1.291
Mass Maritime Academy	0.021	0.072	0.114	0.107	2.220	1.891
Massachusetts College of Liberal Arts	0.808	0.097	0.141	1.152	0.200	0.988
Massasoit Community College	0.317	0.465	0.703	0.116	0.502	0.521
Middlesex Community College	0.047	0.088	0.034	0.078	0.028	0.485
Mt Wachusett Community College	0.015	0.020	0.735	0.139	0.066	1.568
North Essex Community College	0.035	0.878	0.014	0.050	0.169	1.603
North Shore Community College	0.020	0.015	0.088	0.043	0.709	1.715
Quinsigamond Community College	0.292	0.092	0.218	0.132	0.092	0.529
Roxbury Community College	0.515	0.005	0.021	0.000	0.460	1.314
Salem State College	0.107	0.290	0.093	0.033	0.450	0.883
Springfield Tech Community College	0.015	0.506	0.646	0.318	0.053	0.897
UMass (Boston)	0.159	0.146	0.422	0.017	0.229	0.763
UMass (Dartmouth)	0.336	0.179	0.682	0.229	0.914	0.679
University of Lowell	0.101	0.248	0.518	0.519	0.288	0.543
Westfield State College	0.477	0.460	0.465	1.098	0.359	0.521
Worcester State College	0.444	0.558	0.393	1.051	0.590	0.430

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, 2020

Massachusetts Colleges & Universities - Cluster 4

Payroll

Cluster	2020	2019	2018	2017	2016
Berkshire Community College	14,381,855	14,683,061	14,513,016	14,696,718	14,456,120
Bridgewater State College	106,974,885	104,320,974	100,133,918	97,400,514	97,128,570
Bristol Community College	41,695,637	40,217,086	40,662,231	42,497,107	42,104,373
Bunker Hill Community College	55,875,830	54,879,900	54,081,418	53,589,800	51,343,817
Cape Cod Community College	21,534,993	20,739,078	20,323,018	20,065,891	19,144,217
Fitchburg State College	49,624,265	48,171,555	45,049,448	43,890,058	44,309,826
Framingham State College	52,469,493	51,449,954	48,824,202	48,220,544	47,747,768
Greenfield Community College	15,168,704	14,873,785	14,787,726	15,305,880	15,235,538
Holyoke Community College	34,138,074	34,348,857	34,789,710	34,835,042	35,011,610
Mass Bay Community College	24,986,303	24,319,504	24,302,975	24,251,880	23,795,629
Mass College of Art	36,740,832	35,421,336	33,915,892	33,946,011	33,494,988
Mass Maritime Academy	25,272,684	25,131,031	23,950,910	23,330,642	23,527,846
Massachusetts College of Liberal Arts	24,066,122	23,757,666	22,767,051	23,143,013	22,994,917
Massasoit Community College	35,951,850	35,939,034	36,026,658	37,949,986	38,340,014
Middlesex Community College	41,786,720	40,839,312	40,626,618	44,371,671	46,520,224
Mt Wachusett Community College	26,828,517	27,441,233	27,192,245	28,153,442	28,286,480
North Essex Community College	32,951,487	32,223,712	34,057,029	33,839,378	33,817,735
North Shore Community College	34,916,738	34,312,192	34,256,484	34,445,788	34,773,439
Quinsigamond Community College	45,462,345	43,018,023	42,665,806	42,310,090	43,077,361
Roxbury Community College	13,983,762	14,664,256	14,671,551	15,152,955	15,833,427
Salem State College	84,486,265	88,668,198	87,993,695	88,794,120	89,125,627
Springfield Tech Community College	34,236,705	34,391,222	34,598,242	34,485,179	34,472,989
UMass (Boston)	205,244,282	209,901,374	206,111,953	212,861,097	212,382,851
UMass (Dartmouth)	115,795,182	118,419,657	113,334,671	110,902,002	112,337,308
University of Lowell	219,834,225	214,532,333	200,073,066	196,482,825	192,533,065
Westfield State College	61,300,681	62,516,173	59,384,668	58,872,900	54,526,913
Worcester State College	52,969,818	51,024,319	48,645,329	47,793,656	48,289,827
UMass (Amherst)	664,701,327	656,644,000	607,483,570	594,786,634	585,875,165
UMass (Medical Center)	424,565,065	410,826,029	398,722,042	395,324,473	382,602,152
Total	2,597,944,646	2,567,674,851	2,463,945,144	2,451,699,296	2,423,089,795

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June 30, 2020

Massachusetts Colleges & Universities - Cluster 4

Estimated Ultimate Losses

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			Indemnity					Medical		
Cluster	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Berkshire Community College	0	977	76	814	0	3,204	13,047	2,180	1,370	2,724
Bridgewater State College	406,754	119,009	275,531	265,302	157,993	121,952	60,739	108,904	131,749	106,884
Bristol Community College	1,303	1,782	0	0	59,348	19,109	12,405	13,637	3,723	34,973
Bunker Hill Community College	0	3,410	102,072	44,000	0	675	24,887	53,509	24,146	341
Cape Cod Community College	465,583	127,165	11,160	0	0	127,922	110,808	9,872	18,785	290
Fitchburg State College	16,025	47,917	237,983	79,898	21,510	23,283	20,109	61,545	66,983	50,715
Framingham State College	2,122	188,436	37,811	16,409	3,032	13,415	25,119	23,422	26,587	16,211
Greenfield Community College	0	8,711	29,071	42,420	40,058	1,411	9,217	90,818	17,051	25,296
Holyoke Community College	0	236,099	9,437	34,335	47,485	3,549	27,786	10,934	14,580	53,987
Mass Bay Community College	29,323	297,602	-14,542	3,527	0	23,314	9,830	24,230	175	24,419
Mass College of Art	21,244	305,054	43,515	77,531	6,538	4,265	63,403	21,316	26,653	3,504
Mass Maritime Academy	436,390	12,369	15,568	9,967	0	86,000	12,543	11,712	8,249	5,207
Massachusetts College of Liberal Arts	176	226,165	21,240	5,201	123,808	45,850	40,525	10,899	17,947	70,679
Massasoit Community College	130,169	14,284	218,005	108,518	104,716	62,163	29,736	35,255	58,519	9,337
Middlesex Community College	2,044	12,840	5,493	27,773	0	10,867	21,857	8,399	7,989	19,637
Mt Wachusett Community College	10,860	24,611	160,518	4,716	0	7,833	14,494	39,293	870	3,972
North Essex Community College	41,513	2,359	0	217,006	2,871	15,726	14,695	4,837	66,017	8,654
North Shore Community College	208,767	0	10,957	4,885	0	37,870	14,683	19,226	306	6,932
Quinsigamond Community College	9,946	13,803	66,564	13,253	98,194	29,844	41,993	26,559	26,354	34,531
Roxbury Community College	48,275	0	0	0	72,016	24,483	0	3,141	711	0
Salem State College	317,707	12,967	42,889	217,669	68,378	83,167	16,034	39,320	39,841	22,335
Springfield Tech Community College	8,743	93,142	138,542	133,667	0	9,517	16,584	84,863	40,273	5,133
UMass (Boston)	355,534	20,527	711,063	192,374	241,005	131,068	15,234	158,357	113,877	85,157
UMass (Dartmouth)	799,256	191,165	626,378	162,160	298,547	227,455	62,716	146,280	49,365	90,066
University of Lowell	410,077	790,562	820,683	432,105	171,219	143,741	228,564	216,118	98,893	51,142
Westfield State College	137,091	550,321	179,450	181,365	232,630	58,491	96,029	96,729	106,299	60,026
Worcester State College	275,042	417,203	102,068	245,217	182,785	9,733	85,309	88,962	39,334	52,439
Total	4,133,945	3,718,480	3,851,530	2,520,110	1,932,132	1,325,907	1,088,348	1,410,318	1,006,643	844,591
Age to Ultimate LDF's	1.658	1.823	2.179	2.914	6.393	1.270	1.309	1.403	1.628	3.450

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.

Massachusetts Colleges & Universities - Cluster 4

Cumulative Paid Losses as of 6/30/20

	Indemnity					Medical				
Cluster	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Berkshire Community College	0	536	35	279	0	2,522	9,971	1,555	842	789
Bridgewater State College	245,372	65,274	126,462	91,048	24,713	96,002	46,418	77,643	80,950	30,978
Bristol Community College	786	977	0	0	9,283	15,043	9,480	9,723	2,287	10,136
Bunker Hill Community College	0	1,870	46,848	15,100	0	532	19,019	38,149	14,836	99
Cape Cod Community College	280,860	69,747	5,122	0	0	100,701	84,682	7,038	11,542	84
Fitchburg State College	9,667	26,281	109,228	27,420	3,365	18,329	15,368	43,878	41,156	14,699
Framingham State College	1,280	103,352	17,354	5,631	474	10,560	19,196	16,699	16,336	4,699
Greenfield Community College	0	4,778	13,343	14,558	6,266	1,110	7,044	64,748	10,476	7,332
Holyoke Community College	0	129,495	4,331	11,783	7,428	2,794	21,235	7,795	8,958	15,647
Mass Bay Community College	17,689	163,227	-6,674	1,211	0	18,353	7,513	17,274	108	7,077
Mass College of Art	12,815	167,315	19,972	26,608	1,023	3,357	48,454	15,197	16,376	1,015
Mass Maritime Academy	263,250	6,784	7,145	3,421	0	67,700	9,585	8,350	5,068	1,509
Massachusetts College of Liberal Arts	106	124,046	9,748	1,785	19,366	36,093	30,970	7,771	11,027	20,485
Massasoit Community College	78,524	7,834	100,059	37,242	16,380	48,935	22,725	25,135	35,956	2,706
Middlesex Community College	1,233	7,042	2,521	9,531	0	8,555	16,703	5,988	4,908	5,691
Mt Wachusett Community College	6,551	13,498	73,674	1,618	0	6,166	11,077	28,014	535	1,151
North Essex Community College	25,042	1,294	0	74,473	449	12,380	11,231	3,449	40,562	2,508
North Shore Community College	125,937	0	5,029	1,677	0	29,811	11,221	13,707	188	2,009
Quinsigamond Community College	6,000	7,570	30,551	4,548	15,360	23,493	32,092	18,935	16,193	10,008
Roxbury Community College	29,122	0	0	0	11,265	19,274	0	2,239	437	0
Salem State College	191,655	7,112	19,685	74,701	10,696	65,469	12,254	28,033	24,479	6,473
Springfield Tech Community College	5,274	51,086	63,587	45,873	0	7,492	12,674	60,503	24,745	1,488
UMass (Boston)	214,474	11,258	326,360	66,020	37,698	103,178	11,643	112,900	69,969	24,681
UMass (Dartmouth)	482,146	104,849	287,492	55,651	46,699	179,054	47,929	104,289	30,331	26,104
University of Lowell	247,376	433,603	376,672	148,293	26,782	113,154	174,674	154,081	60,762	14,822
Westfield State College	82,699	301,837	82,363	62,242	36,388	46,044	73,387	68,962	65,312	17,397
Worcester State College	165,918	228,826	46,847	84,155	28,591	7,662	65,195	63,425	24,168	15,198
Total	2,493,778	2,039,493	1,767,754	864,868	302,226	1,043,763	831,738	1,005,480	618,505	244,786

Massachusetts Colleges & Universities - Cluster 4

Fiscal Year 2020 Paid Losses

	Indemnity					Medical				
Cluster	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Berkshire Community College	0	0	0	0	0	0	0	0	742	789
Bridgewater State College	11,930	0	13,360	50,695	24,713	478	100	2,689	39,261	30,978
Bristol Community College	0	0	0	0	9,283	168	0	0	1,026	10,136
Bunker Hill Community College	0	0	1,579	1,391	0	0	0	2,303	6,475	99
Cape Cod Community College	37,638	26,713	0	0	0	1,816	22,974	15	6,600	84
Fitchburg State College	0	931	28,283	4,257	3,365	0	314	315	6,411	14,699
Framingham State College	0	0	0	4,114	474	0	232	1,969	10,904	4,699
Greenfield Community College	0	0	0	2,847	6,266	0	2,141	4,867	6,937	7,332
Holyoke Community College	0	0	-1,047	0	7,428	0	0	0	1,350	15,647
Mass Bay Community College	0	87,061	-16,015	0	0	0	450	1,202	108	7,077
Mass College of Art	0	42,818	0	9,274	1,023	0	0	0	6,875	1,015
Mass Maritime Academy	46,441	0	0	0	0	2,529	0	0	935	1,509
Massachusetts College of Liberal Arts	0	17,515	0	0	19,366	0	162	0	1,153	20,485
Massasoit Community College	8,536	0	55,545	15,651	16,380	1,829	223	960	30,337	2,706
Middlesex Community College	0	0	0	7,851	0	0	0	0	3,732	5,691
Mt Wachusett Community College	0	0	51,142	0	0	0	0	4,817	5	1,151
North Essex Community College	0	0	0	56,366	449	0	0	0	24,116	2,508
North Shore Community College	23,426	0	0	0	0	0	0	0	0	2,009
Quinsigamond Community College	0	0	0	0	15,360	4,240	1,085	125	447	10,008
Roxbury Community College	0	0	0	0	11,265	0	0	0	437	0
Salem State College	81,691	0	0	38,089	10,696	5,697	0	579	13,208	6,473
Springfield Tech Community College	1	0	7,531	29,859	0	0	0	274	15,514	1,488
UMass (Boston)	30,126	0	121,054	44,967	37,698	0	0	22,514	42,630	24,681
UMass (Dartmouth)	0	32,676	92,912	8,951	46,699	3,368	10,092	1,238	7,562	26,104
University of Lowell	114,990	78,245	125,243	93,650	26,782	5,444	14,104	20,487	42,118	14,822
Westfield State College	16,134	67,332	26,772	43,901	36,388	0	3,448	4,743	33,157	17,397
Worcester State College	96,175	24,497	0	33,456	28,591	0	1,299	1,235	10,282	15,198
Total	467,087	377,788	506,359	445,320	302,226	25,569	56,623	70,332	312,320	244,786

Commonwealth of Massachusetts

Workers Compensation

Reserve Analysis at June 30, 2020

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Commonwealth of Massachusetts

Workers Compensation

Reserve Analysis at June, 30, 2020

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		100,573,657			107,811,598	111,052,939	7,237,941	10,479,282		
6/30/82-83		17,167,966	17,299,011		17,238,536	17,344,140	70,570	176,174		
6/30/83-84		23,764,291	24,507,316		24,010,050	24,340,993	245,760	576,702		
6/30/84-85	1,823,085	36,806,981	37,326,563	37,167,772	37,086,933	37,369,275	279,952	562,294	2.034	2.050
6/30/85-86	1,952,445	47,928,620	48,662,385	48,494,082	48,288,531	48,516,974	359,911	588,354	2.473	2.485
6/30/86-87	2,220,820	54,395,228	55,317,538	55,166,060	54,787,326	55,088,095	392,098	692,867	2.467	2.481
6/30/87-88	2,885,583	77,325,961	78,898,824	78,678,786	78,626,068	79,518,593	1,300,107	2,192,632	2.725	2.756
6/30/88-89	3,098,180	73,790,356	75,552,340	75,267,248	75,299,056	76,132,550	1,508,700	2,342,195	2.430	2.457
6/30/89-90	3,079,763	70,465,255	72,388,876	72,223,240	72,073,827	72,861,477	1,608,571	2,396,221	2.340	2.366
6/30/90-91	2,914,364	56,448,062	58,212,758	58,101,690	57,537,925	58,216,130	1,089,862	1,768,068	1.974	1.998
6/30/91-92	2,880,434	35,940,468	37,220,581	37,141,000	36,862,822	37,742,610	922,355	1,802,142	1.280	1.310
6/30/92-93	2,887,238	23,510,337	24,588,530	24,523,444	24,447,094	24,611,229	936,756	1,100,891	0.847	0.852
6/30/93-94	3,056,850	26,726,384	28,109,478	27,974,338	27,919,000	28,460,664	1,192,616	1,734,280	0.913	0.931
6/30/94-95	3,158,808	24,146,180	25,481,888	25,443,076	25,198,648	25,919,349	1,052,468	1,773,169	0.798	0.821
6/30/95-96	3,301,791	23,310,367	24,822,883	24,773,644	24,615,068	25,363,872	1,304,701	2,053,505	0.746	0.768
6/30/96-97	3,902,868	22,738,067	24,373,559	24,328,726	24,097,614	24,867,808	1,359,547	2,129,741	0.617	0.637
6/30/97-98	3,776,138	26,803,508	28,754,999	28,688,220	28,084,475	28,831,602	1,280,967	2,028,094	0.744	0.764
6/30/98-99	4,017,530	24,267,856	26,346,149	26,283,471	25,916,271	26,612,843	1,648,415	2,344,986	0.645	0.662
6/30/99-00	4,221,786	27,301,468	30,020,429	29,914,855	29,410,373	30,316,695	2,108,905	3,015,227	0.697	0.718
6/30/00-01	4,310,725	31,782,168	35,104,567	34,962,185	34,357,960	35,222,193	2,575,792	3,440,025	0.797	0.817
6/30/01-02	4,438,755	28,042,239	31,312,318	31,211,059	30,527,117	31,670,243	2,484,879	3,628,004	0.688	0.713
6/30/02-03	4,423,888	27,413,308	30,867,354	30,772,584	30,419,948	31,503,000	3,006,640	4,089,692	0.688	0.712
6/30/03-04	4,482,207	26,955,181	30,655,088	30,559,416	30,054,740	30,828,940	3,099,559	3,873,759	0.671	0.688
6/30/04-05	4,639,517	26,765,402	30,826,173	29,882,888	29,530,110	30,302,000	2,764,708	3,536,598	0.636	0.653
6/30/05-06	4,938,165	23,527,829	27,325,516	27,204,248	26,787,093	27,530,000	3,259,264	4,002,171	0.542	0.557
6/30/06-07	5,183,126	21,444,993	25,336,096	25,732,969	24,710,393	26,002,950	3,265,400	4,557,957	0.477	0.502
6/30/07-08	5,508,425	26,364,076	31,758,631	31,551,928	31,369,394	31,912,576	5,005,317	5,548,500	0.569	0.579
6/30/08-09	5,447,676	25,541,750	31,312,338	31,201,368	31,093,885	31,646,364	5,552,135	6,104,614	0.571	0.581
6/30/09-10	5,525,579	25,504,381	31,810,389	31,862,551	31,310,102	32,449,690	5,805,721	6,945,309	0.567	0.587
6/30/10-11	5,712,303	28,560,758	36,384,948	35,860,089	35,738,956	36,616,816	7,178,198	8,056,058	0.626	0.641
6/30/11-12	5,880,714	27,949,838	36,640,329	36,284,743	35,946,072	37,113,492	7,996,234	9,163,654	0.611	0.631
6/30/12-13	6,162,621	23,987,428	32,163,726	33,656,457	32,185,038	33,856,000	8,197,610	9,868,572	0.522	0.549
6/30/13-14	6,442,136	28,755,184	40,096,201	40,490,270	39,962,240	40,942,778	11,207,057	12,187,594	0.620	0.636
6/30/14-15	6,758,892	31,544,419	46,112,806	46,143,282	45,804,701	47,079,371	14,260,282	15,534,952	0.678	0.697
6/30/15-16	6,843,054	32,778,189	51,944,183	50,441,863	50,544,432	52,632,383	17,766,243	19,854,194	0.739	0.769
6/30/16-17	6,638,078	28,946,602	50,715,796	49,389,465	49,375,596	51,819,770	20,428,994	22,873,168	0.744	0.781
6/30/17-18	6,709,926	22,531,876	49,648,381	49,144,123	48,278,628	51,356,740	25,746,753	28,824,864	0.720	0.765
6/30/18-19	7,024,786	15,540,220	47,313,821	50,867,628	47,479,804	53,223,350	31,939,583	37,683,130	0.676	0.758
6/30/19-20	7,252,948	8,101,214	53,011,741	57,035,507	51,757,883	60,176,286	43,656,668	52,075,072	0.714	0.830
Total	163,501,202	1,305,448,068	1,468,224,507	1,428,424,278	1,556,545,308	1,607,052,778	251,097,240	301,604,710		
Tot 6/30/84-20	163,501,202	1,163,942,154	1,426,418,180	1,428,424,278	1,407,485,124	1,454,314,706	243,542,970	290,372,552	0.861	0.889

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, 2020

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 7/1/17-18	Paid Counts 7/1/18-19	Average Outstanding Claim	Average Age
All Prior Yrs		96,631,975							18	17		81
6/30/82-83		16,396,735	1.008	N/A	16,527,624	771,387	17,299,011		1	0		
6/30/83-84		21,971,652	1.034	N/A	22,713,263	1,794,053	24,507,316		4	4	185,403	74
6/30/84-85	1,823,085	34,015,717	1.015	N/A	34,533,157	2,793,406	37,326,563	2.047	3	2	258,720	88
6/30/85-86	1,952,445	44,625,019	1.016	N/A	45,355,725	3,306,660	48,662,385	2.492	3	2	365,353	81
6/30/86-87	2,220,820	48,853,478	1.019	N/A	49,771,572	5,545,966	55,317,538	2.491	6	6	153,016	82
6/30/87-88	2,885,583	69,118,944	1.023	N/A	70,685,786	8,213,038	78,898,824	2.734	9	8	195,855	78
6/30/88-89	3,098,180	63,919,117	1.027	N/A	65,672,685	9,879,655	75,552,340	2.439	11	10	175,357	77
6/30/89-90	3,079,763	60,385,957	1.032	N/A	62,301,770	10,087,106	72,388,876	2.350	9	10	191,581	78
6/30/90-91	2,914,364	47,726,622	1.037	N/A	49,478,333	8,734,425	58,212,758	1.997	8	6	291,952	78
6/30/91-92	2,880,434	30,479,994	1.042	N/A	31,750,047	5,470,534	37,220,581	1.292	8	8	158,757	75
6/30/92-93	2,887,238	19,379,719	1.055	N/A	20,451,173	4,137,356	24,588,530	0.852	2	2	535,727	76
6/30/93-94	3,056,850	22,549,350	1.061	N/A	23,923,943	4,185,535	28,109,478	0.920	12	10	137,459	72
6/30/94-95	3,158,808	20,095,320	1.066	N/A	21,421,628	4,060,261	25,481,888	0.807	3	3	442,103	79
6/30/95-96	3,301,791	19,386,496	1.077	N/A	20,887,316	3,935,567	24,822,883	0.752	3	2	750,410	87
6/30/96-97	3,902,868	18,236,915	1.088	N/A	19,845,785	4,527,774	24,373,559	0.625	3	4	402,218	72
6/30/97-98	3,776,138	22,116,631	1.087	N/A	24,030,618	4,724,381	28,754,999	0.761	6	6	318,998	71
6/30/98-99	4,017,530	20,130,918	1.101	N/A	22,165,511	4,180,638	26,346,149	0.656	6	6	339,099	66
6/30/99-00	4,221,786	23,269,100	1.114	N/A	25,930,262	4,090,166	30,020,429	0.711	4	3	887,054	75
6/30/00-01	4,310,725	27,878,117	1.117	N/A	31,139,156	3,965,411	35,104,567	0.814	12	9	362,338	67
6/30/01-02	4,438,755	24,209,570	1.131	N/A	27,383,367	3,928,951	31,312,318	0.705	5	5	634,759	61
6/30/02-03	4,423,888	23,662,500	1.141	N/A	27,000,643	3,866,711	30,867,354	0.698	8	3	1,112,714	58
6/30/03-04	4,482,207	23,266,661	1.154	N/A	26,844,125	3,810,964	30,655,088	0.684	8	7	511,066	63
6/30/04-05	4,639,517	22,697,747	1.171	N/A	26,581,695	4,244,477	30,826,173	0.664	4	6	647,325	59
6/30/05-06	4,938,165	19,419,899	1.186	N/A	23,022,905	4,302,611	27,325,516	0.553	7	7	514,715	63
6/30/06-07	5,183,126	18,080,176	1.204	N/A	21,764,234	3,571,862	25,336,096	0.489	6	6	614,010	63
6/30/07-08	5,508,425	21,473,384	1.236	N/A	26,543,535	5,215,096	31,758,631	0.577	9	7	724,307	68
6/30/08-09	5,447,676	21,299,113	1.255	N/A	26,720,139	4,592,199	31,312,338	0.575	12	12	451,752	53
6/30/09-10	5,525,579	20,773,195	1.283	N/A	26,658,565	5,151,824	31,810,389	0.576	15	14	420,384	61
6/30/10-11	5,712,303	23,653,986	1.308	N/A	30,932,395	5,452,553	36,384,948	0.637	18	8	909,801	59
6/30/11-12	5,880,714	23,193,162	1.348	N/A	31,259,787	5,380,542	36,640,329	0.623	22	16	504,164	61
6/30/12-13	6,162,621	19,923,690	1.376	N/A	27,412,484	4,751,241	32,163,726	0.522	33	23	325,600	56
6/30/13-14	6,442,136	23,975,352	1.427	N/A	34,201,987	5,894,214	40,096,201	0.622	58	40	255,666	60
6/30/14-15	6,758,892	26,846,394	1.475	N/A	39,585,172	6,527,635	46,112,806	0.682	99	71	179,419	55
6/30/15-16	6,843,054	28,556,473	1.575	N/A	44,986,755	6,957,428	51,944,183	0.759	160	103	159,517	56
6/30/16-17	6,638,078	25,727,801	1.713	N/A	44,078,982	6,636,814	50,715,796	0.764	201	148	123,994	53
6/30/17-18	6,709,926	21,099,124	2.055	N/A	43,367,368	6,281,013	49,648,381	0.740	473	194	114,785	52
6/30/18-19	7,024,786	15,257,719	2.719	N/A	41,492,421	5,821,400	47,313,821	0.674	1,085	426	61,584	48
6/30/19-20	7,252,948	8,026,213	5.736	N/A	46,034,496	6,977,245	53,011,741	0.731		1,041	36,511	46
Total	163,501,202	1,138,309,937			1,274,456,410	193,768,098	1,468,224,507		2,354	2,255		

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, 2020

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	34,015,717	1.015	34,374,366	2,793,406	37,167,772	2.039	1.886
6/30/85-86	1,952,445	3.712	44,625,019	1.016	45,187,422	3,306,660	48,494,082	2.484	2.314
6/30/86-87	2,220,820	3.485	48,853,478	1.019	49,620,094	5,545,966	55,166,060	2.484	2.234
6/30/87-88	2,885,583	3.526	69,118,944	1.023	70,465,748	8,213,038	78,678,786	2.727	2.442
6/30/88-89	3,098,180	2.963	63,919,117	1.027	65,387,593	9,879,655	75,267,248	2.429	2.111
6/30/89-90	3,079,763	2.802	60,385,957	1.032	62,136,134	10,087,106	72,223,240	2.345	2.018
6/30/90-91	2,914,364	1.684	47,726,622	1.037	49,367,265	8,734,425	58,101,690	1.994	1.694
6/30/91-92	2,880,434	1.086	30,479,994	1.042	31,670,466	5,470,534	37,141,000	1.289	1.100
6/30/92-93	2,887,238	0.694	19,379,719	1.055	20,386,088	4,137,356	24,523,444	0.849	0.706
6/30/93-94	3,056,850	0.762	22,549,350	1.061	23,788,803	4,185,535	27,974,338	0.915	0.778
6/30/94-95	3,158,808	0.658	20,095,320	1.066	21,382,816	4,060,261	25,443,076	0.805	0.677
6/30/95-96	3,301,791	0.611	19,386,496	1.077	20,838,077	3,935,567	24,773,644	0.750	0.631
6/30/96-97	3,902,868	0.493	18,236,915	1.088	19,800,952	4,527,774	24,328,726	0.623	0.507
6/30/97-98	3,776,138	0.609	22,116,631	1.087	23,963,838	4,724,381	28,688,220	0.760	0.635
6/30/98-99	4,017,530	0.530	20,130,918	1.101	22,102,833	4,180,638	26,283,471	0.654	0.550
6/30/99-00	4,221,786	0.585	23,269,100	1.114	25,824,689	4,090,166	29,914,855	0.709	0.612
6/30/00-01	4,310,725	0.685	27,878,117	1.117	30,996,774	3,965,411	34,962,185	0.811	0.719
6/30/01-02	4,438,755	0.592	24,209,570	1.131	27,282,108	3,928,951	31,211,059	0.703	0.615
6/30/02-03	4,423,888	0.587	23,662,500	1.141	26,905,873	3,866,711	30,772,584	0.696	0.608
6/30/03-04	4,482,207	0.578	23,266,661	1.154	26,748,453	3,810,964	30,559,416	0.682	0.597
6/30/04-05	4,639,517	0.401	22,697,747	1.171	25,638,411	4,244,477	29,882,888	0.644	0.553
6/30/05-06	4,938,165	0.417	19,419,899	1.186	22,901,637	4,302,611	27,204,248	0.551	0.464
6/30/06-07	5,183,126	0.434	18,080,176	1.204	22,161,107	3,571,862	25,732,969	0.496	0.428
6/30/07-08	5,508,425	0.452	21,473,384	1.236	26,336,832	5,215,096	31,551,928	0.573	0.478
6/30/08-09	5,447,676	0.471	21,299,113	1.255	26,609,169	4,592,199	31,201,368	0.573	0.488
6/30/09-10	5,525,579	0.487	20,773,195	1.283	26,710,727	5,151,824	31,862,551	0.577	0.483
6/30/10-11	5,712,303	0.501	23,653,986	1.308	30,407,537	5,452,553	35,860,089	0.628	0.532
6/30/11-12	5,880,714	0.520	23,193,162	1.348	30,904,201	5,380,542	36,284,743	0.617	0.526
6/30/12-13	6,162,621	0.540	19,923,690	1.376	28,905,216	4,751,241	33,656,457	0.546	0.469
6/30/13-14	6,442,136	0.559	23,975,352	1.427	34,596,057	5,894,214	40,490,270	0.629	0.537
6/30/14-15	6,758,892	0.578	26,846,394	1.475	39,615,648	6,527,635	46,143,282	0.683	0.586
6/30/15-16	6,843,054	0.600	28,556,473	1.575	43,484,436	6,957,428	50,441,863	0.737	0.635
6/30/16-17	6,638,078	0.623	25,727,801	1.713	42,752,652	6,636,814	49,389,465	0.744	0.644
6/30/17-18	6,709,926	0.648	21,099,124	2.055	42,863,110	6,281,013	49,144,123	0.732	0.639
6/30/18-19	7,024,786	0.673	15,257,719	2.719	45,046,228	5,821,400	50,867,628	0.724	0.641
6/30/19-20	7,252,948	0.699	8,026,213	5.736	50,058,262	6,977,245	57,035,507	0.786	0.690
Total	163,501,202		1,003,309,575		1,237,221,621	191,202,657	1,428,424,278		

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, 2020

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	49,478,333	1.698	1.004	1.705	2.427	4.139	0.295	1.688	1.684
6/30/91-92	2,880,434	31,750,047	1.102	1.102	1.215	2.357	2.862	0.277	1.084	1.086
6/30/92-93	2,887,238	20,451,173	0.708	1.285	0.910	2.288	2.082	0.245	0.698	0.694
6/30/93-94	3,056,850	23,923,943	0.783	1.268	0.993	2.221	2.205	0.256	0.759	0.762
6/30/94-95	3,158,808	21,421,628	0.678	1.257	0.852	2.157	1.838	0.266	0.661	0.658
6/30/95-96	3,301,791	20,887,316	0.633	1.247	0.789	2.094	1.651	0.276	0.615	0.611
6/30/96-97	3,902,868	19,845,785	0.508	1.234	0.628	2.033	1.276	0.287	0.495	0.493
6/30/97-98	3,776,138	24,030,618	0.636	1.218	0.775	1.974	1.530	0.299	0.608	0.609
6/30/98-99	4,017,530	22,165,511	0.552	1.202	0.663	1.916	1.271	0.313	0.534	0.530
6/30/99-00	4,221,786	25,930,262	0.614	1.183	0.727	1.860	1.352	0.327	0.592	0.585
6/30/00-01	4,310,725	31,139,156	0.722	1.153	0.833	1.806	1.504	0.346	0.690	0.685
6/30/01-02	4,438,755	27,383,367	0.617	1.131	0.697	1.754	1.223	0.363	0.597	0.592
6/30/02-03	4,423,888	27,000,643	0.610	1.126	0.688	1.702	1.170	0.375	0.594	0.587
6/30/03-04	4,482,207	26,844,125	0.599	1.126	0.675	1.653	1.115	0.387	0.582	0.578
6/30/04-05	4,639,517	26,581,695	0.573	1.119	0.641	1.605	1.029	0.401	0.401	0.401
6/30/05-06	4,938,165	23,022,905	0.466	1.108	0.517	1.558	0.805	0.417	0.419	0.417
6/30/06-07	5,183,126	21,764,234	0.420	1.096	0.460	1.513	0.696	0.434	0.437	0.434
6/30/07-08	5,508,425	26,543,535	0.482	1.084	0.522	1.469	0.767	0.452	0.457	0.452
6/30/08-09	5,447,676	26,720,139	0.490	1.071	0.526	1.426	0.749	0.471	0.477	0.471
6/30/09-10	5,525,579	26,658,565	0.482	1.067	0.515	1.384	0.713	0.487	0.495	0.487
6/30/10-11	5,712,303	30,932,395	0.542	1.069	0.579	1.344	0.778	0.501	0.511	0.501
6/30/11-12	5,880,714	31,259,787	0.532	1.062	0.564	1.305	0.736	0.520	0.531	0.520
6/30/12-13	6,162,621	27,412,484	0.445	1.052	0.468	1.267	0.593	0.540	0.553	0.540
6/30/13-14	6,442,136	34,201,987	0.531	1.048	0.556	1.230	0.684	0.559	0.574	0.559
6/30/14-15	6,758,892	39,585,172	0.586	1.042	0.610	1.194	0.729	0.578	0.596	0.578
6/30/15-16	6,843,054	44,986,755	0.657	1.034	0.680	1.159	0.788	0.600	0.620	0.600
6/30/16-17	6,638,078	44,078,982	0.664	1.026	0.681	1.126	0.767	0.623	0.646	0.623
6/30/17-18	6,709,926	43,367,368	0.646	1.017	0.657	1.093	0.718	0.648	0.674	0.648
6/30/18-19	7,024,786	41,492,421	0.591	1.008	0.595	1.061	0.632	0.673	0.702	0.673
6/30/19-20	7,252,948	46,034,496	0.635	1.000	0.635	1.030	0.654	0.699		0.699
Total	148,441,327	906,894,827								

Trend Last 4 (ex 19-20):	-4.3%	Avg 3 (ex 19-20):	0.706
Trend Last 8 (ex 19-20):	3.4%	Avg 5 (ex 19-20):	0.727
Trend Last 12 (ex 19-20):	2.3%	Avg 10 (ex 19-20):	0.714
Prior Selected Trend:	3.3%	Prior Sel Avg:	0.725
Selected Trend:	3.0%	Sel. Loss Cost:	0.720

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, 2019

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

All Clusters Combined
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.950	
(2)	Credibility	85%	
(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 2020	773,571	773,571
(7)	Estimated Reserve	8,896,072	18,565,715
(8)	Paid to Date (82 & Prior)	96,631,975	96,631,975
(9)	Est Ult Paid for 1982 & Prior	105,528,047	115,197,690

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	813,105	876,865
(11)	Projected Number of Years	5	5
(12)	Estimated Reserve	4,065,523	4,384,324
(13)	Paid to Date (82 & Prior)	96,631,975	95,858,403
(14)	Est Ult Paid for 1982 & Prior	100,697,497	100,242,728
(14a)	Paid Counts During Fiscal Year	17	18

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	103,862,412	107,091,675
(16)	Lump Sum Ultimates	3,946,165	3,946,165
(17)	Ult Loss Including Lump Sums	**107,808,578**	**111,037,840**
(18)	Implied Tail	1.075	1.108
(19)	Ult Loss Inc Lump Sums @ 6/19	107,791,194	111,261,141

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

All Clusters Combined
Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1) Year	(2) X	(3) Incremental Paids	(4) LN	(5) 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 =	29
2001	10	2,865,446	14.868	0.985	S(x) =	58,174
2002	11	2,547,239	14.751	0.889	S(x-sq) =	116,699,074
2003	12	2,422,167	14.700	0.951	S(xy) =	843,350
2004	13	2,289,077	14.644	0.945	S(y) =	420
2005	14	2,336,964	14.664	1.021	D =	58,870
2006	15	2,051,702	14.534	0.878	slope =	-0.053
2007	16	2,039,778	14.528	0.994	Avg Trend =	0.947
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		
2017	26	964,853	13.780	0.831		
2018	27	871,501	13.678	0.903		
2019	28	794,241	13.585	0.911		
2020	29	773,571	13.559	0.974		
					Selected Trend:	**0.950**

NOTES:
(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019
(4) LN [(3)]
(5) Eg. 2020: 0.974 = 773571 / 794241

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	22,831,619
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	27,282,429	27,462,873
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	23,923,456	24,014,301	24,108,655
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	23,452,866	23,563,202	23,660,204	23,662,500
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	22,775,503	22,959,430	23,121,373	23,266,661	
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	22,237,839	22,388,318	22,552,948	22,697,747		
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	19,087,957	19,179,683	19,279,310	19,419,899			
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	17,594,111	17,764,535	17,939,057	18,080,176				
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	20,335,410	20,733,972	21,123,817	21,473,384					
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	20,595,458	20,880,688	21,102,785	21,299,113						
June-10	5,243,901	10,948,444	14,508,772	16,517,571	17,830,710	18,623,670	19,213,928	19,635,668	20,060,838	20,418,707	20,773,195							
June-11	6,252,011	12,542,403	16,418,085	18,781,010	20,600,606	21,620,084	22,471,802	23,025,405	23,425,068	23,653,986								
June-12	5,840,358	12,172,326	16,214,542	18,988,063	20,565,799	21,638,630	22,364,552	22,871,599	23,193,162									
June-13	5,964,573	11,594,933	14,963,475	16,921,102	17,900,204	18,848,558	19,522,034	19,923,690										
June-14	6,327,324	13,568,028	17,741,202	20,360,105	21,993,453	23,190,745	23,975,352											
June-15	7,233,041	14,180,886	19,044,154	22,685,743	25,206,857	26,846,394												
June-16	8,117,063	16,348,717	21,947,145	25,749,141	28,556,473													
June-17	7,620,426	16,084,999	21,787,121	25,727,801														
June-18	7,872,188	16,132,882	21,099,124															
June-19	7,775,710	15,257,719																
June-20	8,026,213																	

Acc Yr Ending	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	16,286,464	16,354,893	16,396,735	16,396,735
June-84	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	21,422,776	21,597,478	21,783,013	21,971,652	
June-85	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	33,574,935	33,755,458	33,882,433	34,015,717		
June-86	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	44,161,262	44,343,804	44,487,067	44,625,019			
June-87	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	47,825,788	48,181,819	48,511,902	48,853,478				
June-88	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	67,731,263	68,229,244	68,676,681	69,118,944					
June-89	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	62,580,677	63,071,096	63,504,388	63,919,117						
June-90	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	58,764,730	59,320,504	59,843,420	60,385,957							
June-91	43,635,680	44,069,182	44,462,411	44,863,611	45,327,198	45,737,838	46,124,346	46,460,492	46,799,671	47,151,253	47,480,571	47,726,622								
June-92	27,207,194	27,587,356	27,962,307	28,341,430	28,639,184	28,939,814	29,250,064	29,555,803	29,857,025	30,163,915	30,479,994									
June-93	17,927,011	18,169,867	18,397,903	18,582,538	18,741,996	18,889,448	19,103,497	19,207,894	19,292,942	19,379,719										
June-94	20,167,726	20,466,005	20,764,911	21,069,099	21,363,244	21,655,777	21,954,364	22,262,502	22,549,350											
June-95	19,049,825	19,261,206	19,432,796	19,603,661	19,754,111	19,882,468	20,010,327	20,095,320												
June-96	18,448,007	18,735,501	18,936,140	19,066,742	19,191,051	19,291,518	19,386,496													
June-97	17,796,045	17,892,253	17,978,559	18,062,143	18,149,123	18,236,915														
June-98	21,160,830	21,393,405	21,630,180	21,871,200	22,116,631															
June-99	19,722,092	19,861,648	19,994,570	20,130,918																
June-00	22,993,427	23,130,639	23,269,100																	
June-01	27,652,302	27,878,117																		
June-02	24,209,570																			

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	1.008	1.007
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	1.004	1.004	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	1.008	1.005	1.004	1.000
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	1.009	1.008	1.007	1.006	
June-05	2.056	1.323	1.148	1.061	1.045	1.037	1.023	1.012	1.010	1.012	1.008	1.006	1.007	1.007	1.006		
June-06	2.145	1.319	1.129	1.072	1.062	1.036	1.017	1.010	1.020	1.010	1.007	1.005	1.005	1.007			
June-07	1.980	1.228	1.173	1.104	1.052	1.039	1.023	1.022	1.014	1.011	1.010	1.010	1.008				
June-08	2.066	1.308	1.181	1.101	1.056	1.035	1.026	1.019	1.019	1.020	1.019	1.017					
June-09	2.108	1.346	1.182	1.104	1.080	1.038	1.022	1.009	1.014	1.011	1.009						
June-10	2.088	1.325	1.138	1.079	1.044	1.032	1.022	1.022	1.018	1.017							
June-11	2.006	1.309	1.144	1.097	1.049	1.039	1.025	1.017	1.010								
June-12	2.084	1.332	1.171	1.083	1.052	1.034	1.023	1.014									
June-13	1.944	1.291	1.131	1.058	1.053	1.036	1.021										
June-14	2.144	1.308	1.148	1.080	1.054	1.034											
June-15	1.961	1.343	1.191	1.111	1.065												
June-16	2.014	1.342	1.173	1.109													
June-17	2.111	1.354	1.181														
June-18	2.049	1.308															
June-19	1.962																

Acc Yr Ending	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	420-432	432-444	444-456
June-83	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	1.004	1.004	1.003	1.000
June-84	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	1.008	1.008	1.009	1.009	
June-85	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	1.005	1.005	1.004	1.004		
June-86	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	1.004	1.004	1.003	1.003			
June-87	1.012	1.012	1.018	1.011	1.011	1.012	1.009	1.009	1.010	1.009	1.008	1.008	1.008	1.007	1.007	1.007				
June-88	1.018	1.017	1.016	1.014	1.012	1.013	1.012	1.011	1.011	1.011	1.010	1.008	1.007	1.007	1.006					
June-89	1.015	1.014	1.013	1.013	1.013	1.013	1.011	1.011	1.010	1.010	1.009	1.008	1.007	1.007						
June-90	1.012	1.011	1.010	1.010	1.010	1.011	1.011	1.010	1.009	1.010	1.009	1.009	1.009							
June-91	1.017	1.010	1.009	1.009	1.010	1.009	1.008	1.007	1.007	1.008	1.007	1.005								
June-92	1.016	1.014	1.014	1.014	1.011	1.010	1.011	1.010	1.010	1.010	1.010									
June-93	1.015	1.014	1.013	1.010	1.009	1.008	1.011	1.005	1.004	1.004										
June-94	1.014	1.015	1.015	1.015	1.014	1.014	1.014	1.014	1.013											
June-95	1.011	1.011	1.009	1.009	1.008	1.006	1.006	1.004												
June-96	1.013	1.016	1.011	1.007	1.007	1.005	1.005													
June-97	1.005	1.005	1.005	1.005	1.005	1.005														
June-98	1.011	1.011	1.011	1.011	1.011															
June-99	1.010	1.007	1.007	1.007																
June-00	1.007	1.006	1.006																	
June-01	1.007	1.008																		
June-02	1.004																			

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
Simple Avg																	
All Yrs	2.145	1.352	1.185	1.115	1.077	1.054	1.042	1.032	1.028	1.023	1.022	1.020	1.017	1.017	1.016	1.015	1.014
Latest 5	2.019	1.331	1.165	1.088	1.055	1.035	1.022	1.016	1.015	1.014	1.011	1.009	1.007	1.007	1.006	1.006	1.006
Latest 3	2.041	1.335	1.182	1.100	1.057	1.034	1.023	1.018	1.014	1.016	1.013	1.010	1.007	1.008	1.006	1.005	1.004
Volume Wtd																	
All Yrs	2.129	1.352	1.185	1.112	1.073	1.051	1.039	1.030	1.027	1.024	1.022	1.021	1.018	1.018	1.017	1.016	1.014
Latest 5	2.020	1.332	1.167	1.091	1.055	1.035	1.022	1.016	1.015	1.014	1.011	1.009	1.007	1.007	1.006	1.006	1.006
Latest 3	2.040	1.335	1.181	1.101	1.058	1.034	1.023	1.017	1.014	1.016	1.013	1.011	1.007	1.008	1.006	1.005	1.004

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																					
All Yrs	1.014	1.013	1.013	1.012	1.012	1.011	1.011	1.010	1.010	1.009	1.009	1.008	1.008	1.007	1.006	1.006	1.005	1.006	1.006	1.000	
Latest 5	1.008	1.008	1.008	1.008	1.009	1.008	1.009	1.008	1.009	1.008	1.009	1.008	1.007	1.006	1.006	1.006					
Latest 3	1.006	1.007	1.008	1.008	1.008	1.006	1.008	1.008	1.009	1.007	1.009	1.007	1.008	1.007	1.006	1.005	1.005	1.006			
Volume Wtd																					
All Yrs	1.014	1.013	1.013	1.012	1.012	1.012	1.011	1.010	1.010	1.009	1.009	1.007	1.007	1.006	1.006	1.005	1.004	1.005	1.006	1.000	
Latest 5	1.008	1.008	1.008	1.008	1.009	1.008	1.010	1.008	1.009	1.009	1.009	1.008	1.007	1.006	1.006	1.005					
Latest 3	1.006	1.007	1.008	1.008	1.008	1.006	1.009	1.008	1.009	1.008	1.009	1.007	1.008	1.007	1.006	1.005	1.004	1.005			

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	107,794,214	111,276,240	107,811,598	111,052,939	17,384	0.0%	(223,301)	-0.2%
6/30/82-83	17,287,145	17,392,611	17,238,536	17,344,140	(48,610)	-0.3%	(48,471)	-0.3%
6/30/83-84	24,265,006	24,510,471	24,010,050	24,340,993	(254,956)	-1.1%	(169,478)	-0.7%
6/30/84-85	37,048,069	37,379,449	37,086,933	37,369,275	38,864	0.1%	(10,174)	0.0%
6/30/85-86	48,232,324	48,547,313	48,288,531	48,516,974	56,207	0.1%	(30,339)	-0.1%
6/30/86-87	54,513,341	54,785,244	54,787,326	55,088,095	273,985	0.5%	302,851	0.6%
6/30/87-88	78,515,209	79,430,087	78,626,068	79,518,593	110,859	0.1%	88,506	0.1%
6/30/88-89	75,210,084	76,082,550	75,299,056	76,132,550	88,972	0.1%	50,000	0.1%
6/30/89-90	71,875,827	72,678,477	72,073,827	72,861,477	198,000	0.3%	183,000	0.3%
6/30/90-91	57,580,925	58,325,664	57,537,925	58,216,130	(43,000)	-0.1%	(109,533)	-0.2%
6/30/91-92	36,794,822	37,768,053	36,862,822	37,742,610	68,000	0.2%	(25,444)	-0.1%
6/30/92-93	24,550,269	24,717,229	24,447,094	24,611,229	(103,175)	-0.4%	(106,000)	-0.4%
6/30/93-94	27,837,000	28,383,120	27,919,000	28,460,664	82,000	0.3%	77,544	0.3%
6/30/94-95	25,301,648	26,067,375	25,198,648	25,919,349	(103,000)	-0.4%	(148,026)	-0.6%
6/30/95-96	24,759,068	25,535,197	24,615,068	25,363,872	(144,000)	-0.6%	(171,325)	-0.7%
6/30/96-97	24,187,614	24,984,413	24,097,614	24,867,808	(90,000)	-0.4%	(116,605)	-0.5%
6/30/97-98	27,944,793	28,819,822	28,084,475	28,831,602	139,682	0.5%	11,780	0.0%
6/30/98-99	26,011,504	26,813,733	25,916,271	26,612,843	(95,233)	-0.4%	(200,890)	-0.7%
6/30/99-00	29,596,323	30,527,835	29,410,373	30,316,695	(185,950)	-0.6%	(211,140)	-0.7%
6/30/00-01	34,444,791	35,346,923	34,357,960	35,222,193	(86,831)	-0.3%	(124,730)	-0.4%
6/30/01-02	30,693,661	31,981,463	30,527,117	31,670,243	(166,543)	-0.5%	(311,220)	-1.0%
6/30/02-03	30,652,790	31,927,000	30,419,948	31,503,000	(232,841)	-0.8%	(424,000)	-1.3%
6/30/03-04	30,128,047	31,015,260	30,054,740	30,828,940	(73,307)	-0.2%	(186,320)	-0.6%
6/30/04-05	29,511,611	30,560,000	29,530,110	30,302,000	18,499	0.1%	(258,000)	-0.8%
6/30/05-06	27,035,449	27,617,000	26,787,093	27,530,000	(248,356)	-0.9%	(87,000)	-0.3%
6/30/06-07	25,008,427	26,094,550	24,710,393	26,002,950	(298,033)	-1.2%	(91,600)	-0.4%
6/30/07-08	30,929,450	32,106,206	31,369,394	31,912,576	439,944	1.4%	(193,630)	-0.6%
6/30/08-09	31,162,640	32,167,828	31,093,885	31,646,364	(68,755)	-0.2%	(521,464)	-1.6%
6/30/09-10	31,454,680	32,733,961	31,310,102	32,449,690	(144,578)	-0.5%	(284,271)	-0.9%
6/30/10-11	35,998,090	37,484,624	35,738,956	36,616,816	(259,134)	-0.7%	(867,808)	-2.3%
6/30/11-12	36,579,800	38,149,129	35,946,072	37,113,492	(633,728)	-1.7%	(1,035,637)	-2.7%
6/30/12-13	33,000,950	34,830,000	32,185,038	33,856,000	(815,912)	-2.5%	(974,000)	-2.8%
6/30/13-14	40,199,530	42,430,000	39,962,240	40,942,778	(237,290)	-0.6%	(1,487,222)	-3.5%
6/30/14-15	45,163,540	47,562,300	45,804,701	47,079,371	641,161	1.4%	(482,929)	-1.0%
6/30/15-16	49,679,380	52,761,400	50,544,432	52,632,383	865,052	1.7%	(129,017)	-0.2%
6/30/16-17	48,713,410	51,638,200	49,375,596	51,819,770	662,186	1.4%	181,570	0.4%
6/30/17-18	49,396,830	51,977,000	48,278,628	51,356,740	(1,118,202)	-2.3%	(620,260)	-1.2%
6/30/18-19	50,237,220	57,947,000	47,479,804	53,223,350	(2,757,416)	-5.5%	(4,723,650)	-8.2%
6/30/19-20								
Total	1,509,295,479	1,560,354,724	1,504,787,425	1,546,876,492	(4,508,054)	-0.3%	(13,478,232)	-0.9%

NOTES:
(2), (3) From prior Aon analysis as of June 30, 2019
(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, 2020

All Clusters Combined
Indemnity

Calculation of Ultimate Lump Sum Payments

(1) Accident Year	(2) Paid Loss Excluding Lump Sum	(3) Implied Cumulative LDF	(4) Ult Loss Excluding Lump Sum	(5) Selected Incr Lump Sum % Outstdg	(6) Cumulative Lump Sum % Outstdg	(7) Total Lump Sum Outstdg	(8) Paid Lump Sum to Date	(9) Est Ult Lump Sum - Incr Method	(10) Ultimate Lump Sum Percentage	(11) Lump Sum LDF	(12) Est Ult Lump Sum - Paid Method	(13) Selected Est Ultimate Lump Sums	(14) Prior Est Ultimate Lump Sums
All Prior Yrs	96,631,975	1.092	105,477,043	0.0%	0.0%	0	3,941,682	3,941,682	3.7%	1.002	3,950,649	3,946,165	3,950,316
6/30/82-83	16,396,735	1.008	16,527,624	0.0%	0.0%	0	771,231	771,231	4.7%	1.000	771,544	771,387	771,497
6/30/83-84	21,971,652	1.034	22,713,263	0.0%	0.0%	0	1,792,639	1,792,639	7.9%	1.002	1,795,467	1,794,053	1,795,262
6/30/84-85	34,015,717	1.015	34,533,157	0.0%	0.0%	0	2,791,264	2,791,264	8.1%	1.002	2,795,548	2,793,406	2,795,272
6/30/85-86	44,625,019	1.016	45,355,725	0.0%	0.0%	0	3,303,601	3,303,601	7.3%	1.002	3,309,719	3,306,660	3,309,426
6/30/86-87	48,853,478	1.019	49,771,572	0.0%	0.0%	0	5,541,750	5,541,750	11.1%	1.002	5,550,182	5,545,966	5,549,766
6/30/87-88	69,118,944	1.023	70,685,786	0.0%	0.0%	0	8,207,017	8,207,017	11.6%	1.001	8,219,059	8,213,038	8,218,217
6/30/88-89	63,919,117	1.027	65,672,685	0.0%	0.0%	0	9,871,239	9,871,239	15.0%	1.002	9,888,070	9,879,655	9,841,858
6/30/89-90	60,385,957	1.032	62,301,770	0.0%	0.0%	0	10,079,298	10,079,298	16.2%	1.002	10,094,914	10,087,106	10,095,096
6/30/90-91	47,726,622	1.037	49,478,333	0.0%	0.0%	11,816	8,721,440	8,733,256	17.7%	1.002	8,735,593	8,734,425	8,740,569
6/30/91-92	30,479,994	1.042	31,750,047	0.0%	0.0%	12,183	5,460,474	5,472,657	17.2%	1.001	5,468,411	5,470,534	5,478,413
6/30/92-93	19,379,719	1.055	20,451,173	0.0%	0.0%	1,498	4,130,618	4,132,116	20.2%	1.003	4,142,597	4,137,356	4,141,628
6/30/93-94	22,549,350	1.061	23,923,943	0.0%	0.0%	2,981	4,177,034	4,180,015	17.5%	1.003	4,191,055	4,185,535	4,190,132
6/30/94-95	20,095,320	1.066	21,421,628	0.0%	0.0%	3,213	4,050,860	4,054,073	18.9%	1.004	4,066,448	4,060,261	4,066,943
6/30/95-96	19,386,496	1.077	20,887,316	0.0%	0.0%	2,452	3,923,871	3,926,323	18.8%	1.005	3,944,811	3,935,567	3,952,255
6/30/96-97	18,236,915	1.088	19,845,785	0.0%	0.0%	3,399	4,501,152	4,504,551	22.7%	1.011	4,550,997	4,527,774	4,540,995
6/30/97-98	22,116,631	1.087	24,030,618	0.0%	0.0%	11,509	4,686,877	4,698,386	19.6%	1.014	4,750,377	4,724,381	4,741,061
6/30/98-99	20,130,918	1.101	22,165,511	0.0%	0.1%	21,027	4,136,938	4,157,965	18.8%	1.016	4,203,311	4,180,638	4,195,295
6/30/99-00	23,269,100	1.114	25,930,262	0.0%	0.1%	35,349	4,032,368	4,067,718	15.7%	1.020	4,112,615	4,090,166	4,106,581
6/30/00-01	27,878,117	1.117	31,139,156	0.0%	0.1%	46,563	3,904,051	3,950,614	12.7%	1.020	3,980,207	3,965,411	3,966,522
6/30/01-02	24,209,570	1.131	27,383,367	0.1%	0.2%	63,708	3,832,669	3,896,377	14.2%	1.034	3,961,525	3,928,951	3,961,305
6/30/02-03	23,662,500	1.141	27,000,643	0.1%	0.3%	85,705	3,750,808	3,836,513	14.2%	1.039	3,896,909	3,866,711	3,849,831
6/30/03-04	23,266,661	1.154	26,844,125	0.1%	0.4%	100,415	3,688,520	3,788,935	14.1%	1.039	3,832,992	3,810,964	3,782,678
6/30/04-05	22,697,747	1.171	26,581,695	0.1%	0.5%	134,239	4,067,655	4,201,895	15.8%	1.054	4,287,060	4,244,477	4,272,121
6/30/05-06	19,419,899	1.186	23,022,905	0.1%	0.6%	147,751	4,107,930	4,255,681	18.5%	1.059	4,349,542	4,302,611	4,327,886
6/30/06-07	18,080,176	1.204	21,764,234	0.1%	0.8%	171,694	3,364,817	3,536,511	16.2%	1.063	3,577,175	3,571,862	3,607,557
6/30/07-08	21,473,384	1.236	26,543,535	0.2%	1.0%	259,455	4,890,692	5,150,147	19.4%	1.073	5,247,644	5,215,096	5,199,126
6/30/08-09	21,299,113	1.255	26,720,139	0.1%	1.1%	299,049	4,242,637	4,541,686	17.0%	1.088	4,614,752	4,592,199	4,644,703
6/30/09-10	20,773,195	1.283	26,658,565	0.2%	1.3%	343,450	4,731,186	5,074,636	19.0%	1.101	5,206,721	5,151,824	5,178,971
6/30/10-11	23,653,986	1.308	30,932,395	0.2%	1.5%	458,492	4,906,772	5,365,264	17.3%	1.124	5,515,908	5,452,553	5,482,710
6/30/11-12	23,193,162	1.348	31,259,787	0.3%	1.8%	559,608	4,756,675	5,316,284	17.0%	1.141	5,428,305	5,380,542	5,509,164
6/30/12-13	19,923,690	1.376	27,412,484	0.4%	2.2%	590,592	4,063,738	4,654,330	17.0%	1.189	4,831,005	4,751,241	4,819,107
6/30/13-14	23,975,352	1.427	34,201,987	1.0%	3.2%	1,080,440	4,779,832	5,860,272	17.1%	1.257	6,008,899	5,894,214	6,290,243
6/30/14-15	26,846,394	1.475	39,585,172	1.2%	4.4%	1,735,518	4,698,025	6,433,543	16.3%	1.403	6,593,416	6,527,635	6,112,963
6/30/15-16	28,556,473	1.575	44,986,755	1.6%	6.0%	2,682,238	4,221,716	6,903,954	15.3%	1.642	6,930,909	6,957,428	6,823,346
6/30/16-17	25,727,801	1.713	44,078,982	2.6%	8.5%	3,753,384	3,218,801	6,972,185	15.8%	2.292	7,376,193	6,636,814	6,144,536
6/30/17-18	21,099,124	2.055	43,367,368	3.9%	12.4%	5,394,105	1,432,752	6,826,857	15.7%	4.179	5,986,901	6,281,013	5,982,590
6/30/18-19	15,257,719	2.719	41,492,421	2.4%	14.9%	6,161,782	282,501	6,444,283	15.5%	11.672	3,297,274	5,821,400	6,955,965
6/30/19-20	8,026,213	5.736	46,034,496	0.8%	15.7%	7,225,204	75,001	7,300,205	15.9%	60.784	4,558,848	6,977,245	
Total	1,138,309,937		1,379,933,453			31,398,817	167,138,131	198,536,948	14.4%		194,023,550	197,714,263	191,391,904

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, 2019

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*	*420-432*	*432-444*	*444-456*	*456-468*
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	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	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	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	0	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	0	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	94,000	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	0	150,000	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	0	0	0	45,000							
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	0	0	0	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	0	0	0	0									
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	40,000	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	0	14,500	15,500	0											
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	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	0	0	0	0													
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	64,138	0	1	0														
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	0	0	0	0															
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	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	0	25,000	25,000	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	0	45,000	80,000	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	60,001	0	0	29,187																			
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	0	0	0	0																				
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	5,000	45,894	145,000	35,000																					
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	0	40,000	0	55,000																						
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	0	37,500	0	2																							
Jun-06	0	307,301	772,454	1,353,001	484,173	445,500	363,000	103,000	19,700	15,300	177,000	50,000	0	17,500	1																								
Jun-07	36,000	451,583	914,752	703,751	416,002	193,002	149,442	275,002	148,783	76,500	0	0	0	0																									
Jun-08	17,730	728,501	774,649	979,000	795,250	372,462	679,872	198,334	148,893	0	105,000	41,000	50,001																										
Jun-09	285,000	362,500	783,767	808,001	522,676	524,500	314,501	373,691	75,000	65,001	128,000	1																											
Jun-10	0	601,092	797,379	946,609	922,799	554,305	511,501	192,500	136,250	18,750	50,001																												
Jun-11	315,691	461,993	1,026,227	799,329	1,115,029	406,000	349,502	188,000	193,000	52,001																													
Jun-12	0	441,786	742,328	1,621,090	868,462	640,401	264,104	138,500	40,004																														
Jun-13	113,000	371,012	696,259	1,337,661	871,178	145,625	323,000	206,003																															
Jun-14	102,000	301,628	1,569,902	1,187,866	841,730	648,202	128,504																																
Jun-15	0	377,841	1,376,990	962,545	987,500	993,149																																	
Jun-16	21,500	318,702	1,260,931	1,348,314	1,272,268																																		
Jun-17	37,200	798,100	888,000	1,495,501																																			
Jun-18	46,368	290,704	1,095,679																																				
Jun-19	3,000	279,501																																					
Jun-20	75,001																																						

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*	*432*	*444*	*456*	*468*
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	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	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	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	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	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	5,541,750	5,541,750	5,541,750	5,541,750					
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	8,057,017	8,207,017	8,207,017	8,207,017						
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	9,826,239	9,826,239	9,826,239	9,871,239							
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	10,079,298	10,079,298	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	8,721,440	8,721,440	8,721,440	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	5,460,474	5,460,474	5,460,474	5,460,474										
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	4,100,618	4,115,118	4,130,618	4,130,618											
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	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	4,050,860	4,050,860	4,050,860	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	3,923,870	3,923,870	3,923,871	3,923,871														
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	4,501,152	4,501,152	4,501,152	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	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	4,111,938	4,136,938	4,136,938																	
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	3,907,368	3,952,368	4,032,368	4,032,368																		
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	3,874,864	3,874,864	3,874,864	3,904,051																			
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	3,832,669	3,832,669	3,832,669	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	3,524,914	3,570,808	3,715,808	3,750,808																					
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	3,593,520	3,633,520	3,633,520	3,688,520																						
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	4,030,153	4,067,653	4,067,653	4,067,655																							
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	4,090,429	4,090,429	4,107,929	4,107,930																								
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	3,364,817	3,364,817	3,364,817	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	4,694,691	4,799,691	4,840,691	4,890,692																										
Jun-09	285,000	647,500	1,431,267	2,239,268	2,761,944	3,286,444	3,600,945	3,974,635	4,049,635	4,114,636	4,242,636	4,242,637																											
Jun-10	0	601,092	1,398,471	2,345,079	3,267,878	3,822,184	4,333,685	4,526,185	4,662,435	4,681,185	4,731,186																												
Jun-11	315,691	777,684	1,803,911	2,603,240	3,718,269	4,124,269	4,473,771	4,661,771	4,854,771	4,906,772																													
Jun-12	0	441,786	1,184,114	2,805,204	3,673,666	4,314,068	4,578,171	4,716,671	4,756,675																														
Jun-13	113,000	484,012	1,180,271	2,517,932	3,389,110	3,534,735	3,857,735	4,063,738																															
Jun-14	102,000	403,628	1,973,530	3,161,396	4,003,126	4,651,328	4,779,832																																
Jun-15	0	377,841	1,754,831	2,717,376	3,704,876	4,698,025																																	
Jun-16	21,500	340,202	1,601,133	2,949,448	4,221,716																																		
Jun-17	37,200	835,300	1,723,300	3,218,801																																			
Jun-18	46,368	337,072	1,432,752																																				
Jun-19	3,000	282,501																																					
Jun-20	75,001																																						

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
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
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
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
Jun-85	0.000	0.000	0.000	0.003	0.001	0.004	0.004	0.006	0.011	0.016	0.010	0.006	0.009
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
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
Jun-88	0.000	0.002	0.003	0.006	0.012	0.022	0.017	0.010	0.012	0.005	0.004	0.003	0.005
Jun-89	0.000	0.004	0.006	0.015	0.027	0.025	0.016	0.015	0.008	0.005	0.009	0.004	0.004
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
Jun-91	0.000	0.009	0.040	0.029	0.019	0.025	0.015	0.004	0.005	0.003	0.002	0.001	0.000
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
Jun-93	0.003	0.032	0.033	0.048	0.020	0.020	0.014	0.005	0.009	0.004	0.001	0.003	0.000
Jun-94	0.004	0.028	0.036	0.030	0.022	0.014	0.008	0.008	0.002	0.002	0.000	0.010	0.003
Jun-95	0.010	0.041	0.046	0.037	0.019	0.011	0.003	0.000	0.003	0.006	0.003	0.002	0.000
Jun-96	0.004	0.034	0.050	0.031	0.015	0.005	0.004	0.008	0.006	0.006	0.005	0.003	0.000
Jun-97	0.007	0.060	0.054	0.041	0.021	0.009	0.001	0.007	0.005	0.005	0.008	0.001	0.000
Jun-98	0.017	0.037	0.048	0.028	0.018	0.011	0.005	0.007	0.001	0.000	0.000	0.009	0.005
Jun-99	0.011	0.020	0.047	0.035	0.017	0.010	0.012	0.008	0.003	0.008	0.002	0.003	0.000
Jun-00	0.005	0.038	0.028	0.021	0.015	0.010	0.014	0.008	0.005	0.003	0.001	0.001	0.001
Jun-01	0.003	0.017	0.027	0.017	0.016	0.017	0.008	0.012	0.004	0.001	0.000	0.000	0.002
Jun-02	0.002	0.009	0.023	0.025	0.028	0.020	0.013	0.012	0.002	0.003	0.002	0.002	0.000
Jun-03	0.001	0.009	0.036	0.031	0.021	0.017	0.005	0.003	0.000	0.004	0.003	0.002	0.000
Jun-04	0.002	0.006	0.021	0.034	0.031	0.021	0.006	0.009	0.004	0.000	0.000	0.001	0.000
Jun-05	0.000	0.006	0.032	0.051	0.024	0.011	0.010	0.008	0.007	0.000	0.000	0.001	0.000
Jun-06	0.000	0.013	0.034	0.059	0.021	0.019	0.016	0.004	0.001	0.001	0.008	0.002	0.000
Jun-07	0.002	0.021	0.042	0.032	0.019	0.009	0.007	0.013	0.007	0.004	0.000	0.000	0.000
Jun-08	0.001	0.027	0.029	0.037	0.030	0.014	0.026	0.007	0.006	0.000	0.004	0.002	0.002
Jun-09	0.011	0.014	0.029	0.030	0.020	0.020	0.012	0.014	0.003	0.002	0.005	0.000	
Jun-10	0.000	0.023	0.030	0.036	0.035	0.021	0.019	0.007	0.005	0.001	0.002		
Jun-11	0.010	0.015	0.033	0.026	0.036	0.013	0.011	0.006	0.006	0.002			
Jun-12	0.000	0.014	0.024	0.052	0.028	0.020	0.008	0.004	0.001				
Jun-13	0.004	0.014	0.025	0.049	0.032	0.005	0.012	0.008					
Jun-14	0.003	0.009	0.046	0.035	0.025	0.019	0.004						
Jun-15	0.000	0.010	0.035	0.024	0.025	0.025							
Jun-16	0.000	0.007	0.028	0.030	0.028								
Jun-17	0.001	0.018	0.020	0.034									
Jun-18	0.001	0.007	0.025										
Jun-19	0.000	0.007											
Jun-20	0.002												

Acc Yr Ending	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
All Prior Yrs	0.005	0.006	0.003	0.001	0.000	0.003	0.004	0.003	0.001	0.001	0.002	0.001	0.000
Jun-83	0.007	0.010	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-84	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
Jun-85	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
Jun-86	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
Jun-87	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
Jun-88	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
Jun-89	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
Jun-90	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
Jun-91	0.000	0.001	0.004	0.002	0.006	0.003	0.000	0.000	0.000	0.001	0.000	0.003	0.005
Jun-92	0.004	0.001	0.001	0.010	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Jun-93	0.000	0.000	0.000	0.002	0.003	0.002	0.002	0.000	0.000	0.001	0.000	0.000	0.001
Jun-94	0.001	0.001	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-95	0.005	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-96	0.001	0.001	0.000	0.000	0.000	0.003	0.002	0.006	0.003	0.000	0.000	0.000	
Jun-97	0.000	0.002	0.002	0.000	0.000	0.002	0.001	0.000	0.000	0.000	0.000		
Jun-98	0.005	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-99	0.000	0.003	0.005	0.000	0.000	0.000	0.001	0.001	0.000				
Jun-00	0.000	0.000	0.000	0.000	0.000	0.002	0.003	0.000					
Jun-01	0.000	0.000	0.000	0.002	0.000	0.000	0.001						
Jun-02	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-03	0.000	0.000	0.002	0.005	0.001								
Jun-04	0.000	0.001	0.000	0.002									
Jun-05	0.001	0.000	0.000										
Jun-06	0.001	0.000											
Jun-07	0.000												

Acc Yr Ending	312-324	324-336	336-348	348-360	360-372	372-384	384-396	396-408	408-420	420-432	432-444	444-456	456-468
All Prior Yrs	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
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	
Jun-84	0.007	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	0.001	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	0.000				
Jun-87	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000					
Jun-88	0.000	0.000	0.000	0.000	0.002	0.000	0.000						
Jun-89	0.000	0.000	0.000	0.000	0.000	0.001							
Jun-90	0.000	0.000	0.000	0.000	0.000								
Jun-91	0.000	0.000	0.000	0.000									
Jun-92	0.000	0.000	0.000										
Jun-93	0.001	0.000											
Jun-94	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
Simple Avg													
All Yrs (ex P)	0.003	0.016	0.027	0.028	0.020	0.014	0.010	0.008	0.005	0.004	0.004	0.003	0.002
Latest 5	0.001	0.010	0.031	0.034	0.027	0.017	0.011	0.008	0.004	0.002	0.004	0.001	0.000
Latest 3	0.001	0.011	0.024	0.029	0.026	0.016	0.008	0.006	0.004	0.002	0.004	0.001	0.001
Olympic Avg													
All Yrs (ex P)	0.002	0.015	0.027	0.028	0.020	0.014	0.010	0.008	0.005	0.004	0.004	0.003	0.002
Latest 10	0.001	0.012	0.029	0.034	0.028	0.017	0.012	0.008	0.004	0.001	0.002	0.001	0.000
Latest 5	0.001	0.008	0.029	0.033	0.027	0.018	0.011	0.007	0.005	0.002	0.004	0.001	0.000

Averages	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
Simple Avg													
All Yrs (ex P)	0.002	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.001	0.001
Latest 5	0.000	0.000	0.000	0.002	0.000	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.001
Latest 3	0.001	0.000	0.001	0.002	0.000	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Olympic Avg													
All Yrs (ex P)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001
Latest 10	0.000	0.001	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001
Latest 5	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001

Averages	312-324	324-336	336-348	348-360	360-372	372-384	384-396	396-408	408-420	420-432	432-444	444-456	456-468
Simple Avg													
All Yrs (ex P)	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Latest 5	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000					
Latest 3	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000			
Olympic Avg													
All Yrs (ex P)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Latest 10	0.000	0.000	0.000										
Latest 5	0.000	0.000	0.000	0.000	0.001	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 Endin	*12*	*24*	*36*	*48*	*60*	*72*	*84*	*96*	*108*	*120*	*132*	*144*	*156*	*168*	*180*	*192*	*204*	*216*	*228*	*240*
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	4,111,938
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	3,907,368	3,952,368	4,032,368
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	3,814,863	3,814,863	3,814,863	3,814,863	3,874,864	3,874,864	3,874,864	3,874,864	3,904,051
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	3,832,669	3,832,669	3,832,669	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	3,524,914	3,570,808	3,715,808	3,750,808		
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	3,593,520	3,633,520	3,633,520	3,688,520			
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	4,030,153	4,030,153	4,067,653	4,067,653	4,067,653	4,067,655				
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	4,090,429	4,090,429	4,107,929	4,107,930					
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	3,364,817	3,364,817	3,364,817	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	4,694,691	4,799,691	4,840,691	4,890,692							
Jun-09	285,000	647,500	1,431,267	2,239,268	2,761,944	3,286,444	3,600,945	3,974,635	4,049,635	4,114,636	4,242,636	4,242,637								
Jun-10	0	601,092	1,398,471	2,345,079	3,267,878	3,822,184	4,333,685	4,526,185	4,662,435	4,681,185	4,731,186									
Jun-11	315,691	777,684	1,803,911	2,603,240	3,718,269	4,124,269	4,473,771	4,661,771	4,854,771	4,906,772										
Jun-12	0	441,786	1,184,114	2,805,204	3,673,666	4,314,068	4,578,171	4,716,671	4,756,675											
Jun-13	113,000	484,012	1,180,271	2,517,932	3,389,110	3,534,735	3,857,735	4,063,738												
Jun-14	102,000	403,628	1,973,530	3,161,396	4,003,126	4,651,328	4,779,832													
Jun-15	0	377,841	1,754,831	2,717,376	3,704,876	4,698,025														
Jun-16	21,500	340,202	1,601,133	2,949,448	4,221,716															
Jun-17	37,200	835,300	1,723,300	3,218,801																
Jun-18	46,368	337,072	1,432,752																	
Jun-19	3,000	282,501																		
Jun-20	75,001																			

Acc Yr Endin	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*	*432*	*444*	*456*	*468*
All Prior Yrs	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	3,941,682	3,941,682	3,941,682	3,941,682
Jun-83	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	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	1,792,639	1,792,639	1,792,639		
Jun-85	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	2,791,264	2,791,264	2,791,264	2,791,264			
Jun-86	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	3,303,601	3,303,601	3,303,601	3,303,601				
Jun-87	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	5,541,750	5,541,750	5,541,750	5,541,750					
Jun-88	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	8,057,017	8,207,017	8,207,017	8,207,017						
Jun-89	9,816,238	9,816,238	9,816,238	9,826,238	9,826,238	9,826,239	9,826,239	9,826,239	9,826,239	9,826,239	9,826,239	9,871,239							
Jun-90	9,797,631	9,830,965	9,864,298	9,864,298	10,048,798	10,079,298	10,079,298	10,079,298	10,079,298	10,079,298	10,079,298								
Jun-91	8,266,440	8,266,440	8,326,440	8,326,440	8,484,440	8,721,440	8,721,440	8,721,440	8,721,440	8,721,440									
Jun-92	5,420,474	5,420,474	5,420,474	5,420,474	5,420,474	5,460,474	5,460,474	5,460,474	5,460,474										
Jun-93	4,087,117	4,087,117	4,100,617	4,100,618	4,100,618	4,115,118	4,130,618	4,130,618											
Jun-94	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034	4,177,034												
Jun-95	4,050,859	4,050,860	4,050,860	4,050,860	4,050,860	4,050,860													
Jun-96	3,859,732	3,923,870	3,923,870	3,923,871	3,923,871														
Jun-97	4,501,152	4,501,152	4,501,152	4,501,152															
Jun-98	4,686,877	4,686,877	4,686,877																
Jun-99	4,136,938	4,136,938																	
Jun-00	4,032,368																		

Age-to-Age Factors

Acc Yr Endin	*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*
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
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
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
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
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
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
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
Jun-89		2.593	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
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
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
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
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
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
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
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
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	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	1.000	1.006
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	1.000	1.012	1.020
Jun-01	5.773	2.339	1.352	1.245	1.212	1.080	1.115	1.037	1.005	1.000	1.017	1.000	1.000	1.000	1.016	1.000	1.000	1.000	1.008
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	1.000	1.000	1.000	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	1.001	1.013	1.041	1.009		
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	1.000	1.011	1.000	1.015			
Jun-05	28.790	5.741	2.336	1.273	1.099	1.081	1.060	1.051	1.000	1.005	1.000	1.009	1.000	1.000	1.000				
Jun-06		3.514	2.253	1.199	1.153	1.108	1.028	1.005	1.004	1.046	1.012	1.000	1.004	1.000					
Jun-07	13.544	2.876	1.502	1.198	1.077	1.055	1.096	1.047	1.023	1.000	1.000	1.000	1.000						
Jun-08	42.089	2.038	1.644	1.318	1.113	1.185	1.046	1.033	1.000	1.022	1.009	1.010							
Jun-09	2.272	2.210	1.565	1.233	1.190	1.096	1.104	1.019	1.016	1.031	1.000								
Jun-10		2.327	1.677	1.394	1.170	1.134	1.044	1.030	1.004	1.011									
Jun-11	2.463	2.320	1.443	1.428	1.109	1.085	1.042	1.041	1.011										
Jun-12		2.680	2.369	1.310	1.174	1.061	1.030	1.008											
Jun-13	4.283	2.439	2.133	1.346	1.043	1.091	1.053												
Jun-14	3.957	4.889	1.602	1.266	1.162	1.028													
Jun-15		4.644	1.549	1.363	1.268														
Jun-16	15.823	4.706	1.842	1.431															
Jun-17	22.454	2.063	1.868																
Jun-18	7.269	4.251																	
Jun-19	94.167																		

Acc Yr Endin	*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*	*420-432*	*432-444*	*444-456*	*456-468*	*To Ult*
All Prior Yrs	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	1.000	1.000	1.000	1.000	
Jun-83	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Jun-84	1.000	1.054	1.000	1.006	1.000	1.000	1.091	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	1.000	1.009	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Jun-86	1.006	1.016	1.021	1.083	1.000	1.064	1.001	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Jun-87	1.000	1.000	1.000	1.025	1.000	1.000	1.000	1.000	1.000	1.000	1.017	1.000	1.000	1.000						
Jun-88	1.012	1.019	1.000	1.007	1.008	1.007	1.000	1.000	1.000	1.000	1.019	1.000	1.000							
Jun-89	1.006	1.000	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.005								
Jun-90	1.003	1.003	1.003	1.000	1.019	1.003	1.000	1.000	1.000	1.000	1.000									
Jun-91	1.000	1.000	1.007	1.000	1.019	1.028	1.000	1.000	1.000	1.000										
Jun-92	1.000	1.000	1.000	1.000	1.000	1.007	1.000	1.000	1.000											
Jun-93	1.000	1.000	1.003	1.000	1.000	1.004	1.004	1.000												
Jun-94	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	1.035	1.017	1.000	1.000	1.000															
Jun-97	1.000	1.000	1.000	1.000																
Jun-98	1.000	1.000	1.000																	
Jun-99	1.006	1.000																		
Jun-00	1.000																			

Averages

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*
Simple Avg																			
All Yrs (ex P)	14.903	3.069	1.789	1.370	1.269	1.202	1.195	1.102	1.088	1.072	1.040	1.025	1.023	1.019	1.011	1.014	1.011	1.010	1.007
Latest 5	34.929	4.111	1.799	1.343	1.151	1.080	1.055	1.026	1.011	1.022	1.005	1.002	1.003	1.003	1.003	1.014	1.002	1.002	1.008
Latest 3	41.297	3.673	1.753	1.354	1.158	1.060	1.042	1.027	1.010	1.021	1.003	1.003	1.005	1.004	1.004	1.019	1.003	1.004	1.011
Volume Wtd																			
All Yrs (ex P)	6.925	2.576	1.652	1.304	1.182	1.114	1.083	1.051	1.033	1.032	1.024	1.017	1.012	1.009	1.010	1.013	1.012	1.010	1.007
Latest 5	20.107	3.699	1.769	1.342	1.153	1.077	1.053	1.026	1.010	1.022	1.005	1.003	1.003	1.002	1.002	1.014	1.002	1.002	1.008
Latest 3	16.806	3.145	1.749	1.351	1.161	1.057	1.041	1.027	1.010	1.021	1.003	1.004	1.005	1.003	1.004	1.018	1.003	1.004	1.011

Averages	*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*	*420-432*	*432-444*	*444-456*	*456-468*	*To Ult*
Simple Avg																				
All Yrs (ex P)	1.004	1.006	1.002	1.008	1.003	1.009	1.008	1.000	1.001	1.000	1.004	1.001	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5	1.008	1.003	1.000	1.000	1.000	1.008	1.001	1.000	1.000	1.000	1.007	1.001	1.000	1.000						
Latest 3	1.002	1.000	1.000	1.000	1.000	1.001	1.001	1.000	1.000	1.000	1.006	1.002	1.000	1.000	1.000	1.000				
Volume Wtd																				
All Yrs (ex P)	1.004	1.004	1.002	1.006	1.006	1.009	1.003	1.000	1.000	1.000	1.006	1.001	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5	1.007	1.003	1.000	1.000	1.000	1.011	1.000	1.000	1.000	1.000	1.007	1.002	1.000	1.000						
Latest 3	1.002	1.000	1.000	1.000	1.000	1.001	1.001	1.000	1.000	1.000	1.005	1.002	1.000	1.000	1.000	1.000				

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

All Clusters Combined
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.8%	0.0%	0.2%	0.1%	1.000	1.000
456	99.2%	2.5%	0.8%	0.6%	0.3%	0.981	0.971
444	96.7%	-1.8%	3.3%	-0.4%	-0.2%	0.971	0.958
432	98.5%	0.1%	1.5%	0.0%	0.0%	0.879	0.824
420	98.4%	0.2%	1.6%	0.1%	0.0%	0.855	0.791
408	98.2%	0.4%	1.8%	0.1%	0.1%	0.842	0.775
396	97.8%	0.5%	2.2%	0.1%	0.1%	0.838	0.771
384	97.3%	0.4%	2.7%	0.1%	0.1%	0.836	0.769
372	96.9%	0.5%	3.1%	0.1%	0.1%	0.827	0.758
360	96.5%	0.5%	3.5%	0.1%	0.1%	0.819	0.749
348	96.0%	1.2%	4.0%	0.4%	0.2%	0.810	0.737
336	94.8%	0.5%	5.2%	0.2%	0.1%	0.827	0.760
324	94.3%	0.4%	5.7%	0.2%	0.1%	0.811	0.740
312	93.8%	1.0%	6.2%	0.4%	0.2%	0.794	0.718
300	92.8%	0.9%	7.2%	0.4%	0.2%	0.794	0.718
288	91.9%	-0.1%	8.1%	-0.1%	0.0%	0.788	0.710
276	92.0%	1.2%	8.0%	0.5%	0.3%	0.754	0.665
264	90.8%	1.1%	9.2%	0.5%	0.3%	0.759	0.673
252	89.7%	0.2%	10.3%	0.1%	0.1%	0.756	0.670
240	89.5%	1.1%	10.5%	0.5%	0.4%	0.732	0.639
228	88.4%	0.8%	11.6%	0.4%	0.3%	0.730	0.638
216	87.6%	1.0%	12.4%	0.5%	0.3%	0.720	0.625
204	86.7%	1.3%	13.3%	0.7%	0.5%	0.713	0.618
192	85.4%	1.0%	14.6%	0.6%	0.4%	0.711	0.617
180	84.4%	1.3%	15.6%	0.7%	0.5%	0.704	0.608
168	83.1%	2.2%	16.9%	1.3%	1.0%	0.700	0.603
156	80.9%	1.2%	19.1%	0.7%	0.6%	0.708	0.615
144	79.7%	1.8%	20.3%	1.1%	0.9%	0.698	0.603
132	77.9%	1.5%	22.1%	1.0%	0.8%	0.696	0.601
120	76.5%	2.3%	23.5%	1.6%	1.3%	0.689	0.592
108	74.2%	1.5%	25.8%	1.1%	0.9%	0.690	0.595
96	72.7%	2.6%	27.3%	1.9%	1.7%	0.681	0.584
84	70.1%	2.3%	29.9%	1.8%	1.6%	0.683	0.587
72	67.8%	4.3%	32.2%	3.5%	3.2%	0.680	0.584
60	63.5%	5.1%	36.5%	4.3%	3.9%	0.693	0.601
48	58.4%	9.7%	41.6%	8.5%	7.9%	0.705	0.616
36	48.7%	11.9%	51.3%	10.8%	10.3%	0.735	0.655
24	36.8%	19.3%	63.2%	18.2%	17.7%	0.758	0.684
12	17.4%	17.4%	82.6%	17.1%	16.9%	0.788	0.722
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)

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	7,237,941	10,479,282		6,383,854	9,253,508
6/30/82-83	70,570	176,174	0.981	69,199	172,753
6/30/83-84	245,760	576,702	0.971	233,730	548,290
6/30/84-85	279,952	562,294	0.879	258,320	519,682
6/30/85-86	359,911	588,354	0.855	322,905	527,543
6/30/86-87	392,098	692,867	0.842	344,053	608,609
6/30/87-88	1,300,107	2,192,632	0.838	1,132,056	1,895,772
6/30/88-89	1,508,700	2,342,195	0.836	1,294,257	2,000,591
6/30/89-90	1,608,571	2,396,221	0.827	1,365,053	2,032,801
6/30/90-91	1,089,862	1,768,068	0.819	919,537	1,493,373
6/30/91-92	922,355	1,802,142	0.810	778,158	1,521,252
6/30/92-93	936,756	1,100,891	0.827	782,566	922,236
6/30/93-94	1,192,616	1,734,280	0.811	991,389	1,445,377
6/30/94-95	1,052,468	1,773,169	0.794	877,544	1,479,726
6/30/95-96	1,304,701	2,053,505	0.794	1,077,442	1,693,701
6/30/96-97	1,359,547	2,129,741	0.788	1,116,117	1,745,975
6/30/97-98	1,280,967	2,028,094	0.754	1,035,180	1,629,675
6/30/98-99	1,648,415	2,344,986	0.759	1,301,953	1,856,930
6/30/99-00	2,108,905	3,015,227	0.756	1,642,791	2,346,814
6/30/00-01	2,575,792	3,440,025	0.732	1,965,414	2,620,951
6/30/01-02	2,484,879	3,628,004	0.730	1,876,440	2,740,467
6/30/02-03	3,006,640	4,089,692	0.720	2,228,271	3,040,932
6/30/03-04	3,099,559	3,873,759	0.713	2,257,901	2,807,892
6/30/04-05	2,764,708	3,536,598	0.711	1,965,994	2,521,088
6/30/05-06	3,259,264	4,002,171	0.704	2,301,178	2,843,765
6/30/06-07	3,265,400	4,557,957	0.700	2,283,268	3,205,461
6/30/07-08	5,005,317	5,548,500	0.708	3,486,260	3,862,656
6/30/08-09	5,552,135	6,104,614	0.698	3,786,887	4,180,821
6/30/09-10	5,805,721	6,945,309	0.696	3,930,442	4,751,039
6/30/10-11	7,178,198	8,056,058	0.689	4,828,050	5,433,201
6/30/11-12	7,996,234	9,163,654	0.690	5,352,564	6,145,679
6/30/12-13	8,197,610	9,868,572	0.681	5,439,055	6,572,520
6/30/13-14	11,207,057	12,187,594	0.683	7,441,016	8,126,602
6/30/14-15	14,260,282	15,534,952	0.680	9,545,839	10,440,385
6/30/15-16	17,766,243	19,854,194	0.693	12,099,104	13,543,578
6/30/16-17	20,428,994	22,873,168	0.705	14,237,007	15,993,311
6/30/17-18	25,746,753	28,824,864	0.735	18,613,320	20,851,267
6/30/18-19	31,939,583	37,683,130	0.758	24,046,666	28,380,621
6/30/19-20	43,656,668	52,075,072	0.788	34,188,068	40,900,012
Total	251,097,240	301,604,710		183,798,846	222,656,858
			(7) Total Discount Factor:	0.732	0.738

	Discount Calculation for All Prior Years (Low)	Discount Calculation for All Prior Years (High)
(8) Estimated Total Reserve:	7,237,941	10,479,282
(9) Projected Number of Years:	6	6
(10) Projected Paid Loss per Year:	1,232,961	1,828,255
(11) Discounted Value at 4%:	6,383,854	9,253,508

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)

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	7,237,941	10,479,282		6,020,568	8,731,909
6/30/82-83	70,570	176,174	0.981	68,543	171,115
6/30/83-84	245,760	576,702	0.971	228,124	535,051
6/30/84-85	279,952	562,294	0.879	248,503	500,334
6/30/85-86	359,911	588,354	0.855	306,534	500,649
6/30/86-87	392,098	692,867	0.842	323,283	572,171
6/30/87-88	1,300,107	2,192,632	0.838	1,060,500	1,769,867
6/30/88-89	1,508,700	2,342,195	0.836	1,204,712	1,858,520
6/30/89-90	1,608,571	2,396,221	0.827	1,265,381	1,884,402
6/30/90-91	1,089,862	1,768,068	0.819	851,327	1,383,312
6/30/91-92	922,355	1,802,142	0.810	720,933	1,409,813
6/30/92-93	936,756	1,100,891	0.827	722,028	851,997
6/30/93-94	1,192,616	1,734,280	0.811	913,243	1,333,293
6/30/94-95	1,052,468	1,773,169	0.794	809,917	1,366,086
6/30/95-96	1,304,701	2,053,505	0.794	990,233	1,555,652
6/30/96-97	1,359,547	2,129,741	0.788	1,023,462	1,599,857
6/30/97-98	1,280,967	2,028,094	0.754	942,353	1,480,094
6/30/98-99	1,648,415	2,344,986	0.759	1,173,596	1,675,855
6/30/99-00	2,108,905	3,015,227	0.756	1,471,968	2,102,188
6/30/00-01	2,575,792	3,440,025	0.732	1,745,611	2,326,273
6/30/01-02	2,484,879	3,628,004	0.730	1,659,497	2,424,246
6/30/02-03	3,006,640	4,089,692	0.720	1,955,973	2,673,012
6/30/03-04	3,099,559	3,873,759	0.713	1,968,057	2,442,060
6/30/04-05	2,764,708	3,536,598	0.711	1,695,389	2,177,572
6/30/05-06	3,259,264	4,002,171	0.704	1,981,557	2,455,988
6/30/06-07	3,265,400	4,557,957	0.700	1,959,902	2,758,756
6/30/07-08	5,005,317	5,548,500	0.708	2,990,630	3,313,246
6/30/08-09	5,552,135	6,104,614	0.698	3,224,044	3,565,585
6/30/09-10	5,805,721	6,945,309	0.696	3,340,477	4,056,063
6/30/10-11	7,178,198	8,056,058	0.689	4,098,621	4,617,673
6/30/11-12	7,996,234	9,163,654	0.690	4,540,644	5,218,037
6/30/12-13	8,197,610	9,868,572	0.681	4,605,704	5,573,104
6/30/13-14	11,207,057	12,187,594	0.683	6,315,303	6,909,085
6/30/14-15	14,260,282	15,534,952	0.680	8,148,623	8,927,196
6/30/15-16	17,766,243	19,854,194	0.693	10,428,734	11,685,250
6/30/16-17	20,428,994	22,873,168	0.705	12,416,780	13,966,974
6/30/17-18	25,746,753	28,824,864	0.735	16,503,014	18,493,388
6/30/18-19	31,939,583	37,683,130	0.758	21,686,000	25,596,175
6/30/19-20	43,656,668	52,075,072	0.788	31,296,991	37,477,385
Total	251,097,240	301,604,710		162,906,759	197,939,232

	(Low)	(High)
(7) Total Discount Factor:	0.649	0.656

Discount Calculation for All Prior Years

	(Low)	(High)
(8) Estimated Total Reserve:	7,237,941	10,479,282
(9) Projected Number of Years:	6	6
(10) Projected Paid Loss per Year:	1,232,961	1,828,255
(11) Discounted Value at 6%:	6,020,568	8,731,909

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, 2020

All Clusters Combined

Total Indemnity (Including Lump Sums) + Medical

Calculation of Fiscal Year 7/01/20 - 21 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/20 - 06/30/21	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/20 - 06/30/21		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	117,730,678	121,319,378	109,932,797	7,797,881	11,386,582				909,879	1,000,867	11.7%	8.8%
6/30/82-83	18,530,623	18,652,653	18,454,798	75,825	197,856	99.3%	0.3%	34.0%	25,801	74,289	34.0%	37.5%
6/30/83-84	27,448,376	27,833,959	27,190,550	257,826	643,409	98.4%	0.9%	52.3%	134,945	329,191	52.3%	51.2%
6/30/84-85	42,275,345	42,605,791	41,973,346	301,998	632,445	98.9%	0.4%	34.1%	102,933	213,550	34.1%	33.8%
6/30/85-86	54,865,476	55,128,353	54,469,127	396,349	659,226	99.0%	0.3%	32.8%	129,920	206,598	32.8%	31.3%
6/30/86-87	63,003,541	63,339,401	62,553,531	450,010	785,870	99.0%	0.3%	30.9%	139,076	227,670	30.9%	29.0%
6/30/87-88	90,928,603	91,882,533	89,526,109	1,402,494	2,356,424	97.9%	0.6%	27.1%	379,506	568,062	27.1%	24.1%
6/30/88-89	89,419,056	90,370,550	87,745,826	1,673,230	2,624,724	97.6%	0.8%	31.6%	528,371	727,939	31.6%	27.7%
6/30/89-90	85,230,827	86,096,047	83,456,766	1,774,061	2,639,281	97.4%	0.6%	22.7%	402,172	532,483	22.7%	20.2%
6/30/90-91	71,886,968	72,782,920	70,569,188	1,317,780	2,213,732	97.6%	0.5%	20.3%	267,311	432,116	20.3%	19.5%
6/30/91-92	50,078,887	51,138,894	48,957,636	1,121,251	2,181,258	96.7%	0.9%	27.0%	302,467	576,501	27.0%	26.4%
6/30/92-93	32,783,355	33,032,800	31,695,144	1,088,212	1,337,656	96.3%	1.2%	32.0%	347,983	437,254	32.0%	32.7%
6/30/93-94	36,784,515	37,432,456	35,407,106	1,377,409	2,025,350	95.4%	1.1%	24.4%	336,532	494,562	24.4%	24.4%
6/30/94-95	32,889,825	33,703,008	31,648,099	1,241,726	2,054,909	95.0%	1.0%	19.3%	239,337	401,528	19.3%	19.5%
6/30/95-96	31,775,687	32,604,353	30,265,489	1,510,198	2,338,864	94.0%	1.0%	16.2%	244,018	395,729	16.2%	16.9%
6/30/96-97	32,079,204	32,930,058	30,444,148	1,635,056	2,485,910	93.7%	0.9%	14.8%	241,876	398,068	14.8%	16.0%
6/30/97-98	35,435,475	36,269,752	33,871,485	1,563,989	2,398,266	94.5%	0.9%	16.2%	253,473	405,143	16.2%	16.9%
6/30/98-99	33,797,271	34,579,353	31,801,364	1,995,908	2,777,989	93.0%	1.0%	14.9%	297,596	401,098	14.9%	14.4%
6/30/99-00	38,707,133	39,775,955	36,144,327	2,562,805	3,631,628	92.1%	1.2%	14.8%	378,541	539,196	14.8%	14.8%
6/30/00-01	45,930,110	46,984,853	42,669,388	3,260,723	4,315,465	91.8%	1.2%	14.9%	487,081	648,742	14.9%	15.0%
6/30/01-02	39,257,117	40,521,023	36,192,908	3,064,209	4,328,115	90.7%	1.4%	15.6%	478,179	684,900	15.6%	15.8%
6/30/02-03	40,306,608	41,537,740	36,560,178	3,746,430	4,977,562	89.3%	1.6%	15.0%	562,550	735,536	15.0%	14.8%
6/30/03-04	39,872,600	40,813,650	35,988,453	3,884,147	4,825,197	89.2%	1.6%	14.7%	569,067	721,082	14.7%	14.9%
6/30/04-05	41,089,870	42,278,800	37,553,941	3,535,929	4,724,859	90.1%	1.6%	15.9%	562,411	807,296	15.9%	17.1%
6/30/05-06	37,068,453	38,340,900	32,978,327	4,090,125	5,362,573	87.5%	1.8%	14.4%	590,682	800,828	14.4%	14.9%
6/30/06-07	35,939,623	37,960,030	31,705,549	4,234,074	6,254,481	85.8%	1.6%	11.1%	469,708	705,872	11.1%	11.3%
6/30/07-08	42,365,794	43,397,016	36,155,670	6,210,124	7,241,346	84.3%	1.5%	9.6%	593,964	774,970	9.6%	10.7%
6/30/08-09	42,959,695	44,256,514	36,065,085	6,894,611	8,191,429	82.7%	1.7%	10.1%	697,007	887,829	10.1%	10.8%
6/30/09-10	42,194,182	43,852,540	34,867,236	7,326,946	8,985,304	81.0%	1.9%	10.1%	742,254	1,011,410	10.1%	11.3%
6/30/10-11	48,103,576	49,727,266	39,252,175	8,851,401	10,475,091	80.2%	1.3%	6.8%	599,332	776,877	6.8%	7.4%
6/30/11-12	47,931,592	49,702,492	37,983,499	9,948,093	11,718,993	77.8%	2.1%	9.3%	929,635	1,132,035	9.3%	9.7%
6/30/12-13	42,870,778	45,102,500	32,660,847	10,209,931	12,441,653	74.3%	3.6%	14.0%	1,427,112	1,728,233	14.0%	13.9%
6/30/13-14	51,949,700	53,831,228	38,287,916	13,661,784	15,543,312	72.4%	2.0%	7.2%	980,550	1,202,184	7.2%	7.7%
6/30/14-15	59,364,361	61,437,011	41,873,899	17,490,462	19,563,112	69.3%	3.7%	12.2%	2,134,398	2,441,375	12.2%	12.5%
6/30/15-16	65,363,952	68,645,453	43,930,886	21,433,066	24,714,567	65.6%	4.3%	12.3%	2,645,954	3,126,926	12.3%	12.7%
6/30/16-17	63,832,836	67,527,700	39,151,198	24,681,638	28,376,502	59.6%	5.7%	14.2%	3,513,035	4,016,381	14.2%	14.2%
6/30/17-18	61,916,808	66,201,040	31,112,015	30,804,793	35,089,025	48.6%	9.3%	18.2%	5,594,387	6,377,329	18.2%	18.2%
6/30/18-19	61,194,664	68,280,435	22,118,164	39,076,500	46,162,271	34.2%	14.0%	21.3%	8,323,433	9,785,452	21.3%	21.2%
6/30/19-20	65,847,883	77,851,651	11,222,253	54,625,630	66,629,398	15.6%	17.7%	21.0%	11,474,044	14,173,282	21.0%	21.3%
Total	1,961,011,048	2,029,728,054	1,654,436,424	306,574,624	375,291,631				49,036,519	60,900,384	16.0%	16.2%

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), (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, 2020

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		7,075,889			7,434,703	7,682,109	358,814	606,220		
6/30/82-83		1,243,549	1,247,407		1,245,211	1,260,660	1,661	17,111		
6/30/83-84		3,271,135	3,286,084		3,279,233	3,330,936	8,097	59,800		
6/30/84-85	1,823,085	3,299,370	3,319,665	3,316,647	3,309,365	3,355,468	9,995	56,098	0.182	0.184
6/30/85-86	1,952,445	4,968,499	5,002,070	5,001,264	4,993,686	5,025,642	25,186	57,142	0.256	0.257
6/30/86-87	2,220,820	5,823,167	5,869,035	5,870,125	5,861,215	5,890,306	38,048	67,140	0.264	0.265
6/30/87-88	2,885,583	10,021,990	10,119,191	10,120,025	10,097,535	10,155,940	75,545	133,950	0.350	0.352
6/30/88-89	3,098,180	12,159,233	12,296,661	12,298,540	12,297,000	12,411,000	137,767	251,766	0.397	0.401
6/30/89-90	3,079,763	12,626,789	12,802,554	12,810,259	12,783,000	12,850,570	156,211	223,781	0.415	0.417
6/30/90-91	2,914,364	12,108,953	12,319,124	12,317,708	12,316,043	12,508,790	207,090	399,837	0.423	0.429
6/30/91-92	2,880,434	10,940,593	11,134,560	11,132,211	11,119,065	11,272,284	178,471	331,691	0.386	0.391
6/30/92-93	2,887,238	7,996,516	8,163,143	8,160,753	8,147,957	8,215,888	151,441	219,372	0.282	0.285
6/30/93-94	3,056,850	8,512,955	8,711,089	8,707,273	8,700,515	8,774,792	187,560	261,837	0.285	0.287
6/30/94-95	3,158,808	7,045,482	7,242,487	7,238,905	7,233,600	7,295,135	188,118	249,653	0.229	0.231
6/30/95-96	3,301,791	6,607,385	6,813,323	6,810,014	6,812,043	6,867,346	204,659	259,961	0.206	0.208
6/30/96-97	3,902,868	7,381,521	7,656,816	7,652,096	7,655,437	7,714,976	273,916	333,456	0.196	0.198
6/30/97-98	3,776,138	6,792,217	7,083,213	7,078,025	7,075,000	7,142,150	282,783	349,933	0.187	0.189
6/30/98-99	4,017,530	7,124,002	7,479,399	7,472,907	7,472,000	7,532,830	347,998	408,828	0.186	0.187
6/30/99-00	4,221,786	7,987,563	8,460,922	8,447,769	8,442,760	8,551,260	455,197	563,697	0.200	0.203
6/30/00-01	4,310,725	9,826,684	10,485,870	10,460,546	10,453,150	10,640,660	626,466	813,976	0.242	0.247
6/30/01-02	4,438,755	7,940,556	8,513,537	8,503,596	8,501,000	8,621,780	560,444	681,224	0.192	0.194
6/30/02-03	4,423,888	8,570,511	9,320,294	9,302,424	9,278,660	9,427,425	708,149	856,914	0.210	0.213
6/30/03-04	4,482,207	8,911,023	9,736,842	9,720,166	9,685,860	9,851,710	774,837	940,687	0.216	0.220
6/30/04-05	4,639,517	10,451,459	11,636,585	11,231,027	11,200,760	11,616,800	749,301	1,165,341	0.241	0.250
6/30/05-06	4,938,165	9,384,766	10,537,342	10,352,755	10,205,360	10,710,900	820,594	1,326,134	0.207	0.217
6/30/06-07	5,183,126	10,033,223	11,498,557	11,156,947	10,983,230	11,695,080	950,007	1,661,857	0.212	0.226
6/30/07-08	5,508,425	9,731,309	11,208,413	11,116,956	10,920,400	11,402,440	1,189,091	1,671,131	0.198	0.207
6/30/08-09	5,447,676	10,218,016	11,974,016	11,726,354	11,525,810	12,283,150	1,307,794	2,065,134	0.212	0.225
6/30/09-10	5,525,579	9,098,428	10,769,691	10,753,085	10,602,080	11,131,500	1,503,652	2,033,072	0.192	0.201
6/30/10-11	5,712,303	10,038,994	12,054,598	11,857,543	11,672,620	12,411,800	1,633,626	2,372,806	0.204	0.217
6/30/11-12	5,880,714	9,557,193	11,655,356	11,609,874	11,460,520	12,066,000	1,903,327	2,508,807	0.195	0.205
6/30/12-13	6,162,621	8,353,137	10,385,829	10,713,015	10,328,740	10,896,800	1,975,603	2,543,663	0.168	0.177
6/30/13-14	6,442,136	9,376,846	11,971,617	12,158,516	11,815,460	12,670,850	2,438,614	3,294,004	0.183	0.197
6/30/14-15	6,758,892	9,910,119	13,094,297	13,200,553	13,016,660	13,764,000	3,106,541	3,853,881	0.193	0.204
6/30/15-16	6,843,054	10,361,915	14,191,106	14,076,809	13,821,520	14,865,630	3,459,605	4,503,715	0.202	0.217
6/30/16-17	6,638,078	9,579,507	13,922,888	13,657,220	13,513,240	14,633,530	3,933,733	5,054,023	0.204	0.220
6/30/17-18	6,709,926	8,340,825	13,323,637	13,378,527	13,080,180	14,187,000	4,739,355	5,846,175	0.195	0.211
6/30/18-19	7,024,786	6,336,668	12,352,915	13,300,244	12,867,860	14,127,460	6,531,192	7,790,792	0.183	0.201
6/30/19-20	7,252,948	3,127,873	13,823,658	14,700,438	13,619,350	17,024,565	10,491,477	13,896,692	0.188	0.235
Total	163,501,202	322,135,861	371,463,796	367,411,117	374,827,828	391,867,161	52,691,967	69,731,299		
Tot 6/30/84-20	163,501,202	310,545,287	366,930,304	367,411,117	362,868,681	379,593,456	52,323,394	69,048,169	0.222	0.232

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, 2020

All Clusters Combined
Medical

Paid Loss Development Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
					Ultimate Loss	Est Ult	Ultimate Loss	Ultimate	Paid	Paid	Average
Accident	Payroll		Paid	Adjustment	Excluding	Lump Sum	Including	Loss	Counts	Counts	Outstanding
Year	(000's)	Paid Loss	LDF	for Tail	Lump Sum	Payments	Lump Sum	Cost	7/1/18-19	7/1/19-20	Claim
All Prior Yrs		7,075,889							4	4	
6/30/82-83		1,243,549	1.003	N/A	1,247,407	N/A	1,247,407		0	0	
6/30/83-84		3,271,135	1.005	N/A	3,286,084	N/A	3,286,084		2	1	14,948
6/30/84-85	1,823,085	3,299,370	1.006	N/A	3,319,665	N/A	3,319,665	0.182	2	1	20,295
6/30/85-86	1,952,445	4,968,499	1.007	N/A	5,002,070	N/A	5,002,070	0.256	1	0	
6/30/86-87	2,220,820	5,823,167	1.008	N/A	5,869,035	N/A	5,869,035	0.264	2	2	22,934
6/30/87-88	2,885,583	10,021,990	1.010	N/A	10,119,191	N/A	10,119,191	0.351	8	5	19,440
6/30/88-89	3,098,180	12,159,233	1.011	N/A	12,296,661	N/A	12,296,661	0.397	6	7	19,633
6/30/89-90	3,079,763	12,626,789	1.014	N/A	12,802,554	N/A	12,802,554	0.416	5	7	25,109
6/30/90-91	2,914,364	12,108,953	1.017	N/A	12,319,124	N/A	12,319,124	0.423	12	15	14,011
6/30/91-92	2,880,434	10,940,593	1.018	N/A	11,134,560	N/A	11,134,560	0.387	8	8	24,246
6/30/92-93	2,887,238	7,996,516	1.021	N/A	8,163,143	N/A	8,163,143	0.283	5	5	33,325
6/30/93-94	3,056,850	8,512,955	1.023	N/A	8,711,089	N/A	8,711,089	0.285	16	15	13,209
6/30/94-95	3,158,808	7,045,482	1.028	N/A	7,242,487	N/A	7,242,487	0.229	12	10	19,701
6/30/95-96	3,301,791	6,607,385	1.031	N/A	6,813,323	N/A	6,813,323	0.206	4	4	51,485
6/30/96-97	3,902,868	7,381,521	1.037	N/A	7,656,816	N/A	7,656,816	0.196	12	12	22,941
6/30/97-98	3,776,138	6,792,217	1.043	N/A	7,083,213	N/A	7,083,213	0.188	7	6	48,499
6/30/98-99	4,017,530	7,124,002	1.050	N/A	7,479,399	N/A	7,479,399	0.186	15	12	29,616
6/30/99-00	4,221,786	7,987,563	1.059	N/A	8,460,922	N/A	8,460,922	0.200	14	14	33,811
6/30/00-01	4,310,725	9,826,684	1.067	N/A	10,485,870	N/A	10,485,870	0.243	14	9	73,243
6/30/01-02	4,438,755	7,940,556	1.072	N/A	8,513,537	N/A	8,513,537	0.192	21	18	31,832
6/30/02-03	4,423,888	8,570,511	1.087	N/A	9,320,294	N/A	9,320,294	0.211	17	13	57,676
6/30/03-04	4,482,207	8,911,023	1.093	N/A	9,736,842	N/A	9,736,842	0.217	24	21	39,325
6/30/04-05	4,639,517	10,451,459	1.113	N/A	11,636,585	N/A	11,636,585	0.251	20	14	84,652
6/30/05-06	4,938,165	9,384,766	1.123	N/A	10,537,342	N/A	10,537,342	0.213	27	18	64,032
6/30/06-07	5,183,126	10,033,223	1.146	N/A	11,498,557	N/A	11,498,557	0.222	24	17	86,196
6/30/07-08	5,508,425	9,731,309	1.152	N/A	11,208,413	N/A	11,208,413	0.203	18	22	67,141
6/30/08-09	5,447,676	10,218,016	1.172	N/A	11,974,016	N/A	11,974,016	0.220	39	24	73,167
6/30/09-10	5,525,579	9,098,428	1.184	N/A	10,769,691	N/A	10,769,691	0.195	37	28	59,688
6/30/10-11	5,712,303	10,038,994	1.201	N/A	12,054,598	N/A	12,054,598	0.211	43	30	67,187
6/30/11-12	5,880,714	9,557,193	1.220	N/A	11,655,356	N/A	11,655,356	0.198	48	41	51,175
6/30/12-13	6,162,621	8,353,137	1.243	N/A	10,385,829	N/A	10,385,829	0.169	45	35	58,077
6/30/13-14	6,442,136	9,376,846	1.277	N/A	11,971,617	N/A	11,971,617	0.186	84	63	41,187
6/30/14-15	6,758,892	9,910,119	1.321	N/A	13,094,297	N/A	13,094,297	0.194	120	86	37,025
6/30/15-16	6,843,054	10,361,915	1.370	N/A	14,191,106	N/A	14,191,106	0.207	214	125	30,634
6/30/16-17	6,638,078	9,579,507	1.453	N/A	13,922,888	N/A	13,922,888	0.210	344	177	24,539
6/30/17-18	6,709,926	8,340,825	1.597	N/A	13,323,637	N/A	13,323,637	0.199	1,407	322	15,475
6/30/18-19	7,024,786	6,336,668	1.949	N/A	12,352,915	N/A	12,352,915	0.176	2,044	1,151	5,227
6/30/19-20	7,252,948	3,127,873	4.420	N/A	13,823,658	N/A	13,823,658	0.191		1,889	5,662
Total	163,501,202	322,135,861			371,463,796		371,463,796		4,725	4,231	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 10/1/18 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, 2020

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	3,299,370	1.006	3,316,647	N/A	3,316,647	0.182	0.182
6/30/85-86	1,952,445	0.298	4,968,499	1.007	5,001,264	N/A	5,001,264	0.256	0.256
6/30/86-87	2,220,820	0.308	5,823,167	1.008	5,870,125	N/A	5,870,125	0.264	0.264
6/30/87-88	2,885,583	0.387	10,021,990	1.010	10,120,025	N/A	10,120,025	0.351	0.351
6/30/88-89	3,098,180	0.448	12,159,233	1.011	12,298,540	N/A	12,298,540	0.397	0.397
6/30/89-90	3,079,763	0.489	12,626,789	1.014	12,810,259	N/A	12,810,259	0.416	0.416
6/30/90-91	2,914,364	0.420	12,108,953	1.017	12,317,708	N/A	12,317,708	0.423	0.423
6/30/91-92	2,880,434	0.382	10,940,593	1.018	11,132,211	N/A	11,132,211	0.386	0.386
6/30/92-93	2,887,238	0.278	7,996,516	1.021	8,160,753	N/A	8,160,753	0.283	0.283
6/30/93-94	3,056,850	0.279	8,512,955	1.023	8,707,273	N/A	8,707,273	0.285	0.285
6/30/94-95	3,158,808	0.225	7,045,482	1.028	7,238,905	N/A	7,238,905	0.229	0.229
6/30/95-96	3,301,791	0.203	6,607,385	1.031	6,810,014	N/A	6,810,014	0.206	0.206
6/30/96-97	3,902,868	0.193	7,381,521	1.037	7,652,096	N/A	7,652,096	0.196	0.196
6/30/97-98	3,776,138	0.185	6,792,217	1.043	7,078,025	N/A	7,078,025	0.187	0.187
6/30/98-99	4,017,530	0.183	7,124,002	1.050	7,472,907	N/A	7,472,907	0.186	0.186
6/30/99-00	4,221,786	0.196	7,987,563	1.059	8,447,769	N/A	8,447,769	0.200	0.200
6/30/00-01	4,310,725	0.235	9,826,684	1.067	10,460,546	N/A	10,460,546	0.243	0.243
6/30/01-02	4,438,755	0.189	7,940,556	1.072	8,503,596	N/A	8,503,596	0.192	0.192
6/30/02-03	4,423,888	0.207	8,570,511	1.087	9,302,424	N/A	9,302,424	0.210	0.210
6/30/03-04	4,482,207	0.213	8,911,023	1.093	9,720,166	N/A	9,720,166	0.217	0.217
6/30/04-05	4,639,517	0.181	10,451,459	1.113	11,231,027	N/A	11,231,027	0.242	0.242
6/30/05-06	4,938,165	0.184	9,384,766	1.123	10,352,755	N/A	10,352,755	0.210	0.210
6/30/06-07	5,183,126	0.185	10,033,223	1.146	11,156,947	N/A	11,156,947	0.215	0.215
6/30/07-08	5,508,425	0.187	9,731,309	1.152	11,116,956	N/A	11,116,956	0.202	0.202
6/30/08-09	5,447,676	0.190	10,218,016	1.172	11,726,354	N/A	11,726,354	0.215	0.215
6/30/09-10	5,525,579	0.197	9,098,428	1.184	10,753,085	N/A	10,753,085	0.195	0.195
6/30/10-11	5,712,303	0.199	10,038,994	1.201	11,857,543	N/A	11,857,543	0.208	0.208
6/30/11-12	5,880,714	0.201	9,557,193	1.220	11,609,874	N/A	11,609,874	0.197	0.197
6/30/12-13	6,162,621	0.203	8,353,137	1.243	10,713,015	N/A	10,713,015	0.174	0.174
6/30/13-14	6,442,136	0.205	9,376,846	1.277	12,158,516	N/A	12,158,516	0.189	0.189
6/30/14-15	6,758,892	0.207	9,910,119	1.321	13,200,553	N/A	13,200,553	0.195	0.195
6/30/15-16	6,843,054	0.209	10,361,915	1.370	14,076,809	N/A	14,076,809	0.206	0.206
6/30/16-17	6,638,078	0.211	9,579,507	1.453	13,657,220	N/A	13,657,220	0.206	0.206
6/30/17-18	6,709,926	0.214	8,340,825	1.597	13,378,527	N/A	13,378,527	0.199	0.199
6/30/18-19	7,024,786	0.216	6,336,668	1.949	13,300,244	N/A	13,300,244	0.189	0.189
6/30/19-20	7,252,948	0.218	3,127,873	4.420	14,700,438	N/A	14,700,438	0.203	0.203
Total	163,501,202		310,545,287		367,411,117		367,411,117		

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, 2020

All Clusters Combined
Medical

Calculation of Initial Expected Loss Rate

(1) Accident Year	(2) Payroll (000's)	(3) Expected Ult Loss	(4) Unadjusted Loss Cost	(5) Benefit Level Factor	(6) Adjusted Loss Cost	(7) Trend Factor	(8) Trended Adjusted Loss Cost	(9) Detrended Selected Loss Cost	(10) Prior Selected Loss Cost	(11) 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	12,319,124	0.423	1.194	0.505	1.348	0.680	0.137	0.420	0.420
6/30/91-92	2,880,434	11,134,560	0.387	1.189	0.459	1.335	0.613	0.139	0.381	0.382
6/30/92-93	2,887,238	8,163,143	0.283	1.189	0.336	1.321	0.444	0.140	0.278	0.278
6/30/93-94	3,056,850	8,711,089	0.285	1.178	0.336	1.308	0.439	0.143	0.278	0.279
6/30/94-95	3,158,808	7,242,487	0.229	1.170	0.268	1.295	0.347	0.145	0.225	0.225
6/30/95-96	3,301,791	6,813,323	0.206	1.155	0.238	1.282	0.306	0.148	0.203	0.203
6/30/96-97	3,902,868	7,656,816	0.196	1.137	0.223	1.270	0.283	0.152	0.192	0.193
6/30/97-98	3,776,138	7,083,213	0.188	1.135	0.213	1.257	0.268	0.154	0.185	0.185
6/30/98-99	4,017,530	7,479,399	0.186	1.135	0.211	1.245	0.263	0.156	0.183	0.183
6/30/99-00	4,221,786	8,460,922	0.200	1.135	0.227	1.232	0.280	0.157	0.196	0.196
6/30/00-01	4,310,725	10,485,870	0.243	1.109	0.270	1.220	0.329	0.163	0.235	0.235
6/30/01-02	4,438,755	8,513,537	0.192	1.101	0.211	1.208	0.255	0.165	0.189	0.189
6/30/02-03	4,423,888	9,320,294	0.211	1.073	0.226	1.196	0.270	0.171	0.207	0.207
6/30/03-04	4,482,207	9,736,842	0.217	1.046	0.227	1.184	0.269	0.178	0.214	0.213
6/30/04-05	4,639,517	11,636,585	0.251	1.036	0.260	1.173	0.305	0.181	0.183	0.181
6/30/05-06	4,938,165	10,537,342	0.213	1.032	0.220	1.161	0.256	0.184	0.185	0.184
6/30/06-07	5,183,126	11,498,557	0.222	1.032	0.229	1.149	0.263	0.185	0.187	0.185
6/30/07-08	5,508,425	11,208,413	0.203	1.032	0.210	1.138	0.239	0.187	0.189	0.187
6/30/08-09	5,447,676	11,974,016	0.220	1.027	0.226	1.127	0.254	0.190	0.192	0.190
6/30/09-10	5,525,579	10,769,691	0.195	1.000	0.195	1.116	0.217	0.197	0.199	0.197
6/30/10-11	5,712,303	12,054,598	0.211	1.000	0.211	1.105	0.233	0.199	0.201	0.199
6/30/11-12	5,880,714	11,655,356	0.198	1.000	0.198	1.094	0.217	0.201	0.203	0.201
6/30/12-13	6,162,621	10,385,829	0.169	1.000	0.169	1.083	0.182	0.203	0.205	0.203
6/30/13-14	6,442,136	11,971,617	0.186	1.000	0.186	1.072	0.199	0.205	0.207	0.205
6/30/14-15	6,758,892	13,094,297	0.194	1.000	0.194	1.062	0.206	0.207	0.209	0.207
6/30/15-16	6,843,054	14,191,106	0.207	1.000	0.207	1.051	0.218	0.209	0.211	0.209
6/30/16-17	6,638,078	13,922,888	0.210	1.000	0.210	1.041	0.218	0.211	0.214	0.211
6/30/17-18	6,709,926	13,323,637	0.199	1.000	0.199	1.030	0.205	0.214	0.216	0.214
6/30/18-19	7,024,786	12,352,915	0.176	1.000	0.176	1.020	0.179	0.216	0.218	0.216
6/30/19-20	7,252,948	13,823,658	0.191	1.000	0.191	1.010	0.192	0.218		0.218
Total	148,441,327	317,521,128								

Trend Last 4 (ex 19-20):	-5.3%	Avg 3 (ex 19-20):	0.201
Trend Last 8 (ex 19-20):	0.5%	Avg 5 (ex 19-20):	0.205
Trend Last 12 (ex 19-20):	-0.9%	Avg 10 (ex 19-20):	0.207
Prior Selected Trend:	1.0%	Prior Sel Avg:	0.220
Selected Trend:	1.0%	Sel. Loss Cost:	0.220

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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

All Clusters Combined
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.980	
(2)	Credibility	88%	
(3)	Average Pmt Trend Statewide	0.980	
(4)	Credibility Weighted Trend	0.980	

		(Low)	(High)
(5)	Selected Range	0.882	0.981
(6)	Incremental Paid for 2020	147,847	147,847
(7)	Estimated Reserve	1,105,092	7,633,565
(8)	Paid to Date (82 & Prior)	7,075,889	7,075,889
(9)	Est Ult Paid for 1982 & Prior	8,180,982	14,709,454

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	156,400	133,505
(11)	Projected Number of Years	5	5
(12)	Estimated Reserve	782,000	667,526
(13)	Paid to Date (82 & Prior)	7,075,889	6,928,042
(14)	Est Ult Paid for 1982 & Prior	7,857,890	7,595,568
(14a)	Paid Counts During Fiscal Year	4	4

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	7,888,275	11,283,672
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**7,888,275**	**11,283,672**
(18)	Implied Tail	1.115	1.595
(19)	Ult Loss Inc Lump Sums @ 6/19	7,716,162	11,364,281

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

All Clusters Combined
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
				Average		
		Incremental		Observed		Trend
Year	X	Paids	LN	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 =	29
2001	10	83,644	11.334	0.746	S(x) =	58,174
2002	11	54,441	10.905	0.651	S(x-sq) =	116,699,074
2003	12	53,298	10.884	0.979	S(xy) =	680,249
2004	13	73,810	11.209	1.385	S(y) =	339
2005	14	86,676	11.370	1.174	D =	58,870
2006	15	71,904	11.183	0.830	slope =	-0.019
2007	16	66,960	11.112	0.931	Avg Trend =	0.981
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		
2017	26	79,162	11.279	0.912		
2018	27	162,440	11.998	2.052		
2019	28	158,913	11.976	0.978		
2020	29	147,847	11.904	0.930		
					Selected Trend:	**0.980**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(4) LN [(3)]

(5) Eg. 2020: 0.93 = 147847 / 158913

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	7,630,888
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	8,308,529	8,391,707
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	8,616,680	8,726,226	8,844,092
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	10,181,518	10,256,720	10,342,829	10,451,459
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	9,122,357	9,232,800	9,319,041	9,384,766	
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	9,739,228	9,816,055	9,927,458	10,033,223		
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	9,310,231	9,443,394	9,539,821	9,731,309			
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	9,871,493	10,017,460	10,164,889	10,218,016				
June-10	3,060,289	6,279,753	7,213,128	7,731,312	8,124,749	8,370,005	8,627,030	8,770,757	8,859,634	9,034,429	9,098,428					
June-11	3,709,038	7,016,744	8,085,690	8,709,130	9,137,711	9,403,213	9,626,927	9,830,522	9,955,971	10,038,994						
June-12	3,189,372	6,711,576	7,783,683	8,387,093	8,798,309	9,000,424	9,232,426	9,388,935	9,557,193							
June-13	2,903,130	6,057,463	7,167,331	7,672,962	7,986,604	8,133,027	8,259,792	8,353,137								
June-14	2,931,171	6,504,914	7,878,217	8,567,157	8,915,793	9,185,405	9,376,846									
June-15	3,735,022	6,999,911	8,327,951	9,203,521	9,620,080	9,910,119										
June-16	4,192,776	7,734,684	9,247,350	9,944,966	10,361,915											
June-17	3,731,583	7,587,377	9,008,888	9,579,507												
June-18	3,577,517	7,284,310	8,340,825													
June-19	3,275,623	6,336,668														
June-20	3,127,873															

Acc Yr Ending	204	216	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	1,242,918	1,243,549	1,243,549	1,243,549
June-84	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	3,260,710	3,267,811	3,270,663	3,271,135	
June-85	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	3,279,382	3,296,878	3,299,106	3,299,370		
June-86	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	4,968,034	4,968,398	4,968,499	4,968,499			
June-87	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	5,801,310	5,809,821	5,815,494	5,823,167				
June-88	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	9,951,259	9,968,732	10,004,344	10,021,990					
June-89	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	12,105,126	12,131,284	12,147,601	12,159,233						
June-90	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	12,608,229	12,614,539	12,621,066	12,626,789							
June-91	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	12,001,274	12,075,274	12,088,540	12,108,953								
June-92	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	10,867,633	10,901,411	10,919,282	10,940,593									
June-93	7,578,974	7,640,635	7,679,794	7,714,728	7,755,902	7,826,543	7,862,414	7,891,312	7,912,531	7,940,036	7,966,961	7,996,516										
June-94	7,842,474	7,909,569	7,974,641	8,037,509	8,101,818	8,151,347	8,269,070	8,324,376	8,390,929	8,455,066	8,512,955											
June-95	6,642,430	6,764,444	6,797,406	6,837,368	6,873,333	6,913,170	6,955,590	6,988,812	7,018,105	7,045,482												
June-96	6,521,070	6,537,735	6,548,588	6,563,090	6,572,319	6,581,022	6,589,792	6,599,559	6,607,385													
June-97	6,857,883	7,062,337	7,148,622	7,195,566	7,222,769	7,247,398	7,301,398	7,381,521														
June-98	6,360,866	6,472,141	6,564,185	6,651,123	6,704,825	6,747,657	6,792,217															
June-99	6,706,225	6,780,244	6,865,083	6,940,733	7,042,173	7,124,002																
June-00	7,586,347	7,678,527	7,785,609	7,910,764	7,987,563																	
June-01	9,497,154	9,600,632	9,723,734	9,826,684																		
June-02	7,753,775	7,845,832	7,940,556																			
June-03	8,504,781	8,570,511																				
June-04	8,911,023																					

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	1.012
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	1.014	1.011
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	1.016	1.016	1.012
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	1.018	1.010	1.013	1.008
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	1.016	1.013	1.014	1.008	
June-05	2.632	1.231	1.105	1.058	1.035	1.037	1.022	1.020	1.018	1.010	1.010	1.006	1.007	1.008	1.011		
June-06	2.260	1.220	1.095	1.058	1.039	1.033	1.022	1.016	1.011	1.011	1.011	1.012	1.009	1.007			
June-07	2.331	1.238	1.069	1.047	1.028	1.027	1.017	1.013	1.014	1.013	1.008	1.011	1.011				
June-08	2.000	1.162	1.076	1.036	1.030	1.022	1.024	1.016	1.017	1.014	1.010	1.020					
June-09	1.987	1.204	1.082	1.045	1.036	1.031	1.025	1.028	1.015	1.015	1.005						
June-10	2.052	1.149	1.072	1.051	1.030	1.031	1.017	1.010	1.020	1.007							
June-11	1.892	1.152	1.077	1.049	1.029	1.024	1.021	1.013	1.008								
June-12	2.104	1.160	1.078	1.049	1.023	1.026	1.017	1.018									
June-13	2.087	1.183	1.071	1.041	1.018	1.016	1.011										
June-14	2.219	1.211	1.087	1.041	1.030	1.021											
June-15	1.874	1.190	1.105	1.045	1.030												
June-16	1.845	1.196	1.075	1.042													
June-17	2.033	1.187	1.063														
June-18	2.036	1.145															
June-19	1.934																

Acc Yr Ending	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	420-432	432-444	444-456
June-83	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	1.000	1.001	1.000	1.000
June-84	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	1.001	1.002	1.001	1.000	
June-85	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	1.008	1.005	1.001	1.000		
June-86	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	1.000	1.000	1.000	1.000			
June-87	1.003	1.003	1.003	1.003	1.004	1.006	1.004	1.005	1.003	1.003	1.002	1.004	1.003	1.001	1.001	1.001				
June-88	1.006	1.006	1.009	1.005	1.006	1.006	1.006	1.003	1.004	1.014	1.003	1.003	1.002	1.004	1.002					
June-89	1.010	1.007	1.004	1.004	1.004	1.003	1.004	1.004	1.003	1.003	1.005	1.002	1.001	1.001						
June-90	1.003	1.001	1.002	1.001	1.001	1.001	1.002	1.002	1.001	1.001	1.001	1.001	1.000							
June-91	1.020	1.009	1.009	1.011	1.005	1.003	1.002	1.002	1.008	1.006	1.001	1.002								
June-92	1.007	1.016	1.016	1.020	1.023	1.010	1.006	1.008	1.003	1.002	1.002									
June-93	1.005	1.005	1.005	1.009	1.005	1.004	1.003	1.003	1.003	1.004										
June-94	1.008	1.008	1.008	1.006	1.014	1.007	1.008	1.008	1.007											
June-95	1.005	1.006	1.005	1.006	1.006	1.005	1.004	1.004												
June-96	1.002	1.002	1.001	1.001	1.001	1.001	1.001													
June-97	1.012	1.007	1.004	1.003	1.007	1.011														
June-98	1.014	1.013	1.008	1.006	1.007															
June-99	1.013	1.011	1.015	1.012																
June-00	1.014	1.016	1.010																	
June-01	1.013	1.011																		
June-02	1.012																			

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
Simple Avg																	
All Yrs	2.378	1.265	1.127	1.082	1.057	1.047	1.038	1.031	1.024	1.019	1.017	1.014	1.015	1.013	1.011	1.011	1.010
Latest 5	1.945	1.186	1.080	1.044	1.026	1.023	1.018	1.017	1.015	1.012	1.009	1.012	1.013	1.014	1.015	1.012	1.011
Latest 3	2.001	1.176	1.081	1.043	1.026	1.021	1.016	1.014	1.014	1.012	1.008	1.015	1.009	1.009	1.011	1.012	1.010
Volume Wtd																	
All Yrs	2.250	1.230	1.107	1.064	1.044	1.034	1.028	1.021	1.019	1.015	1.014	1.013	1.013	1.011	1.011	1.010	1.010
Latest 5	1.942	1.185	1.080	1.044	1.026	1.023	1.018	1.017	1.015	1.012	1.009	1.012	1.013	1.014	1.015	1.012	1.011
Latest 3	2.004	1.177	1.081	1.043	1.027	1.021	1.017	1.014	1.014	1.012	1.008	1.015	1.009	1.009	1.011	1.012	1.010

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																					
All Yrs	1.008	1.007	1.007	1.007	1.007	1.006	1.005	1.005	1.004	1.005	1.003	1.002	1.003	1.003	1.002	1.002	1.001	1.000	1.000	1.000	
Latest 5	1.013	1.011	1.008	1.006	1.007	1.006	1.005	1.005	1.004	1.003	1.002	1.002	1.002	1.003	1.002	1.002					
Latest 3	1.013	1.013	1.011	1.007	1.005	1.006	1.004	1.005	1.004	1.004	1.001	1.001	1.001	1.002	1.001	1.002	1.001	1.000			
Volume Wtd																					
All Yrs	1.009	1.008	1.007	1.007	1.007	1.005	1.004	1.004	1.004	1.005	1.003	1.002	1.002	1.002	1.002	1.002	1.001	1.000	1.000		
Latest 5	1.013	1.011	1.008	1.006	1.008	1.006	1.005	1.005	1.004	1.003	1.002	1.002	1.001	1.002	1.002	1.002					
Latest 3	1.013	1.012	1.011	1.007	1.005	1.006	1.005	1.005	1.004	1.004	1.001	1.001	1.001	1.002	1.001	1.002	1.001	1.000			

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	7,285,250	7,562,409	7,434,703	7,682,109	149,453	2.1%	119,700	1.6%
6/30/82-83	1,245,221	1,261,298	1,245,211	1,260,660	(10)	0.0%	(638)	-0.1%
6/30/83-84	3,279,233	3,331,832	3,279,233	3,330,936	0	0.0%	(897)	0.0%
6/30/84-85	3,308,365	3,355,680	3,309,365	3,355,468	1,000	0.0%	(212)	0.0%
6/30/85-86	4,995,676	5,027,662	4,993,686	5,025,642	(1,990)	0.0%	(2,020)	0.0%
6/30/86-87	5,855,245	5,885,246	5,861,215	5,890,306	5,970	0.1%	5,060	0.1%
6/30/87-88	10,089,580	10,149,860	10,097,535	10,155,940	7,955	0.1%	6,080	0.1%
6/30/88-89	12,295,000	12,410,724	12,297,000	12,411,000	2,000	0.0%	276	0.0%
6/30/89-90	12,789,000	12,857,610	12,783,000	12,850,570	(6,000)	0.0%	(7,040)	-0.1%
6/30/90-91	12,308,049	12,500,770	12,316,043	12,508,790	7,994	0.1%	8,020	0.1%
6/30/91-92	11,084,933	11,262,448	11,119,065	11,272,284	34,132	0.3%	9,836	0.1%
6/30/92-93	8,127,937	8,196,648	8,147,957	8,215,888	20,020	0.2%	19,240	0.2%
6/30/93-94	8,660,524	8,733,684	8,700,515	8,774,792	39,991	0.5%	41,108	0.5%
6/30/94-95	7,221,213	7,284,012	7,233,600	7,295,135	12,388	0.2%	11,124	0.2%
6/30/95-96	6,819,043	6,873,386	6,812,043	6,867,346	(7,000)	-0.1%	(6,040)	-0.1%
6/30/96-97	7,595,112	7,656,376	7,655,437	7,714,976	60,325	0.8%	58,600	0.8%
6/30/97-98	7,062,000	7,133,220	7,075,000	7,142,150	13,000	0.2%	8,930	0.1%
6/30/98-99	7,431,000	7,495,340	7,472,000	7,532,830	41,000	0.6%	37,490	0.5%
6/30/99-00	8,422,730	8,531,380	8,442,760	8,551,260	20,030	0.2%	19,880	0.2%
6/30/00-01	10,415,120	10,604,560	10,453,150	10,640,660	38,030	0.4%	36,100	0.3%
6/30/01-02	8,474,000	8,598,180	8,501,000	8,621,780	27,000	0.3%	23,600	0.3%
6/30/02-03	9,280,790	9,436,100	9,278,660	9,427,425	(2,130)	0.0%	(8,675)	-0.1%
6/30/03-04	9,734,030	9,905,200	9,685,860	9,851,710	(48,170)	-0.5%	(53,490)	-0.5%
6/30/04-05	11,191,700	11,724,800	11,200,760	11,616,800	9,060	0.1%	(108,000)	-0.9%
6/30/05-06	10,321,500	10,853,900	10,205,360	10,710,900	(116,140)	-1.1%	(143,000)	-1.3%
6/30/06-07	11,084,170	11,813,020	10,983,230	11,695,080	(100,940)	-0.9%	(117,940)	-1.0%
6/30/07-08	10,877,340	11,434,810	10,920,400	11,402,440	43,060	0.4%	(32,370)	-0.3%
6/30/08-09	11,659,700	12,347,500	11,525,810	12,283,150	(133,890)	-1.1%	(64,350)	-0.5%
6/30/09-10	10,620,970	11,278,650	10,602,080	11,131,500	(18,890)	-0.2%	(147,150)	-1.3%
6/30/10-11	11,761,780	12,588,250	11,672,620	12,411,800	(89,160)	-0.8%	(176,450)	-1.4%
6/30/11-12	11,566,080	12,178,250	11,460,520	12,066,000	(105,560)	-0.9%	(112,250)	-0.9%
6/30/12-13	10,460,540	11,292,250	10,328,740	10,896,800	(131,800)	-1.3%	(395,450)	-3.5%
6/30/13-14	12,041,740	13,047,000	11,815,460	12,670,850	(226,280)	-1.9%	(376,150)	-2.9%
6/30/14-15	13,130,820	14,147,170	13,016,660	13,764,000	(114,160)	-0.9%	(383,170)	-2.7%
6/30/15-16	14,020,440	15,199,690	13,821,520	14,865,630	(198,920)	-1.4%	(334,060)	-2.2%
6/30/16-17	13,833,440	15,286,970	13,513,240	14,633,530	(320,200)	-2.3%	(653,440)	-4.3%
6/30/17-18	13,779,500	15,241,760	13,080,180	14,187,000	(699,320)	-5.1%	(1,054,760)	-6.9%
6/30/18-19	14,152,000	16,147,630	12,867,860	14,127,460	(1,284,140)	-9.1%	(2,020,170)	-12.5%
6/30/19-20								
Total	364,280,770	380,635,273	361,208,478	374,842,596	(3,072,292)	-0.8%	(5,792,678)	-1.5%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2019

(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, 2020

All Clusters Combined
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.3%	0.0%	0.1%	0.0%	1.000	1.000
456	99.7%	0.1%	0.3%	0.0%	0.0%	0.981	0.971
444	99.5%	0.2%	0.5%	0.0%	0.0%	0.955	0.934
432	99.4%	0.1%	0.6%	0.0%	0.0%	0.934	0.904
420	99.3%	0.1%	0.7%	0.0%	0.0%	0.906	0.864
408	99.2%	0.2%	0.8%	0.0%	0.0%	0.886	0.837
396	99.0%	0.2%	1.0%	0.0%	0.0%	0.876	0.823
384	98.9%	0.3%	1.1%	0.1%	0.0%	0.862	0.804
372	98.6%	0.3%	1.4%	0.1%	0.1%	0.857	0.798
360	98.3%	0.0%	1.7%	0.0%	0.0%	0.855	0.796
348	98.3%	0.3%	1.7%	0.1%	0.1%	0.825	0.755
336	98.0%	0.2%	2.0%	0.1%	0.0%	0.821	0.750
324	97.7%	0.4%	2.3%	0.2%	0.1%	0.809	0.735
312	97.3%	0.3%	2.7%	0.1%	0.1%	0.811	0.739
300	97.0%	0.6%	3.0%	0.2%	0.1%	0.800	0.724
288	96.4%	0.5%	3.6%	0.2%	0.1%	0.803	0.729
276	95.9%	0.6%	4.1%	0.3%	0.2%	0.798	0.723
264	95.2%	0.8%	4.8%	0.4%	0.2%	0.796	0.722
252	94.4%	0.7%	5.6%	0.3%	0.2%	0.798	0.724
240	93.7%	0.4%	6.3%	0.2%	0.1%	0.791	0.715
228	93.3%	1.3%	6.7%	0.6%	0.4%	0.775	0.694
216	92.0%	0.4%	8.0%	0.2%	0.2%	0.784	0.707
204	91.5%	1.7%	8.5%	0.9%	0.7%	0.765	0.682
192	89.8%	0.8%	10.2%	0.4%	0.3%	0.777	0.698
180	89.1%	1.8%	10.9%	1.0%	0.8%	0.763	0.680
168	87.3%	0.4%	12.7%	0.3%	0.2%	0.769	0.689
156	86.8%	1.5%	13.2%	0.9%	0.7%	0.747	0.660
144	85.3%	0.9%	14.7%	0.5%	0.4%	0.745	0.658
132	84.5%	1.2%	15.5%	0.8%	0.7%	0.731	0.640
120	83.3%	1.3%	16.7%	0.9%	0.7%	0.723	0.630
108	82.0%	1.6%	18.0%	1.1%	1.0%	0.715	0.621
96	80.4%	2.1%	19.6%	1.6%	1.4%	0.711	0.617
84	78.3%	2.6%	21.7%	2.0%	1.8%	0.713	0.620
72	75.7%	2.7%	24.3%	2.1%	1.9%	0.717	0.627
60	73.0%	4.2%	27.0%	3.5%	3.2%	0.718	0.629
48	68.8%	6.2%	31.2%	5.4%	5.1%	0.730	0.644
36	62.6%	11.3%	37.4%	10.2%	9.8%	0.748	0.668
24	51.3%	28.7%	48.7%	27.0%	26.3%	0.780	0.709
12	22.6%	22.6%	77.4%	22.2%	22.0%	0.835	0.781
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, 2020

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	358,814	606,220		344,807	582,317
6/30/82-83	1,661	17,111	0.981	1,634	16,789
6/30/83-84	8,097	59,800	0.955	7,770	57,387
6/30/84-85	9,995	56,098	0.934	9,334	52,621
6/30/85-86	25,186	57,142	0.906	23,118	52,513
6/30/86-87	38,048	67,140	0.886	34,060	60,337
6/30/87-88	75,545	133,950	0.876	66,172	117,619
6/30/88-89	137,767	251,766	0.862	119,225	218,393
6/30/89-90	156,211	223,781	0.857	133,786	191,248
6/30/90-91	207,090	399,837	0.855	173,829	335,213
6/30/91-92	178,471	331,691	0.825	147,488	273,576
6/30/92-93	151,441	219,372	0.821	122,733	176,942
6/30/93-94	187,560	261,837	0.809	149,582	206,411
6/30/94-95	188,118	249,653	0.811	150,299	199,107
6/30/95-96	204,659	259,961	0.800	161,493	204,624
6/30/96-97	273,916	333,456	0.803	215,372	262,047
6/30/97-98	282,783	349,933	0.798	218,039	268,924
6/30/98-99	347,998	408,828	0.796	268,979	316,376
6/30/99-00	455,197	563,697	0.798	352,755	435,708
6/30/00-01	626,466	813,976	0.791	484,739	626,976
6/30/01-02	560,444	681,224	0.775	430,199	522,728
6/30/02-03	708,149	856,914	0.784	543,928	659,188
6/30/03-04	774,837	940,687	0.765	588,494	715,806
6/30/04-05	749,301	1,165,341	0.777	574,126	890,644
6/30/05-06	820,594	1,326,134	0.763	632,278	1,017,407
6/30/06-07	950,007	1,661,857	0.769	724,623	1,262,841
6/30/07-08	1,189,091	1,671,131	0.747	905,823	1,271,628
6/30/08-09	1,307,794	2,065,134	0.745	986,726	1,550,697
6/30/09-10	1,503,652	2,033,072	0.731	1,106,752	1,495,790
6/30/10-11	1,633,626	2,372,806	0.723	1,177,892	1,713,961
6/30/11-12	1,903,327	2,508,807	0.715	1,358,703	1,797,998
6/30/12-13	1,975,603	2,543,663	0.711	1,397,810	1,810,773
6/30/13-14	2,438,614	3,294,004	0.713	1,726,270	2,346,323
6/30/14-15	3,106,541	3,853,881	0.717	2,204,795	2,750,992
6/30/15-16	3,459,605	4,503,715	0.718	2,470,935	3,227,274
6/30/16-17	3,933,733	5,054,023	0.730	2,844,268	3,665,766
6/30/17-18	4,739,355	5,846,175	0.748	3,522,786	4,359,737
6/30/18-19	6,531,192	7,790,792	0.780	5,066,316	6,062,406
6/30/19-20	10,491,477	13,896,692	0.835	8,474,202	11,182,110
Total	52,691,967	69,731,299		39,922,141	52,959,197
			(7) Total Discount Factor:	0.758	0.759

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	358,814	606,220
(9) Projected Number of Years:	5	5
(10) Projected Paid Loss per Year:	71,763	121,244
(11) Discounted Value at 4%:	325,865	550,552

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, 2020

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	358,814	606,220		338,308	571,232
6/30/82-83	1,661	17,111	0.971	1,621	16,635
6/30/83-84	8,097	59,800	0.934	7,617	56,259
6/30/84-85	9,995	56,098	0.904	9,033	51,032
6/30/85-86	25,186	57,142	0.864	22,195	50,443
6/30/86-87	38,048	67,140	0.837	32,319	57,361
6/30/87-88	75,545	133,950	0.823	62,164	110,624
6/30/88-89	137,767	251,766	0.804	111,441	204,346
6/30/89-90	156,211	223,781	0.798	124,522	177,823
6/30/90-91	207,090	399,837	0.796	160,377	309,137
6/30/91-92	178,471	331,691	0.755	135,172	250,542
6/30/92-93	151,441	219,372	0.750	111,562	160,494
6/30/93-94	187,560	261,837	0.735	135,038	185,404
6/30/94-95	188,118	249,653	0.739	135,992	180,065
6/30/95-96	204,659	259,961	0.724	145,385	184,064
6/30/96-97	273,916	333,456	0.729	193,751	235,741
6/30/97-98	282,783	349,933	0.723	194,555	239,716
6/30/98-99	347,998	408,828	0.722	240,599	283,132
6/30/99-00	455,197	563,697	0.724	316,281	390,116
6/30/00-01	626,466	813,976	0.715	434,726	560,961
6/30/01-02	560,444	681,224	0.694	384,559	467,151
6/30/02-03	708,149	856,914	0.707	486,907	590,413
6/30/03-04	774,837	940,687	0.682	524,202	638,136
6/30/04-05	749,301	1,165,341	0.698	513,839	796,229
6/30/05-06	820,594	1,326,134	0.680	567,732	911,759
6/30/06-07	950,007	1,661,857	0.689	647,614	1,127,031
6/30/07-08	1,189,091	1,671,131	0.660	809,443	1,135,644
6/30/08-09	1,307,794	2,065,134	0.658	877,995	1,376,979
6/30/09-10	1,503,652	2,033,072	0.640	973,281	1,315,409
6/30/10-11	1,633,626	2,372,806	0.630	1,026,397	1,494,912
6/30/11-12	1,903,327	2,508,807	0.621	1,180,020	1,564,651
6/30/12-13	1,975,603	2,543,663	0.617	1,210,262	1,572,751
6/30/13-14	2,438,614	3,294,004	0.620	1,497,205	2,041,355
6/30/14-15	3,106,541	3,853,881	0.627	1,917,819	2,399,069
6/30/15-16	3,459,605	4,503,715	0.629	2,157,673	2,822,298
6/30/16-17	3,933,733	5,054,023	0.644	2,501,070	3,227,659
6/30/17-18	4,739,355	5,846,175	0.668	3,138,792	3,889,603
6/30/18-19	6,531,192	7,790,792	0.709	4,600,078	5,510,501
6/30/19-20	10,491,477	13,896,692	0.781	7,896,331	10,421,611
Total	52,691,967	69,731,299		35,823,875	47,578,288

	(Low)	(High)
(7) Total Discount Factor:	0.680	0.682

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	358,814	606,220
(9) Projected Number of Years:	5	5
(10) Projected Paid Loss per Year:	71,763	121,244
(11) Discounted Value at 6%:	311,360	526,045

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, 2020

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		22,308,808			25,099,351	26,150,816	2,790,543	3,842,008		
6/30/82-83		4,699,567	4,718,550		4,718,550	4,723,269	18,983	23,702		
6/30/83-84		8,938,581	9,414,554		9,037,972	9,132,118	99,391	193,536		
6/30/84-85	181,560	6,810,805	6,858,467	6,861,009	6,818,000	6,858,467	7,195	47,663	3.755	3.778
6/30/85-86	195,247	10,272,096	10,369,583	10,371,061	10,282,000	10,293,000	9,904	20,904	5.266	5.272
6/30/86-87	224,370	13,480,506	13,622,764	13,630,857	13,494,000	13,507,000	13,494	26,494	6.014	6.020
6/30/87-88	262,864	20,167,216	20,418,922	20,401,979	20,402,000	20,419,000	234,784	251,784	7.761	7.768
6/30/88-89	283,884	20,269,405	20,544,106	20,552,330	20,544,000	20,552,000	274,595	282,595	7.237	7.240
6/30/89-90	285,078	15,018,718	15,269,964	15,318,782	15,169,000	15,169,000	150,282	150,282	5.321	5.321
6/30/90-91	267,732	10,867,057	11,088,786	11,087,166	10,976,000	10,976,000	108,943	108,943	4.100	4.100
6/30/91-92	261,442	7,818,419	8,009,857	8,007,296	8,007,000	8,010,000	188,581	191,581	3.063	3.064
6/30/92-93	259,992	4,189,576	4,314,130	4,312,402	4,231,000	4,273,000	41,424	83,424	1.627	1.644
6/30/93-94	257,062	3,498,323	3,613,198	3,611,723	3,568,000	3,603,000	69,677	104,677	1.388	1.402
6/30/94-95	255,854	2,081,529	2,159,003	2,159,443	2,159,000	2,159,000	77,471	77,471	0.844	0.844
6/30/95-96	255,539	3,175,273	3,311,188	3,308,846	3,309,000	3,311,000	133,727	135,727	1.295	1.296
6/30/96-97	270,071	2,467,027	2,577,351	2,577,535	2,479,000	2,492,000	11,973	24,973	0.918	0.923
6/30/97-98	245,367	2,744,675	2,891,771	2,889,023	2,889,000	2,892,000	144,325	147,325	1.177	1.179
6/30/98-99	251,453	2,410,298	2,538,084	2,538,034	2,538,000	2,538,000	127,702	127,702	1.009	1.009
6/30/99-00	255,641	2,564,701	2,735,617	2,732,474	2,732,000	2,736,000	167,299	171,299	1.069	1.070
6/30/00-01	263,918	3,598,950	3,880,431	3,868,566	3,869,000	3,880,000	270,050	281,050	1.466	1.470
6/30/01-02	267,598	2,237,473	2,425,940	2,426,047	2,249,000	2,260,000	11,527	22,527	0.840	0.845
6/30/02-03	274,465	3,053,235	3,350,552	3,342,900	3,343,000	3,351,000	289,765	297,765	1.218	1.221
6/30/03-04	272,384	3,483,456	3,855,721	3,842,081	3,842,000	3,856,000	358,544	372,544	1.411	1.416
6/30/04-05	273,647	2,658,617	2,952,389	2,914,339	2,672,000	2,685,000	13,383	26,383	0.976	0.981
6/30/05-06	285,139	2,785,839	3,131,630	3,082,756	3,083,000	3,132,000	297,161	346,161	1.081	1.098
6/30/06-07	298,516	2,933,862	3,319,301	3,276,233	3,276,000	3,319,000	342,138	385,138	1.097	1.112
6/30/07-08	314,231	1,663,170	1,898,752	2,042,038	1,899,000	2,042,000	235,830	378,830	0.604	0.650
6/30/08-09	302,998	2,418,014	2,786,039	2,819,568	2,786,000	2,820,000	367,986	401,986	0.919	0.931
6/30/09-10	297,252	3,385,951	3,959,088	3,842,628	3,843,000	3,959,000	457,049	573,049	1.293	1.332
6/30/10-11	292,432	2,971,496	3,537,769	3,460,334	3,460,000	3,538,000	488,504	566,504	1.183	1.210
6/30/11-12	295,908	2,985,675	3,602,235	3,538,697	3,539,000	3,602,000	553,325	616,325	1.196	1.217
6/30/12-13	301,541	2,731,912	3,356,197	3,377,620	3,356,000	3,378,000	624,088	646,088	1.113	1.120
6/30/13-14	309,910	3,143,540	3,947,541	3,866,707	3,867,000	3,948,000	723,460	804,460	1.248	1.274
6/30/14-15	316,552	3,483,052	4,587,198	4,373,312	4,373,000	4,587,000	889,948	1,103,948	1.381	1.449
6/30/15-16	316,565	2,027,137	2,964,688	3,110,017	2,965,000	3,110,000	937,863	1,082,863	0.937	0.982
6/30/16-17	292,403	2,317,695	3,556,872	3,524,557	3,525,000	3,557,000	1,207,305	1,239,305	1.206	1.216
6/30/17-18	292,956	1,809,012	3,409,752	3,406,552	3,407,000	3,410,000	1,597,988	1,600,988	1.163	1.164
6/30/18-19	308,002	1,433,442	3,487,414	3,590,149	3,487,000	3,590,000	2,053,558	2,156,558	1.132	1.166
6/30/19-20	311,058	499,126	2,670,789	3,382,575	2,804,329	3,383,000	2,305,202	2,883,874	0.902	1.088
Total	9,900,630	215,403,233	211,136,196	197,447,635	234,098,202	237,201,670	18,694,970	21,798,437		
Tot 6/30/84-20	9,900,630	179,456,276	197,003,091	197,447,635	195,242,329	197,195,467	15,786,052	17,739,191	1.972	1.992

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim	Average Age
All Prior Yrs		21,043,310							5	5		83
6/30/82-83		4,309,167	1.004	1.000	4,328,150	390,400	4,718,550		0	0		
6/30/83-84		8,389,431	1.006	1.050	8,865,404	549,150	9,414,554		3	3	158,658	74
6/30/84-85	181,560	5,655,954	1.008	1.000	5,703,616	1,154,851	6,858,467	3.778	0	0		
6/30/85-86	195,247	9,334,452	1.010	1.000	9,431,939	937,644	10,369,583	5.311	0	0		
6/30/86-87	224,370	11,412,789	1.012	1.000	11,555,047	2,067,717	13,622,764	6.072	0	0		
6/30/87-88	262,864	17,371,452	1.014	1.000	17,623,158	2,795,764	20,418,922	7.768	2	2	125,853	81
6/30/88-89	283,884	16,629,792	1.017	1.000	16,904,493	3,639,613	20,544,106	7.237	1	1	274,701	93
6/30/89-90	285,078	11,631,137	1.022	1.000	11,882,383	3,387,581	15,269,964	5.356	0	0		
6/30/90-91	267,732	8,301,627	1.027	1.000	8,523,356	2,565,430	11,088,786	4.142	0	0		
6/30/91-92	261,442	6,012,007	1.032	1.000	6,203,445	1,806,412	8,009,857	3.064	2	2	95,719	69
6/30/92-93	259,992	3,210,473	1.038	1.000	3,332,580	981,551	4,314,130	1.659	0	0		
6/30/93-94	257,062	2,529,622	1.044	1.000	2,641,588	971,610	3,613,198	1.406	1	0		
6/30/94-95	255,854	1,526,329	1.049	1.000	1,601,857	557,146	2,159,003	0.844	0	0		
6/30/95-96	255,539	2,428,633	1.055	1.000	2,561,554	749,633	3,311,188	1.296	1	0		
6/30/96-97	270,071	1,787,477	1.060	1.000	1,894,734	682,617	2,577,351	0.954	0	0		
6/30/97-98	245,367	2,211,512	1.065	1.000	2,355,933	535,838	2,891,771	1.179	1	1	144,421	60
6/30/98-99	251,453	1,758,227	1.071	1.000	1,882,412	655,672	2,538,084	1.009	0	0		
6/30/99-00	255,641	2,222,200	1.076	1.000	2,391,051	344,566	2,735,617	1.070	1	1	168,852	76
6/30/00-01	263,918	3,318,660	1.084	1.000	3,598,309	282,122	3,880,431	1.470	4	3	93,217	65
6/30/01-02	267,598	1,954,259	1.095	1.000	2,140,733	285,208	2,425,940	0.907	1	1	186,474	61
6/30/02-03	274,465	2,720,211	1.108	1.000	3,013,508	337,044	3,350,552	1.221	0	0		
6/30/03-04	272,384	3,173,631	1.115	1.000	3,539,860	315,861	3,855,721	1.416	3	3	122,076	63
6/30/04-05	273,647	2,315,265	1.124	1.000	2,602,193	350,196	2,952,389	1.079	0	0		
6/30/05-06	285,139	2,464,337	1.135	1.000	2,797,977	333,654	3,131,630	1.098	1	1	333,640	70
6/30/06-07	298,516	2,514,329	1.145	1.000	2,879,713	439,588	3,319,301	1.112	1	1	365,383	73
6/30/07-08	314,231	1,426,669	1.155	1.000	1,647,356	251,396	1,898,752	0.604	1	0		
6/30/08-09	302,998	2,084,014	1.164	1.000	2,425,469	360,570	2,786,039	0.919	2	1	341,455	53
6/30/09-10	297,252	2,868,071	1.182	1.000	3,391,366	567,722	3,959,088	1.332	1	1	523,295	45
6/30/10-11	292,432	2,552,496	1.201	1.000	3,065,825	471,944	3,537,769	1.210	1	1	513,329	57
6/30/11-12	295,908	2,472,239	1.220	1.000	3,016,996	585,240	3,602,235	1.217	1	3	181,585	61
6/30/12-13	301,541	2,132,685	1.239	1.000	2,642,998	713,199	3,356,197	1.113	2	2	255,157	54
6/30/13-14	309,910	2,536,038	1.274	1.000	3,231,493	716,047	3,947,541	1.274	10	3	231,819	62
6/30/14-15	316,552	2,945,554	1.309	1.000	3,854,407	732,791	4,587,198	1.449	13	10	90,885	55
6/30/15-16	316,565	1,776,136	1.388	1.000	2,464,688	500,000	2,964,688	0.937	11	6	114,759	58
6/30/16-17	292,403	1,905,195	1.516	1.000	2,887,983	668,889	3,556,872	1.216	25	13	75,599	58
6/30/17-18	292,956	1,625,512	1.751	1.000	2,846,017	563,735	3,409,752	1.164	57	19	64,237	47
6/30/18-19	308,002	1,253,442	2.267	1.000	2,841,426	645,989	3,487,414	1.132	165	48	33,083	50
6/30/19-20	311,058	499,125	4.349	1.000	2,170,789	500,000	2,670,789	0.859		131	12,761	46
Total	9,900,630	182,303,459			176,741,807	34,394,389	211,136,196		316	262		

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, 2020

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	1.008	5,706,158	1,154,851	6,861,009	3.779	3.143
6/30/85-86	195,247	4.904	9,334,452	1.010	9,433,417	937,644	10,371,061	5.312	4.832
6/30/86-87	224,370	5.443	11,412,789	1.012	11,563,140	2,067,717	13,630,857	6.075	5.154
6/30/87-88	262,864	6.253	17,371,452	1.014	17,606,215	2,795,764	20,401,979	7.761	6.698
6/30/88-89	283,884	6.133	16,629,792	1.017	16,912,718	3,639,613	20,552,330	7.240	5.958
6/30/89-90	285,078	4.978	11,631,137	1.022	11,931,201	3,387,581	15,318,782	5.374	4.185
6/30/90-91	267,732	3.160	8,301,627	1.027	8,521,736	2,565,430	11,087,166	4.141	3.183
6/30/91-92	261,442	2.341	6,012,007	1.032	6,200,884	1,806,412	8,007,296	3.063	2.372
6/30/92-93	259,992	1.264	3,210,473	1.038	3,330,851	981,551	4,312,402	1.659	1.281
6/30/93-94	257,062	1.014	2,529,622	1.044	2,640,113	971,610	3,611,723	1.405	1.027
6/30/94-95	255,854	0.630	1,526,329	1.049	1,602,297	557,146	2,159,443	0.844	0.626
6/30/95-96	255,539	0.985	2,428,633	1.055	2,559,213	749,633	3,308,846	1.295	1.001
6/30/96-97	270,071	0.703	1,787,477	1.060	1,894,918	682,617	2,577,535	0.954	0.702
6/30/97-98	245,367	0.942	2,211,512	1.065	2,353,185	535,838	2,889,023	1.177	0.959
6/30/98-99	251,453	0.748	1,758,227	1.071	1,882,362	655,672	2,538,034	1.009	0.749
6/30/99-00	255,641	0.918	2,222,200	1.076	2,387,908	344,566	2,732,474	1.069	0.934
6/30/00-01	263,918	1.306	3,318,660	1.084	3,586,444	282,122	3,868,566	1.466	1.359
6/30/01-02	267,598	0.800	1,954,259	1.095	2,140,840	285,208	2,426,047	0.907	0.800
6/30/02-03	274,465	1.069	2,720,211	1.108	3,005,856	337,044	3,342,900	1.218	1.095
6/30/03-04	272,384	1.251	3,173,631	1.115	3,526,220	315,861	3,842,081	1.411	1.295
6/30/04-05	273,647	0.825	2,315,265	1.124	2,564,143	350,196	2,914,339	1.065	0.937
6/30/05-06	285,139	0.838	2,464,337	1.135	2,749,102	333,654	3,082,756	1.081	0.964
6/30/06-07	298,516	0.851	2,514,329	1.145	2,836,644	439,588	3,276,233	1.098	0.950
6/30/07-08	314,231	0.865	1,426,669	1.155	1,790,642	251,396	2,042,038	0.650	0.570
6/30/08-09	302,998	0.879	2,084,014	1.164	2,458,997	360,570	2,819,568	0.931	0.812
6/30/09-10	297,252	0.887	2,868,071	1.182	3,274,906	567,722	3,842,628	1.293	1.102
6/30/10-11	292,432	0.890	2,552,496	1.201	2,988,390	471,944	3,460,334	1.183	1.022
6/30/11-12	295,908	0.901	2,472,239	1.220	2,953,457	585,240	3,538,697	1.196	0.998
6/30/12-13	301,541	0.913	2,132,685	1.239	2,664,421	713,199	3,377,620	1.120	0.884
6/30/13-14	309,910	0.922	2,536,038	1.274	3,150,660	716,047	3,866,707	1.248	1.017
6/30/14-15	316,552	0.931	2,945,554	1.309	3,640,521	732,791	4,373,312	1.382	1.150
6/30/15-16	316,565	0.943	1,776,136	1.388	2,610,017	500,000	3,110,017	0.982	0.824
6/30/16-17	292,403	0.955	1,905,195	1.516	2,855,668	668,889	3,524,557	1.205	0.977
6/30/17-18	292,956	0.969	1,625,512	1.751	2,842,817	563,735	3,406,552	1.163	0.970
6/30/18-19	308,002	0.982	1,253,442	2.267	2,944,160	645,989	3,590,149	1.166	0.956
6/30/19-20	311,058	0.995	499,125	4.349	2,882,575	500,000	3,382,575	1.087	0.927
Total	9,900,630		148,561,551		163,992,796	33,454,839	197,447,635		

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, 2020

Department of Developmental Services - Cluster 1
Indemnity

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		Exp Ult Loss	Unadjusted	Benefit	Benefit	Loss	Trended	Detrended	Prior	Current
Accident	Payroll	Excluding	Loss	Level	Adjusted	Trend	Adjusted	Selected	Selected	Selected
Year	(000's)	Lump Sum	Cost	Factor	Loss Cost	Factor	Loss Cost	Loss Cost	Loss Cost	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	8,523,356	3.184	1.004	3.197	1.161	3.713	0.857	3.173	3.160
6/30/91-92	261,442	6,203,445	2.373	1.102	2.614	1.156	3.021	0.785	2.333	2.341
6/30/92-93	259,992	3,332,580	1.282	1.285	1.647	1.150	1.894	0.677	1.270	1.264
6/30/93-94	257,062	2,641,588	1.028	1.268	1.303	1.144	1.491	0.689	1.018	1.014
6/30/94-95	255,854	1,601,857	0.626	1.257	0.787	1.138	0.896	0.699	0.633	0.630
6/30/95-96	255,539	2,561,554	1.002	1.247	1.250	1.133	1.416	0.708	0.989	0.985
6/30/96-97	270,071	1,894,734	0.702	1.234	0.866	1.127	0.976	0.719	0.706	0.703
6/30/97-98	245,367	2,355,933	0.960	1.218	1.170	1.122	1.312	0.732	0.936	0.942
6/30/98-99	251,453	1,882,412	0.749	1.202	0.900	1.116	1.005	0.745	0.752	0.748
6/30/99-00	255,641	2,391,051	0.935	1.183	1.107	1.110	1.229	0.761	0.908	0.918
6/30/00-01	263,918	3,598,309	1.363	1.153	1.572	1.105	1.737	0.785	1.279	1.306
6/30/01-02	267,598	2,140,733	0.800	1.131	0.904	1.099	0.994	0.805	0.803	0.800
6/30/02-03	274,465	3,013,508	1.098	1.126	1.237	1.094	1.353	0.812	1.072	1.069
6/30/03-04	272,384	3,539,860	1.300	1.126	1.464	1.088	1.593	0.816	1.228	1.251
6/30/04-05	273,647	2,602,193	0.951	1.119	1.064	1.083	1.153	0.825	0.836	0.825
6/30/05-06	285,139	2,797,977	0.981	1.108	1.087	1.078	1.172	0.838	0.848	0.838
6/30/06-07	298,516	2,879,713	0.965	1.096	1.057	1.072	1.134	0.851	0.862	0.851
6/30/07-08	314,231	1,647,356	0.524	1.084	0.568	1.067	0.606	0.865	0.876	0.865
6/30/08-09	302,998	2,425,469	0.800	1.071	0.858	1.062	0.911	0.879	0.891	0.879
6/30/09-10	297,252	3,391,366	1.141	1.067	1.218	1.056	1.286	0.887	0.899	0.887
6/30/10-11	292,432	3,065,825	1.048	1.069	1.120	1.051	1.178	0.890	0.902	0.890
6/30/11-12	295,908	3,016,996	1.020	1.062	1.082	1.046	1.132	0.901	0.912	0.901
6/30/12-13	301,541	2,642,998	0.876	1.052	0.922	1.041	0.960	0.913	0.925	0.913
6/30/13-14	309,910	3,231,493	1.043	1.048	1.093	1.036	1.132	0.922	0.934	0.922
6/30/14-15	316,552	3,854,407	1.218	1.042	1.269	1.030	1.308	0.931	0.943	0.931
6/30/15-16	316,565	2,464,688	0.779	1.034	0.805	1.025	0.826	0.943	0.955	0.943
6/30/16-17	292,403	2,887,983	0.988	1.026	1.014	1.020	1.034	0.955	0.968	0.955
6/30/17-18	292,956	2,846,017	0.971	1.017	0.988	1.015	1.003	0.969	0.982	0.969
6/30/18-19	308,002	2,841,426	0.923	1.008	0.930	1.010	0.939	0.982	0.995	0.982
6/30/19-20	311,058	2,170,789	0.698	1.000	0.698	1.005	0.701	0.995		0.995
Total	8,467,627	90,447,616								

Trend Last 4 (ex 19-20):	4.1%	Avg 3 (ex 19-20):	0.992
Trend Last 8 (ex 19-20):	-1.7%	Avg 5 (ex 19-20):	1.022
Trend Last 12 (ex 19-20):	1.6%	Avg 10 (ex 19-20):	1.080
Prior Selected Trend:	0.5%	Prior Sel Avg:	1.000
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, 2019

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Department of Developmental Services - Cluster 1
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.960	
(2)	Credibility		40%	
(3)	Average Pmt Trend Statewide		0.950	
(4)	Credibility Weighted Trend		0.954	
		(Low)		(High)
(5)	Selected Range	0.944		0.959
(6)	Incremental Paid for 2020	232,087		232,087
(7)	Estimated Reserve	3,912,320		5,394,549
(8)	Paid to Date (82 & Prior)	21,043,310		21,043,310
(9)	Est Ult Paid for 1982 & Prior	24,955,630		26,437,859

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	238,395	249,326
(11)	Projected Number of Years	7	7
(12)	Estimated Reserve	1,668,767	1,745,282
(13)	Paid to Date (82 & Prior)	21,043,310	20,811,223
(14)	Est Ult Paid for 1982 & Prior	22,712,077	22,556,506
(14a)	Paid Counts During Fiscal Year	5	5

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	23,833,853	24,885,318
(16)	Lump Sum Ultimates	1,265,498	1,265,498
(17)	Ult Loss Including Lump Sums	**25,099,351**	**26,150,816**
(18)	Implied Tail	1.133	1.183
(19)	Ult Loss Inc Lump Sums @ 6/19	25,019,683	26,147,420

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 =	29
2001	10	586,837	13.283	0.920	S(x) =	58,174
2002	11	551,859	13.221	0.940	S(x-sq) =	116,699,074
2003	12	510,510	13.143	0.925	S(xy) =	757,133
2004	13	475,438	13.072	0.931	S(y) =	377
2005	14	461,151	13.041	0.970	D =	58,870
2006	15	476,801	13.075	1.034	slope =	-0.040
2007	16	429,059	12.969	0.900	Avg Trend =	0.960
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		
2017	26	264,879	12.487	0.911		
2018	27	237,468	12.378	0.897		
2019	28	245,631	12.412	1.034		
2020	29	232,087	12.355	0.945		
					Selected Trend:	**0.960**

NOTES:
(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019
(4) LN [(3)]
(5) Eg. 2020: 0.945 = 232087 / 245631

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

Accident Yr E	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	2,107,204
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	3,124,951	3,174,172
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	1,946,268	1,946,268	1,947,862
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	2,699,825	2,720,211	2,720,211	2,720,211
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	2,968,719	3,034,745	3,101,642	3,173,631	
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	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	2,427,360	2,439,465	2,451,790	2,464,337			
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	2,444,639	2,467,452	2,490,682	2,514,329				
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	1,349,256	1,381,465	1,426,669	1,426,669					
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	1,959,565	2,000,096	2,043,397	2,084,014						
June-10	611,726	1,437,135	2,071,218	2,345,985	2,542,928	2,700,053	2,771,498	2,805,389	2,829,952	2,848,986	2,868,071							
June-11	714,837	1,318,901	1,664,634	1,948,510	2,176,832	2,332,885	2,417,198	2,466,418	2,510,326	2,552,496								
June-12	737,468	1,470,092	1,872,540	2,089,074	2,233,894	2,365,672	2,431,645	2,460,231	2,472,239									
June-13	748,452	1,316,963	1,677,597	1,855,465	1,995,318	2,076,543	2,124,200	2,132,685										
June-14	693,795	1,434,737	1,895,910	2,203,839	2,380,774	2,463,658	2,536,038											
June-15	685,778	1,336,264	1,894,169	2,294,853	2,687,276	2,945,554												
June-16	713,131	1,227,202	1,453,482	1,666,384	1,776,136													
June-17	684,027	1,290,456	1,658,597	1,905,195														
June-18	624,664	1,297,701	1,625,512															
June-19	670,450	1,253,442																
June-20	499,125																	

Accident Yr E	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	4,309,167	4,309,167	4,309,167	4,309,167
June-84	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	7,972,071	8,104,814	8,246,950	8,389,431	
June-85	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	5,655,954	5,655,954	5,655,954	5,655,954		
June-86	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	9,334,452	9,334,452	9,334,452			
June-87	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	11,412,789	11,412,789	11,412,789				
June-88	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	16,979,214	17,105,435	17,235,996	17,371,452					
June-89	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	16,535,361	16,577,438	16,612,609	16,629,792						
June-90	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	11,631,137	11,631,137	11,631,137	11,631,137							
June-91	8,295,115	8,296,069	8,296,953	8,297,667	8,298,631	8,299,673	8,300,774	8,301,627	8,301,627	8,301,627	8,301,627	8,301,627								
June-92	5,558,121	5,598,760	5,641,750	5,685,342	5,729,682	5,774,150	5,819,387	5,864,563	5,912,050	5,961,583	6,012,007									
June-93	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	3,210,473										
June-94	2,527,522	2,527,522	2,527,522	2,527,522	2,527,522	2,527,522	2,527,522	2,529,622	2,529,622											
June-95	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	2,287,650	2,319,312	2,348,935	2,388,784	2,421,465	2,428,633	2,428,633													
June-97	1,787,477	1,787,477	1,787,477	1,787,477	1,787,477	1,787,477														
June-98	2,116,101	2,139,333	2,162,985	2,186,995	2,211,512															
June-99	1,758,227	1,758,227	1,758,227	1,758,227																
June-00	2,144,841	2,183,164	2,222,200																	
June-01	3,228,588	3,318,660																		
June-02	1,954,259																			

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	1.018	1.016
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	1.000	1.000	1.001
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	1.010	1.008	1.000	1.000
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	1.022	1.022	1.022	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	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	1.005	1.005	1.005	1.005			
June-07	2.002	1.435	1.194	1.112	1.067	1.053	1.045	1.018	1.009	1.009	1.009	1.009	1.009				
June-08	1.708	1.223	1.120	1.066	1.027	1.024	1.015	1.013	1.018	1.024	1.033	1.000					
June-09	1.715	1.308	1.169	1.083	1.044	1.033	1.028	1.022	1.021	1.022	1.020						
June-10	2.349	1.441	1.133	1.084	1.062	1.026	1.012	1.009	1.007	1.007							
June-11	1.845	1.262	1.171	1.117	1.072	1.036	1.020	1.018	1.017								
June-12	1.993	1.274	1.116	1.069	1.059	1.028	1.012	1.005									
June-13	1.760	1.274	1.106	1.075	1.041	1.023	1.004										
June-14	2.068	1.321	1.162	1.080	1.035	1.029											
June-15	1.949	1.418	1.212	1.171	1.096												
June-16	1.721	1.184	1.146	1.066													
June-17	1.887	1.285	1.149														
June-18	2.077	1.253															
June-19	1.870																

Acc Yr Ending	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	420-432	432-444	444-456
June-83	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	1.000	1.000	1.000	1.000
June-84	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	1.016	1.017	1.018	1.017	
June-85	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	1.000	1.000	1.000	1.000		
June-86	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	1.000	1.000	1.000	1.000			
June-87	1.005	1.002	1.003	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				
June-88	1.011	1.011	1.012	1.012	1.010	1.010	1.010	1.010	1.010	1.010	1.007	1.007	1.007	1.008	1.008					
June-89	1.007	1.006	1.007	1.007	1.007	1.007	1.006	1.004	1.004	1.005	1.005	1.003	1.002	1.001						
June-90	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000							
June-91	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-92	1.007	1.007	1.008	1.008	1.008	1.008	1.008	1.008	1.008	1.008	1.008									
June-93	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.000											
June-95	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
June-96	1.013	1.014	1.013	1.017	1.014	1.003	1.000													
June-97	1.000	1.000	1.000	1.000	1.000	1.000														
June-98	1.011	1.011	1.011	1.011	1.011															
June-99	1.000	1.000	1.000	1.000																
June-00	1.018	1.018	1.018																	
June-01	1.017	1.028																		
June-02	1.003																			

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
Simple Avg																			
All Yrs	2.019	1.325	1.167	1.097	1.064	1.040	1.031	1.021	1.019	1.016	1.014	1.012	1.010	1.010	1.009	1.007	1.007	1.007	1.008
Latest 5	1.901	1.292	1.155	1.092	1.060	1.029	1.015	1.013	1.014	1.014	1.013	1.007	1.009	1.007	1.009	1.012	1.007	1.010	1.011
Latest 3	1.945	1.241	1.169	1.106	1.057	1.027	1.012	1.010	1.015	1.017	1.021	1.005	1.005	1.009	1.010	1.008	1.006	1.013	1.015
Volume Wtd																			
All Yrs	2.085	1.346	1.182	1.110	1.071	1.045	1.037	1.023	1.021	1.017	1.015	1.014	1.011	1.011	1.010	1.008	1.007	1.007	1.007
Latest 5	1.896	1.295	1.157	1.095	1.062	1.029	1.015	1.013	1.013	1.013	1.011	1.009	1.010	1.008	1.011	1.013	1.008	1.011	1.014
Latest 3	1.941	1.242	1.172	1.110	1.060	1.027	1.012	1.010	1.014	1.015	1.019	1.006	1.005	1.010	1.011	1.009	1.007	1.014	1.018
Dev Factor Selection																			
Industry 1	2.958	1.596	1.236	1.106	1.039	1.020	1.014	1.008	1.006	1.006	1.005	1.010	1.002	1.003	1.003	1.002	1.004	1.003	
Industry 2		1.877	1.312	1.143	1.055	1.028	1.016	1.015	1.006	1.005	1.007	1.007	1.004	1.002	1.005	1.002	1.003	1.002	1.001
Prior	*1.912*	*1.299*	*1.148*	*1.103*	*1.054*	*1.029*	*1.028*	*1.018*	*1.017*	*1.016*	*1.014*	*1.009*	*1.009*	*1.010*	*1.012*	*1.007*	*1.008*	*1.010*	*1.008*
Selected	1.919	1.295	1.155	1.092	1.060	1.027	1.028	1.016	1.016	1.016	1.016	1.008	1.008	1.009	1.010	1.008	1.007	1.011	1.010
FacToUlt	4.349	2.267	1.751	1.516	1.388	1.309	1.274	1.239	1.220	1.201	1.182	1.164	1.155	1.145	1.135	1.124	1.115	1.108	1.095
Percent of Ult	23.0%	44.1%	57.1%	66.0%	72.1%	76.4%	78.5%	80.7%	81.9%	83.3%	84.6%	85.9%	86.6%	87.3%	88.1%	89.0%	89.7%	90.3%	91.3%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																			
All Yrs	1.006	1.006	1.006	1.005	1.005	1.005	1.005	1.005	1.005	1.004	1.004	1.005	1.004	1.003	1.004	1.006	1.009	1.000	
Latest 5	1.008	1.006	1.005	1.001	1.002	1.002	1.002	1.003	1.004	1.002	1.002	1.002	1.005	1.003					
Latest 3	1.010	1.004	1.008	1.001	1.000	1.000	1.003	1.003	1.003	1.001	1.003	1.003	1.003	1.000	1.006	1.006			
Volume Wtd																			
All Yrs	1.006	1.006	1.006	1.006	1.005	1.005	1.005	1.005	1.004	1.004	1.004	1.004	1.005	1.003	1.005	1.008	1.011	1.000	
Latest 5	1.009	1.007	1.005	1.001	1.003	1.002	1.002	1.003	1.004	1.003	1.002	1.002	1.005	1.003					
Latest 3	1.010	1.004	1.009	1.001	1.000	1.000	1.004	1.003	1.002	1.001	1.004	1.003	1.004	1.000	1.006	1.008			
Dev Factor Selection																			
Industry 1																			
Industry 2	1.001																		
Prior	*1.006*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.005*	*1.006*	*1.006*	*1.005*	*1.005*	*1.005*	*1.002*	*1.002*	*1.002*	*1.002*	*1.002*	*1.006*	
Selected	1.008	1.005	1.005	1.005	1.005	1.005	1.005	1.006	1.006	1.005	1.005	1.005	1.002	1.002	1.002	1.002	1.002	1.002	1.004
FacToUlt	1.084	1.076	1.071	1.065	1.060	1.055	1.049	1.044	1.038	1.032	1.027	1.022	1.017	1.014	1.012	1.010	1.008	1.006	1.004
Percent of Ult	92.2%	92.9%	93.4%	93.9%	94.3%	94.8%	95.3%	95.8%	96.3%	96.9%	97.4%	97.9%	98.4%	98.6%	98.8%	99.0%	99.2%	99.4%	99.6%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	25,019,683	26,147,420	25,099,351	26,150,816	79,668	0.3%	3,396	0.0%
6/30/82-83	4,723,296	4,728,019	4,718,550	4,723,269	(4,746)	-0.1%	(4,751)	-0.1%
6/30/83-84	9,274,000	9,282,819	9,037,972	9,132,118	(236,028)	-2.5%	(150,701)	-1.6%
6/30/84-85	6,818,000	6,864,721	6,818,000	6,858,467	0	0.0%	(6,254)	-0.1%
6/30/85-86	10,282,000	10,293,000	10,282,000	10,293,000	0	0.0%	0	0.0%
6/30/86-87	13,494,000	13,507,000	13,494,000	13,507,000	0	0.0%	0	0.0%
6/30/87-88	20,284,000	20,301,000	20,402,000	20,419,000	118,000	0.6%	118,000	0.6%
6/30/88-89	20,596,000	20,605,000	20,544,000	20,552,000	(52,000)	-0.3%	(53,000)	-0.3%
6/30/89-90	15,169,000	15,169,000	15,169,000	15,169,000	0	0.0%	0	0.0%
6/30/90-91	10,976,000	10,976,000	10,976,000	10,976,000	0	0.0%	0	0.0%
6/30/91-92	7,991,000	7,994,000	8,007,000	8,010,000	16,000	0.2%	16,000	0.2%
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	3,568,000	3,603,000	3,568,000	3,603,000	0	0.0%	0	0.0%
6/30/94-95	2,166,000	2,166,000	2,159,000	2,159,000	(7,000)	-0.3%	(7,000)	-0.3%
6/30/95-96	3,320,000	3,322,000	3,309,000	3,311,000	(11,000)	-0.3%	(11,000)	-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	2,873,000	2,875,000	2,889,000	2,892,000	16,000	0.6%	17,000	0.6%
6/30/98-99	2,546,000	2,546,000	2,538,000	2,538,000	(8,000)	-0.3%	(8,000)	-0.3%
6/30/99-00	2,702,000	2,705,000	2,732,000	2,736,000	30,000	1.1%	31,000	1.1%
6/30/00-01	3,759,000	3,771,000	3,869,000	3,880,000	110,000	2.9%	109,000	2.9%
6/30/01-02	2,242,000	2,253,000	2,249,000	2,260,000	7,000	0.3%	7,000	0.3%
6/30/02-03	3,351,000	3,358,000	3,343,000	3,351,000	(8,000)	-0.2%	(7,000)	-0.2%
6/30/03-04	3,772,000	3,785,000	3,842,000	3,856,000	70,000	1.9%	71,000	1.9%
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	3,093,000	3,141,000	3,083,000	3,132,000	(10,000)	-0.3%	(9,000)	-0.3%
6/30/06-07	3,278,000	3,317,000	3,276,000	3,319,000	(2,000)	-0.1%	2,000	0.1%
6/30/07-08	1,883,000	2,036,000	1,899,000	2,042,000	16,000	0.8%	6,000	0.3%
6/30/08-09	2,779,000	2,822,000	2,786,000	2,820,000	7,000	0.3%	(2,000)	-0.1%
6/30/09-10	3,871,000	3,994,000	3,843,000	3,959,000	(28,000)	-0.7%	(35,000)	-0.9%
6/30/10-11	3,467,000	3,543,000	3,460,000	3,538,000	(7,000)	-0.2%	(5,000)	-0.1%
6/30/11-12	3,605,000	3,674,000	3,539,000	3,602,000	(66,000)	-1.8%	(72,000)	-2.0%
6/30/12-13	3,378,000	3,396,000	3,356,000	3,378,000	(22,000)	-0.7%	(18,000)	-0.5%
6/30/13-14	3,902,000	3,984,000	3,867,000	3,948,000	(35,000)	-0.9%	(36,000)	-0.9%
6/30/14-15	4,047,000	4,250,000	4,373,000	4,587,000	326,000	8.1%	337,000	7.9%
6/30/15-16	3,048,000	3,214,000	2,965,000	3,110,000	(83,000)	-2.7%	(104,000)	-3.2%
6/30/16-17	3,459,000	3,492,000	3,525,000	3,557,000	66,000	1.9%	65,000	1.9%
6/30/17-18	3,442,000	3,486,000	3,407,000	3,410,000	(35,000)	-1.0%	(76,000)	-2.2%
6/30/18-19	3,436,000	3,550,000	3,487,000	3,590,000	51,000	1.5%	40,000	1.1%
6/30/19-20								
Total	230,995,979	233,600,979	231,293,874	233,818,670	297,895	0.1%	217,691	0.1%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2019

(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, 2020

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	21,043,310	1.158	24,359,586	0.0%	0.0%	0	1,265,498	1,265,498	5.2%	1.000	1,265,498	1,265,498	1,265,498
6/30/82-83	4,309,167	1.004	4,328,150	0.0%	0.0%	0	390,400	390,400	9.0%	1.000	390,400	390,400	390,400
6/30/83-84	8,389,431	1.057	8,865,404	0.0%	0.0%	0	549,150	549,150	6.2%	1.000	549,150	549,150	549,150
6/30/84-85	5,655,954	1.008	5,703,616	0.0%	0.0%	0	1,154,851	1,154,851	20.2%	1.000	1,154,851	1,154,851	1,154,851
6/30/85-86	9,334,452	1.010	9,431,939	0.0%	0.0%	0	937,644	937,644	9.9%	1.000	937,644	937,644	937,644
6/30/86-87	11,412,789	1.012	11,555,047	0.0%	0.0%	0	2,067,717	2,067,717	17.9%	1.000	2,067,717	2,067,717	2,067,717
6/30/87-88	17,371,452	1.014	17,623,158	0.0%	0.0%	0	2,795,764	2,795,764	15.9%	1.000	2,795,764	2,795,764	2,795,764
6/30/88-89	16,629,792	1.017	16,904,493	0.0%	0.0%	0	3,639,613	3,639,613	21.5%	1.000	3,639,613	3,639,613	3,639,613
6/30/89-90	11,631,137	1.022	11,882,383	0.0%	0.0%	0	3,387,581	3,387,581	28.5%	1.000	3,387,581	3,387,581	3,387,581
6/30/90-91	8,301,627	1.027	8,523,356	0.0%	0.0%	0	2,565,430	2,565,430	30.1%	1.000	2,565,430	2,565,430	2,565,430
6/30/91-92	6,012,007	1.032	6,203,445	0.0%	0.0%	0	1,806,412	1,806,412	29.1%	1.000	1,806,412	1,806,412	1,810,928
6/30/92-93	3,210,473	1.038	3,332,580	0.0%	0.0%	0	979,103	979,103	29.4%	1.005	983,999	981,551	982,043
6/30/93-94	2,529,622	1.044	2,641,588	0.0%	0.0%	0	968,701	968,701	36.7%	1.006	974,518	971,610	972,097
6/30/94-95	1,526,329	1.049	1,601,857	0.0%	0.0%	0	555,200	555,200	34.7%	1.007	559,093	557,146	557,426
6/30/95-96	2,428,633	1.055	2,561,554	0.0%	0.0%	0	746,640	746,640	29.1%	1.008	752,627	749,633	750,010
6/30/96-97	1,787,477	1.060	1,894,734	0.0%	0.0%	0	679,550	679,550	35.9%	1.009	685,684	682,617	682,960
6/30/97-98	2,211,512	1.065	2,355,933	0.0%	0.0%	0	533,163	533,163	22.6%	1.010	538,513	535,838	536,107
6/30/98-99	1,758,227	1.071	1,882,412	0.0%	0.0%	0	652,071	652,071	34.6%	1.011	659,273	655,672	656,002
6/30/99-00	2,222,200	1.076	2,391,051	0.0%	0.0%	0	342,501	342,501	14.3%	1.012	346,630	344,566	344,739
6/30/00-01	3,318,660	1.084	3,598,309	0.0%	0.0%	0	280,290	280,290	7.8%	1.013	283,953	282,122	252,871
6/30/01-02	1,954,259	1.095	2,140,733	0.0%	0.0%	0	283,214	283,214	13.2%	1.014	287,202	285,208	286,423
6/30/02-03	2,720,211	1.108	3,013,508	0.1%	0.1%	3,014	333,024	336,037	11.2%	1.015	338,051	337,044	338,726
6/30/03-04	3,173,631	1.115	3,539,860	0.1%	0.2%	7,080	309,825	316,905	9.0%	1.016	314,816	315,861	317,680
6/30/04-05	2,315,265	1.124	2,602,193	0.1%	0.3%	7,807	343,352	351,159	13.5%	1.017	349,232	350,196	355,407
6/30/05-06	2,464,337	1.135	2,797,977	0.2%	0.5%	13,990	321,502	335,492	12.0%	1.032	331,816	333,654	338,953
6/30/06-07	2,514,329	1.145	2,879,713	0.2%	0.7%	20,158	419,533	439,691	15.3%	1.048	439,486	439,588	445,728
6/30/07-08	1,426,669	1.155	1,647,356	0.2%	0.9%	14,826	236,501	251,327	15.3%	1.063	251,465	251,396	223,806
6/30/08-09	2,084,014	1.164	2,425,469	0.2%	1.1%	26,680	334,000	360,680	14.9%	1.079	360,460	360,570	367,710
6/30/09-10	2,868,071	1.182	3,391,366	0.3%	1.4%	47,479	517,880	565,359	16.7%	1.101	570,086	567,722	580,127
6/30/10-11	2,552,496	1.201	3,065,825	0.3%	1.7%	52,119	419,000	471,119	15.4%	1.128	472,769	471,944	483,571
6/30/11-12	2,472,239	1.220	3,016,996	0.3%	2.0%	60,340	513,436	573,776	19.0%	1.162	596,703	585,240	620,675
6/30/12-13	2,132,685	1.239	2,642,998	0.3%	2.3%	61,122	599,227	660,349	25.0%	1.278	766,049	713,199	667,926
6/30/13-14	2,536,038	1.274	3,231,493	1.0%	3.4%	108,545	607,502	716,047	22.2%	1.342	815,459	716,047	748,424
6/30/14-15	2,945,554	1.309	3,854,407	1.1%	4.4%	170,518	537,498	708,016	18.4%	1.409	757,566	732,791	531,809
6/30/15-16	1,776,136	1.388	2,464,688	1.8%	6.2%	153,570	251,001	404,571	16.4%	1.730	434,307	500,000	506,066
6/30/16-17	1,905,195	1.516	2,887,983	2.6%	8.9%	256,389	412,500	668,889	23.2%	2.223	917,061	668,889	586,025
6/30/17-18	1,625,512	1.751	2,846,017	4.5%	13.4%	380,235	183,500	563,735	19.8%	4.009	735,586	563,735	532,674
6/30/18-19	1,253,442	2.267	2,841,426	3.0%	16.4%	465,989	180,000	645,989	22.7%	10.489	1,887,941	645,989	518,953
6/30/19-20	499,125	4.349	2,170,789	2.4%	18.8%	407,137	1	407,138	18.8%	57.687	58	500,000	
Total	182,303,459		201,101,393			2,256,997	33,099,773	35,356,770	17.6%		36,970,463	35,659,887	34,749,514

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, 2019

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	420-432	432-444	444-456	456-468
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	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	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	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	0	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	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	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	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	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	0	0	0	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	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	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	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	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	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	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	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	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	0	0	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	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	0	0	0	29,187																			
Jun-02	0	800	23,940	52,775	72,135	32,564	76,000	25,000	0	0	0	0	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	5,000	0	0	0																					
Jun-04	0	0	88,974	64,100	121,250	0	0	5,501	0	0	0	30,000	0	0	0	0	0																						
Jun-05	0	7,500	39,052	104,600	42,000	94,000	20,000	0	36,200	0	0	0	0	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	5,000	0	0	0																								
Jun-07	0	8,500	85,000	83,750	78,000	6,000	6,000	20,000	120,783	11,500	0	0	0	0																									
Jun-08	0	37,000	17,501	25,000	45,000	30,000	3,000	8,000	0	0	0	41,000	30,000																										
Jun-09	0	24,000	55,000	41,000	35,500	90,500	34,500	48,500	5,000	0	0	0																											
Jun-10	0	12,500	57,878	128,398	138,602	52,001	98,500	30,000	0	0	1																												
Jun-11	0	27,523	53,478	75,263	75,237	72,000	67,500	48,000	0	0																													
Jun-12	0	35,436	120,064	151,936	128,500	42,500	35,000	0	0																														
Jun-13	0	101,200	70,600	223,200	111,602	27,625	0	65,000																															
Jun-14	0	35,000	261,500	187,500	65,000	58,501	1																																
Jun-15	0	10,000	80,000	112,500	105,000	229,998																																	
Jun-16	0	115,000	17,501	108,687	9,813																																		
Jun-17	35,000	100,000	79,500	198,000																																			
Jun-18	25,000	48,000	110,500																																				
Jun-19	0	180,000																																					
Jun-20	1																																						

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	432	444	456	468
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	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	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	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	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	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	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	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	3,547,946	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	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	3,387,581	3,387,581	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									
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	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	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	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	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	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	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	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	652,071	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	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	251,103	251,103	251,103	280,290																			
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	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	333,024	333,024	333,024	333,024																					
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	309,825	309,825	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	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	321,502	321,502	321,502	321,502																								
Jun-07	0	8,500	93,500	177,250	255,250	261,250	267,250	287,250	408,033	419,533	419,533	419,533	419,533	419,533																									
Jun-08	0	37,000	54,501	79,501	124,501	154,501	157,501	165,501	165,501	165,501	165,501	206,501	236,501																										
Jun-09	0	24,000	79,000	120,000	155,500	246,000	280,500	329,000	334,000	334,000	334,000	334,000																											
Jun-10	0	12,500	70,378	198,776	337,378	389,379	487,879	517,879	517,879	517,879	517,880																												
Jun-11	0	27,523	81,000	156,263	231,500	303,500	371,000	419,000	419,000	419,000																													
Jun-12	0	35,436	155,500	307,436	435,936	478,436	513,436	513,436	513,436																														
Jun-13	0	101,200	171,800	395,000	506,602	534,227	534,227	599,227																															
Jun-14	0	35,000	296,500	484,000	549,000	607,501	607,502																																
Jun-15	0	10,000	90,000	202,500	307,500	537,498																																	
Jun-16	0	115,000	132,501	241,188	251,001																																		
Jun-17	35,000	135,000	214,500	412,500																																			
Jun-18	25,000	73,000	183,500																																				
Jun-19	0	180,000																																					
Jun-20	1																																						

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
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	0.005	0.002	0.003	0.001	0.009	0.005
Jun-83	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.006	0.012	0.002	0.007	0.022	0.034	0.000	0.002	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
Jun-85	0.000	0.000	0.000	0.002	0.006	0.004	0.016	0.022	0.034	0.032	0.012	0.009	0.036	0.000	0.000	0.005	0.009	0.005	0.000	0.004
Jun-86	0.000	0.000	0.002	0.002	0.002	0.010	0.019	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
Jun-87	0.000	0.003	0.001	0.009	0.006	0.034	0.045	0.018	0.013	0.001	0.008	0.001	0.013	0.011	0.010	0.006	0.000	0.000	0.000	0.000
Jun-88	0.000	0.001	0.006	0.018	0.017	0.038	0.021	0.015	0.020	0.013	0.004	0.005	0.002	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	0.028	0.012	0.028	0.013	0.006	0.011	0.013	0.008	0.000	0.000	0.000	0.000	0.002	0.003	0.003
Jun-90	0.000	0.007	0.047	0.062	0.021	0.025	0.044	0.024	0.011	0.006	0.020	0.011	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-91	0.001	0.037	0.102	0.033	0.020	0.060	0.037	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
Jun-92	0.009	0.055	0.021	0.014	0.088	0.038	0.008	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
Jun-93	0.010	0.052	0.049	0.119	0.015	0.020	0.023	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
Jun-94	0.008	0.034	0.110	0.084	0.042	0.031	0.045	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
Jun-95	0.002	0.098	0.129	0.101	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
Jun-96	0.020	0.083	0.086	0.019	0.016	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
Jun-97	0.019	0.094	0.113	0.082	0.045	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	0.046	0.102	0.051	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	0.000
Jun-99	0.000	0.097	0.102	0.060	0.001	0.004	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.000	0.000	0.000	0.000
Jun-00	0.005	0.024	0.034	0.015	0.016	0.004	0.004	0.012	0.004	0.000	0.000	0.014	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-01	0.005	0.006	0.012	0.011	0.009	0.012	0.011	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Jun-02	0.000	0.000	0.011	0.025	0.034	0.015	0.036	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-03	0.000	0.000	0.016	0.033	0.030	0.016	0.003	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000		
Jun-04	0.000	0.000	0.025	0.018	0.034	0.000	0.000	0.002	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000			
Jun-05	0.000	0.003	0.015	0.040	0.016	0.036	0.008	0.000	0.014	0.000	0.000	0.000	0.000	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	0.013	0.002	0.000	0.000	0.000					
Jun-07	0.000	0.003	0.030	0.029	0.027	0.002	0.002	0.007	0.042	0.004	0.000	0.000	0.000	0.000						
Jun-08	0.000	0.022	0.011	0.015	0.027	0.018	0.002	0.005	0.000	0.000	0.000	0.025	0.018							
Jun-09	0.000	0.010	0.023	0.017	0.015	0.037	0.014	0.020	0.002	0.000	0.000	0.000								
Jun-10	0.000	0.004	0.017	0.038	0.041	0.015	0.029	0.009	0.000	0.000	0.000									
Jun-11	0.000	0.009	0.017	0.025	0.025	0.023	0.022	0.016	0.000	0.000										
Jun-12	0.000	0.012	0.040	0.050	0.043	0.014	0.012	0.000	0.000											
Jun-13	0.000	0.038	0.027	0.084	0.042	0.010	0.000	0.025												
Jun-14	0.000	0.011	0.081	0.058	0.020	0.018	0.000													
Jun-15	0.000	0.003	0.021	0.029	0.027	0.060														
Jun-16	0.000	0.047	0.007	0.044	0.004															
Jun-17	0.012	0.035	0.028	0.069																
Jun-18	0.009	0.017	0.039																	
Jun-19	0.000	0.063																		
Jun-20	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
Simple Avg																				
All Yrs (ex P)	0.003	0.025	0.037	0.038	0.023	0.018	0.014	0.010	0.007	0.004	0.004	0.004	0.004	0.002	0.003	0.002	0.002	0.000	0.000	0.001
Latest 5	0.004	0.033	0.035	0.057	0.027	0.025	0.013	0.014	0.000	0.001	0.003	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.002
Latest 3	0.003	0.038	0.024	0.047	0.017	0.029	0.004	0.013	0.000	0.000	0.000	0.008	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.003
Olympic Avg																				
All Yrs (ex P)	0.002	0.024	0.036	0.036	0.022	0.017	0.013	0.009	0.007	0.003	0.004	0.004	0.003	0.001	0.002	0.001	0.001	0.000	0.000	0.000
Latest 10	0.001	0.021	0.026	0.041	0.028	0.018	0.008	0.008	0.003	0.001	0.000	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Latest 5	0.003	0.033	0.029	0.057	0.030	0.019	0.011	0.015	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dev Factor Selection																				
Prior	*NA*	*0.022*	*0.028*	*0.041*	*0.027*	*0.017*	*0.012*	*0.008*	*0.003*	*0.003*	*0.003*	*0.003*	*0.002*	*0.002*	*0.002*	*0.002*	*0.001*	*0.001*	*0.001*	*0.000*
Selected	NA	0.024	0.030	0.045	0.026	0.018	0.011	0.010	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.000
FacToUlt	NA	0.188	0.164	0.134	0.089	0.062	0.044	0.034	0.023	0.020	0.017	0.014	0.011	0.009	0.007	0.005	0.003	0.002	0.001	0.000

Acc Yr Ending	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	420-432	432-444	444-456	456-468
All Prior Yrs	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	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	
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	0.000		
Jun-85	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.000	0.000	0.000	0.000	0.000	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	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000								
Jun-91	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	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												
Jun-95	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.000	0.000	0.000	0.000														
Jun-97	0.000	0.000	0.000	0.000															
Jun-98	0.000	0.000	0.000																
Jun-99	0.000	0.000																	
Jun-00	0.000																		
Averages	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	420-432	432-444	444-456	456-468
Simple Avg																			
All Yrs (ex P)	0.000	0.000	0.000	0.000	0.000	0.000	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	0.000	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	0.000	0.000	0.000	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	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.000	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	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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
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
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
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
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
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
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
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
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	3,547,946	3,593,779	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
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
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
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
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
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
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
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	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	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	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	251,103	251,103	251,103	280,290
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	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	333,024	333,024	333,024	333,024		
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	309,825	309,825	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	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	321,502	321,502	321,502	321,502					
Jun-07	0	8,500	93,500	177,250	255,250	261,250	267,250	287,250	408,033	419,533	419,533	419,533	419,533	419,533						
Jun-08	0	37,000	54,501	79,501	124,501	154,501	157,501	165,501	165,501	165,501	165,501	206,501	236,501							
Jun-09	0	24,000	79,000	120,000	155,500	246,000	280,500	329,000	334,000	334,000	334,000	334,000								
Jun-10	0	12,500	70,378	198,776	337,378	389,379	487,879	517,879	517,879	517,879	517,880									
Jun-11	0	27,523	81,000	156,263	231,500	303,500	371,000	419,000	419,000	419,000										
Jun-12	0	35,436	155,500	307,436	435,936	478,436	513,436	513,436	513,436											
Jun-13	0	101,200	171,800	395,000	506,602	534,227	534,227	599,227												
Jun-14	0	35,000	296,500	484,000	549,000	607,501	607,502													
Jun-15	0	10,000	90,000	202,500	307,500	537,498														
Jun-16	0	115,000	132,501	241,188	251,001															
Jun-17	35,000	135,000	214,500	412,500																
Jun-18	25,000	73,000	183,500																	
Jun-19	0	180,000																		
Jun-20	1																			

Acc Yr Ending	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	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	1,265,498	1,265,498	1,265,498	1,265,498
Jun-83	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	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	549,150	549,150		
Jun-85	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	1,154,851	1,154,851	1,154,851	1,154,851			
Jun-86	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	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	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	2,795,764	2,795,764	2,795,764	2,795,764						
Jun-89	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	3,352,581	3,352,581	3,352,581	3,352,581	3,357,081	3,387,581	3,387,581	3,387,581	3,387,581	3,387,581	3,387,581								
Jun-91	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	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	979,103	979,103	979,103	979,103	979,103	979,103	979,103	979,103											
Jun-94	968,701	968,701	968,701	968,701	968,701	968,701	968,701												
Jun-95	555,200	555,200	555,200	555,200	555,200	555,200													
Jun-96	746,640	746,640	746,640	746,640	746,640														
Jun-97	679,550	679,550	679,550	679,550															
Jun-98	533,163	533,163	533,163																
Jun-99	652,071	652,071																	
Jun-00	342,501																		

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
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
Jun-83									1.980	2.048	1.068	1.272	1.677	1.616	1.000	1.026	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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	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	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	1.000	1.000	1.000	1.116
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	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	1.015	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	1.000	1.000	1.000	1.000			
Jun-05		6.207	3.247	1.278	1.487	1.070	1.000	1.118	1.000	1.000	1.000	1.000	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	1.016	1.000	1.000	1.000					
Jun-07		11.000	1.896	1.440	1.024	1.023	1.075	1.420	1.028	1.000	1.000	1.000	1.000						
Jun-08		1.473	1.459	1.566	1.241	1.019	1.051	1.000	1.000	1.000	1.248	1.145							
Jun-09		3.292	1.519	1.296	1.582	1.140	1.173	1.015	1.000	1.000	1.000								
Jun-10		5.630	2.824	1.697	1.154	1.253	1.061	1.000	1.000	1.000									
Jun-11		2.943	1.929	1.481	1.311	1.222	1.129	1.000	1.000										
Jun-12		4.388	1.977	1.418	1.097	1.073	1.000	1.000											
Jun-13		1.698	2.299	1.283	1.055	1.000	1.122												
Jun-14		8.471	1.632	1.134	1.107	1.000													
Jun-15		9.000	2.250	1.519	1.748														
Jun-16		1.152	1.820	1.041															
Jun-17	3.857	1.589	1.923																
Jun-18	2.920	2.514																	
Jun-19																			

Acc Yr Ending	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	420-432	432-444	444-456	456-468	To Ult
All Prior Yrs	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	1.000	1.000	1.000	1.000	
Jun-83	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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			
Jun-85	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.022	1.000	1.000	1.000	1.000	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					
Jun-87	1.000	1.000	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	1.000	1.000	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
Jun-89	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	1.000	1.000	1.000	1.000	1.001	1.009	1.000	1.000	1.000	1.000	1.000									
Jun-91	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
Jun-92	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93	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	1.000	1.000													
Jun-95	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	1.000	1.000	1.000	1.000	1.000															
Jun-97	1.000	1.000	1.000	1.000																
Jun-98	1.000	1.000	1.000																	
Jun-99	1.000	1.000																		
Jun-00	1.000																			

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
Simple Avg																			
All Yrs (ex P)	10.764	4.814	2.063	1.452	1.313	1.211	1.132	1.100	1.101	1.069	1.050	1.037	1.034	1.034	1.011	1.009	1.002	1.005	1.008
Latest 5		4.545	1.985	1.279	1.264	1.110	1.097	1.003	1.006	1.025	1.053	1.029	1.000	1.003	1.000	1.000	1.000	1.000	1.023
Latest 3		1.752	1.998	1.231	1.303	1.024	1.084	1.000	1.000	1.000	1.083	1.048	1.000	1.000	1.000	1.000	1.000	1.000	1.039
Volume Wtd																			
All Yrs (ex P)		2.616	1.690	1.312	1.239	1.154	1.106	1.068	1.038	1.038	1.033	1.027	1.010	1.013	1.008	1.009	1.003	1.004	1.004
Latest 5		2.492	1.917	1.258	1.212	1.087	1.088	1.003	1.006	1.020	1.029	1.019	1.000	1.003	1.000	1.000	1.000	1.000	1.012
Latest 3		1.642	1.959	1.194	1.232	1.022	1.080	1.000	1.000	1.000	1.045	1.032	1.000	1.000	1.000	1.000	1.000	1.000	1.023
Dev Factor Selection																			
Prior	*5.500*	*2.662*	*1.799*	*1.314*	*1.229*	*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*
Selected	5.500	2.616	1.803	1.285	1.228	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
FacToUlt	57.687	10.489	4.009	2.223	1.730	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
Percent of Ult	1.7%	9.5%	24.9%	45.0%	57.8%	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%

Averages	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	420-432	432-444	444-456	456-468	To Ult
Simple Avg																				
All Yrs (ex P)	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5	1.000	1.000	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	1.000	1.000	1.000	1.000	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)	1.000	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		
Latest 5	1.000	1.000	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	1.000	1.000	1.000	1.000	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	*1.001*	*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*	*1.000*	*1.000*	*1.000*	
Selected	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	1.000	1.000	1.000	1.000
FacToUlt	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	1.000	1.000	1.000	1.000
Percent of Ult	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%	100.0%	100.0%	100.0%	100.0%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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%
468	100.0%	0.4%	0.0%	0.1%	0.0%	1.000	1.000
456	99.6%	0.2%	0.4%	0.0%	0.0%	0.981	0.971
444	99.4%	0.2%	0.6%	0.0%	0.0%	0.955	0.933
432	99.2%	0.2%	0.8%	0.0%	0.0%	0.933	0.902
420	99.0%	0.2%	1.0%	0.1%	0.0%	0.913	0.874
408	98.8%	0.2%	1.2%	0.1%	0.0%	0.894	0.848
396	98.6%	0.2%	1.4%	0.1%	0.0%	0.877	0.824
384	98.4%	0.5%	1.6%	0.1%	0.1%	0.860	0.801
372	97.9%	0.5%	2.1%	0.1%	0.1%	0.862	0.805
360	97.4%	0.5%	2.6%	0.2%	0.1%	0.857	0.799
348	96.9%	0.6%	3.1%	0.2%	0.1%	0.849	0.788
336	96.3%	0.6%	3.7%	0.2%	0.1%	0.842	0.779
324	95.8%	0.5%	4.2%	0.2%	0.1%	0.833	0.767
312	95.3%	0.5%	4.7%	0.2%	0.1%	0.819	0.749
300	94.8%	0.5%	5.2%	0.2%	0.1%	0.805	0.731
288	94.3%	0.5%	5.7%	0.2%	0.1%	0.791	0.713
276	93.9%	0.5%	6.1%	0.2%	0.1%	0.778	0.695
264	93.4%	0.5%	6.6%	0.2%	0.1%	0.764	0.678
252	92.9%	0.7%	7.1%	0.3%	0.2%	0.751	0.662
240	92.2%	0.9%	7.8%	0.4%	0.3%	0.746	0.656
228	91.3%	1.0%	8.7%	0.5%	0.3%	0.746	0.657
216	90.3%	0.6%	9.7%	0.3%	0.2%	0.745	0.657
204	89.7%	0.7%	10.3%	0.4%	0.3%	0.732	0.640
192	89.0%	0.9%	11.0%	0.5%	0.4%	0.721	0.627
180	88.1%	0.8%	11.9%	0.4%	0.3%	0.715	0.620
168	87.3%	0.7%	12.7%	0.4%	0.3%	0.705	0.608
156	86.6%	0.7%	13.4%	0.4%	0.3%	0.694	0.595
144	85.9%	1.4%	14.1%	0.9%	0.7%	0.682	0.581
132	84.6%	1.3%	15.4%	0.9%	0.7%	0.684	0.585
120	83.3%	1.3%	16.7%	0.9%	0.8%	0.683	0.585
108	81.9%	1.3%	18.1%	0.9%	0.8%	0.681	0.582
96	80.7%	2.2%	19.3%	1.6%	1.4%	0.676	0.577
84	78.5%	2.1%	21.5%	1.6%	1.4%	0.684	0.588
72	76.4%	4.4%	23.6%	3.5%	3.2%	0.686	0.591
60	72.1%	6.1%	27.9%	5.1%	4.7%	0.709	0.622
48	66.0%	8.9%	34.0%	7.7%	7.2%	0.735	0.656
36	57.1%	13.0%	42.9%	11.8%	11.2%	0.764	0.691
24	44.1%	21.1%	55.9%	19.9%	19.4%	0.792	0.726
12	23.0%	23.0%	77.0%	22.5%	22.3%	0.821	0.764
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, 2020

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	2,790,543	3,842,008		2,440,568	3,360,163
6/30/82-83	18,983	23,702	0.981	18,615	23,242
6/30/83-84	99,391	193,536	0.955	94,881	184,755
6/30/84-85	7,195	47,663	0.933	6,712	44,459
6/30/85-86	9,904	20,904	0.913	9,042	19,084
6/30/86-87	13,494	26,494	0.894	12,067	23,693
6/30/87-88	234,784	251,784	0.877	205,803	220,705
6/30/88-89	274,595	282,595	0.860	236,022	242,898
6/30/89-90	150,282	150,282	0.862	129,565	129,565
6/30/90-91	108,943	108,943	0.857	93,404	93,404
6/30/91-92	188,581	191,581	0.849	160,089	162,636
6/30/92-93	41,424	83,424	0.842	34,887	70,258
6/30/93-94	69,677	104,677	0.833	58,037	87,190
6/30/94-95	77,471	77,471	0.819	63,454	63,454
6/30/95-96	133,727	135,727	0.805	107,676	109,286
6/30/96-97	11,973	24,973	0.791	9,475	19,764
6/30/97-98	144,325	147,325	0.778	112,255	114,589
6/30/98-99	127,702	127,702	0.764	97,609	97,609
6/30/99-00	167,299	171,299	0.751	125,661	128,666
6/30/00-01	270,050	281,050	0.746	201,411	209,615
6/30/01-02	11,527	22,527	0.746	8,594	16,795
6/30/02-03	289,765	297,765	0.745	215,747	221,703
6/30/03-04	358,544	372,544	0.732	262,313	272,555
6/30/04-05	13,383	26,383	0.721	9,643	19,010
6/30/05-06	297,161	346,161	0.715	212,328	247,340
6/30/06-07	342,138	385,138	0.705	241,109	271,411
6/30/07-08	235,830	378,830	0.694	163,578	262,766
6/30/08-09	367,986	401,986	0.682	251,014	274,207
6/30/09-10	457,049	573,049	0.684	312,781	392,165
6/30/10-11	488,504	566,504	0.683	333,809	387,108
6/30/11-12	553,325	616,325	0.681	376,575	419,451
6/30/12-13	624,088	646,088	0.676	421,597	436,459
6/30/13-14	723,460	804,460	0.684	494,556	549,928
6/30/14-15	889,948	1,103,948	0.686	610,083	756,785
6/30/15-16	937,863	1,082,863	0.709	665,217	768,064
6/30/16-17	1,207,305	1,239,305	0.735	887,940	911,475
6/30/17-18	1,597,988	1,600,988	0.764	1,220,277	1,222,568
6/30/18-19	2,053,558	2,156,558	0.792	1,625,534	1,707,065
6/30/19-20	2,305,202	2,883,874	0.821	1,893,294	2,368,564
Total	18,694,970	21,798,437		14,423,218	16,910,453
			(7) Total Discount Factor:	0.772	0.776

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	2,790,543	3,842,008
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	398,649	548,858
(11) Discounted Value at 4%:	2,440,568	3,360,163

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, 2020

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	2,790,543	3,842,008		2,292,173	3,155,854
6/30/82-83	18,983	23,702	0.971	18,438	23,021
6/30/83-84	99,391	193,536	0.933	92,776	180,657
6/30/84-85	7,195	47,663	0.902	6,491	42,998
6/30/85-86	9,904	20,904	0.874	8,657	18,272
6/30/86-87	13,494	26,494	0.848	11,444	22,470
6/30/87-88	234,784	251,784	0.824	193,406	207,410
6/30/88-89	274,595	282,595	0.801	219,852	226,257
6/30/89-90	150,282	150,282	0.805	121,024	121,024
6/30/90-91	108,943	108,943	0.799	87,082	87,082
6/30/91-92	188,581	191,581	0.788	148,638	151,003
6/30/92-93	41,424	83,424	0.779	32,290	65,029
6/30/93-94	69,677	104,677	0.767	53,467	80,324
6/30/94-95	77,471	77,471	0.749	58,019	58,019
6/30/95-96	133,727	135,727	0.731	97,716	99,177
6/30/96-97	11,973	24,973	0.713	8,535	17,802
6/30/97-98	144,325	147,325	0.695	100,360	102,446
6/30/98-99	127,702	127,702	0.678	86,624	86,624
6/30/99-00	167,299	171,299	0.662	110,708	113,355
6/30/00-01	270,050	281,050	0.656	177,146	184,362
6/30/01-02	11,527	22,527	0.657	7,572	14,797
6/30/02-03	289,765	297,765	0.657	190,255	195,508
6/30/03-04	358,544	372,544	0.640	229,565	238,529
6/30/04-05	13,383	26,383	0.627	8,387	16,534
6/30/05-06	297,161	346,161	0.620	184,193	214,565
6/30/06-07	342,138	385,138	0.608	208,029	234,174
6/30/07-08	235,830	378,830	0.595	140,233	225,266
6/30/08-09	367,986	401,986	0.581	213,740	233,489
6/30/09-10	457,049	573,049	0.585	267,401	335,268
6/30/10-11	488,504	566,504	0.585	285,695	331,312
6/30/11-12	553,325	616,325	0.582	322,164	358,845
6/30/12-13	624,088	646,088	0.577	359,873	372,559
6/30/13-14	723,460	804,460	0.588	425,350	472,973
6/30/14-15	889,948	1,103,948	0.591	525,984	652,464
6/30/15-16	937,863	1,082,863	0.622	583,443	673,647
6/30/16-17	1,207,305	1,239,305	0.656	791,650	812,633
6/30/17-18	1,597,988	1,600,988	0.691	1,104,880	1,106,954
6/30/18-19	2,053,558	2,156,558	0.726	1,491,909	1,566,739
6/30/19-20	2,305,202	2,883,874	0.764	1,760,694	2,202,679
Total	18,694,970	21,798,437		13,025,863	15,302,119
			(7) Total Discount Factor:	0.697	0.702

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	2,790,543	3,842,008
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	398,649	548,858
(11) Discounted Value at 6%:	2,292,173	3,155,854

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, 2020

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

Calculation of Fiscal Year 7/01/20 - 21 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/20 - 06/30/21	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/20 - 06/30/21		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	26,318,836	27,382,074	23,524,623	2,794,214	3,857,452				223,425	245,767	8.0%	6.4%
6/30/82-83	4,979,550	4,987,269	4,960,536	19,014	26,733	99.5%	0.2%	43.6%	8,285	11,648	43.6%	43.6%
6/30/83-84	10,462,972	10,585,118	10,360,844	102,128	224,274	98.4%	1.5%	96.7%	98,786	216,935	96.7%	96.7%
6/30/84-85	7,584,000	7,640,467	7,574,989	9,011	65,478	99.5%	0.2%	40.9%	3,683	26,766	40.9%	40.9%
6/30/85-86	11,890,000	11,902,000	11,874,262	15,739	27,739	99.8%	0.1%	54.7%	8,613	15,179	54.7%	54.7%
6/30/86-87	15,399,000	15,414,000	15,376,859	22,141	37,141	99.8%	0.1%	52.0%	11,508	19,305	52.0%	52.0%
6/30/87-88	22,901,000	22,920,000	22,652,319	248,681	267,681	98.9%	0.5%	44.4%	110,337	118,768	44.4%	44.4%
6/30/88-89	24,587,000	24,648,670	24,285,748	301,252	362,922	98.7%	1.0%	74.1%	223,320	269,036	74.1%	74.1%
6/30/89-90	18,884,000	18,887,000	18,705,105	178,895	181,895	99.0%	0.5%	52.3%	93,642	95,213	52.3%	52.3%
6/30/90-91	13,930,043	13,933,000	13,798,141	131,902	134,859	99.0%	0.5%	52.2%	68,885	70,430	52.2%	52.2%
6/30/91-92	10,735,269	10,741,000	10,523,200	212,069	217,800	98.0%	0.8%	37.5%	79,462	81,610	37.5%	37.5%
6/30/92-93	5,992,210	6,052,000	5,947,948	44,262	104,052	98.8%	0.8%	60.9%	26,958	63,373	60.9%	60.9%
6/30/93-94	4,846,090	4,894,000	4,771,616	74,474	122,384	98.0%	1.0%	49.5%	36,848	60,553	49.5%	49.5%
6/30/94-95	3,092,570	3,102,000	3,009,689	82,881	92,311	97.2%	1.0%	35.4%	29,306	32,640	35.4%	35.4%
6/30/95-96	4,331,000	4,343,000	4,179,296	151,704	163,704	96.4%	1.0%	27.5%	41,720	45,020	27.5%	27.5%
6/30/96-97	3,379,000	3,401,000	3,349,690	29,310	51,310	98.8%	1.0%	84.1%	24,649	43,151	84.1%	84.1%
6/30/97-98	3,687,000	3,706,000	3,525,901	161,099	180,099	95.4%	1.0%	21.7%	34,907	39,023	21.7%	21.7%
6/30/98-99	3,188,000	3,201,000	3,044,847	143,153	156,153	95.3%	1.0%	21.3%	30,558	33,332	21.3%	21.3%
6/30/99-00	3,628,000	3,650,000	3,438,001	189,999	211,999	94.5%	1.0%	18.1%	34,399	38,381	18.1%	18.1%
6/30/00-01	5,523,000	5,619,000	5,209,553	313,447	409,447	93.5%	1.0%	15.4%	48,312	63,108	15.4%	15.4%
6/30/01-02	3,315,000	3,348,000	3,272,740	42,260	75,260	98.2%	1.0%	56.7%	23,960	42,670	56.7%	56.7%
6/30/02-03	4,247,000	4,273,000	3,928,885	318,115	344,115	92.2%	1.0%	12.9%	40,927	44,273	12.9%	12.9%
6/30/03-04	4,834,000	4,869,000	4,439,113	394,887	429,887	91.5%	0.7%	8.6%	33,800	36,795	8.6%	8.6%
6/30/04-05	3,772,000	3,807,000	3,710,687	61,313	96,313	97.9%	1.0%	48.1%	29,481	46,309	48.1%	48.1%
6/30/05-06	4,405,000	4,489,000	4,049,579	355,421	439,421	91.1%	2.0%	22.4%	79,541	98,339	22.4%	22.4%
6/30/06-07	4,487,250	4,636,000	4,136,171	351,079	499,829	90.7%	2.0%	21.4%	75,284	107,181	21.4%	21.4%
6/30/07-08	3,369,600	3,641,000	3,125,777	243,823	515,223	89.2%	2.0%	18.5%	45,039	95,173	18.5%	18.5%
6/30/08-09	4,025,750	4,155,000	3,628,397	397,353	526,603	88.7%	2.0%	17.7%	70,364	93,251	17.7%	17.7%
6/30/09-10	5,222,400	5,457,000	4,730,189	492,211	726,811	88.6%	2.0%	17.5%	86,242	127,346	17.5%	17.5%
6/30/10-11	4,535,400	4,705,000	3,995,102	540,298	709,898	86.5%	2.0%	14.8%	79,869	104,939	14.8%	14.8%
6/30/11-12	4,964,000	5,160,000	4,346,065	617,935	813,935	85.9%	2.0%	14.1%	87,382	115,098	14.1%	14.1%
6/30/12-13	4,544,900	4,728,000	3,879,062	665,838	848,938	83.7%	2.2%	13.4%	89,354	113,925	13.4%	13.4%
6/30/13-14	4,974,900	5,222,000	4,177,505	797,395	1,044,495	81.9%	1.7%	9.6%	76,270	99,905	9.6%	9.6%
6/30/14-15	5,588,900	5,971,000	4,578,906	1,009,994	1,392,094	79.2%	2.7%	13.1%	132,024	181,971	13.1%	13.1%
6/30/15-16	4,165,000	4,482,000	3,069,387	1,095,613	1,412,613	71.0%	8.2%	28.4%	310,756	400,669	28.4%	28.4%
6/30/16-17	4,671,000	4,860,000	3,266,144	1,404,856	1,593,856	68.5%	2.5%	7.8%	109,656	124,409	7.8%	7.8%
6/30/17-18	4,425,000	4,621,000	2,561,189	1,863,811	2,059,811	56.6%	11.9%	27.5%	511,839	565,665	27.5%	27.5%
6/30/18-19	4,637,000	4,939,000	2,107,579	2,529,421	2,831,421	44.0%	12.6%	22.5%	569,661	637,676	22.5%	22.5%
6/30/19-20	3,719,329	4,678,000	736,089	2,983,240	3,941,911	17.5%	26.5%	32.1%	958,128	1,266,025	32.1%	32.1%
Total	289,241,969	295,049,598	267,851,732	21,390,237	27,197,866				4,647,180	5,890,859	21.7%	21.7%

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, 2020

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		1,215,814			1,219,485	1,231,258	3,670	15,444		
6/30/82-83		260,969	261,155		261,000	264,000	31	3,031		
6/30/83-84		1,422,262	1,424,702		1,425,000	1,453,000	2,738	30,738		
6/30/84-85	181,560	764,185	766,261	766,374	766,000	782,000	1,815	17,815	0.422	0.431
6/30/85-86	195,247	1,602,166	1,608,125	1,608,373	1,608,000	1,609,000	5,835	6,835	0.824	0.824
6/30/86-87	224,370	1,896,353	1,905,309	1,906,067	1,905,000	1,907,000	8,647	10,647	0.849	0.850
6/30/87-88	262,864	2,485,102	2,499,336	2,500,582	2,499,000	2,501,000	13,898	15,898	0.951	0.951
6/30/88-89	283,884	4,016,343	4,043,387	4,043,248	4,043,000	4,096,670	26,657	80,327	1.424	1.443
6/30/89-90	285,078	3,686,388	3,714,922	3,717,809	3,715,000	3,718,000	28,612	31,612	1.303	1.304
6/30/90-91	267,732	2,931,084	2,956,726	2,956,545	2,954,043	2,957,000	22,959	25,916	1.103	1.104
6/30/91-92	261,442	2,704,782	2,731,172	2,730,809	2,728,269	2,731,000	23,487	26,218	1.044	1.045
6/30/92-93	259,992	1,758,372	1,779,079	1,778,756	1,761,210	1,779,000	2,838	20,628	0.677	0.684
6/30/93-94	257,062	1,273,293	1,290,864	1,290,628	1,278,090	1,291,000	4,797	17,707	0.497	0.502
6/30/94-95	255,854	928,160	942,850	942,789	933,570	943,000	5,410	14,840	0.365	0.369
6/30/95-96	255,539	1,004,022	1,021,953	1,021,802	1,022,000	1,032,000	17,978	27,978	0.400	0.404
6/30/96-97	270,071	882,663	900,223	900,289	900,000	909,000	17,337	26,337	0.333	0.337
6/30/97-98	245,367	781,227	798,363	798,481	798,000	814,000	16,773	32,773	0.325	0.332
6/30/98-99	251,453	634,549	649,764	650,278	650,000	663,000	15,451	28,451	0.258	0.264
6/30/99-00	255,641	873,300	896,029	896,071	896,000	914,000	22,700	40,700	0.350	0.358
6/30/00-01	263,918	1,610,603	1,655,826	1,653,951	1,654,000	1,739,000	43,397	128,397	0.627	0.659
6/30/01-02	267,598	1,035,267	1,066,465	1,066,256	1,066,000	1,088,000	30,733	52,733	0.398	0.407
6/30/02-03	274,465	875,651	903,842	904,305	904,000	922,000	28,349	46,349	0.329	0.336
6/30/03-04	272,384	955,657	992,455	992,765	992,000	1,013,000	36,343	57,343	0.364	0.372
6/30/04-05	273,647	1,052,070	1,099,977	1,099,886	1,100,000	1,122,000	47,930	69,930	0.402	0.410
6/30/05-06	285,139	1,263,740	1,330,848	1,321,916	1,322,000	1,357,000	58,260	93,260	0.464	0.476
6/30/06-07	298,516	1,202,309	1,278,931	1,275,034	1,211,250	1,317,000	8,941	114,691	0.406	0.441
6/30/07-08	314,231	1,462,607	1,567,272	1,548,366	1,470,600	1,599,000	7,993	136,393	0.468	0.509
6/30/08-09	302,998	1,210,384	1,308,868	1,304,521	1,239,750	1,335,000	29,366	124,616	0.409	0.441
6/30/09-10	297,252	1,344,238	1,468,718	1,451,556	1,379,400	1,498,000	35,162	153,762	0.464	0.504
6/30/10-11	292,432	1,023,605	1,132,379	1,143,862	1,075,400	1,167,000	51,795	143,395	0.368	0.399
6/30/11-12	295,908	1,360,390	1,527,569	1,499,724	1,425,000	1,558,000	64,610	197,610	0.482	0.527
6/30/12-13	301,541	1,147,151	1,323,146	1,320,580	1,188,900	1,350,000	41,749	202,849	0.394	0.448
6/30/13-14	309,910	1,033,965	1,230,579	1,249,140	1,107,900	1,274,000	73,935	240,035	0.357	0.411
6/30/14-15	316,552	1,095,854	1,351,120	1,357,046	1,215,900	1,384,000	120,046	288,146	0.384	0.437
6/30/15-16	316,565	1,042,250	1,333,233	1,345,504	1,200,000	1,372,000	157,750	329,750	0.379	0.433
6/30/16-17	292,403	948,449	1,273,561	1,277,712	1,146,000	1,303,000	197,551	354,551	0.392	0.446
6/30/17-18	292,956	752,177	1,130,874	1,187,082	1,018,000	1,211,000	265,823	458,823	0.347	0.413
6/30/18-19	308,002	674,137	1,277,261	1,322,117	1,150,000	1,349,000	475,863	674,863	0.373	0.438
6/30/19-20	311,058	236,963	915,153	1,269,118	915,000	1,295,000	678,037	1,058,037	0.294	0.416
Total	9,900,630	52,448,499	55,358,297	54,099,342	55,143,767	57,847,928	2,695,267	5,399,429		
Tot 6/30/84-20	9,900,630	49,549,453	53,672,440	54,099,342	52,238,282	54,899,670	2,688,829	5,350,216	0.528	0.555

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim
All Prior Yrs		1,215,814							0	1	
6/30/82-83		260,969	1.001	1.000	261,155	N/A	261,155		0	0	
6/30/83-84		1,422,262	1.002	1.000	1,424,702	N/A	1,424,702		2	1	2,439
6/30/84-85	181,560	764,185	1.003	1.000	766,261	N/A	766,261	0.422	0	0	
6/30/85-86	195,247	1,602,166	1.004	1.000	1,608,125	N/A	1,608,125	0.824	0	0	
6/30/86-87	224,370	1,896,353	1.005	1.000	1,905,309	N/A	1,905,309	0.849	0	0	
6/30/87-88	262,864	2,485,102	1.006	1.000	2,499,336	N/A	2,499,336	0.951	1	1	14,234
6/30/88-89	283,884	4,016,343	1.007	1.000	4,043,387	N/A	4,043,387	1.424	2	2	13,522
6/30/89-90	285,078	3,686,388	1.008	1.000	3,714,922	N/A	3,714,922	1.303	1	1	28,534
6/30/90-91	267,732	2,931,084	1.009	1.000	2,956,726	N/A	2,956,726	1.104	2	2	12,821
6/30/91-92	261,442	2,704,782	1.010	1.000	2,731,172	N/A	2,731,172	1.045	2	2	13,195
6/30/92-93	259,992	1,758,372	1.012	1.000	1,779,079	N/A	1,779,079	0.684	0	0	
6/30/93-94	257,062	1,273,293	1.014	1.000	1,290,864	N/A	1,290,864	0.502	2	2	8,786
6/30/94-95	255,854	928,160	1.016	1.000	942,850	N/A	942,850	0.369	0	0	
6/30/95-96	255,539	1,004,022	1.018	1.000	1,021,953	N/A	1,021,953	0.400	0	0	
6/30/96-97	270,071	882,663	1.020	1.000	900,223	N/A	900,223	0.333	0	0	
6/30/97-98	245,367	781,227	1.022	1.000	798,363	N/A	798,363	0.325	0	1	17,136
6/30/98-99	251,453	634,549	1.024	1.000	649,764	N/A	649,764	0.258	0	0	
6/30/99-00	255,641	873,300	1.026	1.000	896,029	N/A	896,029	0.351	1	1	22,729
6/30/00-01	263,918	1,610,603	1.028	1.000	1,655,826	N/A	1,655,826	0.627	3	3	15,074
6/30/01-02	267,598	1,035,267	1.030	1.000	1,066,465	N/A	1,066,465	0.399	3	3	10,399
6/30/02-03	274,465	875,651	1.032	1.000	903,842	N/A	903,842	0.329	3	3	9,397
6/30/03-04	272,384	955,657	1.039	1.000	992,455	N/A	992,455	0.364	3	3	12,266
6/30/04-05	273,647	1,052,070	1.046	1.000	1,099,977	N/A	1,099,977	0.402	1	0	
6/30/05-06	285,139	1,263,740	1.053	1.000	1,330,848	N/A	1,330,848	0.467	2	2	33,554
6/30/06-07	298,516	1,202,309	1.064	1.000	1,278,931	N/A	1,278,931	0.428	3	2	38,311
6/30/07-08	314,231	1,462,607	1.072	1.000	1,567,272	N/A	1,567,272	0.499	2	2	52,332
6/30/08-09	302,998	1,210,384	1.081	1.000	1,308,868	N/A	1,308,868	0.432	4	4	24,621
6/30/09-10	297,252	1,344,238	1.093	1.000	1,468,718	N/A	1,468,718	0.494	3	1	124,480
6/30/10-11	292,432	1,023,605	1.106	1.000	1,132,379	N/A	1,132,379	0.387	5	4	27,193
6/30/11-12	295,908	1,360,390	1.123	1.000	1,527,569	N/A	1,527,569	0.516	4	4	41,795
6/30/12-13	301,541	1,147,151	1.153	1.000	1,323,146	N/A	1,323,146	0.439	6	3	58,665
6/30/13-14	309,910	1,033,965	1.190	1.000	1,230,579	N/A	1,230,579	0.397	11	7	28,088
6/30/14-15	316,552	1,095,854	1.233	1.000	1,351,120	N/A	1,351,120	0.427	13	8	31,908
6/30/15-16	316,565	1,042,250	1.279	1.000	1,333,233	N/A	1,333,233	0.421	18	8	36,373
6/30/16-17	292,403	948,449	1.343	1.000	1,273,561	N/A	1,273,561	0.436	34	23	14,135
6/30/17-18	292,956	752,177	1.503	1.000	1,130,874	N/A	1,130,874	0.386	219	41	9,237
6/30/18-19	308,002	674,137	1.895	1.000	1,277,261	N/A	1,277,261	0.415	219	122	4,944
6/30/19-20	311,058	236,963	3.862	1.000	915,153	N/A	915,153	0.294		192	3,532
Total	9,900,630	52,448,499			55,358,297		55,358,297		569	449	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 10/1/18 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, 2020

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	764,185	1.003	766,374	N/A	766,374	0.422	0.422
6/30/85-86	195,247	0.858	1,602,166	1.004	1,608,373	N/A	1,608,373	0.824	0.824
6/30/86-87	224,370	0.921	1,896,353	1.005	1,906,067	N/A	1,906,067	0.850	0.850
6/30/87-88	262,864	1.034	2,485,102	1.006	2,500,582	N/A	2,500,582	0.951	0.951
6/30/88-89	283,884	1.417	4,016,343	1.007	4,043,248	N/A	4,043,248	1.424	1.424
6/30/89-90	285,078	1.435	3,686,388	1.008	3,717,809	N/A	3,717,809	1.304	1.304
6/30/90-91	267,732	1.097	2,931,084	1.009	2,956,545	N/A	2,956,545	1.104	1.104
6/30/91-92	261,442	1.030	2,704,782	1.010	2,730,809	N/A	2,730,809	1.045	1.045
6/30/92-93	259,992	0.674	1,758,372	1.012	1,778,756	N/A	1,778,756	0.684	0.684
6/30/93-94	257,062	0.495	1,273,293	1.014	1,290,628	N/A	1,290,628	0.502	0.502
6/30/94-95	255,854	0.367	928,160	1.016	942,789	N/A	942,789	0.368	0.368
6/30/95-96	255,539	0.397	1,004,022	1.018	1,021,802	N/A	1,021,802	0.400	0.400
6/30/96-97	270,071	0.335	882,663	1.020	900,289	N/A	900,289	0.333	0.333
6/30/97-98	245,367	0.328	781,227	1.022	798,481	N/A	798,481	0.325	0.325
6/30/98-99	251,453	0.267	634,549	1.024	650,278	N/A	650,278	0.259	0.259
6/30/99-00	255,641	0.351	873,300	1.026	896,071	N/A	896,071	0.351	0.351
6/30/00-01	263,918	0.601	1,610,603	1.028	1,653,951	N/A	1,653,951	0.627	0.627
6/30/01-02	267,598	0.396	1,035,267	1.030	1,066,256	N/A	1,066,256	0.398	0.398
6/30/02-03	274,465	0.335	875,651	1.032	904,305	N/A	904,305	0.329	0.329
6/30/03-04	272,384	0.367	955,657	1.039	992,765	N/A	992,765	0.364	0.364
6/30/04-05	273,647	0.401	1,052,070	1.046	1,099,886	N/A	1,099,886	0.402	0.402
6/30/05-06	285,139	0.405	1,263,740	1.053	1,321,916	N/A	1,321,916	0.464	0.464
6/30/06-07	298,516	0.407	1,202,309	1.064	1,275,034	N/A	1,275,034	0.427	0.427
6/30/07-08	314,231	0.409	1,462,607	1.072	1,548,366	N/A	1,548,366	0.493	0.493
6/30/08-09	302,998	0.413	1,210,384	1.081	1,304,521	N/A	1,304,521	0.431	0.431
6/30/09-10	297,252	0.426	1,344,238	1.093	1,451,556	N/A	1,451,556	0.488	0.488
6/30/10-11	292,432	0.428	1,023,605	1.106	1,143,862	N/A	1,143,862	0.391	0.391
6/30/11-12	295,908	0.430	1,360,390	1.123	1,499,724	N/A	1,499,724	0.507	0.507
6/30/12-13	301,541	0.432	1,147,151	1.153	1,320,580	N/A	1,320,580	0.438	0.438
6/30/13-14	309,910	0.435	1,033,965	1.190	1,249,140	N/A	1,249,140	0.403	0.403
6/30/14-15	316,552	0.437	1,095,854	1.233	1,357,046	N/A	1,357,046	0.429	0.429
6/30/15-16	316,565	0.439	1,042,250	1.279	1,345,504	N/A	1,345,504	0.425	0.425
6/30/16-17	292,403	0.441	948,449	1.343	1,277,712	N/A	1,277,712	0.437	0.437
6/30/17-18	292,956	0.443	752,177	1.503	1,187,082	N/A	1,187,082	0.405	0.405
6/30/18-19	308,002	0.446	674,137	1.895	1,322,117	N/A	1,322,117	0.429	0.429
6/30/19-20	311,058	0.448	236,963	3.862	1,269,118	N/A	1,269,118	0.408	0.408
Total	9,900,630		49,549,453		54,099,342		54,099,342		

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, 2020

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	2,956,726	1.104	1.194	1.319	1.161	1.531	0.325	1.095	1.097
6/30/91-92	261,442	2,731,172	1.045	1.189	1.242	1.156	1.435	0.328	1.029	1.030
6/30/92-93	259,992	1,779,079	0.684	1.189	0.814	1.150	0.936	0.329	0.674	0.674
6/30/93-94	257,062	1,290,864	0.502	1.178	0.592	1.144	0.677	0.334	0.496	0.495
6/30/94-95	255,854	942,850	0.369	1.170	0.431	1.138	0.491	0.338	0.367	0.367
6/30/95-96	255,539	1,021,953	0.400	1.155	0.462	1.133	0.523	0.344	0.397	0.397
6/30/96-97	270,071	900,223	0.333	1.137	0.379	1.127	0.427	0.351	0.335	0.335
6/30/97-98	245,367	798,363	0.325	1.135	0.369	1.122	0.414	0.354	0.327	0.328
6/30/98-99	251,453	649,764	0.258	1.135	0.293	1.116	0.327	0.355	0.268	0.267
6/30/99-00	255,641	896,029	0.351	1.135	0.398	1.110	0.442	0.357	0.350	0.351
6/30/00-01	263,918	1,655,826	0.627	1.109	0.696	1.105	0.769	0.367	0.593	0.601
6/30/01-02	267,598	1,066,465	0.399	1.101	0.439	1.099	0.482	0.372	0.389	0.396
6/30/02-03	274,465	903,842	0.329	1.073	0.353	1.094	0.387	0.383	0.335	0.335
6/30/03-04	272,384	992,455	0.364	1.046	0.381	1.088	0.415	0.395	0.363	0.367
6/30/04-05	273,647	1,099,977	0.402	1.036	0.416	1.083	0.451	0.401	0.403	0.401
6/30/05-06	285,139	1,330,848	0.467	1.032	0.482	1.078	0.519	0.405	0.407	0.405
6/30/06-07	298,516	1,278,931	0.428	1.032	0.442	1.072	0.474	0.407	0.409	0.407
6/30/07-08	314,231	1,567,272	0.499	1.032	0.515	1.067	0.549	0.409	0.411	0.409
6/30/08-09	302,998	1,308,868	0.432	1.027	0.443	1.062	0.471	0.413	0.415	0.413
6/30/09-10	297,252	1,468,718	0.494	1.000	0.494	1.056	0.522	0.426	0.428	0.426
6/30/10-11	292,432	1,132,379	0.387	1.000	0.387	1.051	0.407	0.428	0.430	0.428
6/30/11-12	295,908	1,527,569	0.516	1.000	0.516	1.046	0.540	0.430	0.432	0.430
6/30/12-13	301,541	1,323,146	0.439	1.000	0.439	1.041	0.457	0.432	0.435	0.432
6/30/13-14	309,910	1,230,579	0.397	1.000	0.397	1.036	0.411	0.435	0.437	0.435
6/30/14-15	316,552	1,351,120	0.427	1.000	0.427	1.030	0.440	0.437	0.439	0.437
6/30/15-16	316,565	1,333,233	0.421	1.000	0.421	1.025	0.432	0.439	0.441	0.439
6/30/16-17	292,403	1,273,561	0.436	1.000	0.436	1.020	0.444	0.441	0.443	0.441
6/30/17-18	292,956	1,130,874	0.386	1.000	0.386	1.015	0.392	0.443	0.446	0.443
6/30/18-19	308,002	1,277,261	0.415	1.000	0.415	1.010	0.419	0.446	0.448	0.446
6/30/19-20	311,058	915,153	0.294	1.000	0.294	1.005	0.296	0.448		0.448
Total	8,467,627	39,135,101								

Trend Last 4 (ex 19-20):	-1.7%	Avg 3 (ex 19-20):	0.418
Trend Last 8 (ex 19-20):	-2.2%	Avg 5 (ex 19-20):	0.425
Trend Last 12 (ex 19-20):	-1.6%	vg 10 (ex 19-20):	0.446
Prior Selected Trend:	0.5%	Prior Sel Avg:	0.450
Selected Trend:	0.50%	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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Department of Developmental Services - Cluster 1
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.800	
(2)	Credibility	30%	
(3)	Average Pmt Trend Statewide	0.980	
(4)	Credibility Weighted Trend	0.926	
		(Low)	(High)
(5)	Selected Range	0.880	0.973
(6)	Incremental Paid for 2020	777	777
(7)	Estimated Reserve	5,697	27,790
(8)	Paid to Date (82 & Prior)	1,215,814	1,215,814
(9)	Est Ult Paid for 1982 & Prior	1,221,512	1,243,604

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	1,033	807
(11)	Projected Number of Years	3	3
(12)	Estimated Reserve	3,098	2,420
(13)	Paid to Date (82 & Prior)	1,215,814	1,215,038
(14)	Est Ult Paid for 1982 & Prior	1,218,913	1,217,458
(14a)	Paid Counts During Fiscal Year	1	0

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	1,219,485	1,231,258
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**1,219,485**	**1,231,258**
(18)	Implied Tail	1.003	1.013
(19)	Ult Loss Inc Lump Sums @ 6/19	1,216,248	1,216,984

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, 2019

Commonwealth of Massachusetts

Workers Compensation

Reserve Analysis at June, 30, 2020

Department of Developmental Services - Cluster 1

Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Average		
		Incremental		Observed		Trend
Year	X	Paids	LN	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 =	28
2001	10	9,078	9.114	0.761	S(x) =	56,155
2002	11	5,110	8.539	0.563	S(x-sq) =	112,622,713
2003	12	6,295	8.748	1.232	S(xy) =	471,849
2004	13	4,115	8.322	0.654	S(y) =	235
2005	14	17,494	9.770	4.251	D =	51,939
2006	15	5,802	8.666	0.332	slope =	-0.205
2007	16	8,975	9.102	1.547	Avg Trend =	0.795
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		
2017	26	99	4.593	0.067		
2018	27	2,321	7.750	23.502		
2019	28	0				
2020	29	777	6.655			
					Selected Trend:	**0.800**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(4) LN [(3)]

(5) Eg. 2018: 23.502 = 2321 / 99

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	835,378
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	1,503,318	1,547,279
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	969,248	988,937	1,013,829
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	865,605	867,940	872,229	875,651
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	891,975	916,039	937,450	955,657	
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	1,051,002	1,051,835	1,052,070	1,052,070		
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	1,209,017	1,232,127	1,252,471	1,263,740			
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	1,178,181	1,188,036	1,194,752	1,202,309				
June-08	418,873	692,272	777,557	805,740	842,963	874,236	948,911	1,045,997	1,133,617	1,240,354	1,328,694	1,392,105	1,462,607					
June-09	491,289	882,544	982,774	1,088,621	1,119,184	1,136,600	1,146,349	1,161,838	1,190,931	1,201,505	1,205,743	1,210,384						
June-10	412,961	823,720	1,038,592	1,141,629	1,181,671	1,235,565	1,291,253	1,312,494	1,324,362	1,335,757	1,344,238							
June-11	434,256	781,068	901,778	953,435	989,604	1,003,572	1,011,746	1,019,046	1,021,885	1,023,605								
June-12	463,779	899,638	985,560	1,039,330	1,099,797	1,146,122	1,243,695	1,268,977	1,360,390									
June-13	317,812	782,569	959,446	1,070,185	1,129,117	1,139,556	1,143,899	1,147,151										
June-14	343,501	744,703	854,796	927,960	960,880	1,012,142	1,033,965											
June-15	337,278	703,991	883,924	978,091	1,043,844	1,095,854												
June-16	441,825	812,574	957,038	1,009,315	1,042,250													
June-17	435,827	746,274	861,832	948,449														
June-18	286,984	622,604	752,177															
June-19	358,442	674,137																
June-20	236,963																	

Acc Yr Ending	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	260,969	260,969	260,969	260,969
June-84	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	1,414,337	1,418,938	1,421,790	1,422,262	
June-85	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	764,185	764,185	764,185	764,185		
June-86	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	1,602,166	1,602,166	1,602,166	1,602,166			
June-87	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	1,896,353	1,896,353	1,896,353	1,896,353				
June-88	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	2,484,620	2,484,754	2,485,036	2,485,102					
June-89	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	3,991,672	4,007,382	4,016,111	4,016,343						
June-90	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	3,685,840	3,686,010	3,686,076	3,686,388							
June-91	2,862,970	2,871,036	2,880,572	2,890,850	2,897,227	2,902,044	2,903,974	2,909,098	2,916,555	2,922,015	2,925,692	2,931,084								
June-92	2,385,401	2,392,636	2,402,525	2,411,498	2,588,626	2,601,391	2,629,981	2,681,217	2,693,712	2,699,222	2,704,782									
June-93	1,750,189	1,752,832	1,755,026	1,755,793	1,758,341	1,758,372	1,758,372	1,758,372	1,758,372	1,758,372										
June-94	1,264,853	1,267,940	1,270,183	1,270,498	1,270,668	1,270,736	1,270,834	1,272,079	1,273,293											
June-95	927,514	928,160	928,160	928,160	928,160	928,160	928,160	928,160												
June-96	1,004,022	1,004,022	1,004,022	1,004,022	1,004,022	1,004,022	1,004,022													
June-97	882,663	882,663	882,663	882,663	882,663	882,663														
June-98	776,156	777,189	778,357	778,357	781,227															
June-99	634,549	634,549	634,549	634,549																
June-00	855,368	869,273	873,300																	
June-01	1,583,179	1,610,603																		
June-02	1,035,267																			

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	1.027	1.024
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	1.028	1.029	1.023
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	1.021	1.020	1.025	1.021
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	1.005	1.003	1.005	1.004	
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	1.007	1.027	1.023	1.019		
June-05	1.941	1.157	1.062	1.049	1.011	1.004	1.002	1.000	1.040	1.003	1.001	1.000	1.001	1.000	1.000			
June-06	2.080	1.272	1.117	1.103	1.040	1.032	1.018	1.020	1.010	1.010	1.024	1.019	1.017	1.009				
June-07	2.401	1.254	1.106	1.035	1.022	1.019	1.013	1.018	1.012	1.013	1.008	1.006	1.006					
June-08	1.653	1.123	1.036	1.046	1.037	1.085	1.102	1.084	1.094	1.071	1.048	1.051						
June-09	1.796	1.114	1.108	1.028	1.016	1.009	1.014	1.025	1.009	1.004	1.004							
June-10	1.995	1.261	1.099	1.035	1.046	1.045	1.016	1.009	1.009	1.006								
June-11	1.799	1.155	1.057	1.038	1.014	1.008	1.007	1.003	1.002									
June-12	1.940	1.096	1.055	1.058	1.042	1.085	1.020	1.072										
June-13	2.462	1.226	1.115	1.055	1.009	1.004	1.003											
June-14	2.168	1.148	1.086	1.035	1.053	1.022												
June-15	2.087	1.256	1.107	1.067	1.050													
June-16	1.839	1.178	1.055	1.033														
June-17	1.712	1.155	1.101															
June-18	2.169	1.208																
June-19	1.881																	

Acc Yr Ending	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	420-432	432-444	444-456
June-83	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	1.000	1.000	1.000	1.000
June-84	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	1.000	1.003	1.002	1.000	
June-85	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	1.000	1.000	1.000	1.000		
June-86	1.002	1.004	1.002	1.005	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-87	1.000	1.000	1.000	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	1.000	1.001	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
June-89	1.004	1.003	1.005	1.004	1.004	1.004	1.005	1.006	1.005	1.012	1.004	1.002	1.000						
June-90	1.000	1.000	1.000	1.001	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000							
June-91	1.003	1.003	1.004	1.002	1.002	1.001	1.002	1.003	1.002	1.001	1.002								
June-92	1.003	1.004	1.004	1.073	1.005	1.011	1.019	1.005	1.002	1.002									
June-93	1.002	1.001	1.000	1.001	1.000	1.000	1.000	1.000	1.000										
June-94	1.002	1.002	1.000	1.000	1.000	1.000	1.001	1.001											
June-95	1.001	1.000	1.000	1.000	1.000	1.000	1.000												
June-96	1.000	1.000	1.000	1.000	1.000	1.000													
June-97	1.000	1.000	1.000	1.000	1.000														
June-98	1.001	1.002	1.000	1.004															
June-99	1.000	1.000																	
June-00	1.016	1.005																	
June-01	1.017																		

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
Simple Avg																		
All Yrs	2.256	1.253	1.120	1.075	1.054	1.043	1.032	1.027	1.019	1.013	1.017	1.009	1.007	1.010	1.007	1.007	1.006	1.005
Latest 5	1.938	1.189	1.093	1.050	1.034	1.033	1.012	1.039	1.025	1.021	1.017	1.017	1.007	1.024	1.016	1.019	1.017	1.017
Latest 3	1.921	1.180	1.087	1.045	1.037	1.037	1.010	1.028	1.006	1.027	1.020	1.025	1.008	1.012	1.009	1.015	1.019	1.023
Volume Wtd																		
All Yrs	2.222	1.241	1.112	1.069	1.047	1.036	1.024	1.021	1.015	1.011	1.010	1.008	1.006	1.008	1.006	1.006	1.005	1.004
Latest 5	1.913	1.187	1.092	1.050	1.033	1.034	1.012	1.038	1.025	1.021	1.018	1.019	1.008	1.022	1.017	1.020	1.020	1.019
Latest 3	1.889	1.179	1.086	1.045	1.036	1.038	1.011	1.029	1.007	1.027	1.021	1.026	1.008	1.011	1.008	1.015	1.021	1.023
Dev Factor Se	.																	
Industry 1	1.957	1.147	1.057	1.025	1.015	1.009	1.011	1.009	1.009	1.009	1.010	1.008	1.008	1.009	1.009	1.008	1.008	1.007
Industry 2		1.281	1.080	1.034	1.020	1.017	1.009	1.011	1.009	1.009	1.006	1.007	1.009	1.008	1.008	1.012	1.007	1.006
Prior	*2.056*	*1.260*	*1.120*	*1.051*	*1.038*	*1.036*	*1.033*	*1.026*	*1.015*	*1.013*	*1.011*	*1.007*	*1.007*	*1.010*	*1.008*	*1.006*	*1.006*	*1.002*
Selected	2.038	1.260	1.120	1.050	1.038	1.036	1.032	1.027	1.015	1.013	1.010	1.009	1.007	1.010	1.007	1.007	1.006	1.002
FacToUlt	3.862	1.895	1.503	1.343	1.279	1.233	1.190	1.153	1.123	1.106	1.093	1.081	1.072	1.064	1.053	1.046	1.039	1.032
Percent of Ult	25.9%	52.8%	66.5%	74.5%	78.2%	81.1%	84.0%	86.7%	89.1%	90.4%	91.5%	92.5%	93.3%	94.0%	95.0%	95.6%	96.3%	96.9%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																				
All Yrs	1.003	1.002	1.002	1.006	1.001	1.002	1.002	1.002	1.004	1.005	1.001	1.001	1.000	1.000	1.000	1.001	1.001	1.000	1.000	
Latest 5	1.007	1.001	1.000	1.001	1.000	1.002	1.004	1.002	1.002	1.003	1.001	1.000	1.000	1.000	1.000					
Latest 3	1.011	1.002	1.000	1.001	1.000	1.000	1.000	1.002	1.001	1.001	1.002	1.001	1.000	1.000	1.000	1.001	1.001			
Volume Wtd																				
All Yrs	1.003	1.002	1.002	1.008	1.002	1.002	1.003	1.002	1.003	1.004	1.001	1.001	1.000	1.000	1.000	1.001	1.001	1.000		
Latest 5	1.009	1.001	1.000	1.001	1.000	1.004	1.006	1.002	1.002	1.004	1.001	1.001	1.000	1.000						
Latest 3	1.013	1.002	1.000	1.001	1.000	1.000	1.000	1.002	1.001	1.001	1.002	1.001	1.000	1.000	1.000	1.001				
Dev Factor Se																				
Industry 1																				
Industry 2	1.007	1.006																		
Prior	*1.002*	*1.002*	*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*	*1.001*	*1.001*	*1.001*	*1.001*	
Selected	1.002	1.002	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	1.001	1.001	1.001	1.001	1.001
FacToUlt	1.030	1.028	1.026	1.024	1.022	1.020	1.018	1.016	1.014	1.012	1.010	1.009	1.008	1.007	1.006	1.005	1.004	1.003	1.002	1.001
Percent of Ult	97.1%	97.3%	97.5%	97.7%	97.9%	98.0%	98.2%	98.4%	98.6%	98.8%	99.0%	99.1%	99.2%	99.3%	99.4%	99.5%	99.6%	99.7%	99.8%	99.9%

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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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	1,216,248	1,216,984	1,219,485	1,231,258	3,237	0.3%	14,274	1.2%
6/30/82-83	261,000	264,000	261,000	264,000	0	0.0%	0	0.0%
6/30/83-84	1,424,000	1,453,000	1,425,000	1,453,000	1,000	0.1%	0	0.0%
6/30/84-85	766,000	782,000	766,000	782,000	0	0.0%	0	0.0%
6/30/85-86	1,608,000	1,609,000	1,608,000	1,609,000	0	0.0%	0	0.0%
6/30/86-87	1,905,000	1,907,000	1,905,000	1,907,000	0	0.0%	0	0.0%
6/30/87-88	2,499,000	2,501,000	2,499,000	2,501,000	0	0.0%	0	0.0%
6/30/88-89	4,043,000	4,096,434	4,043,000	4,096,670	0	0.0%	236	0.0%
6/30/89-90	3,715,000	3,718,000	3,715,000	3,718,000	0	0.0%	0	0.0%
6/30/90-91	2,948,049	2,951,000	2,954,043	2,957,000	5,994	0.2%	6,000	0.2%
6/30/91-92	2,700,720	2,728,000	2,728,269	2,731,000	27,549	1.0%	3,000	0.1%
6/30/92-93	1,763,190	1,781,000	1,761,210	1,779,000	(1,980)	-0.1%	(2,000)	-0.1%
6/30/93-94	1,278,090	1,291,000	1,278,090	1,291,000	0	0.0%	0	0.0%
6/30/94-95	934,560	944,000	933,570	943,000	(990)	-0.1%	(1,000)	-0.1%
6/30/95-96	1,023,000	1,033,000	1,022,000	1,032,000	(1,000)	-0.1%	(1,000)	-0.1%
6/30/96-97	901,000	910,000	900,000	909,000	(1,000)	-0.1%	(1,000)	-0.1%
6/30/97-98	796,000	812,000	798,000	814,000	2,000	0.3%	2,000	0.2%
6/30/98-99	650,000	664,000	650,000	663,000	0	0.0%	(1,000)	-0.2%
6/30/99-00	893,000	911,000	896,000	914,000	3,000	0.3%	3,000	0.3%
6/30/00-01	1,628,000	1,711,000	1,654,000	1,739,000	26,000	1.6%	28,000	1.6%
6/30/01-02	1,045,000	1,066,000	1,066,000	1,088,000	21,000	2.0%	22,000	2.1%
6/30/02-03	905,000	924,000	904,000	922,000	(1,000)	-0.1%	(2,000)	-0.2%
6/30/03-04	979,000	999,000	992,000	1,013,000	13,000	1.3%	14,000	1.4%
6/30/04-05	1,107,000	1,129,000	1,100,000	1,122,000	(7,000)	-0.6%	(7,000)	-0.6%
6/30/05-06	1,321,000	1,358,000	1,322,000	1,357,000	1,000	0.1%	(1,000)	-0.1%
6/30/06-07	1,211,250	1,317,000	1,211,250	1,317,000	0	0.0%	0	0.0%
6/30/07-08	1,411,700	1,531,000	1,470,600	1,599,000	58,900	4.2%	68,000	4.4%
6/30/08-09	1,244,500	1,340,000	1,239,750	1,335,000	(4,750)	-0.4%	(5,000)	-0.4%
6/30/09-10	1,382,250	1,504,000	1,379,400	1,498,000	(2,850)	-0.2%	(6,000)	-0.4%
6/30/10-11	1,030,500	1,181,000	1,075,400	1,167,000	44,900	4.4%	(14,000)	-1.2%
6/30/11-12	1,291,500	1,488,000	1,425,000	1,558,000	133,500	10.3%	70,000	4.7%
6/30/12-13	1,215,900	1,385,000	1,188,900	1,350,000	(27,000)	-2.2%	(35,000)	-2.5%
6/30/13-14	1,120,500	1,290,000	1,107,900	1,274,000	(12,600)	-1.1%	(16,000)	-1.2%
6/30/14-15	1,198,800	1,371,000	1,215,900	1,384,000	17,100	1.4%	13,000	0.9%
6/30/15-16	1,218,000	1,392,000	1,200,000	1,372,000	(18,000)	-1.5%	(20,000)	-1.4%
6/30/16-17	1,165,000	1,321,000	1,146,000	1,303,000	(19,000)	-1.6%	(18,000)	-1.4%
6/30/17-18	1,061,000	1,263,000	1,018,000	1,211,000	(43,000)	-4.1%	(52,000)	-4.1%
6/30/18-19	1,256,000	1,423,000	1,150,000	1,349,000	(106,000)	-8.4%	(74,000)	-5.2%
6/30/19-20								
Total	54,116,757	56,565,418	54,228,767	56,552,928	112,010	0.2%	(12,490)	0.0%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2019

(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
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Department of Developmental Services - Cluster 1
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.1%	0.0%	0.0%	0.0%	1.000	1.000
456	99.9%	0.1%	0.1%	0.0%	0.0%	0.981	0.971
444	99.8%	0.1%	0.2%	0.0%	0.0%	0.965	0.948
432	99.7%	0.1%	0.3%	0.0%	0.0%	0.947	0.923
420	99.6%	0.1%	0.4%	0.0%	0.0%	0.930	0.898
408	99.5%	0.1%	0.5%	0.0%	0.0%	0.912	0.873
396	99.4%	0.1%	0.6%	0.0%	0.0%	0.895	0.850
384	99.3%	0.1%	0.7%	0.0%	0.0%	0.879	0.827
372	99.2%	0.1%	0.8%	0.0%	0.0%	0.862	0.805
360	99.1%	0.1%	0.9%	0.0%	0.0%	0.846	0.783
348	99.0%	0.2%	1.0%	0.1%	0.0%	0.831	0.763
336	98.8%	0.2%	1.2%	0.1%	0.0%	0.830	0.762
324	98.6%	0.2%	1.4%	0.1%	0.0%	0.824	0.756
312	98.4%	0.2%	1.6%	0.1%	0.0%	0.816	0.746
300	98.2%	0.2%	1.8%	0.1%	0.0%	0.807	0.733
288	98.0%	0.2%	2.0%	0.1%	0.0%	0.796	0.720
276	97.9%	0.2%	2.1%	0.1%	0.1%	0.785	0.706
264	97.7%	0.2%	2.3%	0.1%	0.1%	0.774	0.691
252	97.5%	0.2%	2.5%	0.1%	0.1%	0.762	0.677
240	97.3%	0.2%	2.7%	0.1%	0.1%	0.751	0.662
228	97.1%	0.2%	2.9%	0.1%	0.1%	0.739	0.648
216	96.9%	0.6%	3.1%	0.3%	0.2%	0.727	0.633
204	96.3%	0.6%	3.7%	0.3%	0.2%	0.744	0.657
192	95.6%	0.7%	4.4%	0.4%	0.3%	0.755	0.672
180	95.0%	0.9%	5.0%	0.5%	0.4%	0.761	0.680
168	94.0%	0.7%	6.0%	0.4%	0.3%	0.771	0.694
156	93.3%	0.8%	6.7%	0.5%	0.4%	0.766	0.687
144	92.5%	1.0%	7.5%	0.6%	0.5%	0.764	0.684
132	91.5%	1.1%	8.5%	0.7%	0.6%	0.762	0.682
120	90.4%	1.3%	9.6%	0.9%	0.8%	0.762	0.682
108	89.1%	2.4%	10.9%	1.7%	1.4%	0.763	0.684
96	86.7%	2.7%	13.3%	2.0%	1.7%	0.777	0.703
84	84.0%	2.9%	16.0%	2.3%	2.0%	0.786	0.715
72	81.1%	2.9%	18.9%	2.4%	2.1%	0.791	0.720
60	78.2%	3.7%	21.8%	3.1%	2.8%	0.790	0.719
48	74.5%	8.0%	25.5%	6.9%	6.5%	0.792	0.720
36	66.5%	13.7%	33.5%	12.5%	11.9%	0.813	0.749
24	52.8%	26.9%	47.2%	25.4%	24.6%	0.840	0.784
12	25.9%	25.9%	74.1%	25.4%	25.1%	0.515	0.471
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
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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	3,670	15,444		3,463	14,572
6/30/82-83	31	3,031	0.981	30	2,972
6/30/83-84	2,738	30,738	0.965	2,641	29,657
6/30/84-85	1,815	17,815	0.947	1,720	16,875
6/30/85-86	5,835	6,835	0.930	5,423	6,353
6/30/86-87	8,647	10,647	0.912	7,888	9,712
6/30/87-88	13,898	15,898	0.895	12,441	14,231
6/30/88-89	26,657	80,327	0.879	23,419	70,569
6/30/89-90	28,612	31,612	0.862	24,672	27,259
6/30/90-91	22,959	25,916	0.846	19,433	21,936
6/30/91-92	23,487	26,218	0.831	19,517	21,786
6/30/92-93	2,838	20,628	0.830	2,355	17,118
6/30/93-94	4,797	17,707	0.824	3,955	14,598
6/30/94-95	5,410	14,840	0.816	4,417	12,116
6/30/95-96	17,978	27,978	0.807	14,507	22,576
6/30/96-97	17,337	26,337	0.796	13,809	20,977
6/30/97-98	16,773	32,773	0.785	13,174	25,741
6/30/98-99	15,451	28,451	0.774	11,959	22,021
6/30/99-00	22,700	40,700	0.762	17,306	31,030
6/30/00-01	43,397	128,397	0.751	32,578	96,388
6/30/01-02	30,733	52,733	0.739	22,712	38,970
6/30/02-03	28,349	46,349	0.727	20,620	33,712
6/30/03-04	36,343	57,343	0.744	27,040	42,665
6/30/04-05	47,930	69,930	0.755	36,180	52,786
6/30/05-06	58,260	93,260	0.761	44,308	70,926
6/30/06-07	8,941	114,691	0.771	6,891	88,398
6/30/07-08	7,993	136,393	0.766	6,120	104,441
6/30/08-09	29,366	124,616	0.764	22,429	95,177
6/30/09-10	35,162	153,762	0.762	26,794	117,169
6/30/10-11	51,795	143,395	0.762	39,461	109,249
6/30/11-12	64,610	197,610	0.763	49,291	150,757
6/30/12-13	41,749	202,849	0.777	32,453	157,682
6/30/13-14	73,935	240,035	0.786	58,148	188,784
6/30/14-15	120,046	288,146	0.791	94,939	227,882
6/30/15-16	157,750	329,750	0.790	124,625	260,508
6/30/16-17	197,551	354,551	0.792	156,397	280,690
6/30/17-18	265,823	458,823	0.813	216,211	373,190
6/30/18-19	475,863	674,863	0.840	399,634	566,757
6/30/19-20	678,037	1,058,037	0.515	348,875	544,400
Total	2,695,267	5,399,429		1,967,837	4,002,630

	(Low)	(High)
(7) Total Discount Factor:	0.730	0.741

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	3,670	15,444
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	1,223	5,148
(11) Discounted Value at 4%:	3,463	14,572

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
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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	3,670	15,444		3,368	14,173
6/30/82-83	31	3,031	0.971	30	2,944
6/30/83-84	2,738	30,738	0.948	2,596	29,150
6/30/84-85	1,815	17,815	0.923	1,675	16,442
6/30/85-86	5,835	6,835	0.898	5,238	6,135
6/30/86-87	8,647	10,647	0.873	7,551	9,298
6/30/87-88	13,898	15,898	0.850	11,807	13,506
6/30/88-89	26,657	80,327	0.827	22,037	66,405
6/30/89-90	28,612	31,612	0.805	23,022	25,436
6/30/90-91	22,959	25,916	0.783	17,984	20,300
6/30/91-92	23,487	26,218	0.763	17,916	19,999
6/30/92-93	2,838	20,628	0.762	2,164	15,726
6/30/93-94	4,797	17,707	0.756	3,626	13,382
6/30/94-95	5,410	14,840	0.746	4,034	11,065
6/30/95-96	17,978	27,978	0.733	13,185	20,519
6/30/96-97	17,337	26,337	0.720	12,483	18,962
6/30/97-98	16,773	32,773	0.706	11,839	23,133
6/30/98-99	15,451	28,451	0.691	10,682	19,670
6/30/99-00	22,700	40,700	0.677	15,362	27,544
6/30/00-01	43,397	128,397	0.662	28,736	85,019
6/30/01-02	30,733	52,733	0.648	19,905	34,154
6/30/02-03	28,349	46,349	0.633	17,956	29,358
6/30/03-04	36,343	57,343	0.657	23,873	37,668
6/30/04-05	47,930	69,930	0.672	32,208	46,992
6/30/05-06	58,260	93,260	0.680	39,612	63,408
6/30/06-07	8,941	114,691	0.694	6,202	79,556
6/30/07-08	7,993	136,393	0.687	5,491	93,701
6/30/08-09	29,366	124,616	0.684	20,100	85,294
6/30/09-10	35,162	153,762	0.682	23,989	104,904
6/30/10-11	51,795	143,395	0.682	35,333	97,821
6/30/11-12	64,610	197,610	0.684	44,171	135,096
6/30/12-13	41,749	202,849	0.703	29,341	142,559
6/30/13-14	73,935	240,035	0.715	52,836	171,537
6/30/14-15	120,046	288,146	0.720	86,437	207,475
6/30/15-16	157,750	329,750	0.719	113,345	236,929
6/30/16-17	197,551	354,551	0.720	142,316	255,419
6/30/17-18	265,823	458,823	0.749	199,087	343,634
6/30/18-19	475,863	674,863	0.784	372,860	528,785
6/30/19-20	678,037	1,058,037	0.471	319,360	498,342
Total	2,695,267	5,399,429		1,799,757	3,651,439
			(7) Total Discount Factor:	0.668	0.676

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	3,670	15,444
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	1,223	5,148
(11) Discounted Value at 6%:	3,368	14,173

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, 2020

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		21,005,984			22,293,753	22,660,403	1,287,769	1,654,419		
6/30/82-83		2,925,786	2,962,378		2,962,378	2,968,303	36,592	42,517		
6/30/83-84		2,655,007	2,695,554		2,668,598	2,695,554	13,592	40,547		
6/30/84-85	142,561	4,384,902	4,485,292	4,460,097	4,407,000	4,485,000	22,098	100,098	3.091	3.146
6/30/85-86	153,298	4,634,091	4,773,327	4,770,409	4,639,000	4,654,000	4,909	19,909	3.026	3.036
6/30/86-87	176,136	6,208,413	6,437,832	6,450,050	6,215,000	6,289,000	6,587	80,587	3.529	3.571
6/30/87-88	206,319	11,895,513	12,416,457	12,369,260	12,381,369	12,428,416	485,856	532,903	6.001	6.024
6/30/88-89	222,806	12,838,830	13,484,498	13,420,219	13,458,786	13,484,000	619,956	645,170	6.041	6.052
6/30/89-90	223,751	12,315,578	13,013,648	12,948,702	12,949,000	13,014,000	633,422	698,422	5.787	5.816
6/30/90-91	210,162	7,830,550	8,300,875	8,296,477	7,870,000	7,927,455	39,450	96,905	3.745	3.772
6/30/91-92	205,241	4,260,079	4,532,229	4,527,433	4,281,000	4,328,060	20,921	67,981	2.086	2.109
6/30/92-93	176,705	3,776,327	4,047,238	4,039,955	4,040,000	4,047,000	263,673	270,673	2.286	2.290
6/30/93-94	173,075	2,644,651	2,868,220	2,860,582	2,861,000	2,868,000	216,349	223,349	1.653	1.657
6/30/94-95	178,317	2,818,005	3,070,373	3,059,802	2,832,000	2,885,800	13,995	67,795	1.588	1.618
6/30/95-96	175,996	1,924,351	2,092,903	2,085,689	1,934,000	1,998,815	9,649	74,464	1.099	1.136
6/30/96-97	190,083	1,571,537	1,703,529	1,698,584	1,579,000	1,627,320	7,463	55,783	0.831	0.856
6/30/97-98	177,278	2,912,109	3,185,805	3,169,280	2,927,000	3,042,630	14,891	130,521	1.651	1.716
6/30/98-99	189,080	1,676,634	1,846,121	1,838,166	1,801,240	1,809,080	124,606	132,446	0.953	0.957
6/30/99-00	194,494	2,313,702	2,540,590	2,527,529	2,401,600	2,464,770	87,898	151,068	1.235	1.267
6/30/00-01	201,568	3,299,797	3,653,697	3,629,802	3,448,500	3,544,380	148,703	244,583	1.711	1.758
6/30/01-02	203,105	2,606,204	2,909,785	2,892,603	2,748,350	2,822,700	142,146	216,496	1.353	1.390
6/30/02-03	202,515	1,799,490	1,994,978	1,990,343	1,990,000	2,000,000	190,510	200,510	0.983	0.988
6/30/03-04	189,588	3,243,956	3,652,706	3,627,792	3,446,600	3,579,940	202,644	335,984	1.818	1.888
6/30/04-05	186,990	2,723,646	3,056,776	2,903,754	2,904,000	3,057,000	180,355	333,355	1.553	1.635
6/30/05-06	193,254	1,859,638	2,083,552	2,068,147	2,068,000	2,084,000	208,362	224,362	1.070	1.078
6/30/06-07	203,359	2,221,812	2,521,063	2,468,537	2,345,550	2,394,950	123,738	173,138	1.153	1.178
6/30/07-08	212,083	1,641,504	1,868,220	1,934,718	1,774,600	1,838,250	133,096	196,746	0.837	0.867
6/30/08-09	204,679	2,016,411	2,320,967	2,342,697	2,321,000	2,343,000	304,589	326,589	1.134	1.145
6/30/09-10	184,688	1,284,832	1,499,547	1,638,011	1,569,000	1,638,000	284,168	353,168	0.850	0.887
6/30/10-11	169,689	2,428,417	2,897,130	2,834,001	2,834,000	2,897,000	405,583	468,583	1.670	1.707
6/30/11-12	177,399	1,755,990	2,136,431	2,248,158	2,136,000	2,248,000	380,010	492,010	1.204	1.267
6/30/12-13	189,252	2,657,491	3,299,767	3,304,804	3,300,000	3,338,000	642,509	680,509	1.744	1.764
6/30/13-14	199,876	3,184,203	4,094,582	4,076,964	4,077,000	4,136,000	892,797	951,797	2.040	2.069
6/30/14-15	213,700	3,873,876	5,208,195	5,054,693	5,055,000	5,208,000	1,181,124	1,334,124	2.365	2.437
6/30/15-16	211,829	4,949,433	6,984,146	6,515,485	6,515,000	6,984,000	1,565,567	2,034,567	3.076	3.297
6/30/16-17	203,085	3,869,716	6,031,006	5,814,944	5,815,000	6,031,000	1,945,284	2,161,284	2.863	2.970
6/30/17-18	203,925	2,463,721	4,543,189	5,013,226	4,543,000	5,013,000	2,079,279	2,549,279	2.228	2.458
6/30/18-19	218,060	2,104,771	5,030,265	5,860,169	5,030,000	5,860,000	2,925,229	3,755,229	2.307	2.687
6/30/19-20	222,496	1,137,532	5,183,283	6,882,257	5,183,000	6,951,000	4,045,468	5,813,468	2.329	3.124
Total	6,986,443	161,714,487	165,426,155	161,623,341	183,605,325	189,645,826	21,890,837	27,931,339		
Tot 6/30/84-20	6,986,443	135,127,711	159,768,223	161,623,341	155,680,595	161,321,566	20,552,884	26,193,855	2.228	2.309

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim	Average Age
All Prior Yrs		20,340,304							4	3		85
6/30/82-83		2,831,786	1.013	1.000	2,868,331	94,047	2,962,378		1	0		
6/30/83-84		2,245,006	1.018	1.000	2,285,348	410,206	2,695,554		0	0		
6/30/84-85	142,561	3,833,819	1.026	1.000	3,933,934	551,359	4,485,292	3.146	1	0		
6/30/85-86	153,298	4,048,163	1.034	1.000	4,187,106	586,221	4,773,327	3.114	0	0		
6/30/86-87	176,136	5,376,022	1.043	1.000	5,605,025	832,807	6,437,832	3.655	0	0		
6/30/87-88	206,319	10,210,491	1.051	1.000	10,730,592	1,685,865	12,416,457	6.018	1	1	520,101	68
6/30/88-89	222,806	10,863,188	1.059	1.000	11,507,868	1,976,630	13,484,498	6.052	3	3	214,893	83
6/30/89-90	223,751	10,277,938	1.068	1.000	10,974,989	2,038,659	13,013,648	5.816	2	2	348,526	80
6/30/90-91	210,162	6,165,086	1.076	1.000	6,634,579	1,666,297	8,300,875	3.950	0	0		
6/30/91-92	205,241	3,230,938	1.084	1.000	3,502,573	1,029,656	4,532,229	2.208	0	0		
6/30/92-93	176,705	2,982,248	1.091	1.000	3,252,762	794,476	4,047,238	2.290	1	1	270,514	69
6/30/93-94	173,075	2,286,067	1.098	1.000	2,509,457	358,763	2,868,220	1.657	1	1	223,390	70
6/30/94-95	178,317	2,341,581	1.108	1.000	2,593,472	476,901	3,070,373	1.722	0	0		
6/30/95-96	175,996	1,440,291	1.117	1.000	1,608,116	484,787	2,092,903	1.189	0	0		
6/30/96-97	190,083	1,057,037	1.124	1.000	1,187,998	515,531	1,703,529	0.896	0	0		
6/30/97-98	177,278	2,101,308	1.129	1.000	2,372,973	812,832	3,185,805	1.797	0	0		
6/30/98-99	189,080	1,256,384	1.134	1.000	1,424,607	421,514	1,846,121	0.976	0	1	168,223	76
6/30/99-00	194,494	1,634,502	1.137	1.000	1,859,006	681,584	2,540,590	1.306	0	0		
6/30/00-01	201,568	2,503,297	1.140	1.000	2,854,000	799,697	3,653,697	1.813	0	0		
6/30/01-02	203,105	2,097,298	1.143	1.000	2,398,067	511,718	2,909,785	1.433	0	0		
6/30/02-03	202,515	1,302,490	1.147	1.000	1,493,724	501,254	1,994,978	0.985	2	2	95,617	50
6/30/03-04	189,588	2,662,956	1.151	1.000	3,064,961	587,746	3,652,706	1.927	0	0		
6/30/04-05	186,990	2,088,646	1.155	1.000	2,412,454	644,322	3,056,776	1.635	0	0		
6/30/05-06	193,254	1,356,888	1.160	1.000	1,573,421	510,130	2,083,552	1.078	1	0		
6/30/06-07	203,359	1,791,061	1.164	1.000	2,083,988	437,075	2,521,063	1.240	0	0		
6/30/07-08	212,083	1,303,214	1.169	1.000	1,523,223	344,997	1,868,220	0.881	0	0		
6/30/08-09	204,679	1,689,411	1.174	1.000	1,984,046	336,921	2,320,967	1.134	1	1	294,635	53
6/30/09-10	184,688	1,061,332	1.193	1.000	1,265,824	233,724	1,499,547	0.812	1	0		
6/30/10-11	169,689	2,054,286	1.216	1.000	2,498,068	399,063	2,897,130	1.707	2	1	443,781	73
6/30/11-12	177,399	1,532,690	1.234	1.000	1,891,476	244,955	2,136,431	1.204	1	1	358,786	55
6/30/12-13	189,252	2,320,490	1.255	1.000	2,912,224	387,543	3,299,767	1.744	4	3	197,245	63
6/30/13-14	199,876	2,720,287	1.288	1.000	3,504,428	590,153	4,094,582	2.049	5	4	196,035	59
6/30/14-15	213,700	3,482,376	1.338	1.000	4,658,425	549,770	5,208,195	2.437	11	9	130,672	57
6/30/15-16	211,829	4,324,932	1.405	1.000	6,076,282	907,864	6,984,146	3.297	18	9	194,594	58
6/30/16-17	203,085	3,517,215	1.524	1.000	5,359,363	671,643	6,031,006	2.970	25	23	80,093	53
6/30/17-18	203,925	2,373,721	1.765	1.000	4,189,749	353,440	4,543,189	2.228	58	15	121,069	55
6/30/18-19	218,060	2,104,770	2.268	1.000	4,772,887	257,378	5,030,265	2.307	199	49	54,451	51
6/30/19-20	222,496	1,137,532	4.274	1.000	4,861,452	321,832	5,183,283	2.330		199	18,713	45
Total	6,986,443	137,947,050			140,416,797	25,009,357	165,426,155		342	328		

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, 2020

Department of Mental Health - Cluster 2
Indemnity

Paid Bornhuetter-Ferguson Method

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		A Priori	Paid Loss		Ultimate Loss	Est Ult	Ultimate Loss	Ultimate	Ultimate Loss
Accident	Payroll	Loss	Excluding	Paid	Excluding	Lump Sum	Including	Loss	Cost Excluding
Year	(000's)	Rate	Lump Sum	LDF	Lump Sum	Payments	Lump Sum	Cost	Lump Sum
All Prior Yrs									
6/30/82-83									
6/30/83-84									
6/30/84-85	142,561	2.065	3,833,819	1.026	3,908,738	551,359	4,460,097	3.129	2.742
6/30/85-86	153,298	2.674	4,048,163	1.034	4,184,188	586,221	4,770,409	3.112	2.729
6/30/86-87	176,136	3.352	5,376,022	1.043	5,617,243	832,807	6,450,050	3.662	3.189
6/30/87-88	206,319	4.729	10,210,491	1.051	10,683,396	1,685,865	12,369,260	5.995	5.178
6/30/88-89	222,806	4.650	10,863,188	1.059	11,443,589	1,976,630	13,420,219	6.023	5.136
6/30/89-90	223,751	4.448	10,277,938	1.068	10,910,043	2,038,659	12,948,702	5.787	4.876
6/30/90-91	210,162	3.127	6,165,086	1.076	6,630,181	1,666,297	8,296,477	3.948	3.155
6/30/91-92	205,241	1.676	3,230,938	1.084	3,497,778	1,029,656	4,527,433	2.206	1.704
6/30/92-93	176,705	1.791	2,982,248	1.091	3,245,479	794,476	4,039,955	2.286	1.837
6/30/93-94	173,075	1.400	2,286,067	1.098	2,501,819	358,763	2,860,582	1.653	1.446
6/30/94-95	178,317	1.393	2,341,581	1.108	2,582,902	476,901	3,059,802	1.716	1.448
6/30/95-96	175,996	0.874	1,440,291	1.117	1,600,902	484,787	2,085,689	1.185	0.910
6/30/96-97	190,083	0.601	1,057,037	1.124	1,183,054	515,531	1,698,584	0.894	0.622
6/30/97-98	177,278	1.257	2,101,308	1.129	2,356,448	812,832	3,169,280	1.788	1.329
6/30/98-99	189,080	0.718	1,256,384	1.134	1,416,652	421,514	1,838,166	0.972	0.749
6/30/99-00	194,494	0.900	1,634,502	1.137	1,845,945	681,584	2,527,529	1.300	0.949
6/30/00-01	201,568	1.319	2,503,297	1.140	2,830,105	799,697	3,629,802	1.801	1.404
6/30/01-02	203,105	1.113	2,097,298	1.143	2,380,885	511,718	2,892,603	1.424	1.172
6/30/02-03	202,515	0.720	1,302,490	1.147	1,489,089	501,254	1,990,343	0.983	0.735
6/30/03-04	189,588	1.516	2,662,956	1.151	3,040,046	587,746	3,627,792	1.914	1.603
6/30/04-05	186,990	0.680	2,088,646	1.155	2,259,432	644,322	2,903,754	1.553	1.208
6/30/05-06	193,254	0.756	1,356,888	1.160	1,558,016	510,130	2,068,147	1.070	0.806
6/30/06-07	203,359	0.841	1,791,061	1.164	2,031,463	437,075	2,468,537	1.214	0.999
6/30/07-08	212,083	0.935	1,303,214	1.169	1,589,721	344,997	1,934,718	0.912	0.750
6/30/08-09	204,679	1.041	1,689,411	1.174	2,005,776	336,921	2,342,697	1.145	0.980
6/30/09-10	184,688	1.149	1,061,332	1.193	1,404,287	233,724	1,638,011	0.887	0.760
6/30/10-11	169,689	1.263	2,054,286	1.216	2,434,939	399,063	2,834,001	1.670	1.435
6/30/11-12	177,399	1.398	1,532,690	1.234	2,003,203	244,955	2,248,158	1.267	1.129
6/30/12-13	189,252	1.552	2,320,490	1.255	2,917,261	387,543	3,304,804	1.746	1.541
6/30/13-14	199,876	1.714	2,720,287	1.288	3,486,811	590,153	4,076,964	2.040	1.744
6/30/14-15	213,700	1.895	3,482,376	1.338	4,504,923	549,770	5,054,693	2.365	2.108
6/30/15-16	211,829	2.101	4,324,932	1.405	5,607,621	907,864	6,515,485	3.076	2.647
6/30/16-17	203,085	2.329	3,517,215	1.524	5,143,302	671,643	5,814,944	2.863	2.533
6/30/17-18	203,925	2.586	2,373,721	1.765	4,659,786	353,440	5,013,226	2.458	2.285
6/30/18-19	218,060	2.870	2,104,770	2.268	5,602,790	257,378	5,860,169	2.687	2.569
6/30/19-20	222,496	3.182	1,137,532	4.274	6,560,425	321,832	6,882,257	3.093	2.949
Total	6,986,443		112,529,954		137,118,237	24,505,104	161,623,341		

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, 2020

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	6,634,579	3.157	1.004	3.171	17.449	55.324	0.200	3.153	3.127
6/30/91-92	205,241	3,502,573	1.707	1.102	1.880	15.863	29.828	0.200	1.692	1.676
6/30/92-93	176,705	3,252,762	1.841	1.285	2.365	14.421	34.107	0.189	1.787	1.791
6/30/93-94	173,075	2,509,457	1.450	1.268	1.839	13.110	24.109	0.210	1.395	1.400
6/30/94-95	178,317	2,593,472	1.454	1.257	1.828	11.918	21.782	0.234	1.410	1.393
6/30/95-96	175,996	1,608,116	0.914	1.247	1.139	10.835	12.342	0.259	0.888	0.874
6/30/96-97	190,083	1,187,998	0.625	1.234	0.771	9.850	7.598	0.288	0.613	0.601
6/30/97-98	177,278	2,372,973	1.339	1.218	1.631	8.954	14.604	0.321	1.277	1.257
6/30/98-99	189,080	1,424,607	0.753	1.202	0.906	8.140	7.375	0.358	0.733	0.718
6/30/99-00	194,494	1,859,006	0.956	1.183	1.131	7.400	8.368	0.400	0.918	0.900
6/30/00-01	201,568	2,854,000	1.416	1.153	1.633	6.727	10.983	0.451	1.343	1.319
6/30/01-02	203,105	2,398,067	1.181	1.131	1.335	6.116	8.164	0.506	1.135	1.113
6/30/02-03	202,515	1,493,724	0.738	1.126	0.831	5.560	4.620	0.559	0.736	0.720
6/30/03-04	189,588	3,064,961	1.617	1.126	1.821	5.054	9.205	0.615	1.542	1.516
6/30/04-05	186,990	2,412,454	1.290	1.119	1.444	4.595	6.636	0.680	0.781	0.680
6/30/05-06	193,254	1,573,421	0.814	1.108	0.902	4.177	3.768	0.756	0.852	0.756
6/30/06-07	203,359	2,083,988	1.025	1.096	1.123	3.797	4.265	0.841	0.930	0.841
6/30/07-08	212,083	1,523,223	0.718	1.084	0.779	3.452	2.688	0.935	1.016	0.935
6/30/08-09	204,679	1,984,046	0.969	1.071	1.039	3.138	3.260	1.041	1.110	1.041
6/30/09-10	184,688	1,265,824	0.685	1.067	0.731	2.853	2.087	1.149	1.203	1.149
6/30/10-11	169,689	2,498,068	1.472	1.069	1.573	2.594	4.080	1.263	1.298	1.263
6/30/11-12	177,399	1,891,476	1.066	1.062	1.132	2.358	2.669	1.398	1.411	1.398
6/30/12-13	189,252	2,912,224	1.539	1.052	1.619	2.144	3.470	1.552	1.537	1.552
6/30/13-14	199,876	3,504,428	1.753	1.048	1.837	1.949	3.580	1.714	1.667	1.714
6/30/14-15	213,700	4,658,425	2.180	1.042	2.272	1.772	4.025	1.895	1.810	1.895
6/30/15-16	211,829	6,076,282	2.868	1.034	2.967	1.611	4.779	2.101	1.970	2.101
6/30/16-17	203,085	5,359,363	2.639	1.026	2.708	1.464	3.965	2.329	2.144	2.329
6/30/17-18	203,925	4,189,749	2.055	1.017	2.089	1.331	2.780	2.586	2.337	2.586
6/30/18-19	218,060	4,772,887	2.189	1.008	2.206	1.210	2.670	2.870	2.546	2.870
6/30/19-20	222,496	4,861,452	2.185	1.000	2.185	1.100	2.403	3.182		3.182
Total	5,861,572	88,323,604								

Trend Last 4 (ex 19-20):	-10.9%	Avg 3 (ex 19-20):	3.138
Trend Last 8 (ex 19-20):	9.2%	Avg 5 (ex 19-20):	3.644
Trend Last 12 (ex 19-20):	12.0%	Avg 10 (ex 19-20):	3.411
Prior Selected Trend:	8.0%	Prior Sel Avg:	2.750
Selected Trend:	10.0%	Sel. Loss Cost:	3.500

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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Department of Mental Health - Cluster 2
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.950	
(2)	Credibility	40%	
(3)	Average Pmt Trend Statewide	0.950	
(4)	Credibility Weighted Trend	0.950	
		(Low)	(High)
(5)	Selected Range	0.920	0.950
(6)	Incremental Paid for 2020	129,434	129,434
(7)	Estimated Reserve	1,488,491	2,459,245
(8)	Paid to Date (82 & Prior)	20,340,304	20,340,304
(9)	Est Ult Paid for 1982 & Prior	21,828,795	22,799,549

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	155,197	178,107
(11)	Projected Number of Years	7	7
(12)	Estimated Reserve	1,086,382	1,246,747
(13)	Paid to Date (82 & Prior)	20,340,304	20,210,870
(14)	Est Ult Paid for 1982 & Prior	21,426,686	21,457,617
(14a)	Paid Counts During Fiscal Year	3	4
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	21,627,740	21,994,390
(16)	Lump Sum Ultimates	666,013	666,013
(17)	Ult Loss Including Lump Sums	**22,293,753**	**22,660,403**
(18)	Implied Tail	1.063	1.081
(19)	Ult Loss Inc Lump Sums @ 6/19	22,358,975	22,813,342

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 =	29
2001	10	614,002	13.328	0.981	S(x) =	58,174
2002	11	594,569	13.296	0.968	S(x-sq) =	116,699,074
2003	12	551,328	13.220	0.927	S(xy) =	755,376
2004	13	536,825	13.193	0.974	S(y) =	377
2005	14	518,060	13.158	0.965	D =	58,870
2006	15	465,230	13.050	0.898	slope =	-0.055
2007	16	463,442	13.046	0.996	Avg Trend =	0.945
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		
2017	26	198,162	12.197	0.788		
2018	27	186,816	12.138	0.943		
2019	28	149,342	11.914	0.799		
2020	29	129,434	11.771	0.867		
					Selected Trend:	**0.950**

NOTES:
(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019
(4) LN [(3)]
(5) Eg. 2020: 0.867 = 129434 / 149342

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	1,254,530
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	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	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	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	1,299,375	1,299,796	1,300,354	1,302,490	
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	2,662,956	2,662,956	2,662,956	2,662,956		
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	2,087,143	2,088,646	2,088,646	2,088,646			
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	1,356,633	1,356,633	1,356,888	1,356,888				
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	1,791,061	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	1,303,214	1,303,214	1,303,214	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	1,632,115	1,651,196	1,670,277	1,689,411							
June-10	415,006	709,896	895,282	1,025,770	1,055,921	1,060,427	1,060,427	1,060,427	1,060,427	1,061,332	1,061,332								
June-11	652,304	1,099,134	1,404,624	1,565,671	1,663,173	1,679,758	1,832,231	1,956,057	2,028,513	2,054,286									
June-12	603,523	1,201,631	1,349,652	1,421,088	1,451,528	1,474,107	1,493,513	1,513,476	1,532,690										
June-13	652,867	1,253,353	1,608,152	1,828,578	1,999,158	2,131,582	2,257,309	2,320,490											
June-14	737,949	1,535,219	1,975,124	2,280,487	2,454,263	2,643,526	2,720,287												
June-15	1,026,870	1,815,749	2,270,640	2,706,742	3,124,113	3,482,376													
June-16	1,405,951	2,666,770	3,548,313	4,013,031	4,324,932														
June-17	1,172,336	2,323,528	3,028,300	3,517,215															
June-18	981,294	1,894,751	2,373,721																
June-19	1,147,072	2,104,770																	
June-20	1,137,532																		

Acc Yr Ending	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	2,721,515	2,789,944	2,831,786	2,831,786
June-84	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	2,245,006	2,245,006	2,245,006	2,245,006	
June-85	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	3,781,629	3,835,920	3,833,819	3,833,819		
June-86	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	4,048,163	4,048,163	4,048,163	4,048,163			
June-87	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	5,376,022	5,376,022	5,376,022	5,376,022				
June-88	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	10,073,519	10,113,632	10,158,652	10,210,491					
June-89	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	10,507,914	10,622,240	10,740,496	10,863,188						
June-90	9,013,337	9,115,739	9,217,710	9,323,158	9,432,048	9,542,392	9,655,288	9,772,206	9,892,249	10,016,363	10,144,744	10,277,938							
June-91	6,022,299	6,050,626	6,079,918	6,110,167	6,140,819	6,165,086	6,165,086	6,165,086	6,165,086	6,165,086	6,165,086								
June-92	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	3,230,938									
June-93	2,710,104	2,745,340	2,778,023	2,810,764	2,844,272	2,877,843	2,912,020	2,946,821	2,982,248										
June-94	2,038,037	2,070,230	2,117,149	2,149,444	2,181,690	2,216,620	2,252,048	2,286,067											
June-95	2,341,429	2,341,429	2,341,581	2,341,581	2,341,581	2,341,581	2,341,581												
June-96	1,440,291	1,440,291	1,440,291	1,440,291	1,440,291	1,440,291													
June-97	1,057,037	1,057,037	1,057,037	1,057,037	1,057,037														
June-98	2,101,308	2,101,308	2,101,308	2,101,308															
June-99	1,254,530	1,254,530	1,256,384																
June-00	1,634,502	1,634,502																	
June-01	2,503,297																		

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
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
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
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
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
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
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
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
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
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
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
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	1.012	1.012	1.012	1.012	1.012	1.013
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
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
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
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	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	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	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	1.000	1.000	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	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	1.001	1.000	1.000	1.002		
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	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	1.000	1.001	1.000	1.000				
June-06	1.733	1.162	1.069	1.027	1.015	1.002	1.001	1.000	1.001	1.001	1.000	1.000	1.000	1.000					
June-07	1.658	1.311	1.168	1.089	1.044	1.041	1.011	1.000	1.000	1.000	1.000	1.000	1.000						
June-08	1.549	1.147	1.078	1.030	1.019	1.012	1.027	1.007	1.000	1.000	1.000	1.000							
June-09	1.692	1.185	1.061	1.076	1.059	1.027	1.023	1.012	1.012	1.012	1.011								
June-10	1.711	1.261	1.146	1.029	1.004	1.000	1.000	1.000	1.001	1.000									
June-11	1.685	1.278	1.115	1.062	1.010	1.091	1.068	1.037	1.013										
June-12	1.991	1.123	1.053	1.021	1.016	1.013	1.013	1.013											
June-13	1.920	1.283	1.137	1.093	1.066	1.059	1.028												
June-14	2.080	1.287	1.155	1.076	1.077	1.029													
June-15	1.768	1.251	1.192	1.154	1.115														
June-16	1.897	1.331	1.131	1.078															
June-17	1.982	1.303	1.161																
June-18	1.931	1.253																	
June-19	1.835																		

Acc Yr Ending	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	420-432	432-444	444-456
June-83	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	1.025	1.025	1.015	1.000
June-84	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	1.000	1.000	1.000	1.000	
June-85	1.022	1.023	1.023	1.024	1.024	1.024	1.024	1.024	1.024	1.016	1.014	1.014	1.014	1.014	0.999	1.000		
June-86	1.009	1.009	1.009	1.010	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
June-87	1.000	1.000	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	1.012	1.011	1.007	1.007	1.007	1.008	1.008	1.008	1.008	1.007	1.004	1.004	1.005					
June-89	1.013	1.013	1.013	1.012	1.010	1.010	1.010	1.010	1.011	1.011	1.011	1.011						
June-90	1.011	1.011	1.011	1.012	1.012	1.012	1.012	1.012	1.013	1.013	1.013							
June-91	1.005	1.005	1.005	1.005	1.004	1.000	1.000	1.000	1.000	1.000								
June-92	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
June-93	1.013	1.012	1.012	1.012	1.012	1.012	1.012	1.012										
June-94	1.016	1.023	1.015	1.015	1.016	1.016	1.015											
June-95	1.000	1.000	1.000	1.000	1.000	1.000												
June-96	1.000	1.000	1.000	1.000	1.000													
June-97	1.000	1.000	1.000	1.000														
June-98	1.000	1.000	1.000															
June-99	1.000	1.001																
June-00	1.000																	

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
Simple Avg																			
All Yrs	1.992	1.320	1.161	1.107	1.070	1.051	1.038	1.032	1.024	1.016	1.016	1.014	1.013	1.010	1.012	1.010	1.010	1.009	1.009
Latest 5	1.883	1.285	1.155	1.085	1.057	1.038	1.026	1.014	1.005	1.002	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Latest 3	1.916	1.296	1.161	1.103	1.086	1.034	1.036	1.017	1.008	1.004	1.004	1.000	1.000	1.000	1.000	1.000	1.001	1.000	1.000
Volume Wtd																			
All Yrs	1.990	1.330	1.172	1.112	1.072	1.050	1.038	1.032	1.027	1.020	1.019	1.017	1.015	1.014	1.014	1.013	1.011	1.010	1.010
Latest 5	1.885	1.289	1.154	1.090	1.067	1.042	1.030	1.016	1.006	1.003	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Latest 3	1.916	1.300	1.157	1.100	1.090	1.036	1.037	1.020	1.010	1.005	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Dev Factor Selection																			
Industry 1	2.958	1.596	1.236	1.106	1.039	1.020	1.014	1.008	1.006	1.006	1.005	1.010	1.002	1.003	1.003	1.002	1.004	1.003	
Industry 2		1.877	1.312	1.143	1.055	1.028	1.016	1.015	1.006	1.005	1.007	1.007	1.004	1.002	1.005	1.002	1.003	1.002	1.001
Prior	*1.922*	*1.291*	*1.146*	*1.095*	*1.044*	*1.038*	*1.026*	*1.017*	*1.015*	*1.020*	*1.016*	*1.005*	*1.005*	*1.004*	*1.004*	*1.004*	*1.003*	*1.003*	*1.003*
Selected	1.885	1.285	1.158	1.085	1.050	1.038	1.026	1.017	1.015	1.020	1.016	1.005	1.005	1.003	1.004	1.004	1.004	1.003	1.003
FacToUlt	4.274	2.268	1.765	1.524	1.405	1.338	1.288	1.255	1.234	1.216	1.193	1.174	1.169	1.164	1.160	1.155	1.151	1.147	1.143
Percent of Ult	23.4%	44.1%	56.7%	65.6%	71.2%	74.8%	77.6%	79.7%	81.0%	82.2%	83.8%	85.1%	85.6%	85.9%	86.2%	86.6%	86.9%	87.2%	87.5%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																			
All Yrs	1.007	1.008	1.009	1.009	1.009	1.009	1.010	1.008	1.008	1.008	1.008	1.008	1.007	1.008	1.006	1.008	1.007		
Latest 5	1.000	1.000	1.003	1.005	1.006	1.006	1.008	1.007	1.006	1.006	1.006	1.006	1.004	1.008					
Latest 3	1.000	1.000	1.000	1.000	1.005	1.009	1.009	1.004	1.004	1.008	1.009	1.005	1.002	1.005	1.000	1.008			
Volume Wtd																			
All Yrs	1.009	1.009	1.009	1.009	1.008	1.008	1.009	1.008	1.008	1.008	1.008	1.007	1.006	1.007	1.005	1.008	1.008		
Latest 5	1.000	1.000	1.004	1.007	1.006	1.004	1.008	1.008	1.008	1.007	1.007	1.006	1.004	1.007					
Latest 3	1.000	1.000	1.000	1.000	1.006	1.009	1.008	1.003	1.006	1.009	1.009	1.006	1.003	1.004	1.000	1.008			
Dev Factor Selection																			
Industry 1																			
Industry 2	1.001																		
Prior	*1.003*	*1.004*	*1.005*	*1.007*	*1.008*	*1.009*	*1.007*	*1.006*	*1.008*	*1.008*	*1.006*	*1.004*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.013*	
Selected	1.002	1.003	1.004	1.005	1.007	1.008	1.009	1.006	1.006	1.007	1.008	1.008	1.008	1.008	1.008	1.008	1.008	1.005	1.013
FacToUlt	1.140	1.137	1.134	1.129	1.124	1.117	1.108	1.098	1.091	1.084	1.076	1.068	1.059	1.051	1.043	1.034	1.026	1.018	1.013
Percent of Ult	87.7%	87.9%	88.2%	88.6%	89.0%	89.6%	90.3%	91.1%	91.7%	92.2%	92.9%	93.6%	94.4%	95.2%	95.9%	96.7%	97.5%	98.2%	98.7%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	22,358,975	22,813,342	22,293,753	22,660,403	(65,222)	-0.3%	(152,939)	-0.7%
6/30/82-83	2,962,665	2,968,590	2,962,378	2,968,303	(287)	0.0%	(288)	0.0%
6/30/83-84	2,680,082	2,707,154	2,668,598	2,695,554	(11,484)	-0.4%	(11,600)	-0.4%
6/30/84-85	4,407,000	4,513,000	4,407,000	4,485,000	0	0.0%	(28,000)	-0.6%
6/30/85-86	4,639,000	4,667,000	4,639,000	4,654,000	0	0.0%	(13,000)	-0.3%
6/30/86-87	6,215,000	6,252,000	6,215,000	6,289,000	0	0.0%	37,000	0.6%
6/30/87-88	12,437,000	12,502,000	12,381,369	12,428,416	(55,631)	-0.4%	(73,584)	-0.6%
6/30/88-89	13,429,814	13,459,000	13,458,786	13,484,000	28,972	0.2%	25,000	0.2%
6/30/89-90	12,883,000	12,951,000	12,949,000	13,014,000	66,000	0.5%	63,000	0.5%
6/30/90-91	7,870,000	7,978,070	7,870,000	7,927,455	0	0.0%	(50,615)	-0.6%
6/30/91-92	4,281,000	4,355,755	4,281,000	4,328,060	0	0.0%	(27,695)	-0.6%
6/30/92-93	4,027,000	4,035,000	4,040,000	4,047,000	13,000	0.3%	12,000	0.3%
6/30/93-94	2,845,000	2,852,000	2,861,000	2,868,000	16,000	0.6%	16,000	0.6%
6/30/94-95	2,832,000	2,907,420	2,832,000	2,885,800	0	0.0%	(21,620)	-0.7%
6/30/95-96	1,934,000	2,013,140	1,934,000	1,998,815	0	0.0%	(14,325)	-0.7%
6/30/96-97	1,579,000	1,637,825	1,579,000	1,627,320	0	0.0%	(10,505)	-0.6%
6/30/97-98	2,927,000	3,063,640	2,927,000	3,042,630	0	0.0%	(21,010)	-0.7%
6/30/98-99	1,814,960	1,820,840	1,801,240	1,809,080	(13,720)	-0.8%	(11,760)	-0.6%
6/30/99-00	2,419,650	2,481,260	2,401,600	2,464,770	(18,050)	-0.7%	(16,490)	-0.7%
6/30/00-01	3,477,000	3,572,510	3,448,500	3,544,380	(28,500)	-0.8%	(28,130)	-0.8%
6/30/01-02	2,774,000	2,847,920	2,748,350	2,822,700	(25,650)	-0.9%	(25,220)	-0.9%
6/30/02-03	2,008,000	2,010,000	1,990,000	2,000,000	(18,000)	-0.9%	(10,000)	-0.5%
6/30/03-04	3,479,850	3,613,260	3,446,600	3,579,940	(33,250)	-1.0%	(33,320)	-0.9%
6/30/04-05	2,943,000	3,084,000	2,904,000	3,057,000	(39,000)	-1.3%	(27,000)	-0.9%
6/30/05-06	2,101,000	2,109,000	2,068,000	2,084,000	(33,000)	-1.6%	(25,000)	-1.2%
6/30/06-07	2,390,200	2,421,550	2,345,550	2,394,950	(44,650)	-1.9%	(26,600)	-1.1%
6/30/07-08	1,796,450	1,886,700	1,774,600	1,838,250	(21,850)	-1.2%	(48,450)	-2.6%
6/30/08-09	2,350,000	2,395,000	2,321,000	2,343,000	(29,000)	-1.2%	(52,000)	-2.2%
6/30/09-10	1,572,000	1,657,000	1,569,000	1,638,000	(3,000)	-0.2%	(19,000)	-1.1%
6/30/10-11	2,870,000	2,992,000	2,834,000	2,897,000	(36,000)	-1.3%	(95,000)	-3.2%
6/30/11-12	2,127,000	2,295,000	2,136,000	2,248,000	9,000	0.4%	(47,000)	-2.0%
6/30/12-13	3,326,000	3,398,000	3,300,000	3,338,000	(26,000)	-0.8%	(60,000)	-1.8%
6/30/13-14	4,105,000	4,249,000	4,077,000	4,136,000	(28,000)	-0.7%	(113,000)	-2.7%
6/30/14-15	4,785,000	5,037,000	5,055,000	5,208,000	270,000	5.6%	171,000	3.4%
6/30/15-16	6,301,000	7,147,000	6,515,000	6,984,000	214,000	3.4%	(163,000)	-2.3%
6/30/16-17	5,412,000	5,844,000	5,815,000	6,031,000	403,000	7.4%	187,000	3.2%
6/30/17-18	4,762,000	5,164,000	4,543,000	5,013,000	(219,000)	-4.6%	(151,000)	-2.9%
6/30/18-19	5,365,000	5,943,000	5,030,000	5,860,000	(335,000)	-6.2%	(83,000)	-1.4%
6/30/19-20								
Total	178,486,646	183,643,976	178,422,325	182,694,826	(64,321)	0.0%	(949,150)	-0.5%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2019

(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, 2020

Department of Mental Health - Cluster 2
Indemnity

Calculation of Ultimate Lump Sum Payments

(1) Accident Year	(2) Paid Loss Excluding Lump Sum	(3) Implied Cumulative LDF	(4) Ult Loss Excluding Lump Sum	(5) Selected Incr Lump Sum % Outstdg	(6) Cumulative Lump Sum % Outstdg	(7) Total Lump Sum Outstdg	(8) Paid Lump Sum to Date	(9) Est Ult Lump Sum - Incr Method	(10) Ultimate Lump Sum Percentage	(11) Lump Sum LDF	(12) Est Ult Lump Sum - Paid Method	(13) Selected Est Ultimate Lump Sums	(14) Prior Est Ultimate Lump Sums
All Prior Yrs	20,340,304	1.072	21,811,065	0.0%	0.0%	0	665,680	665,680	3.1%	1.001	666,346	666,013	666,013
6/30/82-83	2,831,786	1.013	2,868,331	0.0%	0.0%	0	94,000	94,000	3.3%	1.001	94,094	94,047	94,047
6/30/83-84	2,245,006	1.018	2,285,348	0.0%	0.0%	0	410,001	410,001	17.9%	1.001	410,411	410,206	410,206
6/30/84-85	3,833,819	1.026	3,933,934	0.0%	0.0%	0	551,083	551,083	14.0%	1.001	551,634	551,359	551,359
6/30/85-86	4,048,163	1.034	4,187,106	0.0%	0.0%	0	585,928	585,928	14.0%	1.001	586,514	586,221	586,221
6/30/86-87	5,376,022	1.043	5,605,025	0.0%	0.0%	0	832,391	832,391	14.9%	1.001	833,223	832,807	832,807
6/30/87-88	10,210,491	1.051	10,730,592	0.0%	0.0%	0	1,685,022	1,685,022	15.7%	1.001	1,686,707	1,685,865	1,685,865
6/30/88-89	10,863,188	1.059	11,507,868	0.0%	0.0%	0	1,975,642	1,975,642	17.2%	1.001	1,977,618	1,976,630	1,976,630
6/30/89-90	10,277,938	1.068	10,974,989	0.0%	0.0%	0	2,037,640	2,037,640	18.6%	1.001	2,039,678	2,038,659	2,038,659
6/30/90-91	6,165,086	1.076	6,634,579	0.0%	0.0%	0	1,665,464	1,665,464	25.1%	1.001	1,667,129	1,666,297	1,666,297
6/30/91-92	3,230,938	1.084	3,502,573	0.0%	0.0%	0	1,029,141	1,029,141	29.4%	1.001	1,030,170	1,029,656	1,029,656
6/30/92-93	2,982,248	1.091	3,252,762	0.0%	0.0%	0	794,079	794,079	24.4%	1.001	794,873	794,476	794,476
6/30/93-94	2,286,067	1.098	2,509,457	0.0%	0.0%	0	358,584	358,584	14.3%	1.001	358,943	358,763	358,943
6/30/94-95	2,341,581	1.108	2,593,472	0.0%	0.0%	0	476,424	476,424	18.4%	1.002	477,377	476,901	477,139
6/30/95-96	1,440,291	1.117	1,608,116	0.0%	0.0%	0	484,060	484,060	30.1%	1.003	485,514	484,787	485,030
6/30/96-97	1,057,037	1.124	1,187,998	0.0%	0.0%	0	514,500	514,500	43.3%	1.004	516,561	515,531	515,789
6/30/97-98	2,101,308	1.129	2,372,973	0.0%	0.0%	0	810,801	810,801	34.2%	1.005	814,863	812,832	813,239
6/30/98-99	1,256,384	1.134	1,424,607	0.0%	0.0%	0	420,250	420,250	29.5%	1.006	422,778	421,514	421,725
6/30/99-00	1,634,502	1.137	1,859,006	0.0%	0.0%	0	679,200	679,200	36.5%	1.007	683,969	681,584	681,926
6/30/00-01	2,503,297	1.140	2,854,000	0.0%	0.0%	0	796,500	796,500	27.9%	1.008	802,894	799,697	800,902
6/30/01-02	2,097,298	1.143	2,398,067	0.0%	0.0%	0	508,906	508,906	21.2%	1.011	514,531	511,718	513,262
6/30/02-03	1,302,490	1.147	1,493,724	0.0%	0.0%	0	497,000	497,000	33.3%	1.017	505,508	501,254	502,770
6/30/03-04	2,662,956	1.151	3,064,961	0.0%	0.0%	0	581,000	581,000	19.0%	1.023	594,491	587,746	589,529
6/30/04-05	2,088,646	1.155	2,412,454	0.0%	0.0%	0	635,000	635,000	26.3%	1.029	653,644	644,322	644,322
6/30/05-06	1,356,888	1.160	1,573,421	0.0%	0.0%	0	502,750	502,750	32.0%	1.029	517,511	510,130	510,130
6/30/06-07	1,791,061	1.164	2,083,988	0.0%	0.0%	0	430,751	430,751	20.7%	1.029	443,398	437,075	439,292
6/30/07-08	1,303,214	1.169	1,523,223	0.0%	0.0%	0	338,290	338,290	22.2%	1.040	351,705	344,997	348,553
6/30/08-09	1,689,411	1.174	1,984,046	0.0%	0.0%	0	327,000	327,000	16.5%	1.061	346,841	336,921	342,112
6/30/09-10	1,061,332	1.193	1,265,824	0.1%	0.1%	1,671	223,500	225,171	17.8%	1.084	242,277	233,724	185,332
6/30/10-11	2,054,286	1.216	2,498,068	0.2%	0.3%	8,294	374,130	382,424	15.3%	1.111	415,701	399,063	408,761
6/30/11-12	1,532,690	1.234	1,891,476	0.2%	0.5%	10,063	223,300	233,363	12.3%	1.149	256,547	244,955	211,184
6/30/12-13	2,320,490	1.255	2,912,224	0.6%	1.1%	31,549	337,001	368,550	12.7%	1.206	406,536	387,543	398,549
6/30/13-14	2,720,287	1.288	3,504,428	1.0%	2.1%	72,819	463,916	536,735	15.3%	1.387	643,572	590,153	600,958
6/30/14-15	3,482,376	1.338	4,658,425	0.6%	2.7%	126,923	391,500	518,423	11.1%	1.484	581,118	549,770	541,056
6/30/15-16	4,324,932	1.405	6,076,282	0.3%	3.0%	180,752	624,501	805,253	13.3%	1.618	1,010,475	907,864	823,666
6/30/16-17	3,517,215	1.524	5,359,363	2.1%	5.1%	270,973	352,501	623,474	11.6%	2.042	719,811	671,643	494,837
6/30/17-18	2,373,721	1.765	4,189,749	2.8%	7.8%	327,953	90,000	417,953	10.0%	3.210	288,927	353,440	442,567
6/30/18-19	2,104,770	2.268	4,772,887	3.0%	10.8%	514,746	1	514,747	10.8%	9.432	9	257,378	336,821
6/30/19-20	1,137,532	4.274	4,861,452	2.5%	13.2%	643,663	0	643,663	13.2%	40.142	0	321,832	
Total	137,947,050		162,227,862			2,189,407	23,767,437	25,956,844	16.0%		25,393,896	25,675,370	25,220,628

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, 2019

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
All Prior Yrs	0	0	0	0	0	0	0	0	0	20,000	46,500	35,000	0
Jun-83	0	0	0	0	0	0	0	15,000	0	20,000	24,000	35,000	0
Jun-84	0	0	0	0	0	0	0	42,000	0	70,000	40,000	10,001	48,000
Jun-85	0	0	0	25,000	0	28,000	0	31,500	45,000	116,583	190,000	25,000	0
Jun-86	0	0	22,500	27,000	52,500	10,000	24,428	133,500	166,000	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
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
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
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
Jun-91	0	23,609	651,500	370,355	182,000	135,000	97,000	6,000	0	75,000	90,000	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
Jun-93	23,000	109,000	142,400	120,500	84,000	161,300	42,879	0	93,000	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
Jun-95	12,000	35,000	45,000	142,024	68,400	16,500	40,000	0	50,000	25,000	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
Jun-97	0	76,500	124,000	215,000	0	0	0	15,000	0	0	84,000	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
Jun-99	48,000	52,250	115,000	130,000	0	7,459	37,541	30,000	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
Jun-01	45,000	221,500	170,000	132,500	67,500	77,500	12,500	20,000	50,000	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
Jun-03	20,000	30,000	107,000	142,500	137,500	0	0	0	0	60,000	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	0
Jun-06	0	18,000	261,750	170,500	32,500	20,000	0	0	0	0	0	0	0
Jun-07	10,000	58,500	66,250	51,001	95,000	0	0	150,000	0	0	0	0	0
Jun-08	17,730	170,000	22,500	34,500	40,000	0	31,000	0	22,560	0	0	0	0
Jun-09	35,000	85,000	124,500	25,000	0	0	0	37,500	20,000	0	0	0	
Jun-10	0	30,000	6,000	110,000	25,000	0	0	0	0	2,500	50,000		
Jun-11	8,500	28,530	28,000	116,100	0	0	35,000	110,000	48,000	0			
Jun-12	0	5,500	125,300	0	50,000	0	0	2,500	40,000				
Jun-13	0	75,000	64,765	52,235	75,000	0	42,000	28,001					
Jun-14	0	7,850	167,150	131,416	0	132,500	25,000						
Jun-15	0	12,500	205,000	55,000	85,000	34,000							
Jun-16	0	76,001	161,500	204,500	182,500								
Jun-17	0	88,500	54,500	209,501									
Jun-18	15,000	25,000	50,000										
Jun-19	0	1											
Jun-20	0												

Acc Yr Ending	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
All Prior Yrs	73,500	50,000	69,180	0	0	97,000	198,000	0	0	0	26,500	25,000	25,000
Jun-83	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-84	0	50,000	0	0	0	0	0	0	0	0	0	0	0
Jun-85	0	0	54,500	35,500	0	0	0	0	0	0	0	0	0
Jun-86	0	0	0	0	0	0	0	0	0	0	150,000	0	0
Jun-87	90,000	70,000	0	0	40,000	0	0	0	0	0	0	0	0
Jun-88	0	19,910	0	36,667	25,000	48,333	0	0	150,000	0	0	0	0
Jun-89	52,500	0	0	0	0	20,550	4,450	0	0	0	0	0	0
Jun-90	31,000	31,000	0	0	50,125	124,876	0	0	0	0	0	0	0
Jun-91	0	35,000	0	0	0	0	0	0	0	0	0	0	0
Jun-92	0	0	0	0	37,000	1	0	0	0	0	0	0	0
Jun-93	0	0	0	0	18,000	0	0	0	0	0	0	0	0
Jun-94	25,000	25,000	0	0	0	0	0	0	0	0	0	0	0
Jun-95	0	42,500	0	0	0	0	0	0	0	0	0	0	0
Jun-96	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-97	0	0	0	0	0	0	0	0	0	0	0		
Jun-98	50,000	0	0	0	0	0	0	0	0	0			
Jun-99	0	0	0	0	0	0	0	0	0				
Jun-00	0	0	0	0	0	0	0	0					
Jun-01	0	0	0	0	0	0	0						
Jun-02	0	0	0	0	0	0							
Jun-03	0	0	0	0	0								
Jun-04	0	0	0	0									
Jun-05	0	0	0										
Jun-06	0	0											
Jun-07	0												

Acc Yr Ending	312-324	324-336	336-348	348-360	360-372	372-384	384-396	396-408	408-420	420-432	432-444	444-456	456-468
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-83	0	0	0	0	0	0	0	0	0	0	0	0	
Jun-84	150,000	0	0	0	0	0	0	0	0	0	0		
Jun-85	0	0	0	0	0	0	0	0	0	0			
Jun-86	0	0	0	0	0	0	0	0	0				
Jun-87	0	0	0	0	0	0	0	0					
Jun-88	0	0	0	0	0	0	0						
Jun-89	0	0	0	0	0	0							
Jun-90	0	0	0	0	0								
Jun-91	0	0	0	0									
Jun-92	0	0	0										
Jun-93	0	0											
Jun-94	0												

Cumulative Lump Sum Payments

Acc Yr Ending	12	24	36	48	60	72	84	96	108	120	132	144	156
All Prior Yrs	0	0	0	0	0	0	0	0	0	20,000	66,500	101,500	101,500
Jun-83	0	0	0	0	0	0	0	15,000	15,000	35,000	59,000	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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	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	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	338,290	338,290	338,290	338,290
Jun-09	35,000	120,000	244,500	269,500	269,500	269,500	269,500	307,000	327,000	327,000	327,000	327,000	
Jun-10	0	30,000	36,000	146,000	171,000	171,000	171,000	171,000	171,000	173,500	223,500		
Jun-11	8,500	37,030	65,030	181,130	181,130	181,130	216,130	326,130	374,130	374,130			
Jun-12	0	5,500	130,800	130,800	180,800	180,800	180,800	183,300	223,300				
Jun-13	0	75,000	139,765	192,000	267,000	267,000	309,000	337,001					
Jun-14	0	7,850	175,000	306,416	306,416	438,916	463,916						
Jun-15	0	12,500	217,500	272,500	357,500	391,500							
Jun-16	0	76,001	237,501	442,001	624,501								
Jun-17	0	88,500	143,000	352,501									
Jun-18	15,000	40,000	90,000										
Jun-19	0	1											
Jun-20	0												

Acc Yr Ending	168	180	192	204	216	228	240	252	264	276	288	300	312
All Prior Yrs	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
Jun-83	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	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
Jun-85	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
Jun-86	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
Jun-87	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
Jun-88	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
Jun-89	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
Jun-90	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
Jun-91	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
Jun-92	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	776,079	776,079	776,079	776,079	794,079	794,079	794,079	794,079	794,079	794,079	794,079	794,079	794,079
Jun-94	333,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584
Jun-95	433,924	476,424	476,424	476,424	476,424	476,424	476,424	476,424	476,424	476,424	476,424	476,424	476,424
Jun-96	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	484,060	
Jun-97	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500	514,500		
Jun-98	810,801	810,801	810,801	810,801	810,801	810,801	810,801	810,801	810,801	810,801			
Jun-99	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250	420,250				
Jun-00	679,200	679,200	679,200	679,200	679,200	679,200	679,200	679,200					
Jun-01	796,500	796,500	796,500	796,500	796,500	796,500	796,500						
Jun-02	508,906	508,906	508,906	508,906	508,906	508,906							
Jun-03	497,000	497,000	497,000	497,000	497,000								
Jun-04	581,000	581,000	581,000	581,000									
Jun-05	635,000	635,000	635,000										
Jun-06	502,750	502,750											
Jun-07	430,751												

Acc Yr Ending	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680	665,680
Jun-83	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	410,001	410,001	410,001	410,001	410,001	410,001	410,001	410,001	410,001	410,001	410,001		
Jun-85	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083	551,083			
Jun-86	585,928	585,928	585,928	585,928	585,928	585,928	585,928	585,928	585,928				
Jun-87	832,391	832,391	832,391	832,391	832,391	832,391	832,391	832,391					
Jun-88	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022	1,685,022						
Jun-89	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642	1,975,642							
Jun-90	2,037,640	2,037,640	2,037,640	2,037,640	2,037,640								
Jun-91	1,665,464	1,665,464	1,665,464	1,665,464									
Jun-92	1,029,141	1,029,141	1,029,141										
Jun-93	794,079	794,079											
Jun-94	358,584												

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 Endins	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
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
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
Jun-84	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.000	0.031	0.018	0.004	0.021	0.000	0.022	0.000	0.000	0.000	0.000
Jun-85	0.000	0.000	0.000	0.006	0.000	0.007	0.000	0.008	0.011	0.030	0.048	0.006	0.000	0.000	0.000	0.014	0.009	0.000	0.000
Jun-86	0.000	0.000	0.005	0.006	0.013	0.002	0.006	0.032	0.040	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	0.003	0.002	0.011	0.046	0.015	0.019	0.000	0.005	0.004	0.005	0.016	0.012	0.000	0.000	0.007	0.000
Jun-88	0.000	0.002	0.002	0.003	0.022	0.025	0.022	0.011	0.008	0.002	0.005	0.008	0.021	0.000	0.002	0.000	0.003	0.002	0.005
Jun-89	0.000	0.007	0.004	0.009	0.036	0.058	0.029	0.014	0.001	0.001	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.002
Jun-90	0.000	0.004	0.017	0.044	0.031	0.021	0.014	0.005	0.006	0.000	0.012	0.010	0.001	0.003	0.003	0.000	0.000	0.005	0.011
Jun-91	0.000	0.004	0.098	0.056	0.027	0.020	0.015	0.001	0.000	0.011	0.014	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000
Jun-92	0.000	0.097	0.024	0.058	0.025	0.007	0.036	0.016	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.000
Jun-93	0.007	0.034	0.044	0.037	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
Jun-94	0.002	0.034	0.018	0.011	0.015	0.000	0.018	0.025	0.000	0.000	0.000	0.000	0.000	0.010	0.010	0.000	0.000	0.000	0.000
Jun-95	0.005	0.013	0.017	0.055	0.026	0.006	0.015	0.000	0.019	0.010	0.000	0.000	0.000	0.000	0.016	0.000	0.000	0.000	0.000
Jun-96	0.000	0.056	0.090	0.006	0.048	0.017	0.000	0.062	0.000	0.009	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-97	0.000	0.064	0.104	0.181	0.000	0.000	0.000	0.013	0.000	0.000	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-98	0.022	0.052	0.134	0.007	0.014	0.054	0.008	0.008	0.000	0.000	0.000	0.000	0.021	0.021	0.000	0.000	0.000	0.000	0.000
Jun-99	0.034	0.037	0.081	0.091	0.000	0.005	0.026	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-00	0.011	0.137	0.068	0.044	0.035	0.015	0.033	0.014	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-01	0.016	0.078	0.060	0.046	0.024	0.027	0.004	0.007	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-02	0.000	0.031	0.028	0.026	0.022	0.013	0.060	0.015	0.008	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-03	0.013	0.020	0.072	0.095	0.092	0.000	0.000	0.000	0.000	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-04	0.000	0.009	0.018	0.035	0.043	0.070	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-05	0.000	0.021	0.063	0.071	0.044	0.010	0.016	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-06	0.000	0.011	0.166	0.108	0.021	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Jun-07	0.005	0.028	0.032	0.024	0.046	0.000	0.000	0.072	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-08	0.012	0.112	0.015	0.023	0.026	0.000	0.020	0.000	0.015	0.000	0.000	0.000	0.000						
Jun-09	0.018	0.043	0.063	0.013	0.000	0.000	0.000	0.019	0.010	0.000	0.000	0.000							
Jun-10	0.000	0.024	0.005	0.087	0.020	0.000	0.000	0.000	0.000	0.002	0.039								
Jun-11	0.003	0.011	0.011	0.046	0.000	0.000	0.014	0.044	0.019	0.000									
Jun-12	0.000	0.003	0.066	0.000	0.026	0.000	0.000	0.001	0.021										
Jun-13	0.000	0.026	0.022	0.018	0.026	0.000	0.014	0.010											
Jun-14	0.000	0.002	0.048	0.037	0.000	0.038	0.007												
Jun-15	0.000	0.003	0.044	0.012	0.018	0.007													
Jun-16	0.000	0.013	0.027	0.034	0.030														
Jun-17	0.000	0.017	0.010	0.039															
Jun-18	0.004	0.006	0.012																
Jun-19	0.000	0.000																	
Jun-20	0.000																		

Acc Yr Endins	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	420-432	432-444	444-456	456-468
All Prior Yrs	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	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	
Jun-84	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.066	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.000	0.000	0.036	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.000	0.014	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	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000								
Jun-91	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000									
Jun-92	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.000	0.000	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												
Jun-95	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.000	0.000	0.000	0.000	0.000														
Jun-97	0.000	0.000	0.000	0.000	0.000															
Jun-98	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.000	0.000																	
Jun-00	0.000	0.000																		
Jun-01	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
Simple Avg																			
All Yrs (ex P)	0.004	0.027	0.041	0.038	0.022	0.014	0.013	0.016	0.008	0.005	0.008	0.002	0.003	0.002	0.003	0.001	0.001	0.001	0.001
Latest 5	0.001	0.008	0.028	0.028	0.020	0.009	0.007	0.015	0.013	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Latest 3	0.001	0.007	0.016	0.028	0.016	0.015	0.007	0.018	0.013	0.001	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Olympic Avg																			
All Yrs (ex P)	0.003	0.025	0.038	0.035	0.021	0.013	0.012	0.014	0.008	0.004	0.006	0.001	0.002	0.001	0.002	0.000	0.000	0.001	0.000
Latest 10	0.000	0.010	0.030	0.028	0.018	0.003	0.006	0.016	0.006	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Latest 5	0.000	0.007	0.028	0.030	0.023	0.002	0.007	0.010	0.015	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*	*0.025*	*0.030*	*0.021*	*0.020*	*0.003*	*0.013*	*0.012*	*0.004*	*0.002*	*0.002*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Selected	NA	0.025	0.030	0.028	0.021	0.003	0.006	0.010	0.006	0.002	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FacToUlt	NA	0.132	0.108	0.078	0.051	0.030	0.027	0.021	0.011	0.005	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Averages	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	420-432	432-444	444-456	456-468
Simple Avg																				
All Yrs (ex P)	0.000	0.000	0.001	0.000	0.002	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	
Latest 5	0.000	0.000	0.000	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	0.000	0.000	0.000	0.000	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	0.000	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.000	0.000	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	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	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	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	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	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	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	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	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	430,751	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	338,290	338,290	338,290	338,290						
Jun-09	35,000	120,000	244,500	269,500	269,500	269,500	269,500	307,000	327,000	327,000	327,000	327,000							
Jun-10	0	30,000	36,000	146,000	171,000	171,000	171,000	171,000	171,000	173,500	223,500								
Jun-11	8,500	37,030	65,030	181,130	181,130	181,130	216,130	326,130	374,130	374,130									
Jun-12	0	5,500	130,800	130,800	180,800	180,800	180,800	183,300	223,300										
Jun-13	0	75,000	139,765	192,000	267,000	267,000	309,000	337,001											
Jun-14	0	7,850	175,000	306,416	306,416	438,916	463,916												
Jun-15	0	12,500	217,500	272,500	357,500	391,500													
Jun-16	0	76,001	237,501	442,001	624,501														
Jun-17	0	88,500	143,000	352,501															
Jun-18	15,000	40,000	90,000																
Jun-19	0	1																	
Jun-20	0																		

Acc Yr Ending	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	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	665,680	665,680	665,680	665,680
Jun-83	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	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	410,001	410,001	410,001	410,001		
Jun-85	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	551,083			
Jun-86	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	585,928	585,928	585,928				
Jun-87	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	832,391	832,391					
Jun-88	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	1,685,022	1,685,022	1,685,022						
Jun-89	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	1,975,642	1,975,642	1,975,642							
Jun-90	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	2,037,640	2,037,640								
Jun-91	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	1,029,141	1,029,141	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	794,079	794,079	794,079	794,079	794,079	794,079	794,079	794,079	794,079											
Jun-94	358,584	358,584	358,584	358,584	358,584	358,584	358,584	358,584												
Jun-95	476,424	476,424	476,424	476,424	476,424	476,424	476,424													
Jun-96	484,060	484,060	484,060	484,060	484,060	484,060														
Jun-97	514,500	514,500	514,500	514,500	514,500															
Jun-98	810,801	810,801	810,801	810,801																
Jun-99	420,250	420,250	420,250																	
Jun-00	679,200	679,200																		
Jun-01	796,500																			

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
All Prior Yrs										3.325	1.526	1.000	1.724	1.286	1.307	1.000	1.000	1.330
Jun-83								1.000	2.333	1.686	1.593	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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	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	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	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	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	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	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	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	1.000	1.000	1.000	1.000					
Jun-08	10.588	1.120	1.164	1.163	1.000	1.109	1.000	1.071	1.000	1.000	1.000	1.000						
Jun-09	3.429	2.038	1.102	1.000	1.000	1.000	1.139	1.065	1.000	1.000	1.000							
Jun-10		1.200	4.056	1.171	1.000	1.000	1.000	1.000	1.015	1.288								
Jun-11	4.357	1.756	2.785	1.000	1.000	1.193	1.509	1.147	1.000									
Jun-12		23.782	1.000	1.382	1.000	1.000	1.014	1.218										
Jun-13		1.864	1.374	1.391	1.000	1.157	1.091											
Jun-14		22.293	1.751	1.000	1.432	1.057												
Jun-15		17.400	1.253	1.312	1.095													
Jun-16		3.125	1.861	1.413														
Jun-17		1.616	2.465															
Jun-18	2.667	2.250																
Jun-19																		

Acc Yr Ending	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	420-432	432-444	444-456	456-468	To Ult
All Prior Yrs	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	1.000	1.000	1.000	1.000	
Jun-83	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.577	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	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	1.344	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	1.000	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	1.000	1.098	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
Jun-89	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								
Jun-90	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
Jun-92	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93	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	1.000	1.000	1.000													
Jun-95	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	1.000	1.000	1.000	1.000	1.000	1.000															
Jun-97	1.000	1.000	1.000	1.000	1.000																
Jun-98	1.000	1.000	1.000	1.000																	
Jun-99	1.000	1.000	1.000																		
Jun-00	1.000	1.000																			
Jun-01	1.000																				

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
Simple Avg																		
All Yrs (ex P)	6.371	5.357	1.777	1.401	1.233	1.183	1.156	1.084	1.147	1.093	1.033	1.024	1.013	1.023	1.005	1.004	1.007	1.005
Latest 5		9.337	1.741	1.300	1.106	1.081	1.151	1.100	1.003	1.058	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Latest 3		2.330	1.860	1.242	1.176	1.071	1.204	1.122	1.005	1.096	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Volume Wtd																		
All Yrs (ex P)		2.456	1.572	1.276	1.192	1.128	1.096	1.055	1.025	1.044	1.016	1.020	1.014	1.015	1.003	1.004	1.010	1.012
Latest 5		3.838	1.715	1.292	1.129	1.082	1.155	1.100	1.002	1.028	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Latest 3		2.301	1.784	1.262	1.179	1.076	1.199	1.129	1.003	1.060	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Dev Factor Selection																		
Prior	*4.294*	*3.157*	*1.547*	*1.224*	*1.075*	*1.058*	*1.141*	*1.050*	*1.034*	*1.025*	*1.022*	*1.020*	*1.010*	*1.000*	*1.000*	*1.006*	*1.006*	*1.006*
Selected	4.256	2.938	1.572	1.262	1.090	1.070	1.150	1.050	1.034	1.025	1.022	1.020	1.010	1.000	1.000	1.006	1.006	1.006
FacToUlt	40.142	9.432	3.210	2.042	1.618	1.484	1.387	1.206	1.149	1.111	1.084	1.061	1.040	1.029	1.029	1.029	1.023	1.017
Percent of Ult	2.5%	10.6%	31.1%	49.0%	61.8%	67.4%	72.1%	82.9%	87.0%	90.0%	92.2%	94.3%	96.2%	97.1%	97.1%	97.1%	97.7%	98.3%

Averages	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	420-432	432-444	444-456	456-468	To Ult
Simple Avg																					
All Yrs (ex P)	1.000	1.000	1.006	1.000	1.023	1.000	1.000	1.048	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	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)	1.000	1.000	1.011	1.000	1.011	1.000	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		
Latest 5	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	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	*1.003*	*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*	*1.000*	*1.000*	*1.000*	*1.001*	
Selected	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	1.000	1.000	1.000	1.000	1.001
FacToUlt	1.011	1.008	1.007	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	1.001
Percent of Ult	98.9%	99.2%	99.3%	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%	99.9%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Department of Mental Health - Cluster 2
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	1.3%	0.0%	0.3%	0.1%	1.000	1.000
456	98.7%	0.5%	1.3%	0.1%	0.1%	0.981	0.971
444	98.2%	0.8%	1.8%	0.2%	0.1%	0.953	0.932
432	97.5%	0.8%	2.5%	0.2%	0.1%	0.936	0.907
420	96.7%	0.8%	3.3%	0.2%	0.1%	0.919	0.883
408	95.9%	0.8%	4.1%	0.2%	0.1%	0.902	0.859
396	95.2%	0.8%	4.8%	0.2%	0.1%	0.885	0.835
384	94.4%	0.7%	5.6%	0.2%	0.1%	0.868	0.813
372	93.6%	0.7%	6.4%	0.2%	0.1%	0.852	0.791
360	92.9%	0.7%	7.1%	0.2%	0.1%	0.836	0.769
348	92.2%	0.6%	7.8%	0.2%	0.1%	0.819	0.747
336	91.7%	0.6%	8.3%	0.2%	0.1%	0.801	0.723
324	91.1%	0.8%	8.9%	0.3%	0.2%	0.784	0.701
312	90.3%	0.7%	9.7%	0.3%	0.2%	0.773	0.687
300	89.6%	0.6%	10.4%	0.2%	0.1%	0.759	0.671
288	89.0%	0.4%	11.0%	0.2%	0.1%	0.744	0.651
276	88.6%	0.4%	11.4%	0.1%	0.1%	0.725	0.627
264	88.2%	0.3%	11.8%	0.1%	0.1%	0.706	0.603
252	87.9%	0.2%	12.1%	0.1%	0.1%	0.685	0.578
240	87.7%	0.3%	12.3%	0.1%	0.1%	0.664	0.553
228	87.5%	0.3%	12.5%	0.1%	0.1%	0.646	0.530
216	87.2%	0.3%	12.8%	0.2%	0.1%	0.628	0.510
204	86.9%	0.3%	13.1%	0.2%	0.1%	0.613	0.493
192	86.6%	0.3%	13.4%	0.2%	0.1%	0.598	0.477
180	86.2%	0.3%	13.8%	0.2%	0.1%	0.585	0.462
168	85.9%	0.4%	14.1%	0.2%	0.2%	0.572	0.447
156	85.6%	0.4%	14.4%	0.2%	0.2%	0.561	0.437
144	85.1%	1.3%	14.9%	0.8%	0.7%	0.552	0.427
132	83.8%	1.6%	16.2%	1.1%	0.9%	0.567	0.449
120	82.2%	1.2%	17.8%	0.8%	0.7%	0.584	0.473
108	81.0%	1.4%	19.0%	1.0%	0.8%	0.589	0.480
96	79.7%	2.1%	20.3%	1.5%	1.3%	0.593	0.487
84	77.6%	2.9%	22.4%	2.2%	2.0%	0.608	0.507
72	74.8%	3.6%	25.2%	2.9%	2.6%	0.630	0.534
60	71.2%	5.5%	28.8%	4.7%	4.3%	0.652	0.562
48	65.6%	9.0%	34.4%	7.8%	7.3%	0.684	0.601
36	56.7%	12.6%	43.3%	11.4%	10.9%	0.725	0.651
24	44.1%	20.7%	55.9%	19.5%	19.0%	0.761	0.694
12	23.4%	23.4%	76.6%	22.9%	22.7%	0.799	0.740
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, 2020

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	1,287,769	1,654,419		1,126,264	1,446,930
6/30/82-83	36,592	42,517	0.981	35,882	41,691
6/30/83-84	13,592	40,547	0.953	12,958	38,656
6/30/84-85	22,098	100,098	0.936	20,690	93,718
6/30/85-86	4,909	19,909	0.919	4,512	18,296
6/30/86-87	6,587	80,587	0.902	5,940	72,677
6/30/87-88	485,856	532,903	0.885	429,966	471,601
6/30/88-89	619,956	645,170	0.868	538,375	560,271
6/30/89-90	633,422	698,422	0.852	539,789	595,181
6/30/90-91	39,450	96,905	0.836	32,977	81,005
6/30/91-92	20,921	67,981	0.819	17,139	55,693
6/30/92-93	263,673	270,673	0.801	211,136	216,741
6/30/93-94	216,349	223,349	0.784	169,575	175,062
6/30/94-95	13,995	67,795	0.773	10,813	52,378
6/30/95-96	9,649	74,464	0.759	7,327	56,545
6/30/96-97	7,463	55,783	0.744	5,549	41,475
6/30/97-98	14,891	130,521	0.725	10,793	94,597
6/30/98-99	124,606	132,446	0.706	87,914	93,446
6/30/99-00	87,898	151,068	0.685	60,220	103,498
6/30/00-01	148,703	244,583	0.664	98,784	162,477
6/30/01-02	142,146	216,496	0.646	91,780	139,786
6/30/02-03	190,510	200,510	0.628	119,670	125,952
6/30/03-04	202,644	335,984	0.613	124,221	205,959
6/30/04-05	180,355	333,355	0.598	107,915	199,462
6/30/05-06	208,362	224,362	0.585	121,962	131,327
6/30/06-07	123,738	173,138	0.572	70,724	98,959
6/30/07-08	133,096	196,746	0.561	74,686	110,403
6/30/08-09	304,589	326,589	0.552	168,023	180,159
6/30/09-10	284,168	353,168	0.567	161,060	200,167
6/30/10-11	405,583	468,583	0.584	237,046	273,867
6/30/11-12	380,010	492,010	0.589	223,651	289,567
6/30/12-13	642,509	680,509	0.593	381,305	403,856
6/30/13-14	892,797	951,797	0.608	543,104	578,995
6/30/14-15	1,181,124	1,334,124	0.630	743,989	840,364
6/30/15-16	1,565,567	2,034,567	0.652	1,021,065	1,326,947
6/30/16-17	1,945,284	2,161,284	0.684	1,330,938	1,478,722
6/30/17-18	2,079,279	2,549,279	0.725	1,506,793	1,847,388
6/30/18-19	2,925,229	3,755,229	0.761	2,224,764	2,856,016
6/30/19-20	4,045,468	5,813,468	0.799	3,230,937	4,642,961
Total	21,890,837	27,931,339		15,910,235	20,402,797

	(Low)	(High)
(7) Total Discount Factor:	0.727	0.730

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	1,287,769	1,654,419
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	183,967	236,346
(11) Discounted Value at 4%:	1,126,264	1,446,930

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, 2020

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	1,287,769	1,654,419		1,057,783	1,358,952
6/30/82-83	36,592	42,517	0.971	35,541	41,296
6/30/83-84	13,592	40,547	0.932	12,662	37,774
6/30/84-85	22,098	100,098	0.907	20,047	90,807
6/30/85-86	4,909	19,909	0.883	4,334	17,575
6/30/86-87	6,587	80,587	0.859	5,657	69,207
6/30/87-88	485,856	532,903	0.835	405,923	445,230
6/30/88-89	619,956	645,170	0.813	503,945	524,441
6/30/89-90	633,422	698,422	0.791	501,021	552,434
6/30/90-91	39,450	96,905	0.769	30,348	74,546
6/30/91-92	20,921	67,981	0.747	15,632	50,797
6/30/92-93	263,673	270,673	0.723	190,608	195,669
6/30/93-94	216,349	223,349	0.701	151,662	156,569
6/30/94-95	13,995	67,795	0.687	9,617	46,588
6/30/95-96	9,649	74,464	0.671	6,471	49,942
6/30/96-97	7,463	55,783	0.651	4,857	36,302
6/30/97-98	14,891	130,521	0.627	9,340	81,862
6/30/98-99	124,606	132,446	0.603	75,171	79,900
6/30/99-00	87,898	151,068	0.578	50,809	87,325
6/30/00-01	148,703	244,583	0.553	82,183	135,172
6/30/01-02	142,146	216,496	0.530	75,407	114,849
6/30/02-03	190,510	200,510	0.510	97,168	102,268
6/30/03-04	202,644	335,984	0.493	99,881	165,603
6/30/04-05	180,355	333,355	0.477	85,946	158,857
6/30/05-06	208,362	224,362	0.462	96,355	103,754
6/30/06-07	123,738	173,138	0.447	55,368	77,472
6/30/07-08	133,096	196,746	0.437	58,145	85,952
6/30/08-09	304,589	326,589	0.427	130,196	139,600
6/30/09-10	284,168	353,168	0.449	127,627	158,617
6/30/10-11	405,583	468,583	0.473	191,976	221,796
6/30/11-12	380,010	492,010	0.480	182,343	236,085
6/30/12-13	642,509	680,509	0.487	312,994	331,505
6/30/13-14	892,797	951,797	0.507	452,296	482,185
6/30/14-15	1,181,124	1,334,124	0.534	630,737	712,441
6/30/15-16	1,565,567	2,034,567	0.562	879,546	1,143,033
6/30/16-17	1,945,284	2,161,284	0.601	1,169,612	1,299,483
6/30/17-18	2,079,279	2,549,279	0.651	1,353,321	1,659,226
6/30/18-19	2,925,229	3,755,229	0.694	2,030,901	2,607,146
6/30/19-20	4,045,468	5,813,468	0.740	2,995,460	4,304,572
Total	21,890,837	27,931,339		14,198,891	18,236,834
			(7) Total Discount Factor:	0.649	0.653

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	1,287,769	1,654,419
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	183,967	236,346
(11) Discounted Value at 6%:	1,057,783	1,358,952

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, 2020

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

Calculation of Fiscal Year 7/01/20 - 21 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/20 - 06/30/21	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/20 - 06/30/21		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	23,110,406	23,477,056	21,821,999	1,288,408	1,655,058				122,962	135,258	9.5%	8.2%
6/30/82-83	3,103,266	3,110,600	3,066,083	37,183	44,517	98.7%	0.5%	38.0%	14,140	16,929	38.0%	38.0%
6/30/83-84	2,878,598	2,905,554	2,864,047	14,552	41,507	99.0%	0.5%	51.6%	7,507	21,414	51.6%	51.6%
6/30/84-85	4,908,000	4,991,010	4,882,362	25,638	108,648	98.6%	0.5%	36.9%	9,450	40,045	36.9%	36.9%
6/30/85-86	4,899,000	4,914,000	4,891,866	7,134	22,134	99.7%	0.1%	30.2%	2,153	6,679	30.2%	30.2%
6/30/86-87	6,924,000	6,998,000	6,911,248	12,752	86,752	99.3%	0.1%	12.6%	1,606	10,924	12.6%	12.6%
6/30/87-88	14,280,369	14,331,416	13,781,010	499,359	550,406	96.3%	1.0%	27.3%	136,102	150,015	27.3%	27.3%
6/30/88-89	15,538,786	15,584,800	14,897,483	641,303	687,317	95.7%	1.0%	23.4%	150,228	161,007	23.4%	23.4%
6/30/89-90	14,892,000	14,977,000	14,256,491	635,509	720,509	95.5%	1.0%	22.0%	139,984	158,706	22.0%	22.0%
6/30/90-91	9,640,000	9,715,155	9,579,422	60,578	135,733	99.0%	0.5%	49.3%	29,863	66,912	49.3%	49.3%
6/30/91-92	5,542,000	5,594,974	5,520,691	21,309	74,284	99.1%	0.5%	58.3%	12,413	43,272	58.3%	58.3%
6/30/92-93	5,243,000	5,262,030	4,961,331	281,669	300,699	94.5%	2.0%	36.1%	101,618	108,483	36.1%	36.1%
6/30/93-94	3,523,000	3,537,630	3,295,259	227,741	242,371	93.3%	2.0%	30.0%	68,409	72,804	30.0%	30.0%
6/30/94-95	3,704,000	3,766,520	3,672,165	31,835	94,355	98.3%	0.5%	29.6%	9,423	27,929	29.6%	29.6%
6/30/95-96	2,765,000	2,839,135	2,736,200	28,800	102,935	97.6%	1.0%	42.5%	12,252	43,789	42.5%	42.5%
6/30/96-97	2,179,000	2,234,330	2,156,401	22,599	77,929	97.7%	1.0%	43.9%	9,921	34,212	43.9%	43.9%
6/30/97-98	3,450,000	3,571,870	3,420,225	29,775	151,645	97.4%	1.0%	38.7%	11,525	58,694	38.7%	38.7%
6/30/98-99	2,748,240	2,758,080	2,594,441	153,799	163,639	94.2%	2.0%	34.7%	53,356	56,770	34.7%	34.7%
6/30/99-00	3,019,360	3,089,770	2,916,057	103,303	173,713	95.5%	2.0%	44.1%	45,564	76,619	44.1%	44.1%
6/30/00-01	4,225,650	4,330,380	4,053,774	171,876	276,606	94.8%	2.0%	38.2%	65,580	105,540	38.2%	38.2%
6/30/01-02	3,396,350	3,478,190	3,225,444	170,906	252,746	93.8%	2.0%	32.5%	55,465	82,025	32.5%	32.5%
6/30/02-03	2,879,020	2,909,000	2,654,226	224,794	254,774	91.7%	2.0%	24.1%	54,262	61,499	24.1%	24.1%
6/30/03-04	4,969,220	5,139,380	4,702,375	266,845	437,005	93.0%	2.0%	28.7%	76,648	125,524	28.7%	28.7%
6/30/04-05	3,874,000	4,057,000	3,658,713	215,287	398,287	92.3%	2.0%	25.9%	55,656	102,964	25.9%	25.9%
6/30/05-06	3,008,000	3,052,000	2,756,568	251,432	295,432	91.0%	2.0%	22.2%	55,724	65,476	22.2%	22.2%
6/30/06-07	3,072,550	3,128,950	2,893,235	179,315	235,715	93.3%	2.0%	29.9%	53,588	70,442	29.9%	29.9%
6/30/07-08	2,507,600	2,572,250	2,305,389	202,211	266,861	90.8%	2.0%	21.7%	43,797	57,800	21.7%	21.7%
6/30/08-09	3,277,000	3,324,000	2,893,148	383,852	430,852	87.7%	2.0%	16.2%	62,202	69,818	16.2%	16.2%
6/30/09-10	2,201,000	2,282,000	1,842,861	358,139	439,139	82.2%	3.0%	16.9%	60,413	74,077	16.9%	16.9%
6/30/10-11	3,771,000	3,868,000	3,273,103	497,897	594,897	85.7%	3.0%	21.0%	104,414	124,756	21.0%	21.0%
6/30/11-12	2,813,000	2,942,000	2,334,587	478,413	607,413	81.1%	3.0%	15.9%	76,069	96,581	15.9%	15.9%
6/30/12-13	4,004,000	4,073,000	3,242,793	761,207	830,207	80.3%	3.0%	15.2%	115,902	126,408	15.2%	15.2%
6/30/13-14	4,870,000	4,969,000	3,820,779	1,049,221	1,148,221	77.7%	3.0%	13.4%	140,936	154,234	13.4%	13.4%
6/30/14-15	6,280,000	6,461,000	4,847,255	1,432,745	1,613,745	76.1%	4.0%	16.7%	239,680	269,960	16.7%	16.7%
6/30/15-16	7,950,000	8,501,000	6,089,091	1,860,909	2,411,909	74.0%	4.0%	15.4%	286,591	371,449	15.4%	15.4%
6/30/16-17	7,281,000	7,606,000	4,981,151	2,299,849	2,624,849	66.9%	7.1%	21.5%	494,135	563,963	21.5%	21.5%
6/30/17-18	5,720,000	6,288,750	3,230,813	2,489,187	3,057,937	53.8%	10.0%	21.6%	538,874	662,001	21.6%	21.6%
6/30/18-19	6,255,000	7,252,300	2,793,139	3,461,861	4,459,161	41.4%	12.5%	21.2%	734,974	946,707	21.2%	21.2%
6/30/19-20	6,448,250	8,501,850	1,456,106	4,992,144	7,045,744	19.5%	21.9%	27.2%	1,356,398	1,914,374	27.2%	27.2%
Total	221,150,666	228,394,980	195,279,328	25,871,337	33,115,652				5,609,785	7,336,061	21.7%	22.2%

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, 2020

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		816,015			816,653	816,653	639	639		
6/30/82-83		140,297	140,888		140,888	142,297	591	2,000		
6/30/83-84		209,040	210,131		210,000	210,000	960	960		
6/30/84-85	142,561	497,460	500,556	500,634	501,000	506,010	3,540	8,550	0.351	0.355
6/30/85-86	153,298	257,775	259,639	259,679	260,000	260,000	2,225	2,225	0.170	0.170
6/30/86-87	176,136	702,835	708,625	708,836	709,000	709,000	6,165	6,165	0.403	0.403
6/30/87-88	206,319	1,885,496	1,902,928	1,899,426	1,899,000	1,903,000	13,504	17,504	0.920	0.922
6/30/88-89	222,806	2,058,653	2,079,764	2,080,093	2,080,000	2,100,800	21,347	42,147	0.934	0.943
6/30/89-90	223,751	1,940,913	1,962,777	1,963,420	1,943,000	1,963,000	2,087	22,087	0.868	0.877
6/30/90-91	210,162	1,748,872	1,770,341	1,770,154	1,770,000	1,787,700	21,128	38,828	0.842	0.851
6/30/91-92	205,241	1,260,611	1,277,363	1,277,091	1,261,000	1,266,914	389	6,303	0.614	0.617
6/30/92-93	176,705	1,185,004	1,203,152	1,202,706	1,203,000	1,215,030	17,996	30,026	0.681	0.688
6/30/93-94	173,075	650,608	662,554	662,240	662,000	669,630	11,392	19,022	0.382	0.387
6/30/94-95	178,317	854,160	872,452	871,801	872,000	880,720	17,840	26,560	0.489	0.494
6/30/95-96	175,996	811,848	831,723	830,912	831,000	840,320	19,152	28,472	0.472	0.477
6/30/96-97	190,083	584,864	600,979	600,433	600,000	607,010	15,136	22,146	0.316	0.319
6/30/97-98	177,278	508,116	523,683	523,167	523,000	529,240	14,884	21,124	0.295	0.299
6/30/98-99	189,080	917,808	948,764	946,996	947,000	949,000	29,192	31,192	0.501	0.502
6/30/99-00	194,494	602,355	625,162	624,260	617,760	625,000	15,405	22,645	0.318	0.321
6/30/00-01	201,568	753,977	786,438	784,946	777,150	786,000	23,173	32,023	0.386	0.390
6/30/01-02	203,105	619,240	649,130	648,246	648,000	655,490	28,760	36,250	0.319	0.323
6/30/02-03	202,515	854,736	900,472	898,417	889,020	909,000	34,284	54,264	0.439	0.449
6/30/03-04	189,588	1,458,419	1,544,140	1,538,369	1,522,620	1,559,440	64,201	101,021	0.803	0.823
6/30/04-05	186,990	935,068	1,000,249	969,807	970,000	1,000,000	34,932	64,932	0.519	0.535
6/30/05-06	193,254	896,930	967,842	939,867	940,000	968,000	43,070	71,070	0.486	0.501
6/30/06-07	203,359	671,423	733,985	727,140	727,000	734,000	55,577	62,577	0.357	0.361
6/30/07-08	212,083	663,885	734,360	733,234	733,000	734,000	69,115	70,115	0.346	0.346
6/30/08-09	204,679	876,737	981,259	955,899	956,000	981,000	79,263	104,263	0.467	0.479
6/30/09-10	184,688	558,030	632,197	643,634	632,000	644,000	73,970	85,970	0.342	0.349
6/30/10-11	169,689	844,686	971,307	937,328	937,000	971,000	92,314	126,314	0.552	0.572
6/30/11-12	177,399	578,597	677,464	693,525	677,000	694,000	98,403	115,403	0.382	0.391
6/30/12-13	189,252	585,302	703,803	735,244	704,000	735,000	118,698	149,698	0.372	0.388
6/30/13-14	199,876	636,576	792,878	833,110	793,000	833,000	156,424	196,424	0.397	0.417
6/30/14-15	213,700	973,379	1,252,551	1,225,209	1,225,000	1,253,000	251,621	279,621	0.573	0.586
6/30/15-16	211,829	1,139,658	1,517,220	1,435,089	1,435,000	1,517,000	295,342	377,342	0.677	0.716
6/30/16-17	203,085	1,111,435	1,574,919	1,466,487	1,466,000	1,575,000	354,565	463,565	0.722	0.776
6/30/17-18	203,925	767,092	1,177,432	1,214,622	1,177,000	1,275,750	409,908	508,658	0.577	0.626
6/30/18-19	218,060	688,368	1,224,722	1,325,809	1,225,000	1,392,300	536,632	703,932	0.562	0.638
6/30/19-20	222,496	318,575	1,204,631	1,476,509	1,265,250	1,550,850	946,675	1,232,275	0.569	0.697
Total	6,986,443	33,564,841	37,108,478	36,904,340	37,545,341	38,749,155	3,980,500	5,184,314		
Tot 6/30/84-20	6,986,443	32,399,490	36,757,459	36,904,340	36,377,800	37,580,204	3,978,310	5,180,715	0.521	0.538

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim
All Prior Yrs		816,015							0	0	
6/30/82-83		140,297	1.004	1.000	140,888	N/A	140,888		0	0	
6/30/83-84		209,040	1.005	1.000	210,131	N/A	210,131		0	0	
6/30/84-85	142,561	497,460	1.006	1.000	500,556	N/A	500,556	0.351	1	1	3,096
6/30/85-86	153,298	257,775	1.007	1.000	259,639	N/A	259,639	0.169	0	0	
6/30/86-87	176,136	702,835	1.008	1.000	708,625	N/A	708,625	0.402	0	0	
6/30/87-88	206,319	1,885,496	1.009	1.000	1,902,928	N/A	1,902,928	0.922	2	1	17,432
6/30/88-89	222,806	2,058,653	1.010	1.000	2,079,764	N/A	2,079,764	0.933	2	1	21,111
6/30/89-90	223,751	1,940,913	1.011	1.000	1,962,777	N/A	1,962,777	0.877	0	1	21,864
6/30/90-91	210,162	1,748,872	1.012	1.000	1,770,341	N/A	1,770,341	0.842	1	2	10,735
6/30/91-92	205,241	1,260,611	1.013	1.000	1,277,363	N/A	1,277,363	0.622	0	0	
6/30/92-93	176,705	1,185,004	1.015	1.000	1,203,152	N/A	1,203,152	0.681	2	2	9,074
6/30/93-94	173,075	650,608	1.018	1.000	662,554	N/A	662,554	0.383	1	0	
6/30/94-95	178,317	854,160	1.021	1.000	872,452	N/A	872,452	0.489	1	1	18,293
6/30/95-96	175,996	811,848	1.024	1.000	831,723	N/A	831,723	0.473	1	1	19,874
6/30/96-97	190,083	584,864	1.028	1.000	600,979	N/A	600,979	0.316	2	3	5,372
6/30/97-98	177,278	508,116	1.031	1.000	523,683	N/A	523,683	0.295	1	1	15,567
6/30/98-99	189,080	917,808	1.034	1.000	948,764	N/A	948,764	0.502	1	1	30,956
6/30/99-00	194,494	602,355	1.038	1.000	625,162	N/A	625,162	0.321	0	0	
6/30/00-01	201,568	753,977	1.043	1.000	786,438	N/A	786,438	0.390	0	0	
6/30/01-02	203,105	619,240	1.048	1.000	649,130	N/A	649,130	0.320	0	0	
6/30/02-03	202,515	854,736	1.054	1.000	900,472	N/A	900,472	0.445	3	3	15,245
6/30/03-04	189,588	1,458,419	1.059	1.000	1,544,140	N/A	1,544,140	0.814	3	3	28,574
6/30/04-05	186,990	935,068	1.070	1.000	1,000,249	N/A	1,000,249	0.535	4	4	16,295
6/30/05-06	193,254	896,930	1.079	1.000	967,842	N/A	967,842	0.501	1	1	70,912
6/30/06-07	203,359	671,423	1.093	1.000	733,985	N/A	733,985	0.361	0	0	
6/30/07-08	212,083	663,885	1.106	1.000	734,360	N/A	734,360	0.346	0	0	
6/30/08-09	204,679	876,737	1.119	1.000	981,259	N/A	981,259	0.479	2	2	52,261
6/30/09-10	184,688	558,030	1.133	1.000	632,197	N/A	632,197	0.342	2	2	37,084
6/30/10-11	169,689	844,686	1.150	1.000	971,307	N/A	971,307	0.572	2	3	42,207
6/30/11-12	177,399	578,597	1.171	1.000	677,464	N/A	677,464	0.382	1	1	98,867
6/30/12-13	189,252	585,302	1.202	1.000	703,803	N/A	703,803	0.372	3	2	59,250
6/30/13-14	199,876	636,576	1.246	1.000	792,878	N/A	792,878	0.397	9	7	22,329
6/30/14-15	213,700	973,379	1.287	1.000	1,252,551	N/A	1,252,551	0.586	17	13	21,475
6/30/15-16	211,829	1,139,658	1.331	1.000	1,517,220	N/A	1,517,220	0.716	23	17	22,210
6/30/16-17	203,085	1,111,435	1.417	1.000	1,574,919	N/A	1,574,919	0.775	38	22	21,067
6/30/17-18	203,925	767,092	1.535	1.000	1,177,432	N/A	1,177,432	0.577	124	32	12,823
6/30/18-19	218,060	688,368	1.779	1.000	1,224,722	N/A	1,224,722	0.562	297	129	4,158
6/30/19-20	222,496	318,575	3.781	1.000	1,204,631	N/A	1,204,631	0.541		252	3,516
Total	6,986,443	33,564,841			37,108,478		37,108,478		544	508	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 10/1/18 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, 2020

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	497,460	1.006	500,634	N/A	500,634	0.351	0.351
6/30/85-86	153,298	0.173	257,775	1.007	259,679	N/A	259,679	0.169	0.169
6/30/86-87	176,136	0.417	702,835	1.008	708,836	N/A	708,836	0.402	0.402
6/30/87-88	206,319	0.737	1,885,496	1.009	1,899,426	N/A	1,899,426	0.921	0.921
6/30/88-89	222,806	0.948	2,058,653	1.010	2,080,093	N/A	2,080,093	0.934	0.934
6/30/89-90	223,751	0.903	1,940,913	1.011	1,963,420	N/A	1,963,420	0.878	0.878
6/30/90-91	210,162	0.835	1,748,872	1.012	1,770,154	N/A	1,770,154	0.842	0.842
6/30/91-92	205,241	0.612	1,260,611	1.013	1,277,091	N/A	1,277,091	0.622	0.622
6/30/92-93	176,705	0.664	1,185,004	1.015	1,202,706	N/A	1,202,706	0.681	0.681
6/30/93-94	173,075	0.373	650,608	1.018	662,240	N/A	662,240	0.383	0.383
6/30/94-95	178,317	0.472	854,160	1.021	871,801	N/A	871,801	0.489	0.489
6/30/95-96	175,996	0.453	811,848	1.024	830,912	N/A	830,912	0.472	0.472
6/30/96-97	190,083	0.305	584,864	1.028	600,433	N/A	600,433	0.316	0.316
6/30/97-98	177,278	0.286	508,116	1.031	523,167	N/A	523,167	0.295	0.295
6/30/98-99	189,080	0.473	917,808	1.034	946,996	N/A	946,996	0.501	0.501
6/30/99-00	194,494	0.309	602,355	1.038	624,260	N/A	624,260	0.321	0.321
6/30/00-01	201,568	0.372	753,977	1.043	784,946	N/A	784,946	0.389	0.389
6/30/01-02	203,105	0.310	619,240	1.048	648,246	N/A	648,246	0.319	0.319
6/30/02-03	202,515	0.425	854,736	1.054	898,417	N/A	898,417	0.444	0.444
6/30/03-04	189,588	0.760	1,458,419	1.059	1,538,369	N/A	1,538,369	0.811	0.811
6/30/04-05	186,990	0.285	935,068	1.070	969,807	N/A	969,807	0.519	0.519
6/30/05-06	193,254	0.303	896,930	1.079	939,867	N/A	939,867	0.486	0.486
6/30/06-07	203,359	0.321	671,423	1.093	727,140	N/A	727,140	0.358	0.358
6/30/07-08	212,083	0.341	663,885	1.106	733,234	N/A	733,234	0.346	0.346
6/30/08-09	204,679	0.363	876,737	1.119	955,899	N/A	955,899	0.467	0.467
6/30/09-10	184,688	0.395	558,030	1.133	643,634	N/A	643,634	0.348	0.348
6/30/10-11	169,689	0.419	844,686	1.150	937,328	N/A	937,328	0.552	0.552
6/30/11-12	177,399	0.444	578,597	1.171	693,525	N/A	693,525	0.391	0.391
6/30/12-13	189,252	0.471	585,302	1.202	735,244	N/A	735,244	0.389	0.389
6/30/13-14	199,876	0.499	636,576	1.246	833,110	N/A	833,110	0.417	0.417
6/30/14-15	213,700	0.529	973,379	1.287	1,225,209	N/A	1,225,209	0.573	0.573
6/30/15-16	211,829	0.560	1,139,658	1.331	1,435,089	N/A	1,435,089	0.677	0.677
6/30/16-17	203,085	0.594	1,111,435	1.417	1,466,487	N/A	1,466,487	0.722	0.722
6/30/17-18	203,925	0.630	767,092	1.535	1,214,622	N/A	1,214,622	0.596	0.596
6/30/18-19	218,060	0.667	688,368	1.779	1,325,809	N/A	1,325,809	0.608	0.608
6/30/19-20	222,496	0.708	318,575	3.781	1,476,509	N/A	1,476,509	0.664	0.664
Total	6,986,443		32,399,490		36,904,340		36,904,340		

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, 2020

Department of Mental Health - Cluster 2
Medical

Calculation of Initial Expected Loss Rate

(1) Accident Year	(2) Payroll (000's)	(3) Expected Ult Loss	(4) Unadjusted Loss Cost	(5) Benefit Level Factor	(6) Adjusted Loss Cost	(7) Trend Factor	(8) Trended Adjusted Loss Cost	(9) Detrended Selected Loss Cost	(10) Prior Selected Loss Cost	(11) 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	1,770,341	0.842	1.194	1.006	5.743	5.776	0.109	0.834	0.835
6/30/91-92	205,241	1,277,363	0.622	1.189	0.740	5.418	4.008	0.116	0.613	0.612
6/30/92-93	176,705	1,203,152	0.681	1.189	0.810	5.112	4.139	0.123	0.655	0.664
6/30/93-94	173,075	662,554	0.383	1.178	0.451	4.822	2.175	0.132	0.373	0.373
6/30/94-95	178,317	872,452	0.489	1.170	0.572	4.549	2.604	0.141	0.472	0.472
6/30/95-96	175,996	831,723	0.473	1.155	0.546	4.292	2.343	0.151	0.453	0.453
6/30/96-97	190,083	600,979	0.316	1.137	0.359	4.049	1.455	0.163	0.303	0.305
6/30/97-98	177,278	523,683	0.295	1.135	0.335	3.820	1.281	0.173	0.285	0.286
6/30/98-99	189,080	948,764	0.502	1.135	0.570	3.604	2.052	0.183	0.464	0.473
6/30/99-00	194,494	625,162	0.321	1.135	0.365	3.400	1.240	0.194	0.309	0.309
6/30/00-01	201,568	786,438	0.390	1.109	0.433	3.207	1.388	0.211	0.373	0.372
6/30/01-02	203,105	649,130	0.320	1.101	0.352	3.026	1.065	0.225	0.310	0.310
6/30/02-03	202,515	900,472	0.445	1.073	0.477	2.854	1.362	0.245	0.415	0.425
6/30/03-04	189,588	1,544,140	0.814	1.046	0.852	2.693	2.295	0.266	0.748	0.760
6/30/04-05	186,990	1,000,249	0.535	1.036	0.554	2.540	1.407	0.285	0.272	0.285
6/30/05-06	193,254	967,842	0.501	1.032	0.517	2.397	1.239	0.303	0.289	0.303
6/30/06-07	203,359	733,985	0.361	1.032	0.372	2.261	0.842	0.321	0.307	0.321
6/30/07-08	212,083	734,360	0.346	1.032	0.357	2.133	0.762	0.341	0.325	0.341
6/30/08-09	204,679	981,259	0.479	1.027	0.492	2.012	0.990	0.363	0.346	0.363
6/30/09-10	184,688	632,197	0.342	1.000	0.342	1.898	0.650	0.395	0.377	0.395
6/30/10-11	169,689	971,307	0.572	1.000	0.572	1.791	1.025	0.419	0.400	0.419
6/30/11-12	177,399	677,464	0.382	1.000	0.382	1.689	0.645	0.444	0.424	0.444
6/30/12-13	189,252	703,803	0.372	1.000	0.372	1.594	0.593	0.471	0.449	0.471
6/30/13-14	199,876	792,878	0.397	1.000	0.397	1.504	0.596	0.499	0.476	0.499
6/30/14-15	213,700	1,252,551	0.586	1.000	0.586	1.419	0.831	0.529	0.504	0.529
6/30/15-16	211,829	1,517,220	0.716	1.000	0.716	1.338	0.959	0.560	0.535	0.560
6/30/16-17	203,085	1,574,919	0.775	1.000	0.775	1.262	0.979	0.594	0.567	0.594
6/30/17-18	203,925	1,177,432	0.577	1.000	0.577	1.191	0.688	0.630	0.601	0.630
6/30/18-19	218,060	1,224,722	0.562	1.000	0.562	1.124	0.631	0.667	0.637	0.667
6/30/19-20	222,496	1,204,631	0.541	1.000	0.541	1.060	0.574	0.708		0.708
Total	5,861,572	29,343,171								

Trend Last 4 (ex 19-20):	-10.5%	Avg 3 (ex 19-20):	0.766
Trend Last 8 (ex 19-20):	8.8%	Avg 5 (ex 19-20):	0.818
Trend Last 12 (ex 19-20):	4.1%	Avg 10 (ex 19-20):	0.760
Prior Selected Trend:	6.0%	Prior Sel Avg:	0.675
Selected Trend:	6.0%	Sel. Loss Cost:	0.750

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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Department of Mental Health - Cluster 2
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend		0.900
(2)	Credibility		29%
(3)	Average Pmt Trend Statewide		0.980
(4)	Credibility Weighted Trend		0.957

		(Low)	(High)
(5)	Selected Range	0.947	0.966
(6)	Incremental Paid for 2020	0	0
(7)	Estimated Reserve	0	0
(8)	Paid to Date (82 & Prior)	816,015	816,015
(9)	Est Ult Paid for 1982 & Prior	816,015	816,015

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	426	426
(11)	Projected Number of Years	3	3
(12)	Estimated Reserve	1,278	1,278
(13)	Paid to Date (82 & Prior)	816,015	816,015
(14)	Est Ult Paid for 1982 & Prior	817,292	817,292
(14a)	Paid Counts During Fiscal Year	0	0

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	816,653	816,653
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**816,653**	**816,653**
(18)	Implied Tail	1.001	1.001
(19)	Ult Loss Inc Lump Sums @ 6/19	816,653	817,418

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 =	23
2001	10	21,898	9.994	0.652	S(x) =	46,079
2002	11	10,530	9.262	0.481	S(x-sq) =	92,317,515
2003	12	13,888	9.539	1.319	S(xy) =	436,790
2004	13	14,770	9.600	1.064	S(y) =	218
2005	14	16,486	9.710	1.116	D =	28,604
2006	15	16,533	9.713	1.003	slope =	-0.118
2007	16	15,051	9.619	0.910	Avg Trend =	0.882
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		
2017	26	0				
2018	27	1,278	7.153			
2019	28	0				
2020	29	0				
					Selected Trend:	**0.900**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	807,305
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	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	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	619,240	619,240	619,240	619,240
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	767,961	783,698	833,252	854,736	
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	1,369,371	1,396,465	1,425,306	1,458,419		
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	919,419	921,971	933,349	935,068			
June-06	251,300	520,856	684,007	715,286	737,612	754,221	768,311	780,173	795,227	811,567	832,733	850,354	867,723	881,682	896,930				
June-07	266,977	578,217	638,599	652,141	659,793	664,093	666,803	669,308	669,732	671,423	671,423	671,423	671,423	671,423					
June-08	278,965	550,541	604,168	629,658	649,695	656,991	663,910	663,885	663,885	663,885	663,885	663,885	663,885						
June-09	302,300	569,565	595,188	605,449	639,872	662,294	692,197	758,051	800,308	818,107	864,653	876,737							
June-10	216,046	447,208	465,324	474,345	490,538	503,411	518,661	531,196	538,169	552,229	558,030								
June-11	336,085	580,670	657,420	693,645	718,136	745,881	777,559	801,073	825,708	844,686									
June-12	227,796	448,648	504,764	520,900	532,545	541,224	553,595	562,976	578,597										
June-13	232,201	491,890	540,494	555,003	565,116	574,100	581,542	585,302											
June-14	217,605	461,922	538,864	572,808	596,857	615,386	636,576												
June-15	336,154	678,363	754,856	849,640	936,491	973,379													
June-16	454,022	857,145	977,472	1,078,449	1,139,658														
June-17	447,474	885,439	1,035,511	1,111,435															
June-18	339,683	646,097	767,092																
June-19	318,080	688,368																	
June-20	318,575																		

Acc Yr Ending	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	139,666	140,297	140,297	140,297
June-84	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	209,040	209,040	209,040	209,040	
June-85	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	494,011	496,801	497,196	497,460		
June-86	250,509	253,317	253,317	253,317	257,775	257,775	257,775	257,775	257,775	257,775	257,775	257,775	257,775	257,775	257,775	257,775			
June-87	699,573	700,478	701,229	701,978	702,712	702,835	702,835	702,835	702,835	702,835	702,835	702,835	702,835	702,835	702,835				
June-88	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	1,866,170	1,869,052	1,883,074	1,885,496					
June-89	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	2,053,852	2,055,705	2,057,612	2,058,653						
June-90	1,938,078	1,938,078	1,938,078	1,938,078	1,938,078	1,938,078	1,938,378	1,938,618	1,939,963	1,939,963	1,939,963	1,940,913							
June-91	1,737,397	1,738,820	1,740,878	1,741,982	1,744,875	1,746,213	1,746,723	1,747,281	1,747,508	1,747,549	1,748,872								
June-92	1,257,214	1,258,829	1,260,461	1,260,611	1,260,611	1,260,611	1,260,611	1,260,611	1,260,611	1,260,611									
June-93	1,045,649	1,059,121	1,078,986	1,097,266	1,117,124	1,132,491	1,146,543	1,166,369	1,185,004										
June-94	645,213	646,088	646,088	646,088	648,098	649,917	650,608	650,608											
June-95	844,533	849,477	852,296	852,794	853,498	854,111	854,160												
June-96	803,766	804,663	807,002	808,470	810,127	811,848													
June-97	541,805	545,274	549,243	579,458	584,864														
June-98	507,079	507,413	507,678	508,116															
June-99	852,119	899,201	917,808																
June-00	602,355	602,355																	
June-01	753,977																		

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	1.064
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	1.000	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	1.000	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	1.000	1.000	1.000	1.000
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	1.025	1.020	1.063	1.026	
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	1.019	1.020	1.021	1.023		
June-05	2.804	1.161	1.060	1.033	1.017	1.046	1.021	1.021	1.020	1.010	1.007	1.003	1.003	1.012	1.002			
June-06	2.073	1.313	1.046	1.031	1.023	1.019	1.015	1.019	1.021	1.026	1.021	1.020	1.016	1.017				
June-07	2.166	1.104	1.021	1.012	1.007	1.004	1.004	1.001	1.003	1.000	1.000	1.000	1.000					
June-08	1.974	1.097	1.042	1.032	1.011	1.011	1.000	1.000	1.000	1.000	1.000	1.000						
June-09	1.884	1.045	1.017	1.057	1.035	1.045	1.095	1.056	1.022	1.057	1.014							
June-10	2.070	1.041	1.019	1.034	1.026	1.030	1.024	1.013	1.026	1.011								
June-11	1.728	1.132	1.055	1.035	1.039	1.042	1.030	1.031	1.023									
June-12	1.970	1.125	1.032	1.022	1.016	1.023	1.017	1.028										
June-13	2.118	1.099	1.027	1.018	1.016	1.013	1.006											
June-14	2.123	1.167	1.063	1.042	1.031	1.034												
June-15	2.018	1.113	1.126	1.102	1.039													
June-16	1.888	1.140	1.103	1.057														
June-17	1.979	1.169	1.073															
June-18	1.902	1.187																
June-19	2.164																	

Acc Yr Ending	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	420-432	432-444	444-456
June-83	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	1.002	1.005	1.000	1.000
June-84	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	1.000	1.000	1.000	1.000	
June-85	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	1.002	1.006	1.001	1.001		
June-86	1.003	1.011	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			
June-87	1.002	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				
June-88	1.017	1.038	1.015	1.019	1.017	1.018	1.007	1.012	1.054	1.003	1.007	1.002	1.008	1.001					
June-89	1.017	1.003	1.001	1.001	1.001	1.001	1.001	1.000	1.001	1.001	1.001	1.001	1.001						
June-90	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-91	1.001	1.001	1.001	1.001	1.002	1.001	1.000	1.000	1.000	1.000	1.001								
June-92	1.000	1.000	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000									
June-93	1.017	1.013	1.019	1.017	1.018	1.014	1.012	1.017	1.016										
June-94	1.002	1.001	1.000	1.000	1.003	1.003	1.001	1.000											
June-95	1.009	1.006	1.003	1.001	1.001	1.001	1.000												
June-96	1.003	1.001	1.003	1.002	1.002	1.002													
June-97	1.009	1.006	1.007	1.055	1.009														
June-98	1.001	1.001	1.001	1.001															
June-99	1.056	1.055	1.021																
June-00	1.000	1.000																	
June-01	1.000																		

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
Simple Avg																		
All Yrs	2.349	1.229	1.118	1.083	1.054	1.051	1.050	1.032	1.026	1.026	1.014	1.012	1.010	1.009	1.007	1.010	1.013	1.007
Latest 5	1.990	1.155	1.078	1.048	1.028	1.029	1.035	1.025	1.015	1.019	1.008	1.010	1.013	1.016	1.009	1.017	1.016	1.013
Latest 3	2.015	1.166	1.101	1.067	1.029	1.023	1.018	1.024	1.024	1.022	1.005	1.007	1.006	1.016	1.014	1.029	1.009	1.000
Volume Wtd																		
All Yrs	2.269	1.202	1.102	1.070	1.043	1.037	1.035	1.020	1.018	1.019	1.012	1.012	1.010	1.010	1.007	1.010	1.016	1.008
Latest 5	1.981	1.154	1.083	1.054	1.030	1.030	1.037	1.027	1.015	1.021	1.009	1.012	1.014	1.016	1.010	1.020	1.017	1.015
Latest 3	2.009	1.164	1.098	1.069	1.031	1.024	1.019	1.025	1.023	1.026	1.005	1.008	1.007	1.017	1.015	1.029	1.010	1.000
Dev Factor S																		
Industry 1	1.957	1.147	1.057	1.025	1.015	1.009	1.011	1.009	1.009	1.009	1.010	1.008	1.008	1.009	1.009	1.008	1.008	1.007
Industry 2		1.281	1.080	1.034	1.020	1.017	1.009	1.011	1.009	1.009	1.006	1.007	1.009	1.008	1.008	1.012	1.007	1.006
Prior	*2.120*	*1.153*	*1.091*	*1.060*	*1.030*	*1.034*	*1.035*	*1.022*	*1.018*	*1.015*	*1.012*	*1.012*	*1.012*	*1.011*	*1.009*	*1.009*	*1.005*	*1.005*
Selected	2.125	1.159	1.083	1.064	1.035	1.033	1.036	1.027	1.018	1.015	1.012	1.012	1.012	1.013	1.009	1.010	1.005	1.005
FacToUlt	3.781	1.779	1.535	1.417	1.331	1.287	1.246	1.202	1.171	1.150	1.133	1.119	1.106	1.093	1.079	1.070	1.059	1.054
Percent of Ult	26.4%	56.2%	65.1%	70.6%	75.1%	77.7%	80.3%	83.2%	85.4%	87.0%	88.3%	89.3%	90.4%	91.5%	92.7%	93.5%	94.4%	94.9%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																				
All Yrs	1.007	1.008	1.005	1.006	1.005	1.004	1.003	1.003	1.007	1.001	1.001	1.001	1.001	1.001	1.002	1.001	1.002	1.000	1.000	
Latest 5	1.013	1.013	1.007	1.012	1.007	1.004	1.003	1.004	1.004	1.001	1.002	1.001	1.002	1.001	1.002					
Latest 3	1.019	1.019	1.009	1.019	1.004	1.002	1.005	1.006	1.005	1.000	1.001	1.001	1.003	1.000	1.002	1.000	1.002			
Volume Wtd																				
All Yrs	1.009	1.009	1.005	1.006	1.005	1.004	1.002	1.004	1.010	1.001	1.002	1.001	1.003	1.001	1.002	1.001	1.001	1.000		
Latest 5	1.016	1.016	1.008	1.010	1.007	1.004	1.003	1.003	1.003	1.001	1.002	1.001	1.003	1.001						
Latest 3	1.021	1.024	1.012	1.017	1.003	1.002	1.006	1.006	1.005	1.000	1.001	1.001	1.003	1.001	1.002	1.000				
Dev Factor S																				
Industry 1																				
Industry 2	1.007	1.006																		
Prior	*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*	*1.001*	*1.001*	*1.001*	*1.004*	
Selected	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	1.001	1.001	1.001	1.001	1.004
FacToUlt	1.048	1.043	1.038	1.034	1.031	1.028	1.024	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
Percent of Ult	95.4%	95.9%	96.4%	96.7%	97.0%	97.3%	97.6%	97.9%	98.2%	98.5%	98.7%	98.8%	98.9%	99.0%	99.1%	99.2%	99.3%	99.4%	99.5%	99.6%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	816,653	817,418	816,653	816,653	0	0.0%	(765)	-0.1%
6/30/82-83	140,898	142,307	140,888	142,297	(10)	0.0%	(10)	0.0%
6/30/83-84	210,000	210,000	210,000	210,000	0	0.0%	0	0.0%
6/30/84-85	500,000	505,000	501,000	506,010	1,000	0.2%	1,010	0.2%
6/30/85-86	260,000	260,000	260,000	260,000	0	0.0%	0	0.0%
6/30/86-87	709,000	709,000	709,000	709,000	0	0.0%	0	0.0%
6/30/87-88	1,897,000	1,901,000	1,899,000	1,903,000	2,000	0.1%	2,000	0.1%
6/30/88-89	2,079,000	2,099,790	2,080,000	2,100,800	1,000	0.0%	1,010	0.0%
6/30/89-90	1,942,000	1,963,000	1,943,000	1,963,000	1,000	0.1%	0	0.0%
6/30/90-91	1,769,000	1,786,690	1,770,000	1,787,700	1,000	0.1%	1,010	0.1%
6/30/91-92	1,261,000	1,266,914	1,261,000	1,266,914	0	0.0%	0	0.0%
6/30/92-93	1,186,000	1,198,870	1,203,000	1,215,030	17,000	1.4%	16,160	1.3%
6/30/93-94	664,000	670,640	662,000	669,630	(2,000)	-0.3%	(1,010)	-0.2%
6/30/94-95	873,000	882,740	872,000	880,720	(1,000)	-0.1%	(2,020)	-0.2%
6/30/95-96	831,000	840,320	831,000	840,320	0	0.0%	0	0.0%
6/30/96-97	596,000	602,970	600,000	607,010	4,000	0.7%	4,040	0.7%
6/30/97-98	524,000	529,240	523,000	529,240	(1,000)	-0.2%	0	0.0%
6/30/98-99	930,000	932,000	947,000	949,000	17,000	1.8%	17,000	1.8%
6/30/99-00	620,730	628,000	617,760	625,000	(2,970)	-0.5%	(3,000)	-0.5%
6/30/00-01	780,120	790,000	777,150	786,000	(2,970)	-0.4%	(4,000)	-0.5%
6/30/01-02	651,000	658,520	648,000	655,490	(3,000)	-0.5%	(3,030)	-0.5%
6/30/02-03	870,210	889,810	889,020	909,000	18,810	2.2%	19,190	2.2%
6/30/03-04	1,499,850	1,537,220	1,522,620	1,559,440	22,770	1.5%	22,220	1.4%
6/30/04-05	970,000	1,006,000	970,000	1,000,000	0	0.0%	(6,000)	-0.6%
6/30/05-06	928,000	961,000	940,000	968,000	12,000	1.3%	7,000	0.7%
6/30/06-07	730,000	741,000	727,000	734,000	(3,000)	-0.4%	(7,000)	-0.9%
6/30/07-08	736,000	741,000	733,000	734,000	(3,000)	-0.4%	(7,000)	-0.9%
6/30/08-09	946,000	977,000	956,000	981,000	10,000	1.1%	4,000	0.4%
6/30/09-10	633,000	641,000	632,000	644,000	(1,000)	-0.2%	3,000	0.5%
6/30/10-11	923,000	964,000	937,000	971,000	14,000	1.5%	7,000	0.7%
6/30/11-12	672,000	685,000	677,000	694,000	5,000	0.7%	9,000	1.3%
6/30/12-13	718,000	743,000	704,000	735,000	(14,000)	-1.9%	(8,000)	-1.1%
6/30/13-14	786,000	822,000	793,000	833,000	7,000	0.9%	11,000	1.3%
6/30/14-15	1,196,000	1,233,000	1,225,000	1,253,000	29,000	2.4%	20,000	1.6%
6/30/15-16	1,400,000	1,505,000	1,435,000	1,517,000	35,000	2.5%	12,000	0.8%
6/30/16-17	1,431,000	1,577,000	1,466,000	1,575,000	35,000	2.4%	(2,000)	-0.1%
6/30/17-18	1,135,000	1,232,700	1,177,000	1,275,750	42,000	3.7%	43,050	3.5%
6/30/18-19	1,184,000	1,400,700	1,225,000	1,392,300	41,000	3.5%	(8,400)	-0.6%
6/30/19-20								
Total	35,998,461	37,050,850	36,280,091	37,198,305	281,630	0.8%	147,455	0.4%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2019

(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, 2020

Department of Mental Health - Cluster 2
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.4%	0.0%	0.1%	0.0%	1.000	1.000
456	99.6%	0.1%	0.4%	0.0%	0.0%	0.981	0.971
444	99.5%	0.1%	0.5%	0.0%	0.0%	0.950	0.927
432	99.4%	0.1%	0.6%	0.0%	0.0%	0.924	0.890
420	99.3%	0.1%	0.7%	0.0%	0.0%	0.901	0.858
408	99.2%	0.1%	0.8%	0.0%	0.0%	0.881	0.829
396	99.1%	0.1%	0.9%	0.0%	0.0%	0.861	0.802
384	99.0%	0.1%	1.0%	0.0%	0.0%	0.843	0.778
372	98.9%	0.1%	1.1%	0.0%	0.0%	0.826	0.755
360	98.8%	0.1%	1.2%	0.0%	0.0%	0.809	0.733
348	98.7%	0.2%	1.3%	0.1%	0.0%	0.793	0.713
336	98.5%	0.3%	1.5%	0.1%	0.1%	0.791	0.712
324	98.2%	0.3%	1.8%	0.1%	0.1%	0.797	0.720
312	97.9%	0.3%	2.1%	0.1%	0.1%	0.796	0.720
300	97.6%	0.3%	2.4%	0.1%	0.1%	0.792	0.715
288	97.3%	0.3%	2.7%	0.1%	0.1%	0.785	0.707
276	97.0%	0.3%	3.0%	0.1%	0.1%	0.777	0.697
264	96.7%	0.4%	3.3%	0.2%	0.1%	0.768	0.685
252	96.4%	0.5%	3.6%	0.2%	0.1%	0.764	0.681
240	95.9%	0.5%	4.1%	0.2%	0.2%	0.763	0.681
228	95.4%	0.5%	4.6%	0.2%	0.2%	0.759	0.676
216	94.9%	0.5%	5.1%	0.2%	0.2%	0.754	0.669
204	94.4%	1.0%	5.6%	0.5%	0.4%	0.746	0.660
192	93.5%	0.8%	6.5%	0.4%	0.3%	0.757	0.674
180	92.7%	1.2%	7.3%	0.7%	0.5%	0.756	0.673
168	91.5%	1.1%	8.5%	0.6%	0.5%	0.762	0.682
156	90.4%	1.1%	9.6%	0.6%	0.5%	0.761	0.680
144	89.3%	1.1%	10.7%	0.7%	0.6%	0.756	0.674
132	88.3%	1.3%	11.7%	0.9%	0.7%	0.750	0.667
120	87.0%	1.6%	13.0%	1.1%	0.9%	0.747	0.664
108	85.4%	2.2%	14.6%	1.6%	1.4%	0.747	0.663
96	83.2%	2.9%	16.8%	2.1%	1.9%	0.753	0.671
84	80.3%	2.6%	19.7%	2.0%	1.8%	0.761	0.683
72	77.7%	2.6%	22.3%	2.1%	1.9%	0.761	0.682
60	75.1%	4.5%	24.9%	3.8%	3.5%	0.757	0.678
48	70.6%	5.4%	29.4%	4.7%	4.4%	0.767	0.690
36	65.1%	8.9%	34.9%	8.1%	7.7%	0.776	0.701
24	56.2%	29.8%	43.8%	28.1%	27.3%	0.794	0.725
12	26.4%	26.4%	73.6%	25.9%	25.7%	0.851	0.800
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
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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	639	639		603	603
6/30/82-83	591	2,000	0.981	580	1,961
6/30/83-84	960	960	0.950	912	912
6/30/84-85	3,540	8,550	0.924	3,272	7,903
6/30/85-86	2,225	2,225	0.901	2,006	2,006
6/30/86-87	6,165	6,165	0.881	5,429	5,429
6/30/87-88	13,504	17,504	0.861	11,630	15,075
6/30/88-89	21,347	42,147	0.843	17,995	35,528
6/30/89-90	2,087	22,087	0.826	1,723	18,236
6/30/90-91	21,128	38,828	0.809	17,095	31,415
6/30/91-92	389	6,303	0.793	308	5,000
6/30/92-93	17,996	30,026	0.791	14,238	23,756
6/30/93-94	11,392	19,022	0.797	9,076	15,154
6/30/94-95	17,840	26,560	0.796	14,202	21,144
6/30/95-96	19,152	28,472	0.792	15,165	22,544
6/30/96-97	15,136	22,146	0.785	11,885	17,390
6/30/97-98	14,884	21,124	0.777	11,567	16,416
6/30/98-99	29,192	31,192	0.768	22,419	23,955
6/30/99-00	15,405	22,645	0.764	11,770	17,302
6/30/00-01	23,173	32,023	0.763	17,685	24,440
6/30/01-02	28,760	36,250	0.759	21,840	27,528
6/30/02-03	34,284	54,264	0.754	25,837	40,893
6/30/03-04	64,201	101,021	0.746	47,919	75,401
6/30/04-05	34,932	64,932	0.757	26,430	49,129
6/30/05-06	43,070	71,070	0.756	32,540	53,694
6/30/06-07	55,577	62,577	0.762	42,357	47,692
6/30/07-08	69,115	70,115	0.761	52,564	53,324
6/30/08-09	79,263	104,263	0.756	59,920	78,819
6/30/09-10	73,970	85,970	0.750	55,496	64,499
6/30/10-11	92,314	126,314	0.747	68,988	94,397
6/30/11-12	98,403	115,403	0.747	73,462	86,153
6/30/12-13	118,698	149,698	0.753	89,360	112,698
6/30/13-14	156,424	196,424	0.761	119,091	149,544
6/30/14-15	251,621	279,621	0.761	191,425	212,726
6/30/15-16	295,342	377,342	0.757	223,721	285,836
6/30/16-17	354,565	463,565	0.767	272,060	355,696
6/30/17-18	409,908	508,658	0.776	317,909	394,496
6/30/18-19	536,632	703,932	0.794	425,921	558,706
6/30/19-20	946,675	1,232,275	0.851	805,746	1,048,830
Total	3,980,500	5,184,314		3,142,143	4,096,228
			(7) Total Discount Factor:	0.789	0.790

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	639	639
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	213	213
(11) Discounted Value at 4%:	603	603

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, 2020

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	639	639		586	586
6/30/82-83	591	2,000	0.971	574	1,943
6/30/83-84	960	960	0.927	890	890
6/30/84-85	3,540	8,550	0.890	3,151	7,609
6/30/85-86	2,225	2,225	0.858	1,909	1,909
6/30/86-87	6,165	6,165	0.829	5,110	5,110
6/30/87-88	13,504	17,504	0.802	10,836	14,046
6/30/88-89	21,347	42,147	0.778	16,606	32,787
6/30/89-90	2,087	22,087	0.755	1,575	16,675
6/30/90-91	21,128	38,828	0.733	15,494	28,474
6/30/91-92	389	6,303	0.713	277	4,493
6/30/92-93	17,996	30,026	0.712	12,805	21,364
6/30/93-94	11,392	19,022	0.720	8,206	13,701
6/30/94-95	17,840	26,560	0.720	12,852	19,133
6/30/95-96	19,152	28,472	0.715	13,700	20,367
6/30/96-97	15,136	22,146	0.707	10,703	15,660
6/30/97-98	14,884	21,124	0.697	10,373	14,721
6/30/98-99	29,192	31,192	0.685	20,007	21,378
6/30/99-00	15,405	22,645	0.681	10,489	15,419
6/30/00-01	23,173	32,023	0.681	15,770	21,793
6/30/01-02	28,760	36,250	0.676	19,445	24,509
6/30/02-03	34,284	54,264	0.669	22,937	36,303
6/30/03-04	64,201	101,021	0.660	42,377	66,681
6/30/04-05	34,932	64,932	0.674	23,556	43,786
6/30/05-06	43,070	71,070	0.673	28,996	47,847
6/30/06-07	55,577	62,577	0.682	37,922	42,698
6/30/07-08	69,115	70,115	0.680	47,022	47,702
6/30/08-09	79,263	104,263	0.674	53,459	70,321
6/30/09-10	73,970	85,970	0.667	49,347	57,352
6/30/10-11	92,314	126,314	0.664	61,257	83,818
6/30/11-12	98,403	115,403	0.663	65,227	76,496
6/30/12-13	118,698	149,698	0.671	79,698	100,512
6/30/13-14	156,424	196,424	0.683	106,794	134,103
6/30/14-15	251,621	279,621	0.682	171,575	190,668
6/30/15-16	295,342	377,342	0.678	200,098	255,654
6/30/16-17	354,565	463,565	0.690	244,807	320,065
6/30/17-18	409,908	508,658	0.701	287,398	356,635
6/30/18-19	536,632	703,932	0.725	388,907	510,152
6/30/19-20	946,675	1,232,275	0.800	757,393	985,889
Total	3,980,500	5,184,314		2,860,128	3,729,251
			(7) Total Discount Factor:	0.719	0.719

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	639	639
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	213	213
(11) Discounted Value at 6%:	586	586

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, 2020

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		4,524,902			5,018,501	5,346,621	493,598	821,718		
6/30/82-83		2,747,816	2,764,257		2,750,435	2,764,000	2,619	16,184		
6/30/83-84		1,405,260	1,485,390		1,470,536	1,485,000	65,276	79,740		
6/30/84-85	115,258	4,274,108	4,308,570	4,298,791	4,299,377	4,304,000	25,268	29,892	3.730	3.734
6/30/85-86	123,937	6,399,508	6,456,710	6,448,065	6,445,935	6,452,000	46,427	52,492	5.201	5.206
6/30/86-87	142,396	3,884,640	3,921,632	3,924,867	3,919,326	3,926,923	34,686	42,283	2.752	2.758
6/30/87-88	166,792	6,097,875	6,159,472	6,167,193	6,101,699	6,132,185	3,824	34,310	3.658	3.677
6/30/88-89	180,117	7,489,518	7,575,027	7,563,347	7,563,000	7,575,000	73,482	85,482	4.199	4.206
6/30/89-90	180,883	9,626,806	9,743,763	9,741,061	9,741,000	9,744,000	114,194	117,194	5.385	5.387
6/30/90-91	169,902	10,754,527	10,900,486	10,899,166	10,899,000	10,921,800	144,473	167,273	6.415	6.428
6/30/91-92	165,926	4,580,111	4,657,941	4,656,692	4,657,000	4,658,000	76,889	77,889	2.807	2.807
6/30/92-93	174,198	3,157,116	3,216,678	3,215,439	3,212,843	3,216,000	55,727	58,884	1.844	1.846
6/30/93-94	185,946	5,190,868	5,315,903	5,311,896	5,312,000	5,316,000	121,132	125,132	2.857	2.859
6/30/94-95	194,051	6,155,200	6,339,023	6,331,430	6,331,000	6,339,000	175,800	183,800	3.263	3.267
6/30/95-96	205,262	5,389,787	5,589,583	5,580,219	5,580,000	5,590,000	190,213	200,213	2.718	2.723
6/30/96-97	234,073	6,031,973	6,298,489	6,284,329	6,284,000	6,298,000	252,027	266,027	2.685	2.691
6/30/97-98	221,865	8,621,698	9,105,266	9,072,422	8,725,290	8,816,330	103,592	194,632	3.933	3.974
6/30/98-99	256,071	7,756,368	8,267,596	8,230,560	7,919,115	8,001,530	162,746	245,162	3.093	3.125
6/30/99-00	268,486	8,170,937	8,771,022	8,723,381	8,397,314	8,484,590	226,377	313,653	3.128	3.160
6/30/00-01	279,182	10,541,880	11,398,918	11,328,390	10,909,108	11,023,080	367,228	481,200	3.908	3.948
6/30/01-02	283,070	8,958,778	9,771,720	9,708,783	9,350,642	9,772,000	391,864	813,222	3.303	3.452
6/30/02-03	289,846	8,740,322	9,606,324	9,541,485	9,190,948	9,606,000	450,626	865,678	3.171	3.314
6/30/03-04	293,771	7,892,961	8,741,647	8,681,561	8,363,140	8,392,000	470,179	499,039	2.847	2.857
6/30/04-05	291,382	8,281,321	9,257,514	8,561,465	8,553,110	8,887,000	271,789	605,679	2.935	3.050
6/30/05-06	294,709	5,833,869	6,569,956	6,146,904	6,104,093	6,307,000	270,224	473,131	2.071	2.140
6/30/06-07	289,603	5,145,885	5,863,840	5,504,584	5,456,843	5,805,000	310,958	659,115	1.884	2.004
6/30/07-08	354,668	4,985,764	5,736,663	5,469,717	5,608,794	5,742,000	623,030	756,236	1.581	1.619
6/30/08-09	332,413	4,172,188	4,843,783	4,673,670	4,763,485	5,086,000	591,297	913,812	1.433	1.530
6/30/09-10	336,338	2,901,337	3,404,860	3,449,291	3,430,502	3,622,000	529,166	720,663	1.020	1.077
6/30/10-11	333,783	3,554,523	4,218,366	4,175,359	4,205,256	4,429,000	650,733	874,477	1.260	1.327
6/30/11-12	348,187	2,697,028	3,253,857	3,422,335	3,344,772	3,593,000	647,744	895,972	0.961	1.032
6/30/12-13	368,022	2,448,105	3,015,021	3,323,079	3,175,388	3,489,000	727,283	1,040,895	0.863	0.948
6/30/13-14	390,528	3,084,247	3,882,693	4,149,923	4,024,340	4,357,000	940,093	1,272,753	1.030	1.116
6/30/14-15	402,750	3,873,007	5,033,139	5,165,865	5,109,701	5,424,000	1,236,694	1,550,993	1.269	1.347
6/30/15-16	400,013	3,951,400	5,393,809	5,503,940	5,459,772	5,779,000	1,508,372	1,827,600	1.365	1.445
6/30/16-17	352,565	5,096,866	7,591,908	6,985,129	7,303,096	7,972,000	2,206,230	2,875,134	2.071	2.261
6/30/17-18	347,621	2,919,702	5,292,887	5,393,397	5,353,828	5,663,000	2,434,127	2,743,298	1.540	1.629
6/30/18-19	357,324	2,766,145	6,704,399	6,333,213	6,531,844	7,040,000	3,765,699	4,273,855	1.828	1.970
6/30/19-20	368,720	2,025,160	10,504,180	7,536,418	9,029,319	10,504,000	7,004,159	8,478,840	2.449	2.849
Total	9,699,658	212,129,509	240,962,292	231,503,367	239,895,353	247,863,059	27,765,844	35,733,549		
Tot 6/30/84-20	9,699,658	203,451,531	236,712,645	231,503,367	230,655,880	238,267,438	27,204,349	34,815,907	2.378	2.456

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, 2020

Department of Corrections - Cluster 3
Indemnity

Paid Loss Development Method

(1) Accident Year	(2) Payroll (000's)	(3) Paid Loss Excluding Lump Sum	(4) Paid LDF	(5) Adjstmnt for Extra Tail	(6) Ultimate Loss Excluding Lump Sum	(7) Est Ult Lump Sum Payments	(8) Ultimate Loss Including Lump Sum	(9) Ultimate Loss Cost	(10) Paid Counts 7/1/18-19	(11) Paid Counts 7/1/19-20	(12) Average Outstanding Claim	(13) Average Age
All Prior Yrs		4,364,902							2	2		72
6/30/82-83		2,566,735	1.006	1.000	2,583,176	181,081	2,764,257		0	0		
6/30/83-84		1,386,759	1.007	1.050	1,466,889	18,501	1,485,390		0	0		
6/30/84-85	115,258	4,093,258	1.008	1.000	4,127,720	180,850	4,308,570	3.738	1	1	34,462	76
6/30/85-86	123,937	6,067,508	1.009	1.000	6,124,710	332,000	6,456,710	5.210	0	0		
6/30/86-87	142,396	3,544,280	1.010	1.000	3,581,272	340,360	3,921,632	2.754	0	0		
6/30/87-88	166,792	5,380,873	1.011	1.000	5,442,470	717,002	6,159,472	3.693	0	0		
6/30/88-89	180,117	6,863,317	1.012	1.000	6,948,826	626,201	7,575,027	4.206	1	1	85,509	64
6/30/89-90	180,883	8,681,906	1.013	1.000	8,798,863	944,900	9,743,763	5.387	1	1	116,957	78
6/30/90-91	169,902	9,417,759	1.015	1.000	9,563,718	1,336,768	10,900,486	6.416	3	1	145,959	66
6/30/91-92	165,926	4,196,860	1.019	1.000	4,274,690	383,251	4,657,941	2.807	1	1	77,830	85
6/30/92-93	174,198	2,519,814	1.024	1.000	2,579,376	637,302	3,216,678	1.847	0	0		
6/30/93-94	185,946	4,348,193	1.029	1.000	4,473,228	842,675	5,315,903	2.859	2	2	62,518	61
6/30/94-95	194,051	5,422,587	1.034	1.000	5,606,410	732,613	6,339,023	3.267	0	0		
6/30/95-96	205,262	4,737,785	1.042	1.000	4,937,581	652,002	5,589,583	2.723	0	0		
6/30/96-97	234,073	5,237,372	1.051	1.000	5,501,902	796,588	6,298,489	2.691	0	0		
6/30/97-98	221,865	8,189,980	1.059	1.000	8,672,469	432,797	9,105,266	4.104	2	2	241,244	58
6/30/98-99	256,071	7,580,315	1.067	1.000	8,091,103	176,493	8,267,596	3.229	1	2	255,394	67
6/30/99-00	268,486	7,894,835	1.076	1.000	8,494,230	276,792	8,771,022	3.267	0	0		
6/30/00-01	279,182	10,126,597	1.085	1.000	10,982,596	416,321	11,398,918	4.083	1	1	855,999	64
6/30/01-02	283,070	8,654,897	1.093	1.000	9,461,585	310,135	9,771,720	3.452	1	1	806,689	57
6/30/02-03	289,846	8,376,819	1.102	1.000	9,230,850	375,474	9,606,324	3.314	0	0		
6/30/03-04	293,771	7,558,530	1.110	1.000	8,392,107	349,540	8,741,647	2.976	1	0		
6/30/04-05	291,382	7,986,271	1.120	1.000	8,942,355	315,159	9,257,514	3.177	0	3	318,695	53
6/30/05-06	294,709	5,571,365	1.129	1.000	6,289,570	280,387	6,569,956	2.229	0	0		
6/30/06-07	289,603	4,938,882	1.139	1.000	5,623,098	240,742	5,863,840	2.025	2	2	342,108	58
6/30/07-08	354,668	4,787,262	1.149	1.000	5,499,664	237,000	5,736,663	1.617	1	1	712,402	61
6/30/08-09	332,413	3,992,172	1.159	1.000	4,628,493	215,290	4,843,783	1.457	3	3	212,107	46
6/30/09-10	336,338	2,800,836	1.170	1.000	3,276,532	128,328	3,404,860	1.012	3	4	118,924	58
6/30/10-11	333,783	3,338,741	1.188	1.000	3,964,945	253,420	4,218,366	1.264	1	1	626,205	49
6/30/11-12	348,187	2,527,925	1.208	1.000	3,052,722	201,134	3,253,857	0.935	1	0		
6/30/12-13	368,022	2,302,792	1.232	1.000	2,837,101	177,919	3,015,021	0.819	2	0		
6/30/13-14	390,528	2,905,366	1.260	1.000	3,660,414	222,279	3,882,693	0.994	3	2	377,524	52
6/30/14-15	402,750	3,671,607	1.298	1.000	4,765,705	267,434	5,033,139	1.250	13	5	218,820	45
6/30/15-16	400,013	3,785,174	1.359	1.000	5,145,586	248,223	5,393,809	1.348	15	12	113,368	48
6/30/16-17	352,565	4,691,866	1.489	1.000	6,986,652	605,256	7,591,908	2.153	26	20	114,739	46
6/30/17-18	347,621	2,909,698	1.747	1.000	5,084,079	208,808	5,292,887	1.523	51	20	108,719	47
6/30/18-19	357,324	2,766,145	2.310	1.000	6,390,035	314,364	6,704,399	1.876	143	99	36,605	42
6/30/19-20	368,720	2,025,160	4.904	1.000	9,932,287	571,893	10,504,180	2.849		181	43,686	41
Total	9,699,658	198,213,145			225,415,011	15,547,281	240,962,292		281	368		

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, 2020

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	4,093,258	1.008	4,117,941	180,850	4,298,791	3.730	3.573
6/30/85-86	123,937	4.195	6,067,508	1.009	6,116,065	332,000	6,448,065	5.203	4.935
6/30/86-87	142,396	2.735	3,544,280	1.010	3,584,507	340,360	3,924,867	2.756	2.517
6/30/87-88	166,792	3.672	5,380,873	1.011	5,450,191	717,002	6,167,193	3.698	3.268
6/30/88-89	180,117	3.331	6,863,317	1.012	6,937,146	626,201	7,563,347	4.199	3.851
6/30/89-90	180,883	4.752	8,681,906	1.013	8,796,161	944,900	9,741,061	5.385	4.863
6/30/90-91	169,902	5.578	9,417,759	1.015	9,562,398	1,336,768	10,899,166	6.415	5.628
6/30/91-92	165,926	2.535	4,196,860	1.019	4,273,441	383,251	4,656,692	2.806	2.576
6/30/92-93	174,198	1.450	2,519,814	1.024	2,578,137	637,302	3,215,439	1.846	1.480
6/30/93-94	185,946	2.329	4,348,193	1.029	4,469,221	842,675	5,311,896	2.857	2.404
6/30/94-95	194,051	2.770	5,422,587	1.034	5,598,817	732,613	6,331,430	3.263	2.885
6/30/95-96	205,262	2.293	4,737,785	1.042	4,928,217	652,002	5,580,219	2.719	2.401
6/30/96-97	234,073	2.225	5,237,372	1.051	5,487,742	796,588	6,284,329	2.685	2.344
6/30/97-98	221,865	3.643	8,189,980	1.059	8,639,624	432,797	9,072,422	4.089	3.894
6/30/98-99	256,071	2.931	7,580,315	1.067	8,054,067	176,493	8,230,560	3.214	3.145
6/30/99-00	268,486	2.912	7,894,835	1.076	8,446,589	276,792	8,723,381	3.249	3.146
6/30/00-01	279,182	3.610	10,126,597	1.085	10,912,069	416,321	11,328,390	4.058	3.909
6/30/01-02	283,070	3.082	8,654,897	1.093	9,398,648	310,135	9,708,783	3.430	3.320
6/30/02-03	289,846	2.943	8,376,819	1.102	9,166,012	375,474	9,541,485	3.292	3.162
6/30/03-04	293,771	2.651	7,558,530	1.110	8,332,021	349,540	8,681,561	2.955	2.836
6/30/04-05	291,382	0.835	7,986,271	1.120	8,246,306	315,159	8,561,465	2.938	2.830
6/30/05-06	294,709	0.877	5,571,365	1.129	5,866,517	280,387	6,146,904	2.086	1.991
6/30/06-07	289,603	0.922	4,938,882	1.139	5,263,842	240,742	5,504,584	1.901	1.818
6/30/07-08	354,668	0.970	4,787,262	1.149	5,232,718	237,000	5,469,717	1.542	1.475
6/30/08-09	332,413	1.020	3,992,172	1.159	4,458,380	215,290	4,673,670	1.406	1.341
6/30/09-10	336,338	1.065	2,800,836	1.170	3,320,963	128,328	3,449,291	1.026	0.987
6/30/10-11	333,783	1.106	3,338,741	1.188	3,921,939	253,420	4,175,359	1.251	1.175
6/30/11-12	348,187	1.158	2,527,925	1.208	3,221,201	201,134	3,422,335	0.983	0.925
6/30/12-13	368,022	1.215	2,302,792	1.232	3,145,160	177,919	3,323,079	0.903	0.855
6/30/13-14	390,528	1.269	2,905,366	1.260	3,927,644	222,279	4,149,923	1.063	1.006
6/30/14-15	402,750	1.327	3,671,607	1.298	4,898,431	267,434	5,165,865	1.283	1.216
6/30/15-16	400,013	1.390	3,785,174	1.359	5,255,717	248,223	5,503,940	1.376	1.314
6/30/16-17	352,565	1.458	4,691,866	1.489	6,379,873	605,256	6,985,129	1.981	1.810
6/30/17-18	347,621	1.530	2,909,698	1.747	5,184,589	208,808	5,393,397	1.552	1.491
6/30/18-19	357,324	1.605	2,766,145	2.310	6,018,849	314,364	6,333,213	1.772	1.684
6/30/19-20	368,720	1.683	2,025,160	4.904	6,964,525	571,893	7,536,418	2.044	1.889
Total	9,699,658		189,894,748		216,155,669	15,347,699	231,503,367		

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, 2020

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	9,563,718	5.629	1.004	5.653	3.243	18.336	0.537	5.567	5.578
6/30/91-92	165,926	4,274,690	2.576	1.102	2.839	3.119	8.853	0.509	2.524	2.535
6/30/92-93	174,198	2,579,376	1.481	1.285	1.902	2.999	5.705	0.454	1.466	1.450
6/30/93-94	185,946	4,473,228	2.406	1.268	3.051	2.883	8.798	0.479	2.328	2.329
6/30/94-95	194,051	5,606,410	2.889	1.257	3.631	2.772	10.066	0.502	2.803	2.770
6/30/95-96	205,262	4,937,581	2.405	1.247	2.999	2.666	7.994	0.527	2.325	2.293
6/30/96-97	234,073	5,501,902	2.351	1.234	2.901	2.563	7.437	0.553	2.249	2.225
6/30/97-98	221,865	8,672,469	3.909	1.218	4.763	2.465	11.739	0.583	3.662	3.643
6/30/98-99	256,071	8,091,103	3.160	1.202	3.799	2.370	9.004	0.614	3.002	2.931
6/30/99-00	268,486	8,494,230	3.164	1.183	3.743	2.279	8.529	0.649	3.015	2.912
6/30/00-01	279,182	10,982,596	3.934	1.153	4.536	2.191	9.939	0.693	3.715	3.610
6/30/01-02	283,070	9,461,585	3.342	1.131	3.779	2.107	7.961	0.735	3.160	3.082
6/30/02-03	289,846	9,230,850	3.185	1.126	3.588	2.026	7.268	0.767	3.009	2.943
6/30/03-04	293,771	8,392,107	2.857	1.126	3.218	1.948	6.268	0.798	2.716	2.651
6/30/04-05	291,382	8,942,355	3.069	1.119	3.435	1.873	6.434	0.835	1.071	0.835
6/30/05-06	294,709	6,289,570	2.134	1.108	2.365	1.801	4.258	0.877	1.103	0.877
6/30/06-07	289,603	5,623,098	1.942	1.096	2.128	1.732	3.685	0.922	1.138	0.922
6/30/07-08	354,668	5,499,664	1.551	1.084	1.681	1.665	2.799	0.970	1.173	0.970
6/30/08-09	332,413	4,628,493	1.392	1.071	1.492	1.601	2.389	1.020	1.211	1.020
6/30/09-10	336,338	3,276,532	0.974	1.067	1.040	1.539	1.601	1.065	1.240	1.065
6/30/10-11	333,783	3,964,945	1.188	1.069	1.269	1.480	1.879	1.106	1.263	1.106
6/30/11-12	348,187	3,052,722	0.877	1.062	0.931	1.423	1.325	1.158	1.297	1.158
6/30/12-13	368,022	2,837,101	0.771	1.052	0.811	1.369	1.110	1.215	1.335	1.215
6/30/13-14	390,528	3,660,414	0.937	1.048	0.982	1.316	1.293	1.269	1.367	1.269
6/30/14-15	402,750	4,765,705	1.183	1.042	1.233	1.265	1.561	1.327	1.401	1.327
6/30/15-16	400,013	5,145,586	1.286	1.034	1.331	1.217	1.619	1.390	1.440	1.390
6/30/16-17	352,565	6,986,652	1.982	1.026	2.034	1.170	2.379	1.458	1.481	1.458
6/30/17-18	347,621	5,084,079	1.463	1.017	1.487	1.125	1.673	1.530	1.525	1.530
6/30/18-19	357,324	6,390,035	1.788	1.008	1.803	1.082	1.950	1.605	1.569	1.605
6/30/19-20	368,720	9,932,287	2.694	1.000	2.694	1.040	2.801	1.683		1.683
Total	8,790,274	186,341,085								

Trend Last 4 (ex 19-20):	6.2%	Avg 3 (ex 19-20):	2.000
Trend Last 8 (ex 19-20):	12.5%	Avg 5 (ex 19-20):	1.836
Trend Last 12 (ex 19-20):	2.4%	Avg 10 (ex 19-20):	1.639
Prior Selected Trend:	2.0%	Prior Sel Avg:	1.600
Selected Trend:	4.0%	Sel. Loss Cost:	1.750

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, 2019
(11) Selected based on (9) and (4)

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	0.950	
(4)	Credibility Weighted Trend	0.959	
		(Low)	(High)
(5)	Selected Range	0.921	0.959
(6)	Incremental Paid for 2020	113,026	113,026
(7)	Estimated Reserve	1,319,817	2,677,572
(8)	Paid to Date (82 & Prior)	4,364,902	4,364,902
(9)	Est Ult Paid for 1982 & Prior	5,684,720	7,042,475

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	109,096	105,375
(11)	Projected Number of Years	2	3
(12)	Estimated Reserve	218,192	316,126
(13)	Paid to Date (82 & Prior)	4,364,902	4,251,876
(14)	Est Ult Paid for 1982 & Prior	4,583,095	4,568,003
(14a)	Paid Counts During Fiscal Year	2	2

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	4,858,501	5,186,621
(16)	Lump Sum Ultimates	160,000	160,000
(17)	Ult Loss Including Lump Sums	**5,018,501**	**5,346,621**
(18)	Implied Tail	1.113	1.188
(19)	Ult Loss Inc Lump Sums @ 6/19	5,077,940	5,413,706

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, 2019

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 =	29
2001	10	66,717	11.108	0.908	S(x) =	58,174
2002	11	70,033	11.157	1.050	S(x-sq) =	116,699,074
2003	12	124,671	11.733	1.780	S(xy) =	670,931
2004	13	92,927	11.440	0.745	S(y) =	334
2005	14	283,599	12.555	3.052	D =	58,870
2006	15	99,838	11.511	0.352	slope =	0.002
2007	16	101,854	11.531	1.020	Avg Trend =	1.002
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		
2017	26	101,864	11.531	1.027		
2018	27	105,321	11.565	1.034		
2019	28	108,941	11.599	1.034		
2020	29	113,026	11.635	1.037		
					Selected Trend:	**1.000**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(4) LN [(3)]

(5) Eg. 2020: 1.037 = 113026 / 108941

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*
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	10,126,025	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	8,652,114	8,652,114	8,653,014
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	8,376,819	8,376,819	8,376,819	8,376,819
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	7,556,865	7,556,865	7,558,530	7,558,530	
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	7,980,912	7,982,459	7,982,459	7,986,271		
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	5,571,365	5,571,365	5,571,365	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	4,748,911	4,809,853	4,874,632	4,938,882				
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	4,636,341	4,686,602	4,736,863	4,787,262					
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	3,874,160	3,924,421	3,964,204	3,992,172						
June-10	907,606	1,619,359	1,983,041	2,120,199	2,204,203	2,280,502	2,372,902	2,465,671	2,613,682	2,699,983	2,800,836							
June-11	985,007	2,210,801	2,754,241	3,017,762	3,188,982	3,323,225	3,334,045	3,334,045	3,336,741	3,338,741								
June-12	628,004	1,365,683	1,786,119	2,155,722	2,398,549	2,483,977	2,523,426	2,527,925	2,527,925									
June-13	594,769	1,413,063	1,926,676	2,135,503	2,210,610	2,274,867	2,302,792	2,302,792										
June-14	832,638	1,825,797	2,295,475	2,707,413	2,827,439	2,879,452	2,905,366											
June-15	1,195,780	2,178,416	2,850,777	3,337,760	3,580,649	3,671,607												
June-16	1,329,847	2,465,467	3,091,580	3,496,861	3,785,174													
June-17	1,489,465	3,082,019	4,028,338	4,691,866														
June-18	1,239,405	2,345,387	2,909,698															
June-19	1,503,593	2,766,145																
June-20	2,025,160																	

Acc Yr Ending	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*	*432*	*444*	*456*
June-83	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	2,566,735	2,566,735	2,566,735	2,566,735
June-84	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	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	3,915,623	3,972,786	4,031,914	4,093,258		
June-86	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	6,067,508	6,067,508	6,067,508	6,067,508			
June-87	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	3,544,280	3,544,280				
June-88	5,355,106	5,361,539	5,362,873	5,362,873	5,362,873	5,380,873	5,380,873	5,380,873	5,380,873	5,380,873	5,380,873	5,380,873	5,380,873	5,380,873	5,380,873					
June-89	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	6,786,146	6,838,754	6,846,416	6,863,317						
June-90	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	8,466,985	8,536,146	8,607,685	8,681,906							
June-91	8,226,001	8,354,608	8,448,679	8,541,379	8,674,427	8,786,248	8,901,535	9,018,207	9,134,303	9,255,233	9,345,968	9,417,759								
June-92	3,712,392	3,755,041	3,800,723	3,849,408	3,896,141	3,941,701	3,988,884	4,037,328	4,091,298	4,143,108	4,196,860									
June-93	2,518,289	2,518,289	2,519,814	2,519,814	2,519,814	2,519,814	2,519,814	2,519,814	2,519,814	2,519,814										
June-94	4,025,425	4,065,927	4,115,667	4,152,871	4,192,115	4,230,146	4,267,930	4,308,957	4,348,193											
June-95	5,416,002	5,417,339	5,417,339	5,419,968	5,422,587	5,422,587	5,422,587	5,422,587												
June-96	4,733,649	4,734,439	4,737,035	4,737,785	4,737,785	4,737,785	4,737,785													
June-97	5,236,556	5,237,372	5,237,372	5,237,372	5,237,372	5,237,372														
June-98	7,832,407	7,919,409	8,007,981	8,098,169	8,189,980															
June-99	7,489,039	7,518,614	7,548,728	7,580,315																
June-00	7,894,835	7,894,835	7,894,835																	
June-01	10,126,525	10,126,597																		
June-02	8,654,897																			

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*
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
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
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
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
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
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	1.006	1.006	1.002
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
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
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
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
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
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
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
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
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
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
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	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	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	1.000	1.000	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	1.000	1.000	1.000	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	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	1.000	1.000	1.000	1.000		
June-06	2.408	1.403	1.167	1.062	1.032	1.022	1.007	1.001	1.001	1.001	1.000	1.000	1.000	1.000			
June-07	2.039	1.263	1.132	1.063	1.030	1.020	1.015	1.014	1.013	1.013	1.013	1.013	1.013				
June-08	2.119	1.266	1.153	1.086	1.048	1.024	1.015	1.011	1.011	1.011	1.011	1.011					
June-09	2.117	1.287	1.151	1.061	1.041	1.031	1.023	1.009	1.013	1.010	1.007						
June-10	1.784	1.225	1.069	1.040	1.035	1.041	1.039	1.060	1.033	1.037							
June-11	2.244	1.246	1.096	1.057	1.042	1.003	1.000	1.001	1.001								
June-12	2.175	1.308	1.207	1.113	1.036	1.016	1.002	1.000									
June-13	2.376	1.363	1.108	1.035	1.029	1.012	1.000										
June-14	2.193	1.257	1.179	1.044	1.018	1.009											
June-15	1.822	1.309	1.171	1.073	1.025												
June-16	1.854	1.254	1.131	1.082													
June-17	2.069	1.307	1.165														
June-18	1.892	1.241															
June-19	1.840																

Acc Yr Ending	*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*	*420-432*	*432-444*	*444-456*
June-83	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	1.000	1.000	1.000	1.000
June-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	
June-85	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	1.014	1.015	1.015	1.015		
June-86	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	1.000	1.000	1.000	1.000			
June-87	1.000	1.000	1.000	1.000	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	1.005	1.001	1.000	1.000	1.000	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
June-89	1.017	1.017	1.018	1.017	1.017	1.019	1.009	1.010	1.009	1.009	1.009	1.008	1.001	1.002						
June-90	1.011	1.007	1.007	1.007	1.007	1.007	1.008	1.008	1.008	1.008	1.008	1.008	1.009							
June-91	1.026	1.016	1.011	1.011	1.016	1.013	1.013	1.013	1.013	1.013	1.010	1.008								
June-92	1.014	1.011	1.012	1.013	1.012	1.012	1.012	1.012	1.013	1.013	1.013									
June-93	1.000	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	1.009	1.010	1.012	1.009	1.009	1.009	1.009	1.010	1.009											
June-95	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
June-96	1.016	1.000	1.001	1.000	1.000	1.000	1.000													
June-97	1.000	1.000	1.000	1.000	1.000	1.000														
June-98	1.012	1.011	1.011	1.011	1.011															
June-99	1.004	1.004	1.004	1.004																
June-00	1.000	1.000	1.000																	
June-01	1.000	1.000																		
June-02	1.000																			

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*
Simple Avg																		
All Yrs	2.123	1.330	1.181	1.104	1.069	1.049	1.037	1.030	1.023	1.020	1.017	1.011	1.011	1.011	1.009	1.009	1.008	1.010
Latest 5	1.895	1.273	1.151	1.069	1.030	1.016	1.013	1.016	1.014	1.014	1.006	1.005	1.003	1.000	1.000	1.000	1.001	1.003
Latest 3	1.934	1.267	1.156	1.067	1.024	1.012	1.001	1.020	1.016	1.019	1.010	1.008	1.004	1.000	1.000	1.000	1.000	1.000
Volume Wtd																		
All Yrs	2.089	1.322	1.173	1.095	1.060	1.041	1.028	1.021	1.017	1.014	1.013	1.009	1.009	1.009	1.008	1.008	1.008	1.009
Latest 5	1.900	1.276	1.153	1.070	1.030	1.015	1.013	1.014	1.013	1.012	1.005	1.004	1.002	1.000	1.000	1.000	1.001	1.003
Latest 3	1.936	1.271	1.156	1.068	1.024	1.012	1.001	1.018	1.014	1.017	1.010	1.008	1.004	1.000	1.000	1.000	1.000	1.000
Dev Factor Selection																		
Industry 1	2.958	1.596	1.236	1.106	1.039	1.020	1.014	1.008	1.006	1.006	1.005	1.010	1.002	1.003	1.003	1.002	1.004	1.003
Industry 2		1.877	1.312	1.143	1.055	1.028	1.016	1.015	1.006	1.005	1.007	1.007	1.004	1.002	1.005	1.002	1.003	1.002
Prior	*2.131*	*1.333*	*1.174*	*1.080*	*1.046*	*1.042*	*1.028*	*1.023*	*1.019*	*1.013*	*1.008*	*1.009*	*1.009*	*1.009*	*1.009*	*1.009*	*1.005*	*1.003*
Selected	2.123	1.322	1.173	1.095	1.047	1.030	1.023	1.020	1.017	1.015	1.009	1.009	1.009	1.009	1.008	1.008	1.008	1.008
FacToUlt	4.904	2.310	1.747	1.489	1.359	1.298	1.260	1.232	1.208	1.188	1.170	1.159	1.149	1.139	1.129	1.120	1.110	1.102
Percent of Ult	20.4%	43.3%	57.2%	67.2%	73.6%	77.0%	79.4%	81.2%	82.8%	84.2%	85.5%	86.3%	87.0%	87.8%	88.6%	89.3%	90.1%	90.7%

Averages	*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*	*420-432*	*432-444*	*444-456*	*To Ult*
Simple Avg																				
All Yrs	1.008	1.008	1.008	1.009	1.009	1.007	1.007	1.005	1.005	1.005	1.004	1.003	1.002	1.002	1.003	1.004	1.005	1.000	1.000	
Latest 5	1.003	1.003	1.003	1.004	1.002	1.004	1.007	1.009	1.008	1.005	1.002	1.003	1.003	1.003						
Latest 3	1.001	1.005	1.005	1.004	1.000	1.003	1.003	1.007	1.009	1.010	1.008	1.003	1.001	1.000	1.005	1.005	1.005			
Volume Wtd																				
All Yrs	1.007	1.008	1.009	1.009	1.009	1.008	1.008	1.007	1.007	1.006	1.005	1.004	1.002	1.002	1.003	1.004	1.008	1.000		
Latest 5	1.003	1.004	1.004	1.005	1.002	1.004	1.008	1.010	1.010	1.008	1.006	1.003	1.003	1.003						
Latest 3	1.001	1.005	1.006	1.005	1.000	1.003	1.003	1.009	1.011	1.010	1.008	1.004	1.001	1.000	1.004	1.005				
Dev Factor Selection																				
Industry 1																				
Industry 2	1.001	1.001																		
Prior	*1.004*	*1.014*	*1.018*	*1.017*	*1.003*	*1.008*	*1.008*	*1.004*	*1.004*	*1.004*	*1.003*	*1.002*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.001*	*1.010*	
Selected	1.008	1.008	1.008	1.008	1.008	1.008	1.008	1.005	1.005	1.005	1.003	1.002	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.006
FacToUlt	1.093	1.085	1.076	1.067	1.059	1.051	1.042	1.034	1.029	1.024	1.019	1.015	1.013	1.012	1.011	1.010	1.009	1.008	1.007	1.006
Percent of Ult	91.5%	92.2%	92.9%	93.7%	94.4%	95.2%	96.0%	96.7%	97.2%	97.7%	98.2%	98.5%	98.7%	98.8%	98.9%	99.0%	99.1%	99.2%	99.3%	99.4%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	5,077,940	5,413,706	5,018,501	5,346,621	(59,440)	-1.2%	(67,085)	-1.2%
6/30/82-83	2,758,356	2,772,000	2,750,435	2,764,000	(7,920)	-0.3%	(8,000)	-0.3%
6/30/83-84	1,475,011	1,490,000	1,470,536	1,485,000	(4,475)	-0.3%	(5,000)	-0.3%
6/30/84-85	4,248,593	4,253,000	4,299,377	4,304,000	50,784	1.2%	51,000	1.2%
6/30/85-86	6,405,039	6,437,650	6,445,935	6,452,000	40,896	0.6%	14,350	0.2%
6/30/86-87	3,895,341	3,915,325	3,919,326	3,926,923	23,985	0.6%	11,598	0.3%
6/30/87-88	6,119,209	6,150,095	6,101,699	6,132,185	(17,510)	-0.3%	(17,910)	-0.3%
6/30/88-89	7,565,000	7,579,000	7,563,000	7,575,000	(2,000)	0.0%	(4,000)	-0.1%
6/30/89-90	9,701,000	9,704,000	9,741,000	9,744,000	40,000	0.4%	40,000	0.4%
6/30/90-91	10,874,000	10,896,750	10,899,000	10,921,800	25,000	0.2%	25,050	0.2%
6/30/91-92	4,628,000	4,629,000	4,657,000	4,658,000	29,000	0.6%	29,000	0.6%
6/30/92-93	3,226,018	3,229,000	3,212,843	3,216,000	(13,175)	-0.4%	(13,000)	-0.4%
6/30/93-94	5,290,000	5,294,000	5,312,000	5,316,000	22,000	0.4%	22,000	0.4%
6/30/94-95	6,371,000	6,379,000	6,331,000	6,339,000	(40,000)	-0.6%	(40,000)	-0.6%
6/30/95-96	5,617,000	5,626,000	5,580,000	5,590,000	(37,000)	-0.7%	(36,000)	-0.6%
6/30/96-97	6,298,000	6,310,000	6,284,000	6,298,000	(14,000)	-0.2%	(12,000)	-0.2%
6/30/97-98	8,627,608	8,809,540	8,725,290	8,816,330	97,682	1.1%	6,790	0.1%
6/30/98-99	7,958,628	8,126,660	7,919,115	8,001,530	(39,513)	-0.5%	(125,130)	-1.5%
6/30/99-00	8,520,214	8,610,240	8,397,314	8,484,590	(122,900)	-1.4%	(125,650)	-1.5%
6/30/00-01	11,027,438	11,143,680	10,909,108	11,023,080	(118,331)	-1.1%	(120,600)	-1.1%
6/30/01-02	9,409,535	9,939,000	9,350,642	9,772,000	(58,893)	-0.6%	(167,000)	-1.7%
6/30/02-03	9,223,790	9,743,000	9,190,948	9,606,000	(32,841)	-0.4%	(137,000)	-1.4%
6/30/03-04	8,405,197	8,523,000	8,363,140	8,392,000	(42,057)	-0.5%	(131,000)	-1.5%
6/30/04-05	8,588,611	9,025,000	8,553,110	8,887,000	(35,501)	-0.4%	(138,000)	-1.5%
6/30/05-06	6,152,449	6,411,000	6,104,093	6,307,000	(48,356)	-0.8%	(104,000)	-1.6%
6/30/06-07	5,444,227	5,832,000	5,456,843	5,805,000	12,617	0.2%	(27,000)	-0.5%
6/30/07-08	5,677,000	5,782,000	5,608,794	5,742,000	(68,206)	-1.2%	(40,000)	-0.7%
6/30/08-09	4,841,000	5,134,000	4,763,485	5,086,000	(77,515)	-1.6%	(48,000)	-0.9%
6/30/09-10	3,431,000	3,683,000	3,430,502	3,622,000	(498)	0.0%	(61,000)	-1.7%
6/30/10-11	4,332,000	4,563,000	4,205,256	4,429,000	(126,744)	-2.9%	(134,000)	-2.9%
6/30/11-12	3,485,000	3,800,000	3,344,772	3,593,000	(140,228)	-4.0%	(207,000)	-5.4%
6/30/12-13	3,340,000	3,732,000	3,175,388	3,489,000	(164,612)	-4.9%	(243,000)	-6.5%
6/30/13-14	4,239,000	4,648,000	4,024,340	4,357,000	(214,660)	-5.1%	(291,000)	-6.3%
6/30/14-15	5,315,000	5,678,000	5,109,701	5,424,000	(205,299)	-3.9%	(254,000)	-4.5%
6/30/15-16	5,545,000	5,911,000	5,459,772	5,779,000	(85,228)	-1.5%	(132,000)	-2.2%
6/30/16-17	7,279,000	8,074,000	7,303,096	7,972,000	24,096	0.3%	(102,000)	-1.3%
6/30/17-18	5,723,000	6,076,000	5,353,828	5,663,000	(369,172)	-6.5%	(413,000)	-6.8%
6/30/18-19	7,180,000	8,354,000	6,531,844	7,040,000	(648,156)	-9.0%	(1,314,000)	-15.7%
6/30/19-20								
Total	233,294,203	241,676,646	230,866,033	237,359,059	(2,428,170)	-1.0%	(4,317,587)	-1.8%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2019

(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, 2020

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	4,364,902	1.151	5,022,561	0.0%	0.0%	0	160,000	160,000	3.2%	1.000	160,000	160,000	160,000
6/30/82-83	2,566,735	1.006	2,583,176	0.0%	0.0%	0	181,081	181,081	7.0%	1.000	181,081	181,081	181,081
6/30/83-84	1,386,759	1.058	1,466,889	0.0%	0.0%	0	18,501	18,501	1.3%	1.000	18,501	18,501	18,501
6/30/84-85	4,093,258	1.008	4,127,720	0.0%	0.0%	0	180,850	180,850	4.4%	1.000	180,850	180,850	180,850
6/30/85-86	6,067,508	1.009	6,124,710	0.0%	0.0%	0	332,000	332,000	5.4%	1.000	332,000	332,000	332,000
6/30/86-87	3,544,280	1.010	3,581,272	0.0%	0.0%	0	340,360	340,360	9.5%	1.000	340,360	340,360	340,360
6/30/87-88	5,380,873	1.011	5,442,470	0.0%	0.0%	0	717,002	717,002	13.2%	1.000	717,002	717,002	717,002
6/30/88-89	6,863,317	1.012	6,948,826	0.0%	0.0%	0	626,201	626,201	9.0%	1.000	626,201	626,201	626,201
6/30/89-90	8,681,906	1.013	8,798,863	0.0%	0.0%	0	944,900	944,900	10.7%	1.000	944,900	944,900	944,900
6/30/90-91	9,417,759	1.015	9,563,718	0.0%	0.0%	0	1,336,768	1,336,768	14.0%	1.000	1,336,768	1,336,768	1,336,768
6/30/91-92	4,196,860	1.019	4,274,690	0.0%	0.0%	0	383,251	383,251	9.0%	1.000	383,251	383,251	383,251
6/30/92-93	2,519,814	1.024	2,579,376	0.0%	0.0%	0	637,302	637,302	24.7%	1.000	637,302	637,302	637,302
6/30/93-94	4,348,193	1.029	4,473,228	0.0%	0.0%	0	842,675	842,675	18.8%	1.000	842,675	842,675	842,675
6/30/94-95	5,422,587	1.034	5,606,410	0.0%	0.0%	0	732,613	732,613	13.1%	1.000	732,613	732,613	732,613
6/30/95-96	4,737,785	1.042	4,937,581	0.0%	0.0%	0	652,002	652,002	13.2%	1.000	652,002	652,002	653,632
6/30/96-97	5,237,372	1.051	5,501,902	0.0%	0.0%	0	794,601	794,601	14.4%	1.005	798,574	796,588	796,588
6/30/97-98	8,189,980	1.059	8,672,469	0.0%	0.0%	0	431,718	431,718	5.0%	1.005	433,877	432,797	432,797
6/30/98-99	7,580,315	1.067	8,091,103	0.0%	0.0%	0	176,053	176,053	2.2%	1.005	176,933	176,493	176,493
6/30/99-00	7,894,835	1.076	8,494,230	0.0%	0.0%	0	276,102	276,102	3.3%	1.005	277,483	276,792	276,792
6/30/00-01	10,126,597	1.085	10,982,596	0.0%	0.0%	0	415,283	415,283	3.8%	1.005	417,359	416,321	422,978
6/30/01-02	8,654,897	1.093	9,461,585	0.1%	0.1%	9,462	303,881	313,343	3.3%	1.010	306,927	310,135	315,795
6/30/02-03	8,376,819	1.102	9,230,850	0.1%	0.2%	18,462	363,503	381,965	4.1%	1.015	368,983	375,474	380,287
6/30/03-04	7,558,530	1.110	8,392,107	0.1%	0.3%	25,176	334,431	359,607	4.3%	1.015	339,473	349,540	354,001
6/30/04-05	7,986,271	1.120	8,942,355	0.1%	0.4%	35,769	295,050	330,820	3.7%	1.015	299,498	315,159	320,188
6/30/05-06	5,571,365	1.129	6,289,570	0.1%	0.5%	31,448	262,504	293,952	4.7%	1.016	266,821	280,387	284,050
6/30/06-07	4,938,882	1.139	5,623,098	0.1%	0.6%	33,739	207,003	240,742	4.3%	1.018	210,703	240,742	246,514
6/30/07-08	4,787,262	1.149	5,499,664	0.1%	0.7%	38,498	198,502	237,000	4.3%	1.031	204,598	237,000	240,861
6/30/08-09	3,992,172	1.159	4,628,493	0.1%	0.8%	35,273	180,017	215,290	4.7%	1.041	187,331	215,290	219,973
6/30/09-10	2,800,836	1.170	3,276,532	0.1%	0.8%	27,827	100,501	128,328	3.9%	1.055	106,035	128,328	131,299
6/30/10-11	3,338,741	1.188	3,964,945	0.1%	0.9%	37,638	215,782	253,420	6.4%	1.064	229,487	253,420	258,633
6/30/11-12	2,527,925	1.208	3,052,722	0.1%	1.0%	32,031	169,103	201,134	6.6%	1.092	184,639	201,134	205,448
6/30/12-13	2,302,792	1.232	2,837,101	0.1%	1.1%	32,606	145,313	177,919	6.3%	1.106	160,771	177,919	180,597
6/30/13-14	2,905,366	1.260	3,660,414	0.0%	1.2%	43,398	178,881	222,279	6.1%	1.138	203,611	222,279	216,510
6/30/14-15	3,671,607	1.298	4,765,705	0.2%	1.4%	66,034	201,400	267,434	5.6%	1.205	242,666	267,434	231,433
6/30/15-16	3,785,174	1.359	5,145,586	0.2%	1.6%	81,997	166,226	248,223	4.8%	1.352	224,715	248,223	198,454
6/30/16-17	4,691,866	1.489	6,986,652	1.3%	2.9%	200,256	405,000	605,256	8.7%	1.988	805,087	605,256	573,406
6/30/17-18	2,909,698	1.747	5,084,079	1.0%	3.9%	198,804	10,004	208,808	4.1%	3.374	33,756	208,808	265,122
6/30/18-19	2,766,145	2.310	6,390,035	1.0%	4.9%	314,364	0	314,364	4.9%	11.278	0	314,364	413,022
6/30/19-20	2,025,160	4.904	9,932,287	0.8%	5.8%	571,893	0	571,893	5.8%	57.516	0	571,893	
Total	198,213,145		230,437,572			1,834,674	13,916,364	15,751,038	6.8%		14,564,832	15,707,281	15,228,378

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, 2019

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
All Prior Yrs	0	0	0	0	0	0	0	0	15,000	0	0	0	57,500
Jun-83	0	0	0	0	0	0	0	17,500	0	35,000	41,581	41,000	46,000
Jun-84	0	0	0	0	0	0	0	0	18,500	0	0	0	0
Jun-85	0	0	0	11,000	0	0	20,000	0	69,000	0	42,000	0	38,850
Jun-86	0	0	0	30,000	68,000	10,000	40,000	27,000	50,000	0	45,000	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
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
Jun-89	0	5,000	70,500	4,500	125,000	86,200	157,000	70,000	30,000	49,500	0	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
Jun-91	0	19,996	27,700	321,471	173,500	181,000	68,000	0	40,000	40,000	1	0	0
Jun-92	0	30,500	94,000	95,000	50,000	90,000	0	0	0	0	0	11,250	0
Jun-93	0	122,600	116,000	160,700	27,000	80,001	119,000	0	0	0	12,000	0	0
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
Jun-95	18,613	172,000	187,000	82,000	135,000	70,000	10,000	0	0	25,000	0	1,000	0
Jun-96	0	35,000	32,000	335,000	0	0	0	0	12,000	15,000	23,000	0	0
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
Jun-98	56,500	160,501	125,715	0	10,000	29,000	20,800	12,201	9,000	8,001	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
Jun-00	0	27,501	5,000	85,500	78,101	17,500	28,500	4,500	10,000	0	7,500	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
Jun-02	0	10,000	43,880	99,500	47,501	66,000	7,000	0	0	0	3,000	27,000	0
Jun-03	0	58,500	110,001	81,000	77,501	21,500	10,001	5,000	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	0
Jun-06	0	35,001	24,502	113,501	81,500	6,000	0	0	0	0	2,000	0	0
Jun-07	0	36,000	69,500	32,500	50,000	19,000	1	2	0	0	0	0	0
Jun-08	0	36,001	37,000	72,000	25,500	10,000	18,000	1	0	0	0	0	0
Jun-09	0	16,000	42,767	47,000	46,250	10,000	8,000	0	0	10,000	0	0	
Jun-10	0	3,000	56,000	31,500	10,000	0	1	0	0	0	0		
Jun-11	0	11,750	47,031	67,000	29,000	33,000	13,001	15,000	0	0			
Jun-12	0	11,050	19,003	30,050	109,000	0	0	0	0				
Jun-13	4,000	17,312	21,000	73,501	29,500	0	0	0					
Jun-14	0	8,500	53,901	25,000	75,480	0	16,000						
Jun-15	0	6,000	40,500	18,500	91,500	44,900							
Jun-16	0	16,000	19,500	23,876	106,850								
Jun-17	0	275,000	43,000	87,000									
Jun-18	0	10,004	0										
Jun-19	0	0											
Jun-20	0												

Acc Yr Ending	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
All Prior Yrs	26,000	0	60,000	0	0	0	0	0	0	1,500	0	0	0
Jun-83	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-84	1	0	0	0	0	0	0	0	0	0	0	0	0
Jun-85	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-86	0	0	0	0	0	0	0	0	0	0	0	0	48,000
Jun-87	0	0	0	0	12,000	0	0	0	0	0	0	0	0
Jun-88	0	0	0	0	3,000	0	1	0	0	0	1	0	0
Jun-89	0	0	18,500	0	0	0	0	0	0	0	10,000	0	1
Jun-90	0	0	0	0	0	5,000	12,500	0	0	0	0	0	0
Jun-91	0	0	100	0	0	10,000	0	0	0	60,000	0	158,000	237,000
Jun-92	0	12,501	0	0	0	0	0	0	0	0	0	0	0
Jun-93	0	0	0	0	0	0	0	0	0	0	1	0	0
Jun-94	0	0	0	6,000	0	0	0	0	0	0	0	0	0
Jun-95	32,000	0	0	0	0	0	0	0	0	0	0	0	0
Jun-96	0	0	0	0	0	71,725	32,069	32,069	64,138	0	1	0	
Jun-97	0	0	0	0	0	0	27,000	0	0	0	0		
Jun-98	0	0	0	0	0	0	0	0	0	0			
Jun-99	0	0	0	0	0	0	0	0	0				
Jun-00	12,000	0	0	0	0	0	0	0					
Jun-01	0	0	0	0	0	0	0						
Jun-02	0	0	0	0	0	0							
Jun-03	0	0	0	0	0								
Jun-04	0	0	0	0									
Jun-05	17,500	0	0										
Jun-06	0	0											
Jun-07	0												

Acc Yr Ending	312-324	324-336	336-348	348-360	360-372	372-384	384-396	396-408	408-420	420-432	432-444	444-456	456-468
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-83	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		
Jun-85	0	0	0	0	0	0	0	0	0	0			
Jun-86	2,000	12,000	0	0	0	0	0	0	0				
Jun-87	0	0	0	0	0	0	0	0					
Jun-88	0	0	0	0	0	0	0						
Jun-89	0	0	0	0	0	0							
Jun-90	0	0	0	0	0								
Jun-91	0	0	0	0									
Jun-92	0	0	0										
Jun-93	0	0											
Jun-94	0												

Cumulative Lump Sum Payments

Acc Yr Ending	12	24	36	48	60	72	84	96	108	120	132	144	156
All Prior Yrs	0	0	0	0	0	0	0	0	15,000	15,000	15,000	15,000	72,500
Jun-83	0	0	0	0	0	0	0	17,500	17,500	52,500	94,081	135,081	181,081
Jun-84	0	0	0	0	0	0	0	0	18,500	18,500	18,500	18,500	18,500
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	262,504	262,504
Jun-07	0	36,000	105,500	138,000	188,000	207,000	207,001	207,003	207,003	207,003	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	198,502	198,502	198,502	198,502
Jun-09	0	16,000	58,767	105,767	152,017	162,017	170,017	170,017	170,017	180,017	180,017	180,017	
Jun-10	0	3,000	59,000	90,500	100,500	100,500	100,501	100,501	100,501	100,501	100,501		
Jun-11	0	11,750	58,781	125,781	154,781	187,781	200,782	215,782	215,782	215,782			
Jun-12	0	11,050	30,053	60,103	169,103	169,103	169,103	169,103	169,103				
Jun-13	4,000	21,312	42,312	115,813	145,313	145,313	145,313	145,313					
Jun-14	0	8,500	62,401	87,401	162,881	162,881	178,881						
Jun-15	0	6,000	46,500	65,000	156,500	201,400							
Jun-16	0	16,000	35,500	59,376	166,226								
Jun-17	0	275,000	318,000	405,000									
Jun-18	0	10,004	10,004										
Jun-19	0	0											
Jun-20	0												

Acc Yr Ending	168	180	192	204	216	228	240	252	264	276	288	300	312
All Prior Yrs	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
Jun-83	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	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	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	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
Jun-87	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
Jun-88	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
Jun-89	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
Jun-90	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
Jun-91	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	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	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,301	637,302	637,302	637,302
Jun-94	836,675	836,675	836,675	842,675	842,675	842,675	842,675	842,675	842,675	842,675	842,675	842,675	842,675
Jun-95	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613	732,613
Jun-96	452,000	452,000	452,000	452,000	452,000	523,725	555,794	587,863	652,001	652,001	652,002	652,002	
Jun-97	767,601	767,601	767,601	767,601	767,601	767,601	794,601	794,601	794,601	794,601	794,601		
Jun-98	431,718	431,718	431,718	431,718	431,718	431,718	431,718	431,718	431,718	431,718			
Jun-99	176,053	176,053	176,053	176,053	176,053	176,053	176,053	176,053	176,053				
Jun-00	276,102	276,102	276,102	276,102	276,102	276,102	276,102	276,102					
Jun-01	415,283	415,283	415,283	415,283	415,283	415,283	415,283						
Jun-02	303,881	303,881	303,881	303,881	303,881	303,881							
Jun-03	363,503	363,503	363,503	363,503	363,503								
Jun-04	334,431	334,431	334,431	334,431									
Jun-05	295,050	295,050	295,050										
Jun-06	262,504	262,504											
Jun-07	207,003												

Acc Yr Ending	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	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	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	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501	18,501		
Jun-85	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850	180,850			
Jun-86	320,000	332,000	332,000	332,000	332,000	332,000	332,000	332,000	332,000				
Jun-87	340,360	340,360	340,360	340,360	340,360	340,360	340,360	340,360					
Jun-88	717,002	717,002	717,002	717,002	717,002	717,002	717,002						
Jun-89	626,201	626,201	626,201	626,201	626,201	626,201							
Jun-90	944,900	944,900	944,900	944,900	944,900								
Jun-91	1,336,768	1,336,768	1,336,768	1,336,768									
Jun-92	383,251	383,251	383,251										
Jun-93	637,302	637,302											
Jun-94	842,675												

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	420-432	432-444	444-456	456-468
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	0.011	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	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	0.014	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	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	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	0.017	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	0.000	0.000	0.000	0.000			
Jun-86	0.000	0.000	0.000	0.005	0.011	0.002	0.007	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	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.006	0.007	0.006	0.006	0.008	0.011	0.007	0.003	0.024	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	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.006	0.003	0.004	0.007	0.035	0.037	0.004	0.019	0.006	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	0.000	0.000	0.000	0.000						
Jun-89	0.000	0.001	0.010	0.001	0.018	0.012	0.023	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	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	0.019	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	0.000	0.000	0.000	0.000								
Jun-91	0.000	0.002	0.003	0.034	0.018	0.019	0.007	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	0.017	0.025	0.000	0.000	0.000	0.000									
Jun-92	0.000	0.007	0.022	0.022	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	0.000	0.000	0.000	0.000										
Jun-93	0.000	0.048	0.045	0.062	0.010	0.031	0.046	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	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	0.000	0.000	0.000	0.000												
Jun-95	0.003	0.031	0.033	0.015	0.024	0.012	0.002	0.000	0.000	0.004	0.000	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													
Jun-96	0.000	0.007	0.006	0.068	0.000	0.000	0.000	0.000	0.002	0.003	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.006	0.006	0.013	0.000	0.000	0.000														
Jun-97	0.011	0.049	0.035	0.022	0.008	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	0.000	0.000	0.000	0.000															
Jun-98	0.007	0.019	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	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.000	0.002	0.000	0.011	0.002	0.003	0.002	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																	
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	0.000	0.000	0.000	0.000																		
Jun-01	0.001	0.000	0.007	0.008	0.008	0.007	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																			
Jun-02	0.000	0.001	0.005	0.011	0.005	0.007	0.001	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000																				
Jun-03	0.000	0.006	0.012	0.009	0.008	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																					
Jun-04	0.000	0.003	0.010	0.010	0.003	0.008	0.004	0.002	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000																						
Jun-05	0.000	0.001	0.012	0.010	0.004	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.002	0.000	0.000																							
Jun-06	0.000	0.006	0.004	0.018	0.013	0.001	0.000	0.000	0.000	0.000	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	0.000	0.000	0.000	0.000																									
Jun-08	0.000	0.007	0.007	0.013	0.005	0.002	0.003	0.000	0.000	0.000	0.000	0.000	0.000																										
Jun-09	0.000	0.003	0.009	0.010	0.010	0.002	0.002	0.000	0.000	0.002	0.000	0.000																											
Jun-10	0.000	0.001	0.017	0.010	0.003	0.000	0.000	0.000	0.000	0.000	0.000																												
Jun-11	0.000	0.003	0.012	0.017	0.007	0.008	0.003	0.004	0.000	0.000																													
Jun-12	0.000	0.004	0.006	0.010	0.036	0.000	0.000	0.000	0.000																														
Jun-13	0.001	0.006	0.007	0.026	0.010	0.000	0.000	0.000																															
Jun-14	0.000	0.002	0.015	0.007	0.021	0.000	0.004																																
Jun-15	0.000	0.001	0.008	0.004	0.019	0.009																																	
Jun-16	0.000	0.003	0.004	0.005	0.021																																		
Jun-17	0.000	0.039	0.006	0.012																																			
Jun-18	0.000	0.002	0.000																																				
Jun-19	0.000	0.000																																					
Jun-20	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	420-432	432-444	444-456	456-468
Simple Avg																																							
All Yrs (ex P)	0.001	0.008	0.011	0.014	0.011	0.007	0.006	0.002	0.003	0.003	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.001	0.000	0.000	0.001	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	
Latest 5	0.000	0.009	0.007	0.011	0.021	0.004	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	0.001	0.001	0.003	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Latest 3	0.000	0.014	0.003	0.007	0.020	0.003	0.001	0.001	0.000	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	0.000	0.000	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	0.010	0.006	0.004	0.002	0.002	0.002	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	0.000	0.000	0.000				
Latest 10	0.000	0.003	0.008	0.010	0.013	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	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000										
Latest 5	0.000	0.002	0.006	0.008	0.020	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Dev Factor Selection																																							
Prior	*NA*	*0.009*	*0.010*	*0.009*	*0.011*	*0.001*	*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*	*0.000*	*0.000*	*0.000*	
Selected	NA	0.008	0.010	0.010	0.013	0.002	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	0.000	0.000	0.000	0.000
FacToUlt	NA	0.058	0.049	0.039	0.029	0.016	0.014	0.012	0.011	0.010	0.009	0.008	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	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	432	444	456	468
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	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	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	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	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	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	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	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	626,201	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	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	1,336,768	1,336,768	1,336,768	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	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	637,302	637,302	637,302	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	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	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	652,001	652,001	652,002	652,002														
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	794,601	794,601	794,601	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	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	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	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	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	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	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	334,431	334,431	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	277,550	295,050	295,050	295,050																							
Jun-06	0	35,001	59,503	173,004	254,504	260,504	260,504	260,504	260,504	260,504	262,504	262,504	262,504	262,504	262,504																								
Jun-07	0	36,000	105,500	138,000	188,000	207,000	207,001	207,003	207,003	207,003	207,003	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	198,502	198,502	198,502	198,502																										
Jun-09	0	16,000	58,767	105,767	152,017	162,017	170,017	170,017	170,017	180,017	180,017	180,017																											
Jun-10	0	3,000	59,000	90,500	100,500	100,500	100,501	100,501	100,501	100,501	100,501																												
Jun-11	0	11,750	58,781	125,781	154,781	187,781	200,782	215,782	215,782	215,782																													
Jun-12	0	11,050	30,053	60,103	169,103	169,103	169,103	169,103	169,103																														
Jun-13	4,000	21,312	42,312	115,813	145,313	145,313	145,313	145,313																															
Jun-14	0	8,500	62,401	87,401	162,881	162,881	178,881																																
Jun-15	0	6,000	46,500	65,000	156,500	201,400																																	
Jun-16	0	16,000	35,500	59,376	166,226																																		
Jun-17	0	275,000	318,000	405,000																																			
Jun-18	0	10,004	10,004																																				
Jun-19	0	0																																					
Jun-20	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	420-432	432-444	444-456	456-468	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	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	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	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	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	1.000	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	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	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	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	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	1.000	1.000	1.000	1.000										
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	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	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	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	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	1.159	1.061	1.058	1.109	1.000	1.000	1.000															
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	1.000	1.000	1.000	1.000																
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	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	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	1.000	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	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	1.000	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	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	1.000	1.000	1.000	1.000																							
Jun-05		9.640	1.743	1.179	1.000	1.048	1.039	1.030	1.000	1.000	1.000	1.000	1.063	1.000	1.000																								
Jun-06		1.700	2.907	1.471	1.024	1.000	1.000	1.000	1.000	1.008	1.000	1.000	1.000	1.000																									
Jun-07		2.931	1.308	1.362	1.101	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																										
Jun-08		2.028	1.986	1.176	1.059	1.100	1.000	1.000	1.000	1.000	1.000	1.000																											
Jun-09		3.673	1.800	1.437	1.066	1.049	1.000	1.000	1.059	1.000	1.000																												
Jun-10		19.667	1.534	1.110	1.000	1.000	1.000	1.000	1.000	1.000																													
Jun-11		5.003	2.140	1.231	1.213	1.069	1.075	1.000	1.000																														
Jun-12		2.720	2.000	2.814	1.000	1.000	1.000	1.000																															
Jun-13	5.328	1.985	2.737	1.255	1.000	1.000	1.000																																
Jun-14		7.341	1.401	1.864	1.000	1.098																																	
Jun-15		7.750	1.398	2.408	1.287																																		
Jun-16		2.219	1.673	2.800																																			
Jun-17		1.156	1.274																																				
Jun-18		1.000																																					
Jun-19																																							

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	420-432	432-444	444-456	456-468	To Ult
Simple Avg																																							
All Yrs (ex P)	5.005	4.399	2.095	1.666	1.195	1.174	1.039	1.107	1.106	1.058	1.029	1.026	1.006	1.001	1.001	1.000	1.002	1.009	1.006	1.003	1.006	1.004	1.001	1.012	1.030	1.001	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		3.893	1.696	2.228	1.100	1.033	1.015	1.000	1.012	1.002	1.000	1.000	1.013	1.000	1.000	1.000	1.000	1.000	1.007	1.012	1.022	1.000	1.000	1.000	1.043	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Latest 3		1.458	1.448	2.357	1.096	1.033	1.025	1.000	1.020	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	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)		2.127	1.687	1.329	1.171	1.104	1.038	1.040	1.048	1.022	1.014	1.010	1.006	1.001	1.002	1.001	1.002	1.009	1.008	1.004	1.007	1.007	1.001	1.021	1.041	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5		1.497	1.451	2.064	1.099	1.038	1.019	1.000	1.011	1.002	1.000	1.000	1.012	1.000	1.000	1.000	1.000	1.000	1.013	1.014	1.024	1.000	1.000	1.000	1.064	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Latest 3		1.208	1.323	2.293	1.097	1.034	1.029	1.000	1.021	1.000	1.000	1.000	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	1.000				

Dev Factor Selection

Prior	*5.100*	*3.619*	*1.807*	*1.416*	*1.071*	*1.053*	*1.030*	*1.013*	*1.027*	*1.008*	*1.014*	*1.010*	*1.013*	*1.001*	*1.001*	*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*	*1.000*	*1.000*	*1.000*	
Selected	5.100	3.342	1.697	1.470	1.122	1.059	1.029	1.013	1.027	1.008	1.014	1.010	1.013	1.001	1.001	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	1.000	1.000	1.000	1.000
FacToUlt	57.516	11.278	3.374	1.988	1.352	1.205	1.138	1.106	1.092	1.064	1.055	1.041	1.031	1.018	1.016	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	1.000	1.000	1.000	1.000	1.000
Percent of Ult	1.7%	8.9%	29.6%	50.3%	74.0%	83.0%	87.9%	90.4%	91.6%	94.0%	94.8%	96.1%	97.0%	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%	100.0%	100.0%	100.0%	100.0%	100.0%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Department of Corrections - Cluster 3
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.6%	0.0%	0.1%	0.1%	1.000	1.000
456	99.4%	0.1%	0.6%	0.0%	0.0%	0.981	0.971
444	99.3%	0.1%	0.7%	0.0%	0.0%	0.948	0.924
432	99.2%	0.1%	0.8%	0.0%	0.0%	0.920	0.883
420	99.1%	0.1%	0.9%	0.0%	0.0%	0.895	0.848
408	99.0%	0.1%	1.0%	0.0%	0.0%	0.872	0.816
396	98.9%	0.1%	1.1%	0.0%	0.0%	0.851	0.788
384	98.8%	0.1%	1.2%	0.0%	0.0%	0.831	0.761
372	98.7%	0.2%	1.3%	0.1%	0.0%	0.812	0.737
360	98.5%	0.3%	1.5%	0.1%	0.1%	0.807	0.731
348	98.2%	0.5%	1.8%	0.2%	0.1%	0.809	0.735
336	97.7%	0.5%	2.3%	0.2%	0.1%	0.821	0.752
324	97.2%	0.5%	2.8%	0.2%	0.1%	0.822	0.755
312	96.7%	0.8%	3.3%	0.3%	0.2%	0.819	0.751
300	96.0%	0.8%	4.0%	0.3%	0.2%	0.824	0.758
288	95.2%	0.8%	4.8%	0.3%	0.2%	0.822	0.756
276	94.4%	0.7%	5.6%	0.3%	0.2%	0.816	0.748
264	93.7%	0.7%	6.3%	0.3%	0.2%	0.808	0.737
252	92.9%	0.7%	7.1%	0.3%	0.2%	0.799	0.725
240	92.2%	0.7%	7.8%	0.3%	0.2%	0.788	0.711
228	91.5%	0.7%	8.5%	0.4%	0.2%	0.777	0.696
216	90.7%	0.7%	9.3%	0.3%	0.2%	0.765	0.682
204	90.1%	0.8%	9.9%	0.4%	0.3%	0.753	0.666
192	89.3%	0.7%	10.7%	0.4%	0.3%	0.742	0.652
180	88.6%	0.7%	11.4%	0.4%	0.3%	0.730	0.638
168	87.8%	0.8%	12.2%	0.5%	0.4%	0.719	0.625
156	87.0%	0.8%	13.0%	0.5%	0.4%	0.709	0.612
144	86.3%	0.8%	13.7%	0.5%	0.4%	0.699	0.600
132	85.5%	1.3%	14.5%	0.8%	0.7%	0.689	0.588
120	84.2%	1.4%	15.8%	1.0%	0.8%	0.688	0.588
108	82.8%	1.6%	17.2%	1.2%	1.0%	0.687	0.589
96	81.2%	1.8%	18.8%	1.3%	1.2%	0.689	0.592
84	79.4%	2.3%	20.6%	1.8%	1.6%	0.690	0.594
72	77.0%	3.5%	23.0%	2.8%	2.5%	0.696	0.602
60	73.6%	6.4%	26.4%	5.4%	4.9%	0.710	0.621
48	67.2%	9.9%	32.8%	8.7%	8.1%	0.741	0.661
36	57.2%	13.9%	42.8%	12.6%	12.1%	0.775	0.704
24	43.3%	22.9%	56.7%	21.6%	21.0%	0.803	0.740
12	20.4%	20.4%	79.6%	20.0%	19.8%	0.832	0.777
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, 2020

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	493,598	821,718		474,796	790,417
6/30/82-83	2,619	16,184	0.981	2,569	15,870
6/30/83-84	65,276	79,740	0.948	61,879	75,590
6/30/84-85	25,268	29,892	0.920	23,239	27,491
6/30/85-86	46,427	52,492	0.895	41,531	46,956
6/30/86-87	34,686	42,283	0.872	30,235	36,857
6/30/87-88	3,824	34,310	0.851	3,253	29,184
6/30/88-89	73,482	85,482	0.831	61,059	71,030
6/30/89-90	114,194	117,194	0.812	92,777	95,215
6/30/90-91	144,473	167,273	0.807	116,580	134,978
6/30/91-92	76,889	77,889	0.809	62,204	63,013
6/30/92-93	55,727	58,884	0.821	45,739	48,330
6/30/93-94	121,132	125,132	0.822	99,629	102,919
6/30/94-95	175,800	183,800	0.819	143,950	150,501
6/30/95-96	190,213	200,213	0.824	156,734	164,974
6/30/96-97	252,027	266,027	0.822	207,197	218,707
6/30/97-98	103,592	194,632	0.816	84,564	158,881
6/30/98-99	162,746	245,162	0.808	131,523	198,127
6/30/99-00	226,377	313,653	0.799	180,764	250,455
6/30/00-01	367,228	481,200	0.788	289,352	379,155
6/30/01-02	391,864	813,222	0.777	304,387	631,685
6/30/02-03	450,626	865,678	0.765	344,832	662,442
6/30/03-04	470,179	499,039	0.753	353,846	375,566
6/30/04-05	271,789	605,679	0.742	201,631	449,334
6/30/05-06	270,224	473,131	0.730	197,360	345,555
6/30/06-07	310,958	659,115	0.719	223,703	474,166
6/30/07-08	623,030	756,236	0.709	441,882	536,358
6/30/08-09	591,297	913,812	0.699	413,447	638,957
6/30/09-10	529,166	720,663	0.689	364,429	496,310
6/30/10-11	650,733	874,477	0.688	447,643	601,557
6/30/11-12	647,744	895,972	0.687	445,254	615,884
6/30/12-13	727,283	1,040,895	0.689	500,965	716,987
6/30/13-14	940,093	1,272,753	0.690	648,675	878,213
6/30/14-15	1,236,694	1,550,993	0.696	860,320	1,078,965
6/30/15-16	1,508,372	1,827,600	0.710	1,070,850	1,297,482
6/30/16-17	2,206,230	2,875,134	0.741	1,634,266	2,129,758
6/30/17-18	2,434,127	2,743,298	0.775	1,885,271	2,124,729
6/30/18-19	3,765,699	4,273,855	0.803	3,022,780	3,430,684
6/30/19-20	7,004,159	8,478,840	0.832	5,826,631	7,053,390
Total	27,765,844	35,733,549		21,497,746	27,596,672

	Low	High
(7) Total Discount Factor:	0.774	0.772

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	493,598	821,718
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	246,799	410,859
(11) Discounted Value at 4%:	474,796	790,417

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
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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	493,598	821,718		466,054	775,864
6/30/82-83	2,619	16,184	0.971	2,544	15,719
6/30/83-84	65,276	79,740	0.924	60,297	73,658
6/30/84-85	25,268	29,892	0.883	22,319	26,403
6/30/85-86	46,427	52,492	0.848	39,367	44,510
6/30/86-87	34,686	42,283	0.816	28,316	34,518
6/30/87-88	3,824	34,310	0.788	3,012	27,027
6/30/88-89	73,482	85,482	0.761	55,953	65,090
6/30/89-90	114,194	117,194	0.737	84,174	86,386
6/30/90-91	144,473	167,273	0.731	105,609	122,276
6/30/91-92	76,889	77,889	0.735	56,528	57,263
6/30/92-93	55,727	58,884	0.752	41,924	44,299
6/30/93-94	121,132	125,132	0.755	91,481	94,501
6/30/94-95	175,800	183,800	0.751	131,962	137,967
6/30/95-96	190,213	200,213	0.758	144,194	151,775
6/30/96-97	252,027	266,027	0.756	190,463	201,043
6/30/97-98	103,592	194,632	0.748	77,490	145,590
6/30/98-99	162,746	245,162	0.737	119,980	180,738
6/30/99-00	226,377	313,653	0.725	164,022	227,258
6/30/00-01	367,228	481,200	0.711	261,016	342,024
6/30/01-02	391,864	813,222	0.696	272,876	566,291
6/30/02-03	450,626	865,678	0.682	307,149	590,050
6/30/03-04	470,179	499,039	0.666	312,917	332,124
6/30/04-05	271,789	605,679	0.652	177,268	395,041
6/30/05-06	270,224	473,131	0.638	172,398	301,850
6/30/06-07	310,958	659,115	0.625	194,228	411,690
6/30/07-08	623,030	756,236	0.612	381,558	463,137
6/30/08-09	591,297	913,812	0.600	355,072	548,741
6/30/09-10	529,166	720,663	0.588	311,141	423,739
6/30/10-11	650,733	874,477	0.588	382,852	514,489
6/30/11-12	647,744	895,972	0.589	381,442	527,617
6/30/12-13	727,283	1,040,895	0.592	430,397	615,989
6/30/13-14	940,093	1,272,753	0.594	558,620	756,293
6/30/14-15	1,236,694	1,550,993	0.602	744,826	934,120
6/30/15-16	1,508,372	1,827,600	0.621	937,077	1,135,398
6/30/16-17	2,206,230	2,875,134	0.661	1,458,812	1,901,107
6/30/17-18	2,434,127	2,743,298	0.704	1,714,650	1,932,437
6/30/18-19	3,765,699	4,273,855	0.740	2,786,477	3,162,494
6/30/19-20	7,004,159	8,478,840	0.777	5,439,866	6,585,195
Total	27,765,844	35,733,549		19,466,333	24,951,710
			(7) Total Discount Factor:	0.701	0.698

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	493,598	821,718
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	246,799	410,859
(11) Discounted Value at 6%:	466,054	775,864

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, 2020

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

Calculation of Fiscal Year 7/01/20 - 21 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/20 - 06/30/21	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/20 - 06/30/21		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	6,776,172	7,334,829	5,933,425	842,747	1,401,404				281,508	309,659	33.4%	22.1%
6/30/82-83	2,915,184	2,931,680	2,912,565	2,619	19,115	99.6%	0.2%	53.8%	1,409	10,284	53.8%	53.8%
6/30/83-84	2,200,950	2,229,896	2,135,674	65,276	94,222	96.4%	0.5%	13.9%	9,067	13,087	13.9%	13.9%
6/30/84-85	4,865,377	4,874,000	4,837,061	28,316	36,939	99.3%	0.3%	37.3%	10,565	13,783	37.3%	37.3%
6/30/85-86	7,015,935	7,023,000	6,962,840	53,095	60,160	99.2%	0.3%	31.0%	16,454	18,643	31.0%	31.0%
6/30/86-87	4,577,326	4,584,923	4,532,327	44,999	52,596	98.9%	0.3%	23.5%	10,561	12,344	23.5%	23.5%
6/30/87-88	7,267,699	7,300,185	7,243,858	23,841	56,327	99.4%	0.3%	45.4%	10,831	25,589	45.4%	45.4%
6/30/88-89	8,869,000	8,882,000	8,768,577	100,423	113,423	98.8%	0.5%	41.5%	41,680	47,075	41.5%	41.5%
6/30/89-90	11,652,000	11,656,000	11,489,655	162,345	166,345	98.6%	0.5%	35.5%	57,561	58,979	35.5%	35.5%
6/30/90-91	13,600,000	13,758,900	13,377,556	222,444	381,344	97.8%	0.5%	22.7%	50,397	86,397	22.7%	22.7%
6/30/91-92	6,873,000	6,985,850	6,723,740	149,260	262,110	97.0%	0.5%	16.8%	25,142	44,152	16.8%	16.8%
6/30/92-93	4,623,843	4,627,000	4,516,464	107,379	110,536	97.6%	0.5%	21.2%	22,792	23,462	21.2%	21.2%
6/30/93-94	6,972,000	6,978,000	6,784,946	187,054	193,054	97.3%	0.5%	18.4%	34,324	35,426	18.4%	18.4%
6/30/94-95	7,734,000	7,744,000	7,497,146	236,854	246,854	96.9%	0.5%	16.0%	37,895	39,495	16.0%	16.0%
6/30/95-96	7,139,000	7,152,000	6,876,029	262,971	275,971	96.2%	0.5%	13.3%	34,866	36,589	13.3%	13.3%
6/30/96-97	8,219,000	8,237,000	7,869,817	349,183	367,183	95.6%	0.5%	11.5%	40,106	42,174	11.5%	11.5%
6/30/97-98	11,197,290	11,295,330	10,959,908	237,382	335,422	97.5%	0.5%	19.6%	46,607	65,856	19.6%	19.6%
6/30/98-99	9,969,115	10,057,530	9,676,537	292,577	380,993	96.6%	0.5%	14.9%	43,495	56,639	14.9%	14.9%
6/30/99-00	10,704,314	10,802,590	10,300,738	403,576	501,853	95.8%	1.0%	23.8%	95,863	119,206	23.8%	23.8%
6/30/00-01	14,146,108	14,281,080	13,494,965	651,143	786,115	94.9%	1.0%	19.8%	128,788	155,484	19.8%	19.8%
6/30/01-02	11,462,642	11,895,000	10,861,524	601,117	1,033,476	93.0%	1.0%	14.3%	85,897	147,679	14.3%	14.3%
6/30/02-03	11,747,948	12,179,000	11,021,347	726,601	1,157,653	92.1%	1.0%	12.7%	92,266	147,003	12.7%	12.7%
6/30/03-04	10,749,140	10,792,000	10,013,452	735,689	778,548	93.0%	1.0%	14.2%	104,657	110,754	14.2%	14.2%
6/30/04-05	11,417,110	11,902,300	11,050,330	366,780	851,970	94.8%	1.0%	19.1%	70,179	163,015	19.1%	19.1%
6/30/05-06	8,384,093	8,811,000	7,989,446	394,647	821,554	92.9%	1.0%	14.1%	55,797	116,154	14.1%	14.1%
6/30/06-07	7,392,843	7,934,080	6,938,761	454,083	995,319	90.5%	1.0%	10.6%	48,018	105,252	10.6%	10.6%
6/30/07-08	7,281,794	7,569,090	6,503,977	777,817	1,065,113	87.6%	2.0%	16.1%	125,358	171,660	16.1%	16.1%
6/30/08-09	6,506,485	7,097,800	5,764,684	741,801	1,333,116	84.7%	2.0%	13.1%	97,273	174,813	13.1%	13.1%
6/30/09-10	4,567,502	4,937,650	3,884,514	682,988	1,053,136	81.7%	2.0%	10.9%	74,786	115,317	10.9%	10.9%
6/30/10-11	5,540,256	5,926,300	4,691,548	848,708	1,234,752	81.8%	2.0%	11.0%	93,419	135,912	11.0%	11.0%
6/30/11-12	4,549,772	4,893,950	3,610,499	939,273	1,283,451	76.5%	3.0%	12.7%	119,721	163,591	12.7%	12.7%
6/30/12-13	4,285,388	4,744,800	3,275,963	1,009,425	1,468,837	72.6%	3.0%	10.9%	110,343	160,563	10.9%	10.9%
6/30/13-14	5,225,340	5,747,200	3,970,056	1,255,285	1,777,144	72.4%	4.0%	14.5%	181,685	257,217	14.5%	14.5%
6/30/14-15	6,777,701	7,202,700	5,058,676	1,719,024	2,144,024	72.4%	4.0%	14.5%	248,847	310,370	14.5%	14.5%
6/30/15-16	6,999,772	7,478,950	4,992,597	2,007,175	2,486,353	69.0%	3.4%	11.0%	220,117	272,667	11.0%	11.0%
6/30/16-17	9,237,096	10,147,800	6,373,140	2,863,956	3,774,660	65.8%	3.2%	9.4%	268,525	353,913	9.4%	9.4%
6/30/17-18	6,926,828	7,417,500	3,802,437	3,124,392	3,615,063	53.0%	9.0%	19.2%	598,499	692,491	19.2%	19.2%
6/30/18-19	8,232,844	9,000,750	3,530,903	4,701,941	5,469,847	41.0%	12.0%	20.4%	959,110	1,115,749	20.4%	20.4%
6/30/19-20	11,222,319	14,392,150	2,684,923	8,537,396	11,707,227	21.0%	20.0%	25.3%	2,161,774	2,964,414	25.3%	25.3%
Total	305,824,187	318,805,813	268,912,605	36,911,582	49,893,208				6,716,183	8,892,856	18.2%	17.8%

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, 2020

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		1,408,522			1,757,671	1,988,208	349,148	579,686		
6/30/82-83		164,749	166,020		164,749	167,680	0	2,931		
6/30/83-84		730,414	737,521		730,414	744,896	0	14,482		
6/30/84-85	115,258	562,952	569,566	566,044	566,000	570,000	3,048	7,048	0.491	0.495
6/30/85-86	123,937	563,332	571,091	569,731	570,000	571,000	6,668	7,668	0.460	0.461
6/30/86-87	142,396	647,687	657,920	658,496	658,000	658,000	10,313	10,313	0.462	0.462
6/30/87-88	166,792	1,145,983	1,166,418	1,168,454	1,166,000	1,168,000	20,017	22,017	0.699	0.700
6/30/88-89	180,117	1,279,059	1,307,075	1,306,006	1,306,000	1,307,000	26,941	27,941	0.725	0.726
6/30/89-90	180,883	1,862,849	1,911,265	1,911,649	1,911,000	1,912,000	48,151	49,151	1.056	1.057
6/30/90-91	169,902	2,623,028	2,701,967	2,701,332	2,701,000	2,837,100	77,972	214,072	1.590	1.670
6/30/91-92	165,926	2,143,629	2,216,973	2,215,853	2,216,000	2,327,850	72,371	184,221	1.336	1.403
6/30/92-93	174,198	1,359,348	1,411,481	1,410,531	1,411,000	1,411,000	51,652	51,652	0.810	0.810
6/30/93-94	185,946	1,594,079	1,661,836	1,660,109	1,660,000	1,662,000	65,921	67,921	0.893	0.894
6/30/94-95	194,051	1,341,946	1,404,582	1,402,878	1,403,000	1,405,000	61,054	63,054	0.723	0.724
6/30/95-96	205,262	1,486,242	1,561,835	1,559,311	1,559,000	1,562,000	72,758	75,758	0.760	0.761
6/30/96-97	234,073	1,837,844	1,939,046	1,934,924	1,935,000	1,939,000	97,156	101,156	0.827	0.828
6/30/97-98	221,865	2,338,210	2,479,299	2,471,551	2,472,000	2,479,000	133,790	140,790	1.114	1.117
6/30/98-99	256,071	1,920,169	2,056,394	2,049,537	2,050,000	2,056,000	129,831	135,831	0.801	0.803
6/30/99-00	268,486	2,129,801	2,317,644	2,306,638	2,307,000	2,318,000	177,199	188,199	0.859	0.863
6/30/00-01	279,182	2,953,085	3,258,095	3,237,249	3,237,000	3,258,000	283,915	304,915	1.159	1.167
6/30/01-02	283,070	1,902,747	2,122,524	2,111,566	2,112,000	2,123,000	209,253	220,253	0.746	0.750
6/30/02-03	289,846	2,281,025	2,573,033	2,556,647	2,557,000	2,573,000	275,975	291,975	0.882	0.888
6/30/03-04	293,771	2,120,490	2,400,249	2,386,087	2,386,000	2,400,000	265,510	279,510	0.812	0.817
6/30/04-05	291,382	2,769,009	3,174,004	2,922,100	2,864,000	3,015,300	94,991	246,291	0.983	1.035
6/30/05-06	294,709	2,155,577	2,503,525	2,326,510	2,280,000	2,504,000	124,423	348,423	0.774	0.850
6/30/06-07	289,603	1,792,876	2,108,084	1,975,393	1,936,000	2,129,080	143,124	336,204	0.669	0.735
6/30/07-08	354,668	1,518,213	1,808,747	1,760,737	1,673,000	1,827,090	154,787	308,877	0.472	0.515
6/30/08-09	332,413	1,592,496	1,915,723	1,834,932	1,743,000	2,011,800	150,504	419,304	0.524	0.605
6/30/09-10	336,338	983,178	1,197,222	1,252,666	1,137,000	1,315,650	153,822	332,472	0.338	0.391
6/30/10-11	333,783	1,137,025	1,405,772	1,425,859	1,335,000	1,497,300	197,975	360,275	0.400	0.449
6/30/11-12	348,187	913,471	1,147,904	1,238,560	1,205,000	1,300,950	291,529	387,479	0.346	0.374
6/30/12-13	368,022	827,858	1,057,069	1,196,330	1,110,000	1,255,800	282,142	427,942	0.302	0.341
6/30/13-14	390,528	885,808	1,166,211	1,323,711	1,201,000	1,390,200	315,192	504,392	0.308	0.356
6/30/14-15	402,750	1,185,669	1,619,592	1,693,927	1,668,000	1,778,700	482,331	593,031	0.414	0.442
6/30/15-16	400,013	1,041,197	1,495,421	1,619,218	1,540,000	1,699,950	498,803	658,753	0.385	0.425
6/30/16-17	352,565	1,276,274	1,978,306	1,877,429	1,934,000	2,175,800	657,726	899,526	0.549	0.617
6/30/17-18	347,621	882,735	1,527,659	1,594,921	1,573,000	1,754,500	690,265	871,765	0.453	0.505
6/30/18-19	357,324	764,758	1,651,688	1,705,240	1,701,000	1,960,750	936,242	1,195,992	0.476	0.549
6/30/19-20	368,720	659,763	3,380,935	2,128,908	2,193,000	3,888,150	1,533,237	3,228,387	0.595	1.054
Total	9,699,658	56,783,096	66,329,697	64,061,036	65,928,834	70,942,754	9,145,738	14,159,659		
Tot 6/30/84-20	9,699,658	54,479,410	65,426,156	64,061,036	63,276,000	68,041,970	8,796,590	13,562,560	0.652	0.701

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, 2020

Department of Corrections - Cluster 3
Medical

Paid Loss Development Method

(1) Accident Year	(2) Payroll (000's)	(3) Paid Loss	(4) Paid LDF	(5) Adjustment for Tail	(6) Ultimate Loss Excluding Lump Sum	(7) Est Ult Lump Sum Payments	(8) Ultimate Loss Including Lump Sum	(9) Ultimate Loss Cost	(10) Paid Counts 7/1/18-19	(11) Paid Counts 7/1/19-20	(12) Average Outstanding Claim
All Prior Yrs		1,408,522							1	1	
6/30/82-83		164,749	1.008	1.000	166,020	N/A	166,020		0	0	
6/30/83-84		730,414	1.010	1.000	737,521	N/A	737,521		0	0	
6/30/84-85	115,258	562,952	1.012	1.000	569,566	N/A	569,566	0.494	1	0	
6/30/85-86	123,937	563,332	1.014	1.000	571,091	N/A	571,091	0.461	0	0	
6/30/86-87	142,396	647,687	1.016	1.000	657,920	N/A	657,920	0.462	0	0	
6/30/87-88	166,792	1,145,983	1.018	1.000	1,166,418	N/A	1,166,418	0.699	0	0	
6/30/88-89	180,117	1,279,059	1.022	1.000	1,307,075	N/A	1,307,075	0.726	1	0	
6/30/89-90	180,883	1,862,849	1.026	1.000	1,911,265	N/A	1,911,265	1.057	0	1	48,417
6/30/90-91	169,902	2,623,028	1.030	1.000	2,701,967	N/A	2,701,967	1.590	4	4	19,735
6/30/91-92	165,926	2,143,629	1.034	1.000	2,216,973	N/A	2,216,973	1.336	2	2	36,672
6/30/92-93	174,198	1,359,348	1.038	1.000	1,411,481	N/A	1,411,481	0.810	0	0	
6/30/93-94	185,946	1,594,079	1.043	1.000	1,661,836	N/A	1,661,836	0.894	3	3	22,586
6/30/94-95	194,051	1,341,946	1.047	1.000	1,404,582	N/A	1,404,582	0.724	1	1	62,636
6/30/95-96	205,262	1,486,242	1.051	1.000	1,561,835	N/A	1,561,835	0.761	1	1	75,593
6/30/96-97	234,073	1,837,844	1.055	1.000	1,939,046	N/A	1,939,046	0.828	3	2	50,601
6/30/97-98	221,865	2,338,210	1.060	1.000	2,479,299	N/A	2,479,299	1.117	2	1	141,089
6/30/98-99	256,071	1,920,169	1.071	1.000	2,056,394	N/A	2,056,394	0.803	4	3	45,408
6/30/99-00	268,486	2,129,801	1.088	1.000	2,317,644	N/A	2,317,644	0.863	3	3	62,614
6/30/00-01	279,182	2,953,085	1.103	1.000	3,258,095	N/A	3,258,095	1.167	4	0	
6/30/01-02	283,070	1,902,747	1.116	1.000	2,122,524	N/A	2,122,524	0.750	3	2	109,889
6/30/02-03	289,846	2,281,025	1.128	1.000	2,573,033	N/A	2,573,033	0.888	1	0	
6/30/03-04	293,771	2,120,490	1.132	1.000	2,400,249	N/A	2,400,249	0.817	3	2	139,879
6/30/04-05	291,382	2,769,009	1.146	1.000	3,174,004	N/A	3,174,004	1.089	4	3	134,998
6/30/05-06	294,709	2,155,577	1.161	1.000	2,503,525	N/A	2,503,525	0.849	2	2	173,974
6/30/06-07	289,603	1,792,876	1.176	1.000	2,108,084	N/A	2,108,084	0.728	6	5	63,042
6/30/07-08	354,668	1,518,213	1.191	1.000	1,808,747	N/A	1,808,747	0.510	0	1	290,534
6/30/08-09	332,413	1,592,496	1.203	1.000	1,915,723	N/A	1,915,723	0.576	7	5	64,645
6/30/09-10	336,338	983,178	1.218	1.000	1,197,222	N/A	1,197,222	0.356	7	7	30,578
6/30/10-11	333,783	1,137,025	1.236	1.000	1,405,772	N/A	1,405,772	0.421	3	2	134,373
6/30/11-12	348,187	913,471	1.257	1.000	1,147,904	N/A	1,147,904	0.330	4	4	58,608
6/30/12-13	368,022	827,858	1.277	1.000	1,057,069	N/A	1,057,069	0.287	1	0	
6/30/13-14	390,528	885,808	1.317	1.000	1,166,211	N/A	1,166,211	0.299	7	6	46,734
6/30/14-15	402,750	1,185,669	1.366	1.000	1,619,592	N/A	1,619,592	0.402	10	8	54,240
6/30/15-16	400,013	1,041,197	1.436	1.000	1,495,421	N/A	1,495,421	0.374	20	11	41,293
6/30/16-17	352,565	1,276,274	1.550	1.000	1,978,306	N/A	1,978,306	0.561	51	17	41,296
6/30/17-18	347,621	882,735	1.731	1.000	1,527,659	N/A	1,527,659	0.439	131	16	40,308
6/30/18-19	357,324	764,758	2.160	1.000	1,651,688	N/A	1,651,688	0.462	201	95	9,336
6/30/19-20	368,720	659,763	5.124	1.000	3,380,935	N/A	3,380,935	0.917		237	11,482
Total	9,699,658	56,783,096			66,329,697		66,329,697		491	445	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 10/1/18 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, 2020

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	562,952	1.012	566,044	N/A	566,044	0.491	0.491
6/30/85-86	123,937	0.380	563,332	1.014	569,731	N/A	569,731	0.460	0.460
6/30/86-87	142,396	0.488	647,687	1.016	658,496	N/A	658,496	0.462	0.462
6/30/87-88	166,792	0.769	1,145,983	1.018	1,168,454	N/A	1,168,454	0.701	0.701
6/30/88-89	180,117	0.698	1,279,059	1.022	1,306,006	N/A	1,306,006	0.725	0.725
6/30/89-90	180,883	1.065	1,862,849	1.026	1,911,649	N/A	1,911,649	1.057	1.057
6/30/90-91	169,902	1.578	2,623,028	1.030	2,701,332	N/A	2,701,332	1.590	1.590
6/30/91-92	165,926	1.316	2,143,629	1.034	2,215,853	N/A	2,215,853	1.335	1.335
6/30/92-93	174,198	0.796	1,359,348	1.038	1,410,531	N/A	1,410,531	0.810	0.810
6/30/93-94	185,946	0.871	1,594,079	1.043	1,660,109	N/A	1,660,109	0.893	0.893
6/30/94-95	194,051	0.704	1,341,946	1.047	1,402,878	N/A	1,402,878	0.723	0.723
6/30/95-96	205,262	0.735	1,486,242	1.051	1,559,311	N/A	1,559,311	0.760	0.760
6/30/96-97	234,073	0.795	1,837,844	1.055	1,934,924	N/A	1,934,924	0.827	0.827
6/30/97-98	221,865	1.056	2,338,210	1.060	2,471,551	N/A	2,471,551	1.114	1.114
6/30/98-99	256,071	0.763	1,920,169	1.071	2,049,537	N/A	2,049,537	0.800	0.800
6/30/99-00	268,486	0.813	2,129,801	1.088	2,306,638	N/A	2,306,638	0.859	0.859
6/30/00-01	279,182	1.087	2,953,085	1.103	3,237,249	N/A	3,237,249	1.160	1.160
6/30/01-02	283,070	0.712	1,902,747	1.116	2,111,566	N/A	2,111,566	0.746	0.746
6/30/02-03	289,846	0.838	2,281,025	1.128	2,556,647	N/A	2,556,647	0.882	0.882
6/30/03-04	293,771	0.776	2,120,490	1.132	2,386,087	N/A	2,386,087	0.812	0.812
6/30/04-05	291,382	0.412	2,769,009	1.146	2,922,100	N/A	2,922,100	1.003	1.003
6/30/05-06	294,709	0.417	2,155,577	1.161	2,326,510	N/A	2,326,510	0.789	0.789
6/30/06-07	289,603	0.421	1,792,876	1.176	1,975,393	N/A	1,975,393	0.682	0.682
6/30/07-08	354,668	0.426	1,518,213	1.191	1,760,737	N/A	1,760,737	0.496	0.496
6/30/08-09	332,413	0.432	1,592,496	1.203	1,834,932	N/A	1,834,932	0.552	0.552
6/30/09-10	336,338	0.448	983,178	1.218	1,252,666	N/A	1,252,666	0.372	0.372
6/30/10-11	333,783	0.453	1,137,025	1.236	1,425,859	N/A	1,425,859	0.427	0.427
6/30/11-12	348,187	0.457	913,471	1.257	1,238,560	N/A	1,238,560	0.356	0.356
6/30/12-13	368,022	0.462	827,858	1.277	1,196,330	N/A	1,196,330	0.325	0.325
6/30/13-14	390,528	0.466	885,808	1.317	1,323,711	N/A	1,323,711	0.339	0.339
6/30/14-15	402,750	0.471	1,185,669	1.366	1,693,927	N/A	1,693,927	0.421	0.421
6/30/15-16	400,013	0.476	1,041,197	1.436	1,619,218	N/A	1,619,218	0.405	0.405
6/30/16-17	352,565	0.480	1,276,274	1.550	1,877,429	N/A	1,877,429	0.533	0.533
6/30/17-18	347,621	0.485	882,735	1.731	1,594,921	N/A	1,594,921	0.459	0.459
6/30/18-19	357,324	0.490	764,758	2.160	1,705,240	N/A	1,705,240	0.477	0.477
6/30/19-20	368,720	0.495	659,763	5.124	2,128,908	N/A	2,128,908	0.577	0.577
Total	9,699,658		54,479,410		64,061,036		64,061,036		

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, 2020

Department of Corrections - Cluster 3
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
			Unadjusted	Benefit	Adjusted		Trended	Detrended	Prior	Current
Accident	Payroll	Expected	Loss	Level	Loss	Trend	Adjusted	Selected	Selected	Selected
Year	(000's)	Ult Loss	Cost	Factor	Cost	Factor	Loss Cost	Loss Cost	Loss Cost	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	2,701,967	1.590	1.194	1.899	1.348	2.559	0.311	1.578	1.578
6/30/91-92	165,926	2,216,973	1.336	1.189	1.588	1.335	2.119	0.315	1.313	1.316
6/30/92-93	174,198	1,411,481	0.810	1.189	0.964	1.321	1.273	0.318	0.798	0.796
6/30/93-94	185,946	1,661,836	0.894	1.178	1.053	1.308	1.378	0.324	0.867	0.871
6/30/94-95	194,051	1,404,582	0.724	1.170	0.847	1.295	1.097	0.330	0.706	0.704
6/30/95-96	205,262	1,561,835	0.761	1.155	0.879	1.282	1.127	0.337	0.737	0.735
6/30/96-97	234,073	1,939,046	0.828	1.137	0.942	1.270	1.196	0.346	0.796	0.795
6/30/97-98	221,865	2,479,299	1.117	1.135	1.268	1.257	1.594	0.350	1.052	1.056
6/30/98-99	256,071	2,056,394	0.803	1.135	0.911	1.245	1.135	0.354	0.774	0.763
6/30/99-00	268,486	2,317,644	0.863	1.135	0.980	1.232	1.207	0.357	0.823	0.813
6/30/00-01	279,182	3,258,095	1.167	1.109	1.294	1.220	1.579	0.369	1.103	1.087
6/30/01-02	283,070	2,122,524	0.750	1.101	0.825	1.208	0.997	0.376	0.724	0.712
6/30/02-03	289,846	2,573,033	0.888	1.073	0.952	1.196	1.139	0.390	0.850	0.838
6/30/03-04	293,771	2,400,249	0.817	1.046	0.855	1.184	1.013	0.403	0.793	0.776
6/30/04-05	291,382	3,174,004	1.089	1.036	1.128	1.173	1.323	0.412	0.437	0.412
6/30/05-06	294,709	2,503,525	0.849	1.032	0.877	1.161	1.018	0.417	0.443	0.417
6/30/06-07	289,603	2,108,084	0.728	1.032	0.751	1.149	0.864	0.421	0.447	0.421
6/30/07-08	354,668	1,808,747	0.510	1.032	0.526	1.138	0.599	0.426	0.451	0.426
6/30/08-09	332,413	1,915,723	0.576	1.027	0.592	1.127	0.667	0.432	0.458	0.432
6/30/09-10	336,338	1,197,222	0.356	1.000	0.356	1.116	0.397	0.448	0.475	0.448
6/30/10-11	333,783	1,405,772	0.421	1.000	0.421	1.105	0.465	0.453	0.480	0.453
6/30/11-12	348,187	1,147,904	0.330	1.000	0.330	1.094	0.361	0.457	0.485	0.457
6/30/12-13	368,022	1,057,069	0.287	1.000	0.287	1.083	0.311	0.462	0.490	0.462
6/30/13-14	390,528	1,166,211	0.299	1.000	0.299	1.072	0.320	0.466	0.495	0.466
6/30/14-15	402,750	1,619,592	0.402	1.000	0.402	1.062	0.427	0.471	0.500	0.471
6/30/15-16	400,013	1,495,421	0.374	1.000	0.374	1.051	0.393	0.476	0.505	0.476
6/30/16-17	352,565	1,978,306	0.561	1.000	0.561	1.041	0.584	0.480	0.510	0.480
6/30/17-18	347,621	1,527,659	0.439	1.000	0.439	1.030	0.453	0.485	0.515	0.485
6/30/18-19	357,324	1,651,688	0.462	1.000	0.462	1.020	0.472	0.490	0.520	0.490
6/30/19-20	368,720	3,380,935	0.917	1.000	0.917	1.010	0.926	0.495		0.495
Total	8,790,274	59,242,820								

Trend Last 4 (ex 19-20):	4.0%	Avg 3 (ex 19-20):	0.503
Trend Last 8 (ex 19-20):	7.8%	Avg 5 (ex 19-20):	0.466
Trend Last 12 (ex 19-20):	-0.3%	Avg 10 (ex 19-20):	0.418
Prior Selected Trend:	1.0%	Prior Sel Avg:	0.525
Selected Trend:	1.0%	Sel. Loss Cost:	0.500

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, 2019

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Department of Corrections - Cluster 3
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	1.150	
(2)	Credibility	51%	
(3)	Average Pmt Trend Statewide	0.980	
(4)	Credibility Weighted Trend	1.067	

		(Low)	(High)
(5)	Selected Range	0.800	0.853
(6)	Incremental Paid for 2020	146,506	146,506
(7)	Estimated Reserve	586,492	853,326
(8)	Paid to Date (82 & Prior)	1,408,522	1,408,522
(9)	Est Ult Paid for 1982 & Prior	1,995,014	2,261,849

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	153,023	129,156
(11)	Projected Number of Years	2	2
(12)	Estimated Reserve	306,046	258,311
(13)	Paid to Date (82 & Prior)	1,408,522	1,262,016
(14)	Est Ult Paid for 1982 & Prior	1,714,568	1,520,328
(14a)	Paid Counts During Fiscal Year	1	1

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	1,757,671	1,988,208
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**1,757,671**	**1,988,208**
(18)	Implied Tail	1.248	1.412
(19)	Ult Loss Inc Lump Sums @ 6/19	1,593,395	1,838,254

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Department of Corrections - Cluster 3
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
				Average		
		Incremental		Observed		Trend
Year	X	Paids	LN	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 =	29
2001	10	18,860	9.845	1.348	S(x) =	58,174
2002	11	1,907	7.553	0.101	S(x-sq) =	116,699,074
2003	12	725	6.586	0.380	S(xy) =	564,056
2004	13	1,808	7.500	2.494	S(y) =	281
2005	14	2,687	7.896	1.486	D =	58,870
2006	15	3,792	8.241	1.411	slope =	0.149
2007	16	10,343	9.244	2.728	Avg Trend =	1.149
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		
2017	26	74,905	11.224	1.043		
2018	27	155,601	11.955	2.077		
2019	28	156,961	11.964	1.009		
2020	29	146,506	11.895	0.933		
					Selected Trend:	**1.150**

NOTES:
(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019
(4) LN [(3)]
(5) Eg. 2020: 0.933 = 146506 / 156961

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	1,906,892
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	2,093,612	2,108,637
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	2,950,055	2,950,328	2,953,085
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	1,885,121	1,885,366	1,901,544	1,902,747
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	2,280,804	2,280,955	2,281,025	2,281,025	
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	2,081,524	2,104,233	2,115,963	2,120,490		
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	2,662,069	2,687,403	2,709,261	2,769,009			
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	2,129,368	2,143,673	2,152,579	2,155,577				
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	1,698,398	1,722,104	1,750,256	1,792,876					
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	1,514,151	1,516,558	1,516,558	1,518,213						
June-09	508,581	995,354	1,230,224	1,338,898	1,369,306	1,446,964	1,482,021	1,508,983	1,522,744	1,556,077	1,580,835	1,592,496							
June-10	391,950	706,776	789,348	818,015	852,862	886,332	920,529	942,614	956,766	969,969	983,178								
June-11	496,567	863,714	960,779	1,031,286	1,110,947	1,122,566	1,127,995	1,131,537	1,133,277	1,137,025									
June-12	293,489	638,905	723,823	781,875	824,519	860,213	871,090	900,402	913,471										
June-13	286,539	659,431	752,139	788,982	809,275	827,247	827,858	827,858											
June-14	290,720	674,005	774,112	827,240	857,134	879,000	885,808												
June-15	468,795	894,585	1,082,884	1,140,433	1,173,153	1,185,669													
June-16	502,405	850,852	977,505	1,021,547	1,041,197														
June-17	474,788	1,005,971	1,212,798	1,276,274															
June-18	414,037	834,104	882,735																
June-19	470,708	764,758																	
June-20	659,763																		

Acc Yr Ending	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	164,749	164,749	164,749	164,749
June-84	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	730,414	730,414	730,414	730,414	
June-85	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	546,412	561,119	562,952	562,952		
June-86	512,562	523,474	541,163	550,005	554,546	557,077	558,277	559,768	562,871	563,332	563,332	563,332	563,332	563,332	563,332	563,332			
June-87	636,887	638,336	639,623	640,749	642,212	643,694	648,271	647,521	647,687	647,687	647,687	647,687	647,687	647,687	647,687				
June-88	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	1,145,983	1,145,983	1,145,983	1,145,983					
June-89	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	1,274,184	1,274,184	1,279,059	1,279,059						
June-90	1,851,871	1,853,225	1,854,022	1,856,452	1,857,840	1,861,177	1,861,474	1,861,705	1,861,935	1,862,034	1,862,034	1,862,849							
June-91	2,269,406	2,337,283	2,427,731	2,454,390	2,467,892	2,474,842	2,480,194	2,556,786	2,613,928	2,617,375	2,623,028								
June-92	1,692,813	1,819,909	1,945,315	1,977,667	2,060,792	2,086,626	2,110,139	2,125,864	2,134,707	2,143,629									
June-93	1,323,675	1,327,602	1,358,187	1,359,273	1,359,273	1,359,348	1,359,348	1,359,348	1,359,348										
June-94	1,476,979	1,496,298	1,505,910	1,542,406	1,552,299	1,564,566	1,582,922	1,594,079											
June-95	1,329,061	1,329,847	1,333,586	1,337,649	1,340,065	1,341,063	1,341,946												
June-96	1,471,403	1,475,398	1,477,482	1,480,572	1,484,435	1,486,242													
June-97	1,823,449	1,828,896	1,832,642	1,832,854	1,837,844														
June-98	2,224,037	2,270,169	2,305,855	2,338,210															
June-99	1,910,565	1,915,858	1,920,169																
June-00	2,122,049	2,129,801																	
June-01	2,953,085																		

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	1.004
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	1.006	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	1.003	1.000	1.001
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	1.004	1.000	1.009	1.001
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	1.004	1.000	1.000	1.000	
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	1.020	1.011	1.006	1.002		
June-05	2.924	1.226	1.132	1.071	1.047	1.041	1.030	1.020	1.016	1.017	1.016	1.009	1.010	1.008	1.022			
June-06	2.620	1.308	1.105	1.069	1.050	1.054	1.019	1.004	1.005	1.006	1.007	1.007	1.004	1.001				
June-07	1.860	1.219	1.133	1.050	1.038	1.025	1.037	1.021	1.019	1.020	1.014	1.016	1.024					
June-08	2.004	1.196	1.099	1.039	1.006	1.010	1.003	1.003	1.004	1.002	1.000	1.001						
June-09	1.957	1.236	1.088	1.023	1.057	1.024	1.018	1.009	1.022	1.016	1.007							
June-10	1.803	1.117	1.036	1.043	1.039	1.039	1.024	1.015	1.014	1.014								
June-11	1.739	1.112	1.073	1.077	1.010	1.005	1.003	1.002	1.003									
June-12	2.177	1.133	1.080	1.055	1.043	1.013	1.034	1.015										
June-13	2.301	1.141	1.049	1.026	1.022	1.001	1.000											
June-14	2.318	1.149	1.069	1.036	1.026	1.008												
June-15	1.908	1.210	1.053	1.029	1.011													
June-16	1.694	1.149	1.045	1.019														
June-17	2.119	1.206	1.052															
June-18	2.015	1.058																
June-19	1.625																	

Acc Yr Ending	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	420-432	432-444	444-456
June-83	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	1.000	1.000	1.000	1.000
June-84	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	1.000	1.000	1.000	1.000	
June-85	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	1.049	1.027	1.003	1.000		
June-86	1.036	1.021	1.034	1.016	1.008	1.005	1.002	1.003	1.006	1.001	1.000	1.000	1.000	1.000	1.000	1.000			
June-87	1.005	1.002	1.002	1.002	1.002	1.002	1.007	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
June-88	1.001	1.001	1.000	1.002	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
June-89	1.012	1.013	1.010	1.009	1.008	1.016	1.011	1.007	1.003	1.000	1.000	1.004	1.000						
June-90	1.001	1.001	1.000	1.001	1.001	1.002	1.000	1.000	1.000	1.000	1.000	1.000							
June-91	1.017	1.030	1.039	1.011	1.006	1.003	1.002	1.031	1.022	1.001	1.002								
June-92	1.048	1.075	1.069	1.017	1.042	1.013	1.011	1.007	1.004	1.004									
June-93	1.000	1.003	1.023	1.001	1.000	1.000	1.000	1.000	1.000										
June-94	1.013	1.013	1.006	1.024	1.006	1.008	1.012	1.007											
June-95	1.003	1.001	1.003	1.003	1.002	1.001	1.001												
June-96	1.001	1.003	1.001	1.002	1.003	1.001													
June-97	1.007	1.003	1.002	1.000	1.003														
June-98	1.034	1.021	1.016	1.014															
June-99	1.002	1.003	1.002																
June-00	1.006	1.004																	
June-01	1.000																		

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
Simple Avg																		
All Yrs	2.451	1.273	1.137	1.095	1.064	1.047	1.041	1.039	1.028	1.025	1.022	1.014	1.016	1.012	1.013	1.013	1.010	1.012
Latest 5	1.872	1.154	1.054	1.033	1.022	1.013	1.016	1.009	1.012	1.011	1.009	1.008	1.014	1.005	1.008	1.003	1.003	1.008
Latest 3	1.919	1.138	1.050	1.028	1.019	1.007	1.012	1.010	1.013	1.010	1.007	1.008	1.013	1.007	1.009	1.001	1.003	1.003
Volume Wtd																		
All Yrs	2.274	1.248	1.116	1.079	1.051	1.038	1.031	1.024	1.022	1.020	1.020	1.013	1.015	1.011	1.013	1.011	1.008	1.011
Latest 5	1.866	1.157	1.053	1.032	1.021	1.013	1.016	1.008	1.013	1.011	1.010	1.008	1.013	1.005	1.009	1.003	1.003	1.008
Latest 3	1.916	1.142	1.050	1.028	1.018	1.007	1.012	1.010	1.014	1.010	1.007	1.008	1.012	1.007	1.010	1.001	1.002	1.003
Dev Factor S																		
Industry 1	1.957	1.147	1.057	1.025	1.015	1.009	1.011	1.009	1.009	1.009	1.010	1.008	1.008	1.009	1.009	1.008	1.008	1.007
Industry 2		1.281	1.080	1.034	1.020	1.017	1.009	1.011	1.009	1.009	1.006	1.007	1.009	1.008	1.008	1.012	1.007	1.006
Prior	*2.393*	*1.254*	*1.119*	*1.081*	*1.053*	*1.038*	*1.032*	*1.017*	*1.016*	*1.016*	*1.012*	*1.011*	*1.012*	*1.013*	*1.013*	*1.013*	*1.010*	*1.012*
Selected	2.373	1.248	1.116	1.079	1.051	1.038	1.031	1.016	1.016	1.015	1.012	1.010	1.013	1.012	1.013	1.013	1.003	1.011
FacToUlt	5.124	2.160	1.731	1.550	1.436	1.366	1.317	1.277	1.257	1.236	1.218	1.203	1.191	1.176	1.161	1.146	1.132	1.128
Percent of Ult	19.5%	46.3%	57.8%	64.5%	69.6%	73.2%	76.0%	78.3%	79.6%	80.9%	82.1%	83.1%	83.9%	85.0%	86.1%	87.2%	88.3%	88.7%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																				
All Yrs	1.013	1.014	1.016	1.011	1.013	1.010	1.011	1.009	1.007	1.005	1.005	1.007	1.007	1.008	1.005	1.001	1.000	1.000	1.000	
Latest 5	1.010	1.007	1.005	1.009	1.003	1.004	1.005	1.009	1.006	1.001	1.000	1.001	1.010	1.010	1.005					
Latest 3	1.003	1.009	1.007	1.005	1.002	1.003	1.004	1.005	1.009	1.002	1.001	1.001	1.000	1.000	1.009	1.001	1.000			
Volume Wtd																				
All Yrs	1.011	1.014	1.016	1.009	1.009	1.006	1.006	1.009	1.007	1.003	1.003	1.005	1.005	1.007	1.006	1.001	1.000	1.000		
Latest 5	1.009	1.007	1.006	1.009	1.003	1.005	1.005	1.011	1.008	1.001	1.001	1.001	1.006	1.007						
Latest 3	1.002	1.009	1.007	1.006	1.002	1.003	1.005	1.005	1.011	1.002	1.001	1.001	1.000	1.000	1.008	1.001				
Dev Factor S																				
Industry 1																				
Industry 2	1.007	1.006																		
Prior	*1.012*	*1.015*	*1.017*	*1.010*	*1.005*	*1.004*	*1.004*	*1.004*	*1.004*	*1.004*	*1.004*	*1.004*	*1.004*	*1.004*	*1.002*	*1.002*	*1.002*	*1.002*	*1.008*	
Selected	1.011	1.014	1.016	1.010	1.005	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.002	1.002	1.002	1.002	1.002	1.008
FacToUlt	1.116	1.103	1.088	1.071	1.060	1.055	1.051	1.047	1.043	1.038	1.034	1.030	1.026	1.022	1.018	1.016	1.014	1.012	1.010	1.008
Percent of Ult	89.6%	90.6%	91.9%	93.4%	94.3%	94.8%	95.2%	95.5%	95.9%	96.3%	96.7%	97.1%	97.5%	97.9%	98.2%	98.4%	98.6%	98.8%	99.0%	99.2%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	1,593,395	1,838,254	1,757,671	1,988,208	164,276	10.3%	149,954	8.2%
6/30/82-83	164,749	167,692	164,749	167,680	0	0.0%	(12)	0.0%
6/30/83-84	730,414	744,949	730,414	744,896	0	0.0%	(53)	0.0%
6/30/84-85	566,000	570,000	566,000	570,000	0	0.0%	0	0.0%
6/30/85-86	570,000	571,000	570,000	571,000	0	0.0%	0	0.0%
6/30/86-87	658,000	659,000	658,000	658,000	0	0.0%	(1,000)	-0.2%
6/30/87-88	1,169,000	1,171,000	1,166,000	1,168,000	(3,000)	-0.3%	(3,000)	-0.3%
6/30/88-89	1,309,000	1,310,000	1,306,000	1,307,000	(3,000)	-0.2%	(3,000)	-0.2%
6/30/89-90	1,914,000	1,915,000	1,911,000	1,912,000	(3,000)	-0.2%	(3,000)	-0.2%
6/30/90-91	2,701,000	2,837,100	2,701,000	2,837,100	0	0.0%	0	0.0%
6/30/91-92	2,211,000	2,322,600	2,216,000	2,327,850	5,000	0.2%	5,250	0.2%
6/30/92-93	1,413,000	1,414,000	1,411,000	1,411,000	(2,000)	-0.1%	(3,000)	-0.2%
6/30/93-94	1,652,000	1,654,000	1,660,000	1,662,000	8,000	0.5%	8,000	0.5%
6/30/94-95	1,405,000	1,407,000	1,403,000	1,405,000	(2,000)	-0.1%	(2,000)	-0.1%
6/30/95-96	1,561,000	1,563,000	1,559,000	1,562,000	(2,000)	-0.1%	(1,000)	-0.1%
6/30/96-97	1,936,000	1,940,000	1,935,000	1,939,000	(1,000)	-0.1%	(1,000)	-0.1%
6/30/97-98	2,456,000	2,465,000	2,472,000	2,479,000	16,000	0.7%	14,000	0.6%
6/30/98-99	2,075,000	2,083,000	2,050,000	2,056,000	(25,000)	-1.2%	(27,000)	-1.3%
6/30/99-00	2,330,000	2,342,000	2,307,000	2,318,000	(23,000)	-1.0%	(24,000)	-1.0%
6/30/00-01	3,277,000	3,300,000	3,237,000	3,258,000	(40,000)	-1.2%	(42,000)	-1.3%
6/30/01-02	2,138,000	2,150,000	2,112,000	2,123,000	(26,000)	-1.2%	(27,000)	-1.3%
6/30/02-03	2,587,000	2,605,000	2,557,000	2,573,000	(30,000)	-1.2%	(32,000)	-1.2%
6/30/03-04	2,432,000	2,448,000	2,386,000	2,400,000	(46,000)	-1.9%	(48,000)	-2.0%
6/30/04-05	2,838,000	3,016,250	2,864,000	3,015,300	26,000	0.9%	(950)	0.0%
6/30/05-06	2,311,000	2,555,000	2,280,000	2,504,000	(31,000)	-1.3%	(51,000)	-2.0%
6/30/06-07	1,927,000	2,123,020	1,936,000	2,129,080	9,000	0.5%	6,060	0.3%
6/30/07-08	1,709,000	1,859,410	1,673,000	1,827,090	(36,000)	-2.1%	(32,320)	-1.7%
6/30/08-09	1,772,000	2,040,150	1,743,000	2,011,800	(29,000)	-1.6%	(28,350)	-1.4%
6/30/09-10	1,151,000	1,353,450	1,137,000	1,315,650	(14,000)	-1.2%	(37,800)	-2.8%
6/30/10-11	1,366,000	1,546,650	1,335,000	1,497,300	(31,000)	-2.3%	(49,350)	-3.2%
6/30/11-12	1,221,000	1,345,050	1,205,000	1,300,950	(16,000)	-1.3%	(44,100)	-3.3%
6/30/12-13	1,158,000	1,340,850	1,110,000	1,255,800	(48,000)	-4.1%	(85,050)	-6.3%
6/30/13-14	1,276,000	1,484,700	1,201,000	1,390,200	(75,000)	-5.9%	(94,500)	-6.4%
6/30/14-15	1,708,000	1,893,150	1,668,000	1,778,700	(40,000)	-2.3%	(114,450)	-6.0%
6/30/15-16	1,608,000	1,844,850	1,540,000	1,699,950	(68,000)	-4.2%	(144,900)	-7.9%
6/30/16-17	1,989,000	2,241,750	1,934,000	2,175,800	(55,000)	-2.8%	(65,950)	-2.9%
6/30/17-18	1,813,000	1,934,100	1,573,000	1,754,500	(240,000)	-13.2%	(179,600)	-9.3%
6/30/18-19	1,977,000	2,487,000	1,701,000	1,960,750	(276,000)	-14.0%	(526,250)	-21.2%
6/30/19-20								
Total	64,672,558	68,542,975	63,735,834	67,054,604	(936,724)	-1.4%	(1,488,370)	-2.2%

NOTES:
(2), (3) From prior Aon analysis as of June 30, 2019
(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, 2020

Department of Corrections - Cluster 3
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.8%	0.0%	0.2%	0.1%	1.000	1.000
456	99.2%	0.2%	0.8%	0.0%	0.0%	0.981	0.971
444	99.0%	0.2%	1.0%	0.0%	0.0%	0.951	0.928
432	98.8%	0.2%	1.2%	0.0%	0.0%	0.925	0.891
420	98.6%	0.2%	1.4%	0.1%	0.0%	0.903	0.860
408	98.4%	0.2%	1.6%	0.1%	0.0%	0.882	0.832
396	98.2%	0.4%	1.8%	0.1%	0.1%	0.863	0.805
384	97.9%	0.4%	2.1%	0.1%	0.1%	0.858	0.798
372	97.5%	0.4%	2.5%	0.1%	0.1%	0.849	0.787
360	97.1%	0.4%	2.9%	0.1%	0.1%	0.838	0.773
348	96.7%	0.4%	3.3%	0.1%	0.1%	0.826	0.757
336	96.3%	0.4%	3.7%	0.1%	0.1%	0.814	0.741
324	95.9%	0.4%	4.1%	0.1%	0.1%	0.801	0.725
312	95.5%	0.4%	4.5%	0.1%	0.1%	0.788	0.708
300	95.2%	0.4%	4.8%	0.1%	0.1%	0.775	0.692
288	94.8%	0.5%	5.2%	0.2%	0.1%	0.763	0.676
276	94.3%	0.9%	5.7%	0.4%	0.3%	0.754	0.665
264	93.4%	1.5%	6.6%	0.6%	0.4%	0.761	0.676
252	91.9%	1.3%	8.1%	0.6%	0.4%	0.777	0.699
240	90.6%	1.0%	9.4%	0.5%	0.3%	0.779	0.701
228	89.6%	1.0%	10.4%	0.5%	0.3%	0.771	0.691
216	88.7%	0.3%	11.3%	0.2%	0.1%	0.762	0.680
204	88.3%	1.1%	11.7%	0.6%	0.4%	0.739	0.650
192	87.2%	1.1%	12.8%	0.6%	0.5%	0.734	0.644
180	86.1%	1.1%	13.9%	0.6%	0.5%	0.729	0.638
168	85.0%	1.1%	15.0%	0.7%	0.5%	0.720	0.628
156	83.9%	0.8%	16.1%	0.5%	0.4%	0.712	0.618
144	83.1%	1.0%	16.9%	0.6%	0.5%	0.699	0.602
132	82.1%	1.2%	17.9%	0.8%	0.7%	0.690	0.591
120	80.9%	1.3%	19.1%	0.9%	0.8%	0.684	0.584
108	79.6%	1.3%	20.4%	0.9%	0.8%	0.678	0.578
96	78.3%	2.4%	21.7%	1.8%	1.5%	0.671	0.570
84	76.0%	2.7%	24.0%	2.1%	1.9%	0.678	0.580
72	73.2%	3.6%	26.8%	2.9%	2.6%	0.686	0.591
60	69.6%	5.1%	30.4%	4.3%	3.9%	0.697	0.606
48	64.5%	6.7%	35.5%	5.9%	5.5%	0.715	0.629
36	57.8%	11.5%	42.2%	10.4%	9.9%	0.734	0.654
24	46.3%	26.8%	53.7%	25.3%	24.5%	0.765	0.693
12	19.5%	19.5%	80.5%	19.1%	19.0%	0.817	0.759
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, 2020

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	349,148	579,686		335,849	557,605
6/30/82-83	0	2,931	0.981	0	2,874
6/30/83-84	0	14,482	0.951	0	13,767
6/30/84-85	3,048	7,048	0.925	2,820	6,522
6/30/85-86	6,668	7,668	0.903	6,021	6,924
6/30/86-87	10,313	10,313	0.882	9,101	9,101
6/30/87-88	20,017	22,017	0.863	17,281	19,008
6/30/88-89	26,941	27,941	0.858	23,104	23,962
6/30/89-90	48,151	49,151	0.849	40,862	41,711
6/30/90-91	77,972	214,072	0.838	65,330	179,362
6/30/91-92	72,371	184,221	0.826	59,785	152,183
6/30/92-93	51,652	51,652	0.814	42,032	42,032
6/30/93-94	65,921	67,921	0.801	52,809	54,411
6/30/94-95	61,054	63,054	0.788	48,129	49,705
6/30/95-96	72,758	75,758	0.775	56,423	58,749
6/30/96-97	97,156	101,156	0.763	74,103	77,154
6/30/97-98	133,790	140,790	0.754	100,861	106,138
6/30/98-99	129,831	135,831	0.761	98,791	103,357
6/30/99-00	177,199	188,199	0.777	137,706	146,254
6/30/00-01	283,915	304,915	0.779	221,045	237,395
6/30/01-02	209,253	220,253	0.771	161,304	169,784
6/30/02-03	275,975	291,975	0.762	210,343	222,538
6/30/03-04	265,510	279,510	0.739	196,313	206,665
6/30/04-05	94,991	246,291	0.734	69,750	180,847
6/30/05-06	124,423	348,423	0.729	90,646	253,837
6/30/06-07	143,124	336,204	0.720	103,086	242,153
6/30/07-08	154,787	308,877	0.712	110,280	220,063
6/30/08-09	150,504	419,304	0.699	105,239	293,194
6/30/09-10	153,822	332,472	0.690	106,090	229,303
6/30/10-11	197,975	360,275	0.684	135,362	246,333
6/30/11-12	291,529	387,479	0.678	197,684	262,747
6/30/12-13	282,142	427,942	0.671	189,351	287,200
6/30/13-14	315,192	504,392	0.678	213,769	342,088
6/30/14-15	482,331	593,031	0.686	330,794	406,714
6/30/15-16	498,803	658,753	0.697	347,825	459,361
6/30/16-17	657,726	899,526	0.715	470,386	643,314
6/30/17-18	690,265	871,765	0.734	506,902	640,188
6/30/18-19	936,242	1,195,992	0.765	716,039	914,696
6/30/19-20	1,533,237	3,228,387	0.817	1,252,642	2,637,566
Total	9,145,738	14,159,659		6,905,857	10,746,804
			(7) Total Discount Factor:	0.755	0.759

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	349,148	579,686
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	174,574	289,843
(11) Discounted Value at 4%:	335,849	557,605

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, 2020

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	349,148	579,686		329,665	547,338
6/30/82-83	0	2,931	0.971	0	2,847
6/30/83-84	0	14,482	0.928	0	13,434
6/30/84-85	3,048	7,048	0.891	2,717	6,283
6/30/85-86	6,668	7,668	0.860	5,734	6,594
6/30/86-87	10,313	10,313	0.832	8,575	8,575
6/30/87-88	20,017	22,017	0.805	16,122	17,733
6/30/88-89	26,941	27,941	0.798	21,510	22,309
6/30/89-90	48,151	49,151	0.787	37,885	38,672
6/30/90-91	77,972	214,072	0.773	60,249	165,414
6/30/91-92	72,371	184,221	0.757	54,806	139,509
6/30/92-93	51,652	51,652	0.741	38,286	38,286
6/30/93-94	65,921	67,921	0.725	47,784	49,233
6/30/94-95	61,054	63,054	0.708	43,254	44,671
6/30/95-96	72,758	75,758	0.692	50,362	52,439
6/30/96-97	97,156	101,156	0.676	65,690	68,394
6/30/97-98	133,790	140,790	0.665	89,035	93,694
6/30/98-99	129,831	135,831	0.676	87,796	91,853
6/30/99-00	177,199	188,199	0.699	123,834	131,521
6/30/00-01	283,915	304,915	0.701	199,072	213,796
6/30/01-02	209,253	220,253	0.691	144,633	152,236
6/30/02-03	275,975	291,975	0.680	187,671	198,551
6/30/03-04	265,510	279,510	0.650	172,637	181,740
6/30/04-05	94,991	246,291	0.644	61,210	158,705
6/30/05-06	124,423	348,423	0.638	79,341	222,181
6/30/06-07	143,124	336,204	0.628	89,831	211,016
6/30/07-08	154,787	308,877	0.618	95,709	190,987
6/30/08-09	150,504	419,304	0.602	90,595	252,397
6/30/09-10	153,822	332,472	0.591	90,843	196,349
6/30/10-11	197,975	360,275	0.584	115,614	210,394
6/30/11-12	291,529	387,479	0.578	168,444	223,884
6/30/12-13	282,142	427,942	0.570	160,785	243,873
6/30/13-14	315,192	504,392	0.580	182,870	292,642
6/30/14-15	482,331	593,031	0.591	284,976	350,381
6/30/15-16	498,803	658,753	0.606	302,376	399,338
6/30/16-17	657,726	899,526	0.629	413,990	566,185
6/30/17-18	690,265	871,765	0.654	451,416	570,113
6/30/18-19	936,242	1,195,992	0.693	648,555	828,489
6/30/19-20	1,533,237	3,228,387	0.759	1,164,146	2,451,227
Total	9,145,738	14,159,659		6,188,018	9,653,281

(7) Total Discount Factor:	0.677	0.682

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	349,148	579,686
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	174,574	289,843
(11) Discounted Value at 6%:	329,665	547,338

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, 2020

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		2,395,147			2,596,801	2,697,090	201,654	301,943		
6/30/82-83		134,406	134,998		138,000	140,000	3,594	5,594		
6/30/83-84		188,031	197,139		192,000	196,000	3,969	7,969		
6/30/84-85	176,924	1,942,197	1,958,193	1,955,266	1,955,000	1,958,000	12,803	15,803	1.105	1.107
6/30/85-86	188,662	1,624,227	1,638,997	1,636,434	1,636,000	1,639,000	11,773	14,773	0.867	0.869
6/30/86-87	212,277	2,536,801	2,564,034	2,558,440	2,558,000	2,564,000	21,199	27,199	1.205	1.208
6/30/87-88	243,118	2,413,960	2,445,482	2,441,774	2,442,000	2,445,000	28,040	31,040	1.004	1.006
6/30/88-89	248,990	2,094,792	2,128,272	2,123,722	2,124,000	2,128,000	29,208	33,208	0.853	0.855
6/30/89-90	250,404	522,038	530,784	534,854	533,000	543,000	10,962	20,962	0.213	0.217
6/30/90-91	235,170	2,524,091	2,577,674	2,577,262	2,550,000	2,575,000	25,909	50,909	1.084	1.095
6/30/91-92	235,607	2,631,678	2,691,689	2,690,742	2,658,000	2,685,000	26,322	53,322	1.128	1.140
6/30/92-93	241,161	450,365	458,328	458,301	453,000	473,000	2,635	22,635	0.188	0.196
6/30/93-94	254,321	710,933	727,941	727,616	715,000	747,000	4,067	36,067	0.281	0.294
6/30/94-95	256,665	761,806	781,387	780,897	766,000	800,000	4,194	38,194	0.298	0.312
6/30/95-96	265,739	591,722	607,617	607,289	595,000	622,000	3,278	30,278	0.224	0.234
6/30/96-97	296,336	512,528	530,757	530,418	516,000	539,000	3,473	26,473	0.174	0.182
6/30/97-98	296,982	463,804	477,825	477,904	467,000	487,000	3,196	23,196	0.157	0.164
6/30/98-99	299,530	670,684	694,062	693,547	675,000	705,000	4,316	34,316	0.225	0.235
6/30/99-00	323,627	1,216,150	1,272,374	1,269,039	1,223,000	1,277,000	6,850	60,850	0.378	0.395
6/30/00-01	338,348	1,457,179	1,530,206	1,525,621	1,526,000	1,530,000	68,821	72,821	0.451	0.452
6/30/01-02	329,555	775,348	813,120	812,109	812,000	813,000	36,652	37,652	0.246	0.247
6/30/02-03	329,179	901,243	946,215	944,745	945,000	946,000	43,757	44,757	0.287	0.287
6/30/03-04	344,547	268,295	284,318	286,015	284,000	286,000	15,705	17,705	0.082	0.083
6/30/04-05	325,530	624,705	661,718	659,201	659,000	662,000	34,295	37,295	0.202	0.203
6/30/05-06	403,750	353,027	381,386	406,288	381,000	406,000	27,973	52,973	0.094	0.101
6/30/06-07	420,219	442,769	477,192	500,707	477,000	501,000	34,231	58,231	0.114	0.119
6/30/07-08	425,998	519,052	562,417	580,233	562,000	580,000	42,948	60,948	0.132	0.136
6/30/08-09	420,566	896,558	977,003	962,449	962,000	977,000	65,442	80,442	0.229	0.232
6/30/09-10	433,206	636,168	689,544	705,291	690,000	705,000	53,832	68,832	0.159	0.163
6/30/10-11	444,673	1,033,495	1,146,988	1,114,489	1,114,000	1,147,000	80,505	113,505	0.251	0.258
6/30/11-12	467,753	960,457	1,073,323	1,056,864	1,057,000	1,073,000	96,543	112,543	0.226	0.229
6/30/12-13	495,398	687,544	782,558	797,188	783,000	797,000	95,456	109,456	0.158	0.161
6/30/13-14	518,391	496,067	572,082	646,319	572,000	646,000	75,933	149,933	0.110	0.125
6/30/14-15	539,631	943,966	1,167,681	1,150,455	1,150,000	1,261,440	206,034	317,474	0.213	0.234
6/30/15-16	585,875	1,235,947	1,603,395	1,546,215	1,546,000	1,731,240	310,053	495,293	0.264	0.295
6/30/16-17	594,787	984,882	1,433,204	1,408,884	1,409,000	1,576,300	424,118	591,418	0.237	0.265
6/30/17-18	607,484	542,757	1,001,568	1,099,837	1,002,000	1,155,000	459,243	612,243	0.165	0.190
6/30/18-19	656,644	525,417	1,341,524	1,365,639	1,342,000	1,502,600	816,583	977,183	0.204	0.229
6/30/19-20	664,701	183,754	1,033,200	1,323,580	1,084,650	1,324,000	900,896	1,140,246	0.163	0.199
Total	13,371,748	38,853,988	40,896,193	40,955,633	43,150,451	44,839,670	4,296,462	5,985,682		
Tot 6/30/84-20	13,371,748	36,136,404	40,564,057	40,955,633	40,223,650	41,806,580	4,087,246	5,670,176	0.301	0.313

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim	Average Age
All Prior Yrs		2,307,107							1	1		85
6/30/82-83		134,406	1.004	1.000	134,998	0	134,998		0	0		
6/30/83-84		160,531	1.006	1.050	169,639	27,500	197,139		0	0		
6/30/84-85	176,924	1,898,197	1.008	1.000	1,914,193	44,000	1,958,193	1.107	0	0		
6/30/85-86	188,662	1,414,227	1.010	1.000	1,428,997	210,000	1,638,997	0.869	0	0		
6/30/86-87	212,277	2,184,801	1.012	1.000	2,212,034	352,000	2,564,034	1.208	0	0		
6/30/87-88	243,118	2,175,460	1.014	1.000	2,206,982	238,500	2,445,482	1.006	0	0		
6/30/88-89	248,990	2,026,792	1.017	1.000	2,060,272	68,000	2,128,272	0.855	1	1	33,480	71
6/30/89-90	250,404	471,448	1.019	1.000	480,194	50,590	530,784	0.212	0	0		
6/30/90-91	235,170	2,315,591	1.021	1.000	2,363,266	214,408	2,577,674	1.096	1	1	47,675	81
6/30/91-92	235,607	2,382,678	1.023	1.000	2,436,597	255,091	2,691,689	1.142	1	1	53,920	79
6/30/92-93	241,161	292,355	1.025	1.000	299,569	158,759	458,328	0.190	0	0		
6/30/93-94	254,321	580,633	1.027	1.000	596,151	131,790	727,941	0.286	0	0		
6/30/94-95	256,665	624,606	1.029	1.000	642,581	138,806	781,387	0.304	0	0		
6/30/95-96	265,739	475,722	1.031	1.000	490,391	117,226	607,617	0.229	0	0		
6/30/96-97	296,336	472,528	1.036	1.000	489,534	41,224	530,757	0.179	0	0		
6/30/97-98	296,982	320,304	1.041	1.000	333,491	144,334	477,825	0.161	0	0		
6/30/98-99	299,530	477,184	1.046	1.000	499,314	194,748	694,062	0.232	0	0		
6/30/99-00	323,627	1,036,650	1.052	1.000	1,090,149	182,225	1,272,374	0.393	0	0		
6/30/00-01	338,348	1,227,179	1.057	1.000	1,296,963	233,242	1,530,206	0.452	0	0		
6/30/01-02	329,555	582,848	1.062	1.000	619,072	194,048	813,120	0.247	0	0		
6/30/02-03	329,179	641,271	1.067	1.000	684,531	261,683	946,215	0.287	1	0		
6/30/03-04	344,547	212,295	1.073	1.000	227,749	56,569	284,318	0.083	0	0		
6/30/04-05	325,530	457,755	1.078	1.000	493,534	168,184	661,718	0.203	0	0		
6/30/05-06	403,750	276,027	1.099	1.000	303,243	78,143	381,386	0.094	0	0		
6/30/06-07	420,219	324,328	1.099	1.000	356,491	120,701	477,192	0.114	0	0		
6/30/07-08	425,998	401,552	1.099	1.000	441,372	121,046	562,417	0.132	0	0		
6/30/08-09	420,566	733,058	1.099	1.000	805,752	171,251	977,003	0.232	0	0		
6/30/09-10	433,206	453,578	1.099	1.000	498,557	190,987	689,544	0.159	1	0		
6/30/10-11	444,673	933,495	1.107	1.000	1,033,316	113,672	1,146,988	0.258	2	0		
6/30/11-12	467,753	809,457	1.116	1.000	903,478	169,844	1,073,323	0.229	0	1	94,022	60
6/30/12-13	495,398	598,746	1.128	1.000	675,127	107,431	782,558	0.158	2	1	76,381	69
6/30/13-14	518,391	247,039	1.150	1.000	284,067	288,015	572,082	0.110	1	0		
6/30/14-15	539,631	841,329	1.197	1.000	1,006,962	160,719	1,167,681	0.216	4	4	41,408	60
6/30/15-16	585,875	1,000,946	1.267	1.000	1,268,240	335,155	1,603,395	0.274	6	5	53,459	63
6/30/16-17	594,787	784,882	1.418	1.000	1,112,909	320,295	1,433,204	0.241	7	3	109,343	62
6/30/17-18	607,484	495,783	1.670	1.000	827,857	173,710	1,001,568	0.165	13	5	66,415	47
6/30/18-19	656,644	525,417	2.163	1.000	1,136,557	204,967	1,341,524	0.204	49	15	40,743	50
6/30/19-20	664,701	183,754	4.608	1.000	846,649	186,551	1,033,200	0.155		49	13,528	48
Total	13,371,748	33,481,957			34,670,778	6,225,416	40,896,193		90	87		

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, 2020

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	1.008	1,911,266	44,000	1,955,266	1.105	1.080
6/30/85-86	188,662	0.626	1,414,227	1.010	1,426,434	210,000	1,636,434	0.867	0.756
6/30/86-87	212,277	0.828	2,184,801	1.012	2,206,440	352,000	2,558,440	1.205	1.039
6/30/87-88	243,118	0.801	2,175,460	1.014	2,203,274	238,500	2,441,774	1.004	0.906
6/30/88-89	248,990	0.715	2,026,792	1.017	2,055,722	68,000	2,123,722	0.853	0.826
6/30/89-90	250,404	0.281	471,448	1.019	484,264	50,590	534,854	0.214	0.193
6/30/90-91	235,170	0.996	2,315,591	1.021	2,362,854	214,408	2,577,262	1.096	1.005
6/30/91-92	235,607	1.016	2,382,678	1.023	2,435,650	255,091	2,690,742	1.142	1.034
6/30/92-93	241,161	0.124	292,355	1.025	299,542	158,759	458,301	0.190	0.124
6/30/93-94	254,321	0.229	580,633	1.027	595,825	131,790	727,616	0.286	0.234
6/30/94-95	256,665	0.244	624,606	1.029	642,090	138,806	780,897	0.304	0.250
6/30/95-96	265,739	0.180	475,722	1.031	490,063	117,226	607,289	0.229	0.184
6/30/96-97	296,336	0.162	472,528	1.036	489,194	41,224	530,418	0.179	0.165
6/30/97-98	296,982	0.113	320,304	1.041	333,570	144,334	477,904	0.161	0.112
6/30/98-99	299,530	0.163	477,184	1.046	498,799	194,748	693,547	0.232	0.167
6/30/99-00	323,627	0.316	1,036,650	1.052	1,086,814	182,225	1,269,039	0.392	0.336
6/30/00-01	338,348	0.358	1,227,179	1.057	1,292,379	233,242	1,525,621	0.451	0.382
6/30/01-02	329,555	0.183	582,848	1.062	618,061	194,048	812,109	0.246	0.188
6/30/02-03	329,179	0.201	641,271	1.067	683,062	261,683	944,745	0.287	0.208
6/30/03-04	344,547	0.073	212,295	1.073	229,446	56,569	286,015	0.083	0.067
6/30/04-05	325,530	0.141	457,755	1.078	491,017	168,184	659,201	0.203	0.151
6/30/05-06	403,750	0.144	276,027	1.099	328,145	78,143	406,288	0.101	0.081
6/30/06-07	420,219	0.147	324,328	1.099	380,006	120,701	500,707	0.119	0.090
6/30/07-08	425,998	0.150	401,552	1.099	459,187	121,046	580,233	0.136	0.108
6/30/08-09	420,566	0.153	733,058	1.099	791,198	171,251	962,449	0.229	0.188
6/30/09-10	433,206	0.155	453,578	1.099	514,304	190,987	705,291	0.163	0.119
6/30/10-11	444,673	0.157	933,495	1.107	1,000,817	113,672	1,114,489	0.251	0.225
6/30/11-12	467,753	0.159	809,457	1.116	887,020	169,844	1,056,864	0.226	0.190
6/30/12-13	495,398	0.162	598,746	1.128	689,757	107,431	797,188	0.161	0.139
6/30/13-14	518,391	0.165	247,039	1.150	358,304	288,015	646,319	0.125	0.069
6/30/14-15	539,631	0.167	841,329	1.197	989,736	160,719	1,150,455	0.213	0.183
6/30/15-16	585,875	0.170	1,000,946	1.267	1,211,060	335,155	1,546,215	0.264	0.207
6/30/16-17	594,787	0.173	784,882	1.418	1,088,589	320,295	1,408,884	0.237	0.183
6/30/17-18	607,484	0.177	495,783	1.670	926,127	173,710	1,099,837	0.181	0.152
6/30/18-19	656,644	0.180	525,417	2.163	1,160,672	204,967	1,365,639	0.208	0.177
6/30/19-20	664,701	0.183	183,754	4.608	1,137,029	186,551	1,323,580	0.199	0.171
Total	13,371,748		30,879,913		34,757,717	6,197,916	40,955,633		

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, 2020

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	2,363,266	1.005	1.004	1.009	1.348	1.360	0.137	0.980	0.996
6/30/91-92	235,607	2,436,597	1.034	1.102	1.139	1.335	1.521	0.126	1.001	1.016
6/30/92-93	241,161	299,569	0.124	1.285	0.160	1.321	0.211	0.109	0.124	0.124
6/30/93-94	254,321	596,151	0.234	1.268	0.297	1.308	0.389	0.111	0.230	0.229
6/30/94-95	256,665	642,581	0.250	1.257	0.315	1.295	0.407	0.114	0.244	0.244
6/30/95-96	265,739	490,391	0.185	1.247	0.230	1.282	0.295	0.116	0.181	0.180
6/30/96-97	296,336	489,534	0.165	1.234	0.204	1.270	0.259	0.118	0.163	0.162
6/30/97-98	296,982	333,491	0.112	1.218	0.137	1.257	0.172	0.121	0.114	0.113
6/30/98-99	299,530	499,314	0.167	1.202	0.200	1.245	0.249	0.124	0.164	0.163
6/30/99-00	323,627	1,090,149	0.337	1.183	0.399	1.232	0.491	0.127	0.317	0.316
6/30/00-01	338,348	1,296,963	0.383	1.153	0.442	1.220	0.539	0.131	0.360	0.358
6/30/01-02	329,555	619,072	0.188	1.131	0.212	1.208	0.257	0.135	0.184	0.183
6/30/02-03	329,179	684,531	0.208	1.126	0.234	1.196	0.280	0.137	0.202	0.201
6/30/03-04	344,547	227,749	0.066	1.126	0.074	1.184	0.088	0.139	0.074	0.073
6/30/04-05	325,530	493,534	0.152	1.119	0.170	1.173	0.199	0.141	0.147	0.141
6/30/05-06	403,750	303,243	0.075	1.108	0.083	1.161	0.097	0.144	0.150	0.144
6/30/06-07	420,219	356,491	0.085	1.096	0.093	1.149	0.107	0.147	0.154	0.147
6/30/07-08	425,998	441,372	0.104	1.084	0.112	1.138	0.128	0.150	0.157	0.150
6/30/08-09	420,566	805,752	0.192	1.071	0.205	1.127	0.231	0.153	0.160	0.153
6/30/09-10	433,206	498,557	0.115	1.067	0.123	1.116	0.137	0.155	0.162	0.155
6/30/10-11	444,673	1,033,316	0.232	1.069	0.248	1.105	0.274	0.157	0.164	0.157
6/30/11-12	467,753	903,478	0.193	1.062	0.205	1.094	0.224	0.159	0.167	0.159
6/30/12-13	495,398	675,127	0.136	1.052	0.143	1.083	0.155	0.162	0.170	0.162
6/30/13-14	518,391	284,067	0.055	1.048	0.057	1.072	0.062	0.165	0.172	0.165
6/30/14-15	539,631	1,006,962	0.187	1.042	0.195	1.062	0.206	0.167	0.175	0.167
6/30/15-16	585,875	1,268,240	0.216	1.034	0.224	1.051	0.235	0.170	0.178	0.170
6/30/16-17	594,787	1,112,909	0.187	1.026	0.192	1.041	0.200	0.173	0.181	0.173
6/30/17-18	607,484	827,857	0.136	1.017	0.139	1.030	0.143	0.177	0.185	0.177
6/30/18-19	656,644	1,136,557	0.173	1.008	0.174	1.020	0.178	0.180	0.188	0.180
6/30/19-20	664,701	846,649	0.127	1.000	0.127	1.010	0.129	0.183		0.183
Total	12,051,374	24,063,470								

Trend Last 4 (ex 19-20):	-10.2%	Avg 3 (ex 19-20):	0.174
Trend Last 8 (ex 19-20):	3.0%	Avg 5 (ex 19-20):	0.192
Trend Last 12 (ex 19-20):	1.0%	Avg 10 (ex 19-20):	0.181
Prior Selected Trend:	1.0%	Prior Sel Avg:	0.190
Selected Trend:	1.0%	Sel. Loss Cost:	0.185

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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.950	
(2)	Credibility	14%	
(3)	Average Pmt Trend Statewide	0.950	
(4)	Credibility Weighted Trend	0.950	
		(Low)	(High)
(5)	Selected Range	0.855	0.941
(6)	Incremental Paid for 2020	41,333	41,333
(7)	Estimated Reserve	243,724	653,343
(8)	Paid to Date (82 & Prior)	2,307,107	2,307,107
(9)	Est Ult Paid for 1982 & Prior	2,550,831	2,960,450

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	39,896	38,535
(11)	Projected Number of Years	4	5
(12)	Estimated Reserve	159,584	192,676
(13)	Paid to Date (82 & Prior)	2,307,107	2,265,774
(14)	Est Ult Paid for 1982 & Prior	2,466,691	2,458,450
(14a)	Paid Counts During Fiscal Year	1	1

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	2,508,761	2,609,050
(16)	Lump Sum Ultimates	88,040	88,040
(17)	Ult Loss Including Lump Sums	**2,596,801**	**2,697,090**
(18)	Implied Tail	1.087	1.131
(19)	Ult Loss Inc Lump Sums @ 6/19	2,634,537	2,688,363

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, 2019

Commonwealth of Massachusetts

Workers Compensation

Reserve Analysis at June, 30, 2020

University of Massachusetts (Amherst) - Cluster 4

Indemnity

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
				Average		
		Incremental		Observed		Trend
Year	X	Paids	LN	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 =	29
2001	10	69,462	11.149	1.066	S(x) =	58,174
2002	11	72,621	11.193	1.045	S(x-sq) =	116,699,074
2003	12	73,534	11.206	1.013	S(xy) =	632,114
2004	13	73,411	11.204	0.998	S(y) =	315
2005	14	77,899	11.263	1.061	D =	58,870
2006	15	44,021	10.692	0.565	slope =	-0.045
2007	16	28,745	10.266	0.653	Avg Trend =	0.955
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		
2017	26	37,251	10.525	1.027		
2018	27	38,515	10.559	1.034		
2019	28	39,839	10.593	1.034		
2020	29	41,333	10.629	1.037		
					Selected Trend:	**0.950**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(4) LN [(3)]

(5) Eg. 2020: 1.037 = 41333 / 39839

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	472,528	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	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	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	1,227,179	1,227,179	1,227,179
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	582,848	582,848	582,848	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	631,034	633,761	641,271	641,271	
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	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	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	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	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	387,848	401,552	401,552	401,552						
June-09	157,647	372,637	490,926	555,124	656,285	711,812	727,480	727,480	733,058	733,058	733,058	733,058							
June-10	84,674	225,140	286,244	344,751	390,834	422,920	446,862	452,751	452,751	453,578	453,578								
June-11	203,344	361,140	445,050	584,777	786,089	854,141	910,279	932,795	933,495	933,495									
June-12	198,403	427,078	566,988	683,266	722,953	754,568	808,557	808,557	809,457										
June-13	283,404	453,488	474,086	499,184	521,030	564,083	592,864	598,746											
June-14	158,266	231,996	273,338	249,706	249,734	247,039	247,039												
June-15	292,324	484,207	612,308	740,167	809,710	841,329													
June-16	271,286	532,156	715,829	863,615	1,000,946														
June-17	288,081	520,205	695,741	784,882															
June-18	268,137	432,151	495,783																
June-19	235,059	525,417																	
June-20	183,754																		

Acc Yr Ending	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	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	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	1,898,197	1,898,197	1,898,197	1,898,197		
June-86	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	1,414,227	1,414,227	1,414,227	1,414,227			
June-87	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	2,184,801	2,184,801	2,184,801	2,184,801				
June-88	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	2,163,997	2,175,460	2,175,460	2,175,460					
June-89	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	1,908,677	1,946,686	1,986,002	2,026,792						
June-90	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	1,973,183	2,003,226	2,034,294	2,066,375	2,098,884	2,132,145	2,166,591	2,201,958	2,238,524	2,276,349	2,315,591								
June-92	2,095,831	2,124,362	2,153,822	2,183,675	2,214,219	2,245,851	2,278,329	2,311,908	2,346,641	2,382,678									
June-93	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355	292,355										
June-94	580,633	580,633	580,633	580,633	580,633	580,633	580,633	580,633											
June-95	624,606	624,606	624,606	624,606	624,606	624,606	624,606												
June-96	475,722	475,722	475,722	475,722	475,722	475,722													
June-97	472,528	472,528	472,528	472,528	472,528														
June-98	320,304	320,304	320,304	320,304															
June-99	477,184	477,184	477,184																
June-00	1,036,650	1,036,650																	
June-01	1,227,179																		

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	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	1.003	1.000	1.000	1.000
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	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	1.002	1.004	1.012	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	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	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	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	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	1.040	1.035	1.000	1.000							
June-09	2.364	1.317	1.131	1.182	1.085	1.022	1.000	1.008	1.000	1.000	1.000								
June-10	2.659	1.271	1.204	1.134	1.082	1.057	1.013	1.000	1.002	1.000									
June-11	1.776	1.232	1.314	1.344	1.087	1.066	1.025	1.001	1.000										
June-12	2.153	1.328	1.205	1.058	1.044	1.072	1.000	1.001											
June-13	1.600	1.045	1.053	1.044	1.083	1.051	1.010												
June-14	1.466	1.178	0.914	1.000	0.989	1.000													
June-15	1.656	1.265	1.209	1.094	1.039														
June-16	1.962	1.345	1.206	1.159															
June-17	1.806	1.337	1.128																
June-18	1.612	1.147																	
June-19	2.235																		

Acc Yr Ending	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	420-432	432-444	444-456
June-83	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	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	1.031	1.031	1.032	1.032	1.033	1.035	1.031	1.031	1.031	1.030	1.030	0.998	1.000	1.000	1.000	1.000		
June-86	1.041	1.041	1.041	1.042	1.040	1.038	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
June-87	1.038	1.039	1.038	1.030	1.016	1.016	1.016	1.016	1.016	1.017	1.009	1.000	1.000	1.000				
June-88	1.018	1.019	1.020	1.022	1.019	1.019	1.019	1.019	1.019	1.020	1.005	1.000	1.000					
June-89	1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.020	1.020	1.020	1.020	1.021						
June-90	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
June-91	1.015	1.016	1.016	1.016	1.016	1.016	1.016	1.017	1.017	1.017								
June-92	1.014	1.014	1.014	1.014	1.014	1.014	1.015	1.015	1.015									
June-93	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
June-95	1.000	1.000	1.000	1.000	1.000	1.000												
June-96	1.000	1.000	1.000	1.000	1.000													
June-97	1.000	1.000	1.000	1.000														
June-98	1.000	1.000	1.000															
June-99	1.000	1.000																
June-00	1.000																	

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
Simple Avg																			
All Yrs	2.220	1.328	1.164	1.127	1.073	1.064	1.038	1.028	1.027	1.017	1.019	1.014	1.013	1.012	1.012	1.010	1.010	1.009	1.009
Latest 5	1.854	1.255	1.102	1.071	1.048	1.049	1.010	1.010	1.008	1.007	1.000	1.000	1.000	1.001	1.006	1.003	1.000	1.000	1.000
Latest 3	1.884	1.277	1.181	1.084	1.037	1.041	1.012	1.001	1.001	1.012	1.000	1.000	1.000	1.000	1.001	1.004	1.000	1.000	1.000
Volume Wtd																			
All Yrs	2.109	1.332	1.175	1.127	1.072	1.057	1.037	1.037	1.034	1.025	1.027	1.024	1.022	1.020	1.019	1.017	1.017	1.015	1.015
Latest 5	1.841	1.269	1.132	1.088	1.056	1.057	1.010	1.007	1.006	1.006	1.000	1.000	1.000	1.001	1.010	1.003	1.000	1.000	1.000
Latest 3	1.868	1.285	1.180	1.112	1.046	1.053	1.012	1.001	1.000	1.009	1.000	1.000	1.000	1.000	1.002	1.005	1.000	1.000	1.000
Dev Factor Selection																			
Industry 1	2.958	1.596	1.236	1.106	1.039	1.020	1.014	1.008	1.006	1.006	1.005	1.010	1.002	1.003	1.003	1.002	1.004	1.003	
Industry 2		1.877	1.312	1.143	1.055	1.028	1.016	1.015	1.006	1.005	1.007	1.007	1.004	1.002	1.005	1.002	1.003	1.002	1.001
Prior	*2.130*	*1.298*	*1.177*	*1.123*	*1.069*	*1.053*	*1.021*	*1.010*	*1.008*	*1.007*	*1.000*	*1.000*	*1.000*	*1.005*	*1.019*	*1.005*	*1.005*	*1.005*	*1.005*
Selected	2.130	1.295	1.178	1.119	1.059	1.041	1.020	1.010	1.008	1.007	1.000	1.000	1.000	1.001	1.019	1.005	1.005	1.005	1.005
FacToUlt	4.608	2.163	1.670	1.418	1.267	1.197	1.150	1.128	1.116	1.107	1.099	1.099	1.099	1.099	1.099	1.078	1.073	1.067	1.062
Percent of Ult	21.7%	46.2%	59.9%	70.5%	78.9%	83.6%	87.0%	88.7%	89.6%	90.3%	91.0%	91.0%	91.0%	91.0%	91.0%	92.8%	93.2%	93.7%	94.1%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																			
All Yrs	1.010	1.011	1.011	1.012	1.011	1.012	1.010	1.011	1.012	1.012	1.008	1.003	1.000	1.000	1.000	1.000	1.000	1.000	
Latest 5	1.000	1.000	1.000	1.000	1.003	1.006	1.006	1.010	1.014	1.015	1.007	1.004	1.000	1.000					
Latest 3	1.000	1.000	1.000	1.000	1.000	1.000	1.005	1.011	1.011	1.012	1.008	1.007	1.000	1.000	1.000	1.000			
Volume Wtd																			
All Yrs	1.016	1.018	1.019	1.019	1.017	1.018	1.015	1.016	1.016	1.017	1.012	1.004	1.000	1.000	1.000	1.000	1.000		
Latest 5	1.000	1.000	1.000	1.000	1.008	1.011	1.012	1.015	1.017	1.018	1.009	1.004	1.000	1.000					
Latest 3	1.000	1.000	1.000	1.000	1.000	1.000	1.011	1.015	1.015	1.017	1.011	1.006	1.000	1.000	1.000	1.000			
Dev Factor Selection																			
Industry 1																			
Industry 2	1.001																		
Prior	*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*	*1.002*	*1.002*	*1.002*	*1.005*	
Selected	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	1.002	1.002	1.002	1.002	1.004
FacToUlt	1.057	1.052	1.046	1.041	1.036	1.031	1.029	1.027	1.025	1.023	1.021	1.019	1.017	1.014	1.012	1.010	1.008	1.006	1.004
Percent of Ult	94.6%	95.1%	95.6%	96.0%	96.5%	97.0%	97.2%	97.4%	97.6%	97.8%	98.0%	98.2%	98.4%	98.6%	98.8%	99.0%	99.2%	99.4%	99.6%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	2,634,537	2,688,363	2,596,801	2,697,090	(37,736)	-1.4%	8,727	0.3%
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	1,955,000	1,958,000	1,955,000	1,958,000	0	0.0%	0	0.0%
6/30/85-86	1,657,000	1,690,000	1,636,000	1,639,000	(21,000)	-1.3%	(51,000)	-3.0%
6/30/86-87	2,559,000	2,564,000	2,558,000	2,564,000	(1,000)	0.0%	0	0.0%
6/30/87-88	2,442,000	2,446,000	2,442,000	2,445,000	0	0.0%	(1,000)	0.0%
6/30/88-89	2,083,000	2,087,000	2,124,000	2,128,000	41,000	2.0%	41,000	2.0%
6/30/89-90	533,000	543,000	533,000	543,000	0	0.0%	0	0.0%
6/30/90-91	2,510,000	2,535,000	2,550,000	2,575,000	40,000	1.6%	40,000	1.6%
6/30/91-92	2,622,000	2,648,000	2,658,000	2,685,000	36,000	1.4%	37,000	1.4%
6/30/92-93	455,000	473,000	453,000	473,000	(2,000)	-0.4%	0	0.0%
6/30/93-94	719,000	747,000	715,000	747,000	(4,000)	-0.6%	0	0.0%
6/30/94-95	770,000	800,000	766,000	800,000	(4,000)	-0.5%	0	0.0%
6/30/95-96	598,000	622,000	595,000	622,000	(3,000)	-0.5%	0	0.0%
6/30/96-97	518,000	539,000	516,000	539,000	(2,000)	-0.4%	0	0.0%
6/30/97-98	469,000	487,000	467,000	487,000	(2,000)	-0.4%	0	0.0%
6/30/98-99	678,000	705,000	675,000	705,000	(3,000)	-0.4%	0	0.0%
6/30/99-00	1,229,000	1,277,000	1,223,000	1,277,000	(6,000)	-0.5%	0	0.0%
6/30/00-01	1,529,000	1,534,000	1,526,000	1,530,000	(3,000)	-0.2%	(4,000)	-0.3%
6/30/01-02	814,000	815,000	812,000	813,000	(2,000)	-0.2%	(2,000)	-0.2%
6/30/02-03	947,000	948,000	945,000	946,000	(2,000)	-0.2%	(2,000)	-0.2%
6/30/03-04	285,000	287,000	284,000	286,000	(1,000)	-0.4%	(1,000)	-0.3%
6/30/04-05	669,000	671,000	659,000	662,000	(10,000)	-1.5%	(9,000)	-1.3%
6/30/05-06	383,000	411,000	381,000	406,000	(2,000)	-0.5%	(5,000)	-1.2%
6/30/06-07	479,000	506,000	477,000	501,000	(2,000)	-0.4%	(5,000)	-1.0%
6/30/07-08	565,000	586,000	562,000	580,000	(3,000)	-0.5%	(6,000)	-1.0%
6/30/08-09	970,000	982,000	962,000	977,000	(8,000)	-0.8%	(5,000)	-0.5%
6/30/09-10	697,000	717,000	690,000	705,000	(7,000)	-1.0%	(12,000)	-1.7%
6/30/10-11	1,130,000	1,164,000	1,114,000	1,147,000	(16,000)	-1.4%	(17,000)	-1.5%
6/30/11-12	1,077,000	1,092,000	1,057,000	1,073,000	(20,000)	-1.9%	(19,000)	-1.7%
6/30/12-13	742,000	763,000	783,000	797,000	41,000	5.5%	34,000	4.5%
6/30/13-14	566,000	671,000	572,000	646,000	6,000	1.1%	(25,000)	-3.7%
6/30/14-15	1,178,000	1,323,300	1,150,000	1,261,440	(28,000)	-2.4%	(61,860)	-4.7%
6/30/15-16	1,356,000	1,566,400	1,546,000	1,731,240	190,000	14.0%	164,840	10.5%
6/30/16-17	1,473,000	1,674,200	1,409,000	1,576,300	(64,000)	-4.3%	(97,900)	-5.8%
6/30/17-18	1,124,000	1,212,000	1,002,000	1,155,000	(122,000)	-10.9%	(57,000)	-4.7%
6/30/18-19	1,347,000	1,441,000	1,342,000	1,502,600	(5,000)	-0.4%	61,600	4.3%
6/30/19-20								
Total	42,092,537	43,509,263	42,065,801	43,515,670	(26,736)	-0.1%	6,407	0.0%

NOTES:
(2), (3) From prior Aon analysis as of June 30, 2019
(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, 2020

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Calculation of Ultimate Lump Sum Payments

(1) Accident Year	(2) Paid Loss Excluding Lump Sum	(3) Implied Cumulative LDF	(4) Ult Loss Excluding Lump Sum	(5) Selected Incr Lump Sum % Outstdg	(6) Cumulative Lump Sum % Outstdg	(7) Total Lump Sum Outstdg	(8) Paid Lump Sum to Date	(9) Est Ult Lump Sum - Incr Method	(10) Ultimate Lump Sum Percentage	(11) Lump Sum LDF	(12) Est Ult Lump Sum - Paid Method	(13) Selected Est Ultimate Lump Sums	(14) Prior Est Ultimate Lump Sums
All Prior Yrs	2,307,107	1.109	2,558,905	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	1.004	134,998	0.0%	0.0%	0	0	0	0.0%	1.000	0	0	0
6/30/83-84	160,531	1.057	169,639	0.0%	0.0%	0	27,500	27,500	16.2%	1.000	27,500	27,500	27,500
6/30/84-85	1,898,197	1.008	1,914,193	0.0%	0.0%	0	44,000	44,000	2.3%	1.000	44,000	44,000	44,000
6/30/85-86	1,414,227	1.010	1,428,997	0.0%	0.0%	0	210,000	210,000	14.7%	1.000	210,000	210,000	210,000
6/30/86-87	2,184,801	1.012	2,212,034	0.0%	0.0%	0	352,000	352,000	15.9%	1.000	352,000	352,000	352,000
6/30/87-88	2,175,460	1.014	2,206,982	0.0%	0.0%	0	238,500	238,500	10.8%	1.000	238,500	238,500	238,500
6/30/88-89	2,026,792	1.017	2,060,272	0.0%	0.0%	0	68,000	68,000	3.3%	1.000	68,000	68,000	68,000
6/30/89-90	471,448	1.019	480,194	0.0%	0.0%	0	50,590	50,590	10.5%	1.000	50,590	50,590	51,791
6/30/90-91	2,315,591	1.021	2,363,266	0.5%	0.5%	11,816	208,500	220,316	9.3%	1.000	208,500	214,408	214,309
6/30/91-92	2,382,678	1.023	2,436,597	0.0%	0.5%	12,183	249,000	261,183	10.7%	1.000	249,000	255,091	255,000
6/30/92-93	292,355	1.025	299,569	0.0%	0.5%	1,498	158,010	159,508	53.2%	1.000	158,010	158,759	158,759
6/30/93-94	580,633	1.027	596,151	0.0%	0.5%	2,981	130,300	133,281	22.4%	1.000	130,300	131,790	131,791
6/30/94-95	624,606	1.029	642,581	0.0%	0.5%	3,213	137,200	140,413	21.9%	1.000	137,200	138,806	138,807
6/30/95-96	475,722	1.031	490,391	0.0%	0.5%	2,452	116,000	118,452	24.2%	1.000	116,000	117,226	117,230
6/30/96-97	472,528	1.036	489,534	0.0%	0.5%	2,448	40,000	42,448	8.7%	1.000	40,000	41,224	41,228
6/30/97-98	320,304	1.041	333,491	0.0%	0.5%	1,667	143,500	145,167	43.5%	1.000	143,500	144,334	144,336
6/30/98-99	477,184	1.046	499,314	0.0%	0.5%	2,497	193,500	195,997	39.3%	1.000	193,500	194,748	194,752
6/30/99-00	1,036,650	1.052	1,090,149	0.0%	0.5%	5,451	179,500	184,951	17.0%	1.000	179,500	182,225	182,234
6/30/00-01	1,227,179	1.057	1,296,963	0.0%	0.5%	6,485	230,000	236,485	18.2%	1.000	230,000	233,242	233,252
6/30/01-02	582,848	1.062	619,072	0.0%	0.5%	3,095	192,500	195,595	31.6%	1.000	192,500	194,048	194,052
6/30/02-03	641,271	1.067	684,531	0.0%	0.5%	3,423	259,972	263,395	38.5%	1.000	259,972	261,683	261,689
6/30/03-04	212,295	1.073	227,749	0.0%	0.5%	1,139	56,000	57,139	25.1%	1.000	56,000	56,569	56,571
6/30/04-05	457,755	1.078	493,534	0.0%	0.5%	2,468	166,950	169,418	34.3%	1.000	166,950	168,184	169,040
6/30/05-06	276,027	1.099	303,243	0.0%	0.5%	1,516	77,000	78,516	25.9%	1.010	77,770	78,143	78,687
6/30/06-07	324,328	1.099	356,491	0.1%	0.6%	2,139	118,441	120,580	33.8%	1.020	120,822	120,701	121,666
6/30/07-08	401,552	1.099	441,372	0.2%	0.8%	3,531	117,500	121,031	27.4%	1.030	121,060	121,046	122,321
6/30/08-09	733,058	1.099	805,752	0.3%	1.1%	8,863	163,500	172,363	21.4%	1.041	170,139	171,251	173,733
6/30/09-10	453,578	1.099	498,557	0.4%	1.5%	7,478	182,591	190,069	38.1%	1.051	191,905	190,987	193,724
6/30/10-11	933,495	1.107	1,033,316	0.5%	2.0%	20,666	100,000	120,666	11.7%	1.067	106,678	113,672	118,551
6/30/11-12	809,457	1.116	903,478	0.7%	2.7%	24,394	151,000	175,394	19.4%	1.088	164,294	169,844	177,821
6/30/12-13	598,746	1.128	675,127	0.7%	3.4%	22,954	88,798	111,752	16.6%	1.161	103,110	107,431	57,591
6/30/13-14	247,039	1.150	284,067	1.2%	4.6%	13,151	249,028	262,180	92.3%	1.260	313,850	288,015	265,146
6/30/14-15	841,329	1.197	1,006,962	1.1%	5.8%	58,082	102,637	160,719	16.0%	1.531	157,177	160,719	151,077
6/30/15-16	1,000,946	1.267	1,268,240	2.1%	7.9%	100,154	235,001	335,155	26.4%	1.871	439,791	335,155	164,416
6/30/16-17	784,882	1.418	1,112,909	2.9%	10.8%	120,295	200,000	320,295	28.8%	3.268	653,553	320,295	327,047
6/30/17-18	495,783	1.670	827,857	4.5%	15.3%	126,737	46,973	173,710	21.0%	5.863	275,396	173,710	160,919
6/30/18-19	525,417	2.163	1,136,557	2.7%	18.0%	204,967	0	204,967	18.0%	15.660	0	204,967	231,085
6/30/19-20	183,754	4.608	846,649	4.0%	22.0%	186,551	0	186,551	22.0%	15.660	0	186,551	
Total	33,481,957		37,229,683			964,294	5,372,031	6,336,325	17.0%		6,435,106	6,313,456	5,916,665

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, 2019

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
All Prior Yrs	0	0	0	0	0	0	0	0	7,000	0	0	0	0	0	54,000
Jun-83	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
Jun-85	0	0	0	0	0	16,500	0	0	0	0	0	27,500	0	0	0
Jun-86	0	0	0	0	0	0	0	0	50,000	0	10,000	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
Jun-88	0	0	0	12,500	12,500	0	43,500	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
Jun-90	0	0	0	33,000	8,000	9,590	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
Jun-92	0	5,000	0	100,500	0	0	0	27,500	0	0	0	0	0	36,000	0
Jun-93	0	20,010	43,000	10,000	0	10,000	0	75,000	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
Jun-95	0	37,200	35,000	40,000	25,000	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
Jun-97	0	0	0	0	0	0	0	0	0	40,000	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
Jun-99	0	40,000	93,500	27,500	0	22,500	0	0	0	10,000	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
Jun-01	0	17,500	72,500	50,000	0	30,000	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	0
Jun-04	0	6,000	0	0	50,000	0	0	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	0	0	0
Jun-06	0	35,000	28,000	14,000	0	0	0	0	0	0	0	0	0	0	0
Jun-07	0	0	0	60,000	40,000	15,000	3,441	0	0	0	0	0	0	0	
Jun-08	0	0	17,500	45,000	0	0	0	0	0	0	55,000	0	0		
Jun-09	0	62,500	30,000	0	0	40,000	31,000	0	0	0	0	0			
Jun-10	0	62,591	25,000	0	30,000	0	0	65,000	0	0	0				
Jun-11	0	0	0	0	20,000	10,000	0	0	70,000	0					
Jun-12	0	0	51,000	35,000	0	65,000	0	0	0						
Jun-13	0	0	3,798	15,000	0	0	20,000	50,000							
Jun-14	0	234,027	0	0	15,000	0	1								
Jun-15	0	30,000	12,636	0	35,000	25,001									
Jun-16	0	0	20,000	25,001	190,000										
Jun-17	0	95,000	65,000	40,000											
Jun-18	0	0	46,973												
Jun-19	0	0													
Jun-20	0														

Acc Yr Ending	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	420-432	432-444	444-456	456-468
All Prior Yrs	0	0	0	0	0	0	0	0	0	27,040	0	0	0	0	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	
Jun-84	0	27,500	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	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	0	0	150,000	0	0	0	0	0	0	0	0	0				
Jun-87	0	0	0	0	0	0	0	0	135,000	0	0	0	0	0	0	94,000	0	0	0					
Jun-88	0	0	0	20,000	0	0	0	0	0	0	0	0	0	0	0	150,000	0	0						
Jun-89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
Jun-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Jun-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
Jun-92	0	0	0	80,000	0	0	0	0	0	0	0	0	0	0										
Jun-93	0	0	0	0	0	0	0	0	0	0	0	0	0											
Jun-94	120,000	0	0	0	0	0	0	0	0	0	0	0												
Jun-95	0	0	0	0	0	0	0	0	0	0	0													
Jun-96	0	0	0	0	0	0	0	0	0	0														
Jun-97	0	0	0	0	0	0	0	0	0															
Jun-98	0	0	0	0	0	0	0	0																
Jun-99	0	0	0	0	0	0	0																	
Jun-00	0	0	0	0	0	0																		
Jun-01	0	60,000	0	0	0																			
Jun-02	0	0	0	0																				
Jun-03	0	0	0																					
Jun-04	0	0																						
Jun-05	0																							

Cumulative Lump Sum Payments

Acc Yr Ending	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
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
Jun-83	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
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
Jun-86	0	0	0	0	0	0	0	0	50,000	50,000	60,000	60,000	60,000	60,000	60,000
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
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
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
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
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
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
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
Jun-94	0	0	0	0	0	0	0	0	0	10,300	10,300	10,300	10,300	10,300	10,300
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
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
Jun-97	0	0	0	0	0	0	0	0	0	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
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
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
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
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	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	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	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	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	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	62,500	117,500	117,500	117,500		
Jun-09	0	62,500	92,500	92,500	92,500	132,500	163,500	163,500	163,500	163,500	163,500	163,500			
Jun-10	0	62,591	87,591	87,591	117,591	117,591	117,591	182,591	182,591	182,591	182,591				
Jun-11	0	0	0	0	20,000	30,000	30,000	30,000	100,000	100,000					
Jun-12	0	0	51,000	86,000	86,000	151,000	151,000	151,000	151,000						
Jun-13	0	0	3,798	18,798	18,798	18,798	38,798	88,798							
Jun-14	0	234,027	234,027	234,027	249,027	249,027	249,028								
Jun-15	0	30,000	42,636	42,636	77,636	102,637									
Jun-16	0	0	20,000	45,001	235,001										
Jun-17	0	95,000	160,000	200,000											
Jun-18	0	0	46,973												
Jun-19	0	0													
Jun-20	0														

Acc Yr Ending	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	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	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	
Jun-84	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	27,500	27,500	27,500	27,500		
Jun-85	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	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	210,000	210,000	210,000	210,000				
Jun-87	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	352,000	352,000	352,000	352,000					
Jun-88	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	88,500	238,500	238,500	238,500						
Jun-89	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	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	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500	208,500									
Jun-92	169,000	169,000	169,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000										
Jun-93	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	130,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300												
Jun-95	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200													
Jun-96	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000														
Jun-97	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000															
Jun-98	143,500	143,500	143,500	143,500	143,500	143,500	143,500	143,500																
Jun-99	193,500	193,500	193,500	193,500	193,500	193,500	193,500																	
Jun-00	179,500	179,500	179,500	179,500	179,500	179,500																		
Jun-01	170,000	230,000	230,000	230,000	230,000																			
Jun-02	192,500	192,500	192,500	192,500																				
Jun-03	259,972	259,972	259,972																					
Jun-04	56,000	56,000																						
Jun-05	166,950																							

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*
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
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
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	0.162
Jun-85	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.014	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	0.035	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000
Jun-87	0.000	0.000	0.000	0.000	0.000	0.005	0.017	0.000	0.005	0.000	0.000	0.000	0.009	0.021	0.000	0.000	0.000
Jun-88	0.000	0.000	0.000	0.006	0.006	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-89	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.004	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-90	0.000	0.000	0.000	0.069	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
Jun-91	0.000	0.000	0.000	0.013	0.008	0.025	0.020	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.011	0.000	0.000
Jun-92	0.000	0.002	0.000	0.041	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.000
Jun-93	0.000	0.067	0.144	0.033	0.000	0.033	0.000	0.250	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	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.201	0.000
Jun-95	0.000	0.058	0.054	0.062	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
Jun-96	0.000	0.000	0.033	0.000	0.051	0.076	0.076	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	0.082	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-98	0.000	0.000	0.265	0.000	0.090	0.075	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	0.080	0.187	0.055	0.000	0.045	0.000	0.000	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-00	0.000	0.000	0.021	0.025	0.069	0.000	0.022	0.000	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-01	0.000	0.013	0.056	0.039	0.000	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046
Jun-02	0.000	0.039	0.029	0.085	0.102	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-03	0.000	0.013	0.039	0.047	0.044	0.135	0.000	0.000	0.000	0.000	0.102	0.000	0.000	0.000	0.000	0.000	0.000
Jun-04	0.000	0.026	0.000	0.000	0.220	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-05	0.000	0.050	0.037	0.000	0.071	0.024	0.132	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Jun-06	0.000	0.115	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-07	0.000	0.000	0.000	0.168	0.112	0.042	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-08	0.000	0.000	0.040	0.102	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000				
Jun-09	0.000	0.078	0.037	0.000	0.000	0.050	0.038	0.000	0.000	0.000	0.000	0.000					
Jun-10	0.000	0.126	0.050	0.000	0.060	0.000	0.000	0.130	0.000	0.000	0.000						
Jun-11	0.000	0.000	0.000	0.000	0.019	0.010	0.000	0.000	0.068	0.000							
Jun-12	0.000	0.000	0.056	0.039	0.000	0.072	0.000	0.000	0.000								
Jun-13	0.000	0.000	0.006	0.022	0.000	0.000	0.030	0.074									
Jun-14	0.000	0.824	0.000	0.000	0.053	0.000	0.000										
Jun-15	0.000	0.030	0.013	0.000	0.035	0.025											
Jun-16	0.000	0.000	0.016	0.020	0.150												
Jun-17	0.000	0.085	0.058	0.036													
Jun-18	0.000	0.000	0.057														
Jun-19	0.000	0.000															
Jun-20	0.000																

Acc Yr Ending	*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*	*420-432*	*432-444*	*444-456*	*456-468*
All Prior Yrs	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	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	
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	0.000	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	0.000	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	0.105	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	0.000	0.061	0.000	0.000	0.000	0.000	0.000	0.000	0.042	0.000	0.000	0.000					
Jun-88	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	0.068	0.000	0.000						
Jun-89	0.000	0.000	0.000	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	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000									
Jun-92	0.000	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	0.000	0.000	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	0.000	0.000												
Jun-95	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.000	0.000	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															
Jun-98	0.000	0.000	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.000	0.000	0.000	0.000																	
Jun-00	0.000	0.000	0.000	0.000																		
Jun-01	0.000	0.000	0.000																			
Jun-02	0.000	0.000																				
Jun-03	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*
Simple Avg																	
All Yrs (ex P)	0.000	0.043	0.036	0.026	0.034	0.022	0.011	0.016	0.006	0.004	0.008	0.001	0.000	0.001	0.000	0.009	0.009
Latest 5	0.000	0.023	0.029	0.016	0.047	0.021	0.006	0.041	0.014	0.000	0.025	0.000	0.000	0.000	0.000	0.000	0.009
Latest 3	0.000	0.028	0.044	0.019	0.079	0.008	0.010	0.025	0.023	0.000	0.042	0.000	0.000	0.000	0.000	0.000	0.000
Olympic Avg																	
All Yrs (ex P)	0.000	0.022	0.030	0.022	0.029	0.019	0.008	0.008	0.004	0.001	0.004	0.000	0.000	0.001	0.000	0.000	0.002
Latest 10	0.000	0.030	0.029	0.015	0.035	0.016	0.010	0.012	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000
Latest 5	0.000	0.010	0.028	0.014	0.029	0.012	0.000	0.025	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*	*0.016*	*0.012*	*0.008*	*0.007*	*0.007*	*0.005*	*0.004*	*0.003*	*0.002*	*0.001*	*0.000*	*0.000*
Selected	NA	0.040	0.027	0.045	0.029	0.021	0.011	0.012	0.007	0.007	0.005	0.004	0.003	0.002	0.001	0.000	0.000
FacToUlt	NA	0.220	0.180	0.153	0.108	0.079	0.058	0.046	0.034	0.027	0.020	0.015	0.011	0.008	0.006	0.005	0.005

Averages	*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*	*420-432*	*432-444*	*444-456*	*456-468*
Simple Avg																						
All Yrs (ex P)	0.000	0.002	0.000	0.000	0.000	0.000	0.004	0.000	0.008	0.000	0.000	0.000	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Latest 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.000	0.000	0.000					
Latest 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023	0.000	0.000	0.000	0.000	0.000			
Olympic Avg																						
All Yrs (ex P)	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	0.007	0.000	0.000	0.000	0.000				
Latest 10	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014	0.000	0.000	0.000					
Dev Factor Selection																						
Prior	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.005*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	
Selected	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FacToUlt	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	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
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
Jun-83	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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	230,000
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
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	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	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	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	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	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	62,500	117,500	117,500	117,500				
Jun-09	0	62,500	92,500	92,500	92,500	132,500	163,500	163,500	163,500	163,500	163,500	163,500					
Jun-10	0	62,591	87,591	87,591	117,591	117,591	117,591	182,591	182,591	182,591	182,591						
Jun-11	0	0	0	0	20,000	30,000	30,000	30,000	100,000	100,000							
Jun-12	0	0	51,000	86,000	86,000	151,000	151,000	151,000	151,000								
Jun-13	0	0	3,798	18,798	18,798	18,798	38,798	88,798									
Jun-14	0	234,027	234,027	234,027	249,027	249,027	249,028										
Jun-15	0	30,000	42,636	42,636	77,636	102,637											
Jun-16	0	0	20,000	45,001	235,001												
Jun-17	0	95,000	160,000	200,000													
Jun-18	0	0	46,973														
Jun-19	0	0															
Jun-20	0																

Acc Yr Ending	216	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	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	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	
Jun-84	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	27,500	27,500	27,500		
Jun-85	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	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	210,000	210,000	210,000	210,000				
Jun-87	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	352,000	352,000	352,000	352,000					
Jun-88	68,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	88,500	238,500	238,500	238,500						
Jun-89	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	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	208,500	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	169,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000	249,000										
Jun-93	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010	158,010											
Jun-94	130,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300	130,300												
Jun-95	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200	137,200													
Jun-96	116,000	116,000	116,000	116,000	116,000	116,000	116,000	116,000														
Jun-97	40,000	40,000	40,000	40,000	40,000	40,000	40,000															
Jun-98	143,500	143,500	143,500	143,500	143,500	143,500																
Jun-99	193,500	193,500	193,500	193,500	193,500																	
Jun-00	179,500	179,500	179,500	179,500																		
Jun-01	230,000	230,000	230,000																			
Jun-02	192,500	192,500																				
Jun-03	259,972																					
Jun-19																						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
All Prior Yrs									1.000	1.000	1.000	1.000	1.000	8.714	1.000	1.000
Jun-83																
Jun-84																
Jun-85						1.000	1.000	1.000	1.000	1.000	2.667	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
Jun-87						4.750	1.000	1.211	1.000	1.000	1.000	1.330	1.608	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
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
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
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
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
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
Jun-94										1.000	1.000	1.000	1.000	1.000	12.650	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
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
Jun-97										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
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
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	1.353
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	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	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	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	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	1.000	1.000	1.000	1.000		
Jun-07				1.667	1.150	1.030	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Jun-08			3.571	1.000	1.000	1.000	1.000	1.000	1.000	1.880	1.000	1.000				
Jun-09		1.480	1.000	1.000	1.432	1.234	1.000	1.000	1.000	1.000	1.000					
Jun-10		1.399	1.000	1.343	1.000	1.000	1.553	1.000	1.000	1.000						
Jun-11					1.500	1.000	1.000	3.333	1.000							
Jun-12			1.686	1.000	1.756	1.000	1.000	1.000								
Jun-13			4.950	1.000	1.000	2.064	2.289									
Jun-14		1.000	1.000	1.064	1.000	1.000										
Jun-15		1.421	1.000	1.821	1.322											
Jun-16			2.250	5.222												
Jun-17		1.684	1.250													
Jun-18																
Jun-19																

Acc Yr Ending	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	420-432	432-444	444-456	456-468	To Ult
All Prior Yrs	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	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			
Jun-85	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	3.500	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Jun-87	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	1.364	1.000	1.000	1.000						
Jun-88	1.000	1.292	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	2.695	1.000	1.000							
Jun-89	1.000	1.000	1.000	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	1.000	1.000	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	1.000	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	1.473	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000											
Jun-93	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000													
Jun-95	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	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																
Jun-98	1.000	1.000	1.000	1.000	1.000	1.000																	
Jun-99	1.000	1.000	1.000	1.000	1.000																		
Jun-00	1.000	1.000	1.000	1.000																			
Jun-01	1.000	1.000	1.000																				
Jun-02	1.000	1.000																					
Jun-03	1.000																						

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
Simple Avg																
All Yrs (ex P)		2.120	2.539	1.876	1.251	1.320	1.143	1.195	1.002	1.056	1.067	1.014	1.038	1.006	1.555	1.018
Latest 5		1.368	2.090	2.021	1.316	1.213	1.368	1.467	1.000	1.176	1.000	1.000	1.000	1.000	1.000	1.071
Latest 3		1.684	1.500	2.702	1.107	1.355	1.430	1.778	1.000	1.293	1.000	1.000	1.000	1.000	1.000	1.000
Volume Wtd																
All Yrs (ex P)		2.046	1.467	1.390	1.222	1.113	1.085	1.079	1.020	1.045	1.009	1.007	1.031	1.009	1.046	1.034
Latest 5		1.403	1.174	1.563	1.222	1.035	1.230	1.119	1.000	1.091	1.000	1.000	1.000	1.000	1.000	1.070
Latest 3		2.389	1.292	1.746	1.072	1.048	1.227	1.193	1.000	1.135	1.000	1.000	1.000	1.000	1.000	1.000
Dev Factor Selection																
Prior	*1.000*	*2.671*	*1.794*	*1.736*	*1.219*	*1.255*	*1.068*	*1.056*	*1.021*	*1.015*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.000*
Selected	1.000	2.671	1.794	1.746	1.222	1.215	1.085	1.067	1.020	1.015	1.010	1.010	1.010	1.010	1.010	1.000
FacToUlt	15.660	15.660	5.863	3.268	1.871	1.531	1.260	1.161	1.088	1.067	1.051	1.041	1.030	1.020	1.010	1.000
Percent of Ult	6.4%	6.4%	17.1%	30.6%	53.4%	65.3%	79.3%	86.1%	91.9%	93.7%	95.1%	96.1%	97.1%	98.0%	99.0%	100.0%

Averages	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	420-432	432-444	444-456	456-468	To Ult
Simple Avg																							
All Yrs (ex P)	1.000	1.040	1.000	1.000	1.000	1.000	1.078	1.000	1.208	1.000	1.000	1.000	1.000	1.294	1.000	1.000	1.000	1.000	1.000	1.000			
Latest 5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.412	1.000	1.000	1.000						
Latest 3	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.565	1.000	1.000	1.000	1.000	1.000				
Volume Wtd																							
All Yrs (ex P)	1.000	1.043	1.000	1.000	1.000	1.000	1.090	1.000	1.101	1.000	1.000	1.000	1.000	1.327	1.000	1.000	1.000	1.000	1.000	1.000			
Latest 5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.361	1.000	1.000	1.000						
Latest 3	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.724	1.000	1.000	1.000	1.000	1.000				
Dev Factor Selection																							
Prior	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	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%	100.0%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

University of Massachusetts (Amherst) - Cluster 4
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.4%	0.0%	0.1%	0.0%	1.000	1.000
456	99.6%	0.2%	0.4%	0.0%	0.0%	0.981	0.971
444	99.4%	0.2%	0.6%	0.0%	0.0%	0.955	0.933
432	99.2%	0.2%	0.8%	0.0%	0.0%	0.933	0.902
420	99.0%	0.2%	1.0%	0.1%	0.0%	0.913	0.874
408	98.8%	0.2%	1.2%	0.1%	0.0%	0.894	0.848
396	98.6%	0.2%	1.4%	0.1%	0.0%	0.877	0.824
384	98.4%	0.2%	1.6%	0.1%	0.0%	0.860	0.801
372	98.2%	0.2%	1.8%	0.1%	0.0%	0.843	0.779
360	98.0%	0.2%	2.0%	0.1%	0.0%	0.827	0.758
348	97.8%	0.2%	2.2%	0.1%	0.0%	0.812	0.737
336	97.6%	0.2%	2.4%	0.1%	0.0%	0.797	0.718
324	97.4%	0.2%	2.6%	0.1%	0.0%	0.782	0.699
312	97.2%	0.2%	2.8%	0.1%	0.0%	0.768	0.681
300	97.0%	0.5%	3.0%	0.2%	0.1%	0.754	0.664
288	96.5%	0.5%	3.5%	0.2%	0.1%	0.761	0.674
276	96.0%	0.5%	4.0%	0.2%	0.1%	0.762	0.677
264	95.6%	0.5%	4.4%	0.2%	0.1%	0.759	0.674
252	95.1%	0.5%	4.9%	0.2%	0.1%	0.754	0.669
240	94.6%	0.5%	5.4%	0.2%	0.2%	0.748	0.661
228	94.1%	0.5%	5.9%	0.2%	0.2%	0.740	0.651
216	93.7%	0.5%	6.3%	0.2%	0.2%	0.731	0.641
204	93.2%	0.5%	6.8%	0.2%	0.2%	0.722	0.630
192	92.8%	1.7%	7.2%	0.9%	0.7%	0.713	0.618
180	91.0%	0.0%	9.0%	0.0%	0.0%	0.742	0.658
168	91.0%	0.0%	9.0%	0.0%	0.0%	0.715	0.623
156	91.0%	0.0%	9.0%	0.0%	0.0%	0.688	0.587
144	91.0%	0.0%	9.0%	0.0%	0.0%	0.661	0.554
132	91.0%	0.6%	9.0%	0.4%	0.3%	0.636	0.523
120	90.3%	0.7%	9.7%	0.5%	0.4%	0.636	0.525
108	89.6%	0.9%	10.4%	0.6%	0.6%	0.638	0.529
96	88.7%	1.7%	11.3%	1.3%	1.1%	0.643	0.537
84	87.0%	3.4%	13.0%	2.6%	2.3%	0.666	0.568
72	83.6%	4.6%	16.4%	3.7%	3.4%	0.711	0.626
60	78.9%	8.4%	21.1%	7.0%	6.5%	0.749	0.674
48	70.5%	10.6%	29.5%	9.3%	8.7%	0.794	0.732
36	59.9%	13.7%	40.1%	12.4%	11.8%	0.821	0.765
24	46.2%	24.5%	53.8%	23.1%	22.5%	0.838	0.785
12	21.7%	21.7%	78.3%	21.3%	21.1%	0.861	0.813
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, 2020

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	201,654	301,943		186,655	279,485
6/30/82-83	3,594	5,594	0.981	3,524	5,485
6/30/83-84	3,969	7,969	0.955	3,789	7,607
6/30/84-85	12,803	15,803	0.933	11,943	14,741
6/30/85-86	11,773	14,773	0.913	10,748	13,487
6/30/86-87	21,199	27,199	0.894	18,958	24,324
6/30/87-88	28,040	31,040	0.877	24,579	27,209
6/30/88-89	29,208	33,208	0.860	25,105	28,543
6/30/89-90	10,962	20,962	0.843	9,242	17,673
6/30/90-91	25,909	50,909	0.827	21,431	42,110
6/30/91-92	26,322	53,322	0.812	21,366	43,283
6/30/92-93	2,635	22,635	0.797	2,099	18,034
6/30/93-94	4,067	36,067	0.782	3,181	28,209
6/30/94-95	4,194	38,194	0.768	3,221	29,330
6/30/95-96	3,278	30,278	0.754	2,472	22,833
6/30/96-97	3,473	26,473	0.761	2,641	20,135
6/30/97-98	3,196	23,196	0.762	2,434	17,666
6/30/98-99	4,316	34,316	0.759	3,276	26,048
6/30/99-00	6,850	60,850	0.754	5,166	45,892
6/30/00-01	68,821	72,821	0.748	51,452	54,443
6/30/01-02	36,652	37,652	0.740	27,120	27,860
6/30/02-03	43,757	44,757	0.731	32,004	32,736
6/30/03-04	15,705	17,705	0.722	11,345	12,789
6/30/04-05	34,295	37,295	0.713	24,447	26,585
6/30/05-06	27,973	52,973	0.742	20,760	39,315
6/30/06-07	34,231	58,231	0.715	24,475	41,636
6/30/07-08	42,948	60,948	0.688	29,528	41,903
6/30/08-09	65,442	80,442	0.661	43,262	53,178
6/30/09-10	53,832	68,832	0.636	34,218	43,752
6/30/10-11	80,505	113,505	0.636	51,170	72,145
6/30/11-12	96,543	112,543	0.638	61,561	71,764
6/30/12-13	95,456	109,456	0.643	61,338	70,335
6/30/13-14	75,933	149,933	0.666	50,554	99,821
6/30/14-15	206,034	317,474	0.711	146,451	225,665
6/30/15-16	310,053	495,293	0.749	232,139	370,829
6/30/16-17	424,118	591,418	0.794	336,829	469,696
6/30/17-18	459,243	612,243	0.821	377,118	502,757
6/30/18-19	816,583	977,183	0.838	684,381	818,981
6/30/19-20	900,896	1,140,246	0.861	775,306	981,290
Total	4,296,462	5,985,682		3,437,290	4,769,572
			(7) Total Discount Factor:	0.800	0.797

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	201,654	301,943
(9) Projected Number of Years:	4	4
(10) Projected Paid Loss per Year:	50,413	75,486
(11) Discounted Value at 4%:	186,655	279,485

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
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University of Massachusetts (Amherst) - Cluster 4
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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	201,654	301,943		179,928	269,413
6/30/82-83	3,594	5,594	0.971	3,491	5,433
6/30/83-84	3,969	7,969	0.933	3,705	7,439
6/30/84-85	12,803	15,803	0.902	11,550	14,257
6/30/85-86	11,773	14,773	0.874	10,291	12,913
6/30/86-87	21,199	27,199	0.848	17,980	23,069
6/30/87-88	28,040	31,040	0.824	23,098	25,570
6/30/88-89	29,208	33,208	0.801	23,385	26,588
6/30/89-90	10,962	20,962	0.779	8,535	16,321
6/30/90-91	25,909	50,909	0.758	19,627	38,565
6/30/91-92	26,322	53,322	0.737	19,408	39,316
6/30/92-93	2,635	22,635	0.718	1,892	16,251
6/30/93-94	4,067	36,067	0.699	2,844	25,222
6/30/94-95	4,194	38,194	0.681	2,858	26,024
6/30/95-96	3,278	30,278	0.664	2,177	20,108
6/30/96-97	3,473	26,473	0.674	2,342	17,854
6/30/97-98	3,196	23,196	0.677	2,163	15,702
6/30/98-99	4,316	34,316	0.674	2,911	23,145
6/30/99-00	6,850	60,850	0.669	4,581	40,694
6/30/00-01	68,821	72,821	0.661	45,479	48,123
6/30/01-02	36,652	37,652	0.651	23,876	24,527
6/30/02-03	43,757	44,757	0.641	28,047	28,688
6/30/03-04	15,705	17,705	0.630	9,893	11,152
6/30/04-05	34,295	37,295	0.618	21,206	23,061
6/30/05-06	27,973	52,973	0.658	18,404	34,852
6/30/06-07	34,231	58,231	0.623	21,309	36,249
6/30/07-08	42,948	60,948	0.587	25,222	35,793
6/30/08-09	65,442	80,442	0.554	36,257	44,567
6/30/09-10	53,832	68,832	0.523	28,136	35,976
6/30/10-11	80,505	113,505	0.525	42,240	59,555
6/30/11-12	96,543	112,543	0.529	51,086	59,552
6/30/12-13	95,456	109,456	0.537	51,263	58,782
6/30/13-14	75,933	149,933	0.568	43,130	85,162
6/30/14-15	206,034	317,474	0.626	129,023	198,809
6/30/15-16	310,053	495,293	0.674	209,074	333,985
6/30/16-17	424,118	591,418	0.732	310,304	432,708
6/30/17-18	459,243	612,243	0.765	351,213	468,223
6/30/18-19	816,583	977,183	0.785	640,962	767,023
6/30/19-20	900,896	1,140,246	0.813	732,241	926,782
Total	4,296,462	5,985,682		3,161,132	4,377,453

	(Low)	(High)
(7) Total Discount Factor:	0.736	0.731

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	201,654	301,943
(9) Projected Number of Years:	4	4
(10) Projected Paid Loss per Year:	50,413	75,486
(11) Discounted Value at 6%:	179,928	269,413

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, 2020

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

Calculation of Fiscal Year 7/01/20 - 21 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/20 - 06/30/21	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/20 - 06/30/21		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	5,193,602	5,394,180	4,790,294	403,307	603,885				39,267	43,193	9.7%	7.2%
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	3,910,000	3,916,000	3,884,393	25,607	31,607	99.3%	0.3%	41.0%	10,508	12,970	41.0%	41.0%
6/30/85-86	3,272,000	3,278,000	3,248,453	23,547	29,547	99.2%	0.5%	61.7%	14,524	18,226	61.7%	61.7%
6/30/86-87	5,116,000	5,128,000	5,073,602	42,398	54,398	99.1%	0.5%	52.9%	22,435	28,785	52.9%	52.9%
6/30/87-88	4,884,000	4,890,000	4,827,920	56,080	62,080	98.8%	0.5%	41.4%	23,194	25,676	41.4%	41.4%
6/30/88-89	4,248,000	4,256,000	4,189,584	58,416	66,416	98.5%	0.5%	34.1%	19,898	22,622	34.1%	34.1%
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	5,100,000	5,150,000	5,048,181	51,819	101,819	98.5%	0.5%	33.4%	17,286	33,964	33.4%	33.4%
6/30/91-92	5,316,000	5,370,000	5,263,355	52,645	106,645	98.5%	0.5%	33.5%	17,658	35,772	33.5%	33.5%
6/30/92-93	906,000	946,000	900,730	5,270	45,270	97.3%	0.5%	18.3%	966	8,294	18.3%	18.3%
6/30/93-94	1,430,000	1,494,000	1,421,867	8,133	72,133	97.3%	0.5%	18.2%	1,481	13,139	18.2%	18.2%
6/30/94-95	1,532,000	1,600,000	1,523,612	8,388	76,388	97.3%	0.5%	18.5%	1,549	14,111	18.5%	18.5%
6/30/95-96	1,190,000	1,244,000	1,183,444	6,556	60,556	97.2%	0.5%	18.1%	1,189	10,981	18.1%	18.1%
6/30/96-97	1,032,000	1,078,000	1,025,055	6,945	52,945	97.2%	0.5%	17.6%	1,223	9,327	17.6%	17.6%
6/30/97-98	934,000	974,000	927,608	6,392	46,392	97.2%	0.5%	18.1%	1,155	8,385	18.1%	18.1%
6/30/98-99	1,350,000	1,410,000	1,341,369	8,631	68,631	97.2%	0.5%	17.9%	1,542	12,258	17.9%	17.9%
6/30/99-00	2,446,000	2,554,000	2,432,300	13,700	121,700	97.3%	0.5%	18.5%	2,530	22,470	18.5%	18.5%
6/30/00-01	3,052,000	3,060,000	2,914,358	137,642	145,642	95.4%	0.5%	10.8%	14,848	15,712	10.8%	10.8%
6/30/01-02	1,624,000	1,626,000	1,550,696	73,304	75,304	95.4%	0.5%	10.9%	8,016	8,234	10.9%	10.9%
6/30/02-03	1,890,000	1,892,000	1,802,486	87,514	89,514	95.3%	1.0%	21.4%	18,696	19,124	21.4%	21.4%
6/30/03-04	568,000	572,000	536,589	31,411	35,411	94.1%	1.0%	17.1%	5,359	6,041	17.1%	17.1%
6/30/04-05	1,318,000	1,324,000	1,249,410	68,590	74,590	94.6%	1.0%	18.5%	12,656	13,764	18.5%	18.5%
6/30/05-06	762,000	812,000	706,055	55,945	105,945	89.7%	2.0%	19.4%	10,879	20,601	19.4%	19.4%
6/30/06-07	954,000	1,002,000	885,539	68,461	116,461	90.5%	2.0%	21.2%	14,483	24,637	21.2%	21.2%
6/30/07-08	1,124,000	1,160,000	1,038,103	85,897	121,897	90.9%	2.0%	22.0%	18,883	26,797	22.0%	22.0%
6/30/08-09	1,924,000	1,954,000	1,793,116	130,884	160,884	92.5%	2.0%	26.6%	34,793	42,767	26.6%	26.6%
6/30/09-10	1,380,000	1,410,000	1,272,337	107,663	137,663	91.2%	2.0%	22.7%	24,488	31,312	22.7%	22.7%
6/30/10-11	2,228,000	2,294,000	2,066,989	161,011	227,011	91.4%	2.0%	23.3%	37,528	52,912	23.3%	23.3%
6/30/11-12	2,114,000	2,146,000	1,920,913	193,087	225,087	90.2%	3.0%	30.6%	59,010	68,790	30.6%	30.6%
6/30/12-13	1,566,000	1,594,000	1,375,088	190,912	218,912	87.0%	5.0%	38.6%	73,603	84,397	38.6%	38.6%
6/30/13-14	1,144,000	1,292,000	992,135	151,865	299,865	81.5%	5.0%	27.0%	40,947	80,853	27.0%	27.0%
6/30/14-15	2,300,000	2,522,880	1,887,933	412,067	634,947	78.3%	5.0%	23.0%	94,906	146,238	23.0%	23.0%
6/30/15-16	3,092,000	3,462,480	2,471,893	620,107	990,587	75.4%	5.0%	20.3%	126,172	201,552	20.3%	20.3%
6/30/16-17	2,818,000	3,152,600	1,969,763	848,237	1,182,837	66.0%	5.0%	14.7%	124,675	173,855	14.7%	14.7%
6/30/17-18	2,004,000	2,310,000	1,085,513	918,487	1,224,487	50.3%	7.5%	15.1%	138,675	184,875	15.1%	15.1%
6/30/18-19	2,684,000	3,005,200	1,050,834	1,633,166	1,954,366	36.9%	10.0%	15.9%	258,992	309,928	15.9%	15.9%
6/30/19-20	2,169,300	2,648,000	367,508	1,801,792	2,280,492	15.3%	12.5%	14.8%	265,776	336,387	14.8%	14.8%
Total	86,300,902	89,679,340	77,707,977	8,592,925	11,971,363				1,564,910	2,178,584	18.2%	18.2%

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, 2020

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		111,896			112,423	112,760	527	863		
6/30/82-83		91,124	91,235		91,124	92,147	0	1,023		
6/30/83-84		32,907	32,980		32,907	33,969	0	1,062		
6/30/84-85	176,924	75,201	75,443	75,490	75,953	76,952	752	1,751	0.043	0.043
6/30/85-86	188,662	52,218	52,439	52,496	52,741	53,263	522	1,044	0.028	0.028
6/30/86-87	212,277	201,665	202,719	202,691	203,000	203,000	1,335	1,335	0.096	0.096
6/30/87-88	243,118	235,802	237,271	237,187	237,000	237,000	1,198	1,198	0.097	0.097
6/30/88-89	248,990	298,555	300,715	301,149	301,000	301,000	2,445	2,445	0.121	0.121
6/30/89-90	250,404	157,317	158,614	159,037	159,000	159,000	1,683	1,683	0.063	0.063
6/30/90-91	235,170	511,918	516,654	516,621	517,000	517,000	5,082	5,082	0.220	0.220
6/30/91-92	235,607	555,103	560,799	560,716	561,000	561,000	5,897	5,897	0.238	0.238
6/30/92-93	241,161	262,075	265,029	264,993	264,696	267,317	2,621	5,242	0.110	0.111
6/30/93-94	254,321	543,166	549,838	549,654	550,000	550,000	6,834	6,834	0.216	0.216
6/30/94-95	256,665	305,369	309,429	309,340	308,423	311,476	3,054	6,107	0.120	0.121
6/30/95-96	265,739	243,985	247,476	247,421	246,425	248,865	2,440	4,880	0.093	0.094
6/30/96-97	296,336	187,967	190,847	190,865	189,847	191,726	1,880	3,759	0.064	0.065
6/30/97-98	296,982	188,043	191,116	191,140	191,000	191,000	2,957	2,957	0.064	0.064
6/30/98-99	299,530	261,179	266,242	266,151	266,000	271,320	4,821	10,141	0.089	0.091
6/30/99-00	323,627	360,854	368,953	368,651	369,000	369,000	8,146	8,146	0.114	0.114
6/30/00-01	338,348	396,643	407,573	407,147	407,000	408,000	10,357	11,357	0.120	0.121
6/30/01-02	329,555	565,235	583,715	582,643	583,000	584,000	17,765	18,765	0.177	0.177
6/30/02-03	329,179	324,884	337,183	336,874	337,000	338,685	12,116	13,801	0.102	0.103
6/30/03-04	344,547	146,045	152,332	152,827	152,000	153,000	5,955	6,955	0.044	0.044
6/30/04-05	325,530	287,625	301,507	299,651	300,000	302,000	12,375	14,375	0.092	0.093
6/30/05-06	403,750	287,295	305,181	306,444	305,000	306,000	17,705	18,705	0.076	0.076
6/30/06-07	420,219	215,436	231,473	239,114	231,000	239,000	15,564	23,564	0.055	0.057
6/30/07-08	425,998	458,767	498,318	486,402	486,000	498,000	27,233	39,233	0.114	0.117
6/30/08-09	420,566	591,240	649,601	622,442	622,000	650,000	30,760	58,760	0.148	0.155
6/30/09-10	433,206	371,742	412,521	408,226	408,000	433,650	36,258	61,908	0.094	0.100
6/30/10-11	444,673	381,072	427,103	422,105	422,000	448,350	40,928	67,278	0.095	0.101
6/30/11-12	467,753	483,988	550,071	532,343	532,000	550,000	48,012	66,012	0.114	0.118
6/30/12-13	495,398	367,262	425,900	426,246	426,000	447,300	58,738	80,038	0.086	0.090
6/30/13-14	518,391	340,181	400,060	407,617	400,000	428,400	59,819	88,219	0.077	0.083
6/30/14-15	539,631	524,605	635,677	606,964	607,000	667,800	82,395	143,195	0.112	0.124
6/30/15-16	585,875	445,164	556,364	547,957	548,000	583,800	102,836	138,636	0.094	0.100
6/30/16-17	594,787	359,792	464,855	478,389	465,000	501,900	105,208	142,108	0.078	0.084
6/30/17-18	607,484	303,442	444,228	474,141	444,000	497,700	140,558	194,258	0.073	0.082
6/30/18-19	656,644	284,142	494,912	533,327	495,000	572,975	210,858	288,833	0.075	0.087
6/30/19-20	664,701	190,589	659,709	613,875	614,000	673,200	423,411	482,611	0.092	0.101
Total	13,371,748	12,001,493	13,556,081	13,378,335	13,512,538	14,031,554	1,511,044	2,030,061		
Tot 6/30/84-20	13,371,748	11,765,566	13,431,866	13,378,335	13,276,083	13,792,678	1,510,517	2,027,112	0.099	0.103

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim
All Prior Yrs		111,896							1	0	
6/30/82-83		91,124	1.001	1.000	91,235	N/A	91,235		0	0	
6/30/83-84		32,907	1.002	1.000	32,980	N/A	32,980		0	0	
6/30/84-85	176,924	75,201	1.003	1.000	75,443	N/A	75,443	0.043	0	0	
6/30/85-86	188,662	52,218	1.004	1.000	52,439	N/A	52,439	0.028	0	0	
6/30/86-87	212,277	201,665	1.005	1.000	202,719	N/A	202,719	0.095	0	0	
6/30/87-88	243,118	235,802	1.006	1.000	237,271	N/A	237,271	0.098	0	0	
6/30/88-89	248,990	298,555	1.007	1.000	300,715	N/A	300,715	0.121	0	0	
6/30/89-90	250,404	157,317	1.008	1.000	158,614	N/A	158,614	0.063	0	0	
6/30/90-91	235,170	511,918	1.009	1.000	516,654	N/A	516,654	0.220	0	0	
6/30/91-92	235,607	555,103	1.010	1.000	560,799	N/A	560,799	0.238	0	0	
6/30/92-93	241,161	262,075	1.011	1.000	265,029	N/A	265,029	0.110	0	0	
6/30/93-94	254,321	543,166	1.012	1.000	549,838	N/A	549,838	0.216	1	1	6,672
6/30/94-95	256,665	305,369	1.013	1.000	309,429	N/A	309,429	0.121	0	0	
6/30/95-96	265,739	243,985	1.014	1.000	247,476	N/A	247,476	0.093	0	0	
6/30/96-97	296,336	187,967	1.015	1.000	190,847	N/A	190,847	0.064	0	0	
6/30/97-98	296,982	188,043	1.016	1.000	191,116	N/A	191,116	0.064	0	0	
6/30/98-99	299,530	261,179	1.019	1.000	266,242	N/A	266,242	0.089	1	1	5,063
6/30/99-00	323,627	360,854	1.022	1.000	368,953	N/A	368,953	0.114	0	0	
6/30/00-01	338,348	396,643	1.028	1.000	407,573	N/A	407,573	0.120	0	0	
6/30/01-02	329,555	565,235	1.033	1.000	583,715	N/A	583,715	0.177	2	1	18,480
6/30/02-03	329,179	324,884	1.038	1.000	337,183	N/A	337,183	0.102	1	1	12,300
6/30/03-04	344,547	146,045	1.043	1.000	152,332	N/A	152,332	0.044	0	0	
6/30/04-05	325,530	287,625	1.048	1.000	301,507	N/A	301,507	0.093	0	0	
6/30/05-06	403,750	287,295	1.062	1.000	305,181	N/A	305,181	0.076	0	0	
6/30/06-07	420,219	215,436	1.074	1.000	231,473	N/A	231,473	0.055	1	1	16,037
6/30/07-08	425,998	458,767	1.086	1.000	498,318	N/A	498,318	0.117	1	0	
6/30/08-09	420,566	591,240	1.099	1.000	649,601	N/A	649,601	0.154	2	1	58,361
6/30/09-10	433,206	371,742	1.110	1.000	412,521	N/A	412,521	0.095	3	2	20,389
6/30/10-11	444,673	381,072	1.121	1.000	427,103	N/A	427,103	0.096	2	2	23,016
6/30/11-12	467,753	483,988	1.137	1.000	550,071	N/A	550,071	0.118	3	2	33,042
6/30/12-13	495,398	367,262	1.160	1.000	425,900	N/A	425,900	0.086	1	0	
6/30/13-14	518,391	340,181	1.176	1.000	400,060	N/A	400,060	0.077	0	0	
6/30/14-15	539,631	524,605	1.212	1.000	635,677	N/A	635,677	0.118	3	3	37,024
6/30/15-16	585,875	445,164	1.250	1.000	556,364	N/A	556,364	0.095	13	7	15,886
6/30/16-17	594,787	359,792	1.292	1.000	464,855	N/A	464,855	0.078	12	3	35,021
6/30/17-18	607,484	303,442	1.464	1.000	444,228	N/A	444,228	0.073	96	11	12,799
6/30/18-19	656,644	284,142	1.742	1.000	494,912	N/A	494,912	0.075	173	92	2,291
6/30/19-20	664,701	190,589	3.461	1.000	659,709	N/A	659,709	0.099		142	3,304
Total	13,371,748	12,001,493			13,556,081		13,556,081		316	270	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 7/1/18 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, 2020

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	1.003	75,490	N/A	75,490	0.043	0.043
6/30/85-86	188,662	0.035	52,218	1.004	52,496	N/A	52,496	0.028	0.028
6/30/86-87	212,277	0.093	201,665	1.005	202,691	N/A	202,691	0.095	0.095
6/30/87-88	243,118	0.092	235,802	1.006	237,187	N/A	237,187	0.098	0.098
6/30/88-89	248,990	0.145	298,555	1.007	301,149	N/A	301,149	0.121	0.121
6/30/89-90	250,404	0.084	157,317	1.008	159,037	N/A	159,037	0.064	0.064
6/30/90-91	235,170	0.218	511,918	1.009	516,621	N/A	516,621	0.220	0.220
6/30/91-92	235,607	0.235	555,103	1.010	560,716	N/A	560,716	0.238	0.238
6/30/92-93	241,161	0.109	262,075	1.011	264,993	N/A	264,993	0.110	0.110
6/30/93-94	254,321	0.210	543,166	1.012	549,654	N/A	549,654	0.216	0.216
6/30/94-95	256,665	0.118	305,369	1.013	309,340	N/A	309,340	0.121	0.121
6/30/95-96	265,739	0.092	243,985	1.014	247,421	N/A	247,421	0.093	0.093
6/30/96-97	296,336	0.065	187,967	1.015	190,865	N/A	190,865	0.064	0.064
6/30/97-98	296,982	0.065	188,043	1.016	191,140	N/A	191,140	0.064	0.064
6/30/98-99	299,530	0.087	261,179	1.019	266,151	N/A	266,151	0.089	0.089
6/30/99-00	323,627	0.110	360,854	1.022	368,651	N/A	368,651	0.114	0.114
6/30/00-01	338,348	0.116	396,643	1.028	407,147	N/A	407,147	0.120	0.120
6/30/01-02	329,555	0.167	565,235	1.033	582,643	N/A	582,643	0.177	0.177
6/30/02-03	329,179	0.100	324,884	1.038	336,874	N/A	336,874	0.102	0.102
6/30/03-04	344,547	0.048	146,045	1.043	152,827	N/A	152,827	0.044	0.044
6/30/04-05	325,530	0.080	287,625	1.048	299,651	N/A	299,651	0.092	0.092
6/30/05-06	403,750	0.081	287,295	1.062	306,444	N/A	306,444	0.076	0.076
6/30/06-07	420,219	0.081	215,436	1.074	239,114	N/A	239,114	0.057	0.057
6/30/07-08	425,998	0.082	458,767	1.086	486,402	N/A	486,402	0.114	0.114
6/30/08-09	420,566	0.083	591,240	1.099	622,442	N/A	622,442	0.148	0.148
6/30/09-10	433,206	0.085	371,742	1.110	408,226	N/A	408,226	0.094	0.094
6/30/10-11	444,673	0.086	381,072	1.121	422,105	N/A	422,105	0.095	0.095
6/30/11-12	467,753	0.086	483,988	1.137	532,343	N/A	532,343	0.114	0.114
6/30/12-13	495,398	0.086	367,262	1.160	426,246	N/A	426,246	0.086	0.086
6/30/13-14	518,391	0.087	340,181	1.176	407,617	N/A	407,617	0.079	0.079
6/30/14-15	539,631	0.087	524,605	1.212	606,964	N/A	606,964	0.112	0.112
6/30/15-16	585,875	0.088	445,164	1.250	547,957	N/A	547,957	0.094	0.094
6/30/16-17	594,787	0.088	359,792	1.292	478,389	N/A	478,389	0.080	0.080
6/30/17-18	607,484	0.089	303,442	1.464	474,141	N/A	474,141	0.078	0.078
6/30/18-19	656,644	0.089	284,142	1.742	533,327	N/A	533,327	0.081	0.081
6/30/19-20	664,701	0.090	190,589	3.461	613,875	N/A	613,875	0.092	0.092
Total	13,371,748		11,765,566		13,378,335		13,378,335		

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, 2020

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	516,654	0.220	1.194	0.262	1.161	0.305	0.065	0.219	0.218
6/30/91-92	235,607	560,799	0.238	1.189	0.283	1.156	0.327	0.066	0.235	0.235
6/30/92-93	241,161	265,029	0.110	1.189	0.131	1.150	0.150	0.066	0.109	0.109
6/30/93-94	254,321	549,838	0.216	1.178	0.255	1.144	0.291	0.067	0.211	0.210
6/30/94-95	256,665	309,429	0.121	1.170	0.141	1.138	0.161	0.068	0.119	0.118
6/30/95-96	265,739	247,476	0.093	1.155	0.108	1.133	0.122	0.069	0.093	0.092
6/30/96-97	296,336	190,847	0.064	1.137	0.073	1.127	0.083	0.070	0.067	0.065
6/30/97-98	296,982	191,116	0.064	1.135	0.073	1.122	0.082	0.071	0.067	0.065
6/30/98-99	299,530	266,242	0.089	1.135	0.101	1.116	0.113	0.071	0.089	0.087
6/30/99-00	323,627	368,953	0.114	1.135	0.129	1.110	0.144	0.071	0.113	0.110
6/30/00-01	338,348	407,573	0.120	1.109	0.134	1.105	0.148	0.073	0.119	0.116
6/30/01-02	329,555	583,715	0.177	1.101	0.195	1.099	0.214	0.074	0.169	0.167
6/30/02-03	329,179	337,183	0.102	1.073	0.110	1.094	0.120	0.077	0.102	0.100
6/30/03-04	344,547	152,332	0.044	1.046	0.046	1.088	0.050	0.079	0.051	0.048
6/30/04-05	325,530	301,507	0.093	1.036	0.096	1.083	0.104	0.080	0.108	0.080
6/30/05-06	403,750	305,181	0.076	1.032	0.078	1.078	0.084	0.081	0.108	0.081
6/30/06-07	420,219	231,473	0.055	1.032	0.057	1.072	0.061	0.081	0.109	0.081
6/30/07-08	425,998	498,318	0.117	1.032	0.121	1.067	0.129	0.082	0.110	0.082
6/30/08-09	420,566	649,601	0.154	1.027	0.159	1.062	0.168	0.083	0.111	0.083
6/30/09-10	433,206	412,521	0.095	1.000	0.095	1.056	0.101	0.085	0.114	0.085
6/30/10-11	444,673	427,103	0.096	1.000	0.096	1.051	0.101	0.086	0.115	0.086
6/30/11-12	467,753	550,071	0.118	1.000	0.118	1.046	0.123	0.086	0.115	0.086
6/30/12-13	495,398	425,900	0.086	1.000	0.086	1.041	0.089	0.086	0.116	0.086
6/30/13-14	518,391	400,060	0.077	1.000	0.077	1.036	0.080	0.087	0.116	0.087
6/30/14-15	539,631	635,677	0.118	1.000	0.118	1.030	0.121	0.087	0.117	0.087
6/30/15-16	585,875	556,364	0.095	1.000	0.095	1.025	0.097	0.088	0.118	0.088
6/30/16-17	594,787	464,855	0.078	1.000	0.078	1.020	0.080	0.088	0.118	0.088
6/30/17-18	607,484	444,228	0.073	1.000	0.073	1.015	0.074	0.089	0.119	0.089
6/30/18-19	656,644	494,912	0.075	1.000	0.075	1.010	0.076	0.089	0.119	0.089
6/30/19-20	664,701	659,709	0.099	1.000	0.099	1.005	0.100	0.090		0.090
Total	12,051,374	12,404,665								

Trend Last 4 (ex 19-20):	-7.3%	Avg 3 (ex 19-20):	0.077
Trend Last 8 (ex 19-20):	-4.8%	Avg 5 (ex 19-20):	0.090
Trend Last 12 (ex 19-20):	-4.7%	Avg 10 (ex 19-20):	0.094
Prior Selected Trend:	0.5%	Prior Sel Avg:	0.090
Selected Trend:	0.5%	Sel. Loss Cost:	0.090

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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

University of Massachusetts (Amherst) - Cluster 4
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.950	
(2)	Credibility	10%	
(3)	Average Pmt Trend Statewide	0.980	
(4)	Credibility Weighted Trend	0.977	

		(Low)	(High)
(5)	Selected Range	0.957	0.978
(6)	Incremental Paid for 2020	0	0
(7)	Estimated Reserve	0	0
(8)	Paid to Date (82 & Prior)	111,896	111,896
(9)	Est Ult Paid for 1982 & Prior	111,896	111,896

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	527	863
(11)	Projected Number of Years	2	2
(12)	Estimated Reserve	1,054	1,726
(13)	Paid to Date (82 & Prior)	111,896	111,896
(14)	Est Ult Paid for 1982 & Prior	112,950	113,623
(14a)	Paid Counts During Fiscal Year	0	1

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	112,423	112,760
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**112,423**	**112,760**
(18)	Implied Tail	1.005	1.008
(19)	Ult Loss Inc Lump Sums @ 6/19	129,243	147,677

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 =	17
2001	10	0			S(x) =	34,080
2002	11	0			S(x-sq) =	68,321,596
2003	12	0			S(xy) =	245,161
2004	13	1,400	7.244		S(y) =	122
2005	14	0			D =	20,732
2006	15	424	6.050		slope =	0
2007	16	284	5.649	0.670	Avg Trend =	0.940
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			
2017	26	1,008	6.916	5.783		
2018	27	0				
2019	28	1,581	7.366			
2020	29	0				
					Selected Trend:	**0.950**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(4) LN [(3)]

(5) Eg. 2017: 5.783 = 1008 / 174

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	420	432	444	456
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	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	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	75,201	75,201	75,201	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	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	201,656	201,665	201,665	201,665				
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	233,979	235,802	235,802	235,802					
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	297,380	298,555	298,555	298,555						
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	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	508,968	511,918	511,918	511,918								
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	553,253	555,103	555,103	555,103									
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	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	536,976	540,506	541,736	543,166											
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	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	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	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	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	255,257	256,033	259,412	261,179																
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	360,854	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	396,643	396,643	396,643	396,643																		
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	536,271	555,820	562,283	565,235																			
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	305,180	313,391	319,925	324,884																				
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	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	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	287,295	287,295	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	213,725	214,870	215,240	215,436																								
June-08	174,365	329,758	353,009	367,373	382,156	389,416	393,780	428,915	439,771	457,987	458,453	458,767	458,767																									
June-09	175,201	332,994	476,353	502,636	515,594	547,517	553,032	564,035	568,971	571,863	590,342	591,240																										
June-10	71,728	205,753	256,446	286,005	301,536	322,879	343,231	353,434	360,460	366,147	371,742																											
June-11	188,496	302,104	334,423	349,891	353,820	364,981	367,695	372,561	376,025	381,072																												
June-12	156,195	356,432	391,171	447,380	449,827	460,179	477,927	481,597	483,988																													
June-13	144,944	280,644	335,988	348,994	358,760	363,432	367,262	367,262																														
June-14	132,938	226,821	336,151	339,610	340,181	340,181	340,181																															
June-15	218,511	402,056	463,526	491,979	502,258	524,605																																
June-16	182,684	360,160	399,651	435,386	445,164																																	
June-17	193,279	321,627	353,895	359,792																																		
June-18	153,865	277,712	303,442																																			
June-19	136,770	284,142																																				
June-20	190,589																																					

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	420-432	432-444	444-456
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	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	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	1.000	1.000	1.000	1.000		
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	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	1.008	1.000	1.000	1.000				
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	1.009	1.008	1.000	1.000					
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	1.003	1.004	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	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	1.002	1.006	1.000	1.000								
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	1.003	1.003	1.000	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	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	1.004	1.007	1.002	1.003											
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	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	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	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	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	1.031	1.003	1.013	1.007																
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	1.000	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	1.000	1.000	1.000	1.000																		
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	1.031	1.036	1.012	1.005																			
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	1.027	1.027	1.021	1.016																				
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	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	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	1.000	1.000	1.000	1.000																							
June-07	1.867	1.094	1.050	1.040	1.030	1.004	1.003	1.006	1.013	1.007	1.005	1.002	1.001																								
June-08	1.891	1.071	1.041	1.040	1.019	1.011	1.089	1.025	1.041	1.001	1.001	1.000																									
June-09	1.901	1.431	1.055	1.026	1.062	1.010	1.020	1.009	1.005	1.032	1.002																										
June-10	2.869	1.246	1.115	1.054	1.071	1.063	1.030	1.020	1.016	1.015																											
June-11	1.603	1.107	1.046	1.011	1.032	1.007	1.013	1.009	1.013																												
June-12	2.282	1.097	1.144	1.005	1.023	1.039	1.008	1.005																													
June-13	1.936	1.197	1.039	1.028	1.013	1.011	1.000																														
June-14	1.706	1.482	1.010	1.002	1.000	1.000																															
June-15	1.840	1.153	1.061	1.021	1.044																																
June-16	1.971	1.110	1.089	1.022																																	
June-17	1.664	1.100	1.017																																		
June-18	1.805	1.093																																			
June-19	2.078																																				

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	420-432	432-444	444-456	To Ult
Simple Avg																																						
All Yrs	2.537	1.268	1.148	1.071	1.053	1.051	1.037	1.027	1.033	1.015	1.016	1.012	1.011	1.009	1.007	1.014	1.009	1.018	1.010	1.007	1.005	1.009	1.008	1.004	1.005	1.003	1.002	1.001	1.004	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Latest 5	1.872	1.188	1.043	1.016	1.022	1.024	1.014	1.014	1.018	1.011	1.002	1.000	1.006	1.018	1.013	1.011	1.016	1.007	1.001	1.003	1.001	1.013	1.001	1.001	1.001	1.002	1.001	1.002	1.006	1.003	1.000	1.000	1.000					
Latest 3	1.849	1.101	1.056	1.015	1.019	1.016	1.007	1.011	1.011	1.016	1.003	1.001	1.000	1.000	1.009	1.019	1.009	1.002	1.001	1.004	1.002	1.000	1.000	1.002	1.001	1.002	1.002	1.000	1.001	1.003	1.000	1.000	1.000	1.000	1.000			
Volume Wtd																																						
All Yrs	2.162	1.215	1.100	1.040	1.038	1.029	1.027	1.022	1.024	1.016	1.019	1.015	1.016	1.011	1.009	1.011	1.010	1.023	1.014	1.007	1.005	1.012	1.005	1.004	1.003	1.003	1.003	1.001	1.004	1.004	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5	1.859	1.169	1.046	1.016	1.024	1.024	1.014	1.013	1.018	1.014	1.001	1.000	1.007	1.026	1.017	1.015	1.013	1.006	1.001	1.003	1.001	1.023	1.001	1.002	1.002	1.002	1.002	1.002	1.005	1.004	1.000	1.000						
Latest 3	1.826	1.102	1.058	1.016	1.022	1.019	1.007	1.011	1.010	1.018	1.002	1.000	1.000	1.000	1.011	1.026	1.009	1.002	1.001	1.004	1.003	1.000	1.000	1.003	1.001	1.002	1.002	1.000	1.001	1.003	1.000	1.000	1.000	1.000				
Dev Factor S	.																																					
Industry 1	1.957	1.147	1.057	1.025	1.015	1.009	1.011	1.009	1.009	1.009	1.010	1.008	1.008	1.009	1.009	1.008	1.008	1.007																				
Industry 2		1.281	1.080	1.034	1.020	1.017	1.009	1.011	1.009	1.009	1.006	1.007	1.009	1.008	1.008	1.012	1.007	1.006	1.007	1.006																		
Prior	*1.940*	*1.185*	*1.151*	*1.034*	*1.031*	*1.032*	*1.032*	*1.021*	*1.018*	*1.010*	*1.010*	*1.012*	*1.011*	*1.012*	*1.013*	*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*	*1.001*	*1.001*	*1.001*	*1.002*	
Selected	1.987	1.190	1.133	1.034	1.031	1.030	1.014	1.020	1.014	1.010	1.010	1.012	1.011	1.011	1.013	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	1.001	1.001	1.001	1.001	1.001
FacToUlt	3.461	1.742	1.464	1.292	1.250	1.212	1.176	1.160	1.137	1.121	1.110	1.099	1.086	1.074	1.062	1.048	1.043	1.038	1.033	1.028	1.022	1.019	1.016	1.015	1.014	1.013	1.012	1.011	1.010	1.009	1.008	1.007	1.006	1.005	1.004	1.003	1.002	1.001
Percent of Ult	28.9%	57.4%	68.3%	77.4%	80.0%	82.5%	85.0%	86.2%	88.0%	89.2%	90.1%	91.0%	92.1%	93.1%	94.1%	95.4%	95.9%	96.4%	96.8%	97.3%	97.8%	98.1%	98.4%	98.5%	98.6%	98.7%	98.8%	98.9%	99.0%	99.1%	99.2%	99.3%	99.4%	99.5%	99.6%	99.7%	99.8%	99.9%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	129,243	147,677	112,423	112,760	(16,819)	-13.0%	(34,918)	-23.6%
6/30/82-83	91,124	92,246	91,124	92,147	0	0.0%	(99)	-0.1%
6/30/83-84	32,907	34,006	32,907	33,969	0	0.0%	(36)	-0.1%
6/30/84-85	75,953	77,034	75,953	76,952	0	0.0%	(82)	-0.1%
6/30/85-86	52,741	53,263	52,741	53,263	0	0.0%	0	0.0%
6/30/86-87	203,000	203,000	203,000	203,000	0	0.0%	0	0.0%
6/30/87-88	237,000	238,000	237,000	237,000	0	0.0%	(1,000)	-0.4%
6/30/88-89	301,000	302,000	301,000	301,000	0	0.0%	(1,000)	-0.3%
6/30/89-90	159,000	159,000	159,000	159,000	0	0.0%	0	0.0%
6/30/90-91	517,000	517,000	517,000	517,000	0	0.0%	0	0.0%
6/30/91-92	561,000	561,000	561,000	561,000	0	0.0%	0	0.0%
6/30/92-93	264,696	267,317	264,696	267,317	0	0.0%	0	0.0%
6/30/93-94	549,000	549,000	550,000	550,000	1,000	0.2%	1,000	0.2%
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	192,000	192,000	191,000	191,000	(1,000)	-0.5%	(1,000)	-0.5%
6/30/98-99	265,000	270,300	266,000	271,320	1,000	0.4%	1,020	0.4%
6/30/99-00	371,000	371,000	369,000	369,000	(2,000)	-0.5%	(2,000)	-0.5%
6/30/00-01	409,000	410,000	407,000	408,000	(2,000)	-0.5%	(2,000)	-0.5%
6/30/01-02	583,000	584,000	583,000	584,000	0	0.0%	0	0.0%
6/30/02-03	334,000	335,670	337,000	338,685	3,000	0.9%	3,015	0.9%
6/30/03-04	153,000	154,000	152,000	153,000	(1,000)	-0.7%	(1,000)	-0.6%
6/30/04-05	306,000	308,000	300,000	302,000	(6,000)	-2.0%	(6,000)	-1.9%
6/30/05-06	309,000	318,000	305,000	306,000	(4,000)	-1.3%	(12,000)	-3.8%
6/30/06-07	234,000	252,000	231,000	239,000	(3,000)	-1.3%	(13,000)	-5.2%
6/30/07-08	501,000	505,000	486,000	498,000	(15,000)	-3.0%	(7,000)	-1.4%
6/30/08-09	637,000	656,000	622,000	650,000	(15,000)	-2.4%	(6,000)	-0.9%
6/30/09-10	411,000	441,000	408,000	433,650	(3,000)	-0.7%	(7,350)	-1.7%
6/30/10-11	430,000	462,000	422,000	448,350	(8,000)	-1.9%	(13,650)	-3.0%
6/30/11-12	558,000	562,000	532,000	550,000	(26,000)	-4.7%	(12,000)	-2.1%
6/30/12-13	442,000	487,200	426,000	447,300	(16,000)	-3.6%	(39,900)	-8.2%
6/30/13-14	423,000	480,900	400,000	428,400	(23,000)	-5.4%	(52,500)	-10.9%
6/30/14-15	641,000	675,150	607,000	667,800	(34,000)	-5.3%	(7,350)	-1.1%
6/30/15-16	577,000	634,200	548,000	583,800	(29,000)	-5.0%	(50,400)	-7.9%
6/30/16-17	540,000	625,800	465,000	501,900	(75,000)	-13.9%	(123,900)	-19.8%
6/30/17-18	502,000	630,000	444,000	497,700	(58,000)	-11.6%	(132,300)	-21.0%
6/30/18-19	480,000	731,850	495,000	572,975	15,000	3.1%	(158,875)	-21.7%
6/30/19-20								
Total	13,216,357	14,038,679	12,898,538	13,358,354	(317,819)	-2.4%	(680,325)	-4.8%

NOTES:
(2), (3) From prior Aon analysis as of June 30, 2019
(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, 2020

University of Massachusetts (Amherst) - Cluster 4
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.1%	0.0%	0.0%	0.0%	1.000	1.000
456	99.9%	0.1%	0.1%	0.0%	0.0%	0.981	0.971
444	99.8%	0.1%	0.2%	0.0%	0.0%	0.960	0.941
432	99.7%	0.1%	0.3%	0.0%	0.0%	0.941	0.914
420	99.6%	0.1%	0.4%	0.0%	0.0%	0.923	0.888
408	99.5%	0.1%	0.5%	0.0%	0.0%	0.905	0.863
396	99.4%	0.1%	0.6%	0.0%	0.0%	0.888	0.840
384	99.3%	0.1%	0.7%	0.0%	0.0%	0.871	0.817
372	99.2%	0.1%	0.8%	0.0%	0.0%	0.855	0.795
360	99.1%	0.1%	0.9%	0.0%	0.0%	0.839	0.774
348	99.0%	0.1%	1.0%	0.0%	0.0%	0.824	0.754
336	98.9%	0.1%	1.1%	0.0%	0.0%	0.809	0.734
324	98.8%	0.1%	1.2%	0.0%	0.0%	0.794	0.715
312	98.7%	0.1%	1.3%	0.0%	0.0%	0.780	0.697
300	98.6%	0.1%	1.4%	0.0%	0.0%	0.766	0.679
288	98.5%	0.1%	1.5%	0.0%	0.0%	0.753	0.663
276	98.4%	0.3%	1.6%	0.1%	0.1%	0.739	0.646
264	98.1%	0.3%	1.9%	0.1%	0.1%	0.753	0.666
252	97.8%	0.5%	2.2%	0.2%	0.1%	0.758	0.674
240	97.3%	0.5%	2.7%	0.2%	0.2%	0.775	0.697
228	96.8%	0.5%	3.2%	0.2%	0.2%	0.781	0.705
216	96.4%	0.5%	3.6%	0.2%	0.2%	0.781	0.706
204	95.9%	0.5%	4.1%	0.2%	0.2%	0.778	0.701
192	95.4%	1.3%	4.6%	0.7%	0.5%	0.772	0.694
180	94.1%	1.1%	5.9%	0.6%	0.5%	0.793	0.722
168	93.1%	1.0%	6.9%	0.6%	0.5%	0.796	0.726
156	92.1%	1.0%	7.9%	0.6%	0.5%	0.793	0.721
144	91.0%	0.9%	9.0%	0.6%	0.5%	0.788	0.714
132	90.1%	0.9%	9.9%	0.6%	0.5%	0.778	0.701
120	89.2%	1.2%	10.8%	0.9%	0.7%	0.767	0.687
108	88.0%	1.8%	12.0%	1.3%	1.1%	0.763	0.681
96	86.2%	1.2%	13.8%	0.9%	0.8%	0.765	0.685
84	85.0%	2.5%	15.0%	1.9%	1.7%	0.755	0.672
72	82.5%	2.5%	17.5%	2.0%	1.8%	0.763	0.682
60	80.0%	2.6%	20.0%	2.2%	2.0%	0.764	0.685
48	77.4%	9.1%	22.6%	7.9%	7.4%	0.763	0.684
36	68.3%	10.9%	31.7%	9.9%	9.4%	0.805	0.739
24	57.4%	28.5%	42.6%	26.9%	26.1%	0.827	0.767
12	28.9%	28.9%	71.1%	28.3%	28.1%	0.869	0.823
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
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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	527	863		507	830
6/30/82-83	0	1,023	0.981	0	1,003
6/30/83-84	0	1,062	0.960	0	1,020
6/30/84-85	752	1,751	0.941	708	1,647
6/30/85-86	522	1,044	0.923	482	964
6/30/86-87	1,335	1,335	0.905	1,208	1,208
6/30/87-88	1,198	1,198	0.888	1,064	1,064
6/30/88-89	2,445	2,445	0.871	2,130	2,130
6/30/89-90	1,683	1,683	0.855	1,439	1,439
6/30/90-91	5,082	5,082	0.839	4,266	4,266
6/30/91-92	5,897	5,897	0.824	4,859	4,859
6/30/92-93	2,621	5,242	0.809	2,120	4,240
6/30/93-94	6,834	6,834	0.794	5,429	5,429
6/30/94-95	3,054	6,107	0.780	2,382	4,765
6/30/95-96	2,440	4,880	0.766	1,869	3,739
6/30/96-97	1,880	3,759	0.753	1,415	2,830
6/30/97-98	2,957	2,957	0.739	2,186	2,186
6/30/98-99	4,821	10,141	0.753	3,629	7,633
6/30/99-00	8,146	8,146	0.758	6,176	6,176
6/30/00-01	10,357	11,357	0.775	8,023	8,797
6/30/01-02	17,765	18,765	0.781	13,872	14,653
6/30/02-03	12,116	13,801	0.781	9,465	10,781
6/30/03-04	5,955	6,955	0.778	4,631	5,409
6/30/04-05	12,375	14,375	0.772	9,553	11,097
6/30/05-06	17,705	18,705	0.793	14,047	14,841
6/30/06-07	15,564	23,564	0.796	12,395	18,766
6/30/07-08	27,233	39,233	0.793	21,598	31,114
6/30/08-09	30,760	58,760	0.788	24,239	46,302
6/30/09-10	36,258	61,908	0.778	28,209	48,164
6/30/10-11	40,928	67,278	0.767	31,405	51,624
6/30/11-12	48,012	66,012	0.763	36,623	50,353
6/30/12-13	58,738	80,038	0.765	44,931	61,224
6/30/13-14	59,819	88,219	0.755	45,173	66,619
6/30/14-15	82,395	143,195	0.763	62,834	109,201
6/30/15-16	102,836	138,636	0.764	78,605	105,970
6/30/16-17	105,208	142,108	0.763	80,315	108,484
6/30/17-18	140,558	194,258	0.805	113,114	156,329
6/30/18-19	210,858	288,833	0.827	174,317	238,779
6/30/19-20	423,411	482,611	0.869	368,106	419,573
Total	1,511,044	2,030,061		1,223,323	1,635,509
			(7) Total Discount Factor:	0.810	0.806

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	527	863
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	263	432
(11) Discounted Value at 4%:	507	830

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, 2020

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	527	863		498	815
6/30/82-83	0	1,023	0.971	0	994
6/30/83-84	0	1,062	0.941	0	1,000
6/30/84-85	752	1,751	0.914	687	1,600
6/30/85-86	522	1,044	0.888	464	927
6/30/86-87	1,335	1,335	0.863	1,152	1,152
6/30/87-88	1,198	1,198	0.840	1,006	1,006
6/30/88-89	2,445	2,445	0.817	1,997	1,997
6/30/89-90	1,683	1,683	0.795	1,338	1,338
6/30/90-91	5,082	5,082	0.774	3,933	3,933
6/30/91-92	5,897	5,897	0.754	4,444	4,444
6/30/92-93	2,621	5,242	0.734	1,924	3,847
6/30/93-94	6,834	6,834	0.715	4,887	4,887
6/30/94-95	3,054	6,107	0.697	2,128	4,257
6/30/95-96	2,440	4,880	0.679	1,658	3,316
6/30/96-97	1,880	3,759	0.663	1,245	2,491
6/30/97-98	2,957	2,957	0.646	1,911	1,911
6/30/98-99	4,821	10,141	0.666	3,209	6,750
6/30/99-00	8,146	8,146	0.674	5,489	5,489
6/30/00-01	10,357	11,357	0.697	7,215	7,911
6/30/01-02	17,765	18,765	0.705	12,528	13,233
6/30/02-03	12,116	13,801	0.706	8,550	9,739
6/30/03-04	5,955	6,955	0.701	4,176	4,877
6/30/04-05	12,375	14,375	0.694	8,584	9,971
6/30/05-06	17,705	18,705	0.722	12,789	13,512
6/30/06-07	15,564	23,564	0.726	11,301	17,109
6/30/07-08	27,233	39,233	0.721	19,645	28,302
6/30/08-09	30,760	58,760	0.714	21,976	41,980
6/30/09-10	36,258	61,908	0.701	25,420	43,404
6/30/10-11	40,928	67,278	0.687	28,121	46,225
6/30/11-12	48,012	66,012	0.681	32,716	44,982
6/30/12-13	58,738	80,038	0.685	40,218	54,802
6/30/13-14	59,819	88,219	0.672	40,199	59,284
6/30/14-15	82,395	143,195	0.682	56,222	97,708
6/30/15-16	102,836	138,636	0.685	70,434	94,955
6/30/16-17	105,208	142,108	0.684	71,937	97,168
6/30/17-18	140,558	194,258	0.739	103,821	143,486
6/30/18-19	210,858	288,833	0.767	161,737	221,547
6/30/19-20	423,411	482,611	0.823	348,452	397,172
Total	1,511,044	2,030,061		1,124,012	1,499,520
			(7) Total Discount Factor:	0.744	0.739

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	527	863
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	263	432
(11) Discounted Value at 6%:	498	815

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
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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	306,450		306,340	313,999	0	7,659		
6/30/83-84		1,443,839	1,444,333		1,445,283	1,451,058	1,444	7,219		
6/30/84-85	116,303	852,745	853,085	853,212	853,598	857,009	853	4,264	0.734	0.737
6/30/85-86	123,981	2,517,941	2,518,922	2,519,144	2,519,000	2,519,000	1,059	1,059	2.032	2.032
6/30/86-87	139,388	3,380,019	3,381,264	3,381,240	3,381,000	3,396,919	981	16,900	2.426	2.437
6/30/87-88	159,499	3,025,877	3,026,939	3,026,896	3,027,000	3,041,006	1,123	15,129	1.898	1.907
6/30/88-89	180,644	2,623,646	2,624,556	2,624,912	2,626,270	2,636,764	2,624	13,118	1.454	1.460
6/30/89-90	142,494	3,243,583	3,244,730	3,245,180	3,246,827	3,259,801	3,244	16,218	2.279	2.288
6/30/90-91	143,694	1,101,823	1,102,183	1,102,180	1,102,925	1,107,332	1,102	5,509	0.768	0.771
6/30/91-92	155,170	1,518,304	1,518,776	1,518,768	1,519,822	1,525,896	1,518	7,592	0.979	0.983
6/30/92-93	163,283	638,167	638,368	638,364	638,805	641,358	638	3,191	0.391	0.393
6/30/93-94	177,184	1,960,715	1,961,727	1,961,691	1,962,000	2,009,733	1,285	49,018	1.107	1.134
6/30/94-95	188,391	521,127	522,495	522,475	521,648	523,733	521	2,606	0.277	0.278
6/30/95-96	201,751	491,723	494,318	494,290	496,640	501,557	4,917	9,834	0.246	0.249
6/30/96-97	231,872	422,390	424,228	424,371	426,614	430,838	4,224	8,448	0.184	0.186
6/30/97-98	232,237	545,727	554,607	554,284	551,184	556,642	5,457	10,915	0.237	0.240
6/30/98-99	232,075	631,601	638,488	638,393	637,917	644,233	6,316	12,632	0.275	0.278
6/30/99-00	211,819	687,583	700,195	699,518	694,459	701,335	6,876	13,752	0.328	0.331
6/30/00-01	215,099	737,973	750,881	750,294	745,353	752,733	7,380	14,759	0.347	0.350
6/30/01-02	227,797	341,709	350,081	350,105	345,126	348,543	3,417	6,834	0.152	0.153
6/30/02-03	242,008	1,105,988	1,144,303	1,141,497	1,141,000	1,144,000	35,012	38,012	0.471	0.473
6/30/03-04	276,758	962,971	989,868	988,474	988,000	990,000	25,029	27,029	0.357	0.358
6/30/04-05	260,378	201,102	207,333	214,528	207,000	215,000	5,898	13,898	0.079	0.083
6/30/05-06	317,741	778,823	806,170	798,218	798,000	806,000	19,177	27,177	0.251	0.254
6/30/06-07	325,922	368,698	383,842	391,765	384,000	392,000	15,302	23,302	0.118	0.120
6/30/07-08	354,130	1,180,035	1,228,544	1,212,101	1,212,000	1,229,000	31,965	48,965	0.342	0.347
6/30/08-09	362,309	532,460	562,974	565,919	563,000	566,000	30,540	33,540	0.155	0.156
6/30/09-10	383,298	529,870	562,105	568,767	562,000	569,000	32,130	39,130	0.147	0.148
6/30/10-11	394,924	695,094	751,934	738,873	739,000	752,000	43,906	56,906	0.187	0.190
6/30/11-12	381,943	989,130	1,075,733	1,041,676	1,042,000	1,076,000	52,870	86,870	0.273	0.282
6/30/12-13	384,763	406,699	448,545	465,899	449,000	466,000	42,301	59,301	0.117	0.121
6/30/13-14	364,582	657,315	741,197	724,434	724,000	741,000	66,685	83,685	0.199	0.203
6/30/14-15	370,543	448,681	523,612	524,640	524,000	530,400	75,319	81,719	0.141	0.143
6/30/15-16	382,602	530,279	667,087	640,581	641,000	667,000	110,721	136,721	0.168	0.174
6/30/16-17	395,324	158,296	230,720	308,958	231,000	309,000	72,704	150,704	0.058	0.078
6/30/17-18	398,722	280,195	513,739	570,935	514,000	571,000	233,805	290,805	0.129	0.143
6/30/18-19	410,826	217,164	583,209	589,340	524,700	589,000	307,536	371,836	0.128	0.143
6/30/19-20	424,565	64,753	376,130	556,451	400,000	556,000	335,247	491,247	0.094	0.131
Total	9,674,021	38,429,794	38,853,669	37,348,374	40,020,922	40,717,299	1,591,128	2,287,505		
Tot 6/30/84-20	9,674,021	35,350,203	37,102,886	37,348,374	36,939,887	37,622,830	1,589,684	2,272,627	0.382	0.389

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
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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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim	Average Age
All Prior Yrs		1,242,912							0	0		
6/30/82-83		271,340	1.000	1.000	271,450	35,000	306,450		0	0		
6/30/83-84		1,219,902	1.000	1.000	1,220,396	223,937	1,444,333		0	0		
6/30/84-85	116,303	837,745	1.000	1.000	838,085	15,000	853,085	0.733	0	0		
6/30/85-86	123,981	2,421,446	1.000	1.000	2,422,427	96,495	2,518,922	2.032	0	0		
6/30/86-87	139,388	3,072,101	1.000	1.000	3,073,346	307,918	3,381,264	2.426	0	0		
6/30/87-88	159,499	2,621,395	1.000	1.000	2,622,457	404,482	3,026,939	1.898	0	0		
6/30/88-89	180,644	2,245,396	1.000	1.000	2,246,306	378,250	2,624,556	1.453	0	0		
6/30/89-90	142,494	2,830,333	1.000	1.000	2,831,480	413,250	3,244,730	2.277	0	0		
6/30/90-91	143,694	887,647	1.000	1.000	888,007	214,176	1,102,183	0.767	0	0		
6/30/91-92	155,170	1,163,553	1.000	1.000	1,164,025	354,751	1,518,776	0.979	0	0		
6/30/92-93	163,283	494,916	1.000	1.000	495,117	143,251	638,368	0.391	0	0		
6/30/93-94	177,184	1,549,463	1.001	1.000	1,550,475	411,252	1,961,727	1.107	1	1	1,012	78
6/30/94-95	188,391	273,127	1.005	1.000	274,495	248,000	522,495	0.277	0	0		
6/30/95-96	201,751	253,697	1.010	1.000	256,292	238,026	494,318	0.245	0	0		
6/30/96-97	231,872	113,590	1.016	1.000	115,428	308,800	424,228	0.183	0	0		
6/30/97-98	232,237	445,227	1.020	1.000	454,107	100,500	554,607	0.239	0	0		
6/30/98-99	232,075	289,851	1.024	1.000	296,738	341,750	638,488	0.275	0	0		
6/30/99-00	211,819	489,166	1.026	1.000	501,778	198,417	700,195	0.331	0	0		
6/30/00-01	215,099	431,926	1.030	1.000	444,834	306,047	750,881	0.349	0	0		
6/30/01-02	227,797	246,210	1.034	1.000	254,582	95,499	350,081	0.154	0	0		
6/30/02-03	242,008	1,004,572	1.038	1.000	1,042,887	101,416	1,144,303	0.473	1	0		
6/30/03-04	276,758	635,971	1.042	1.000	662,868	327,000	989,868	0.358	0	0		
6/30/04-05	260,378	134,102	1.046	1.000	140,333	67,000	207,333	0.080	0	0		
6/30/05-06	317,741	498,323	1.055	1.000	525,670	280,500	806,170	0.254	0	0		
6/30/06-07	325,922	238,698	1.063	1.000	253,842	130,000	383,842	0.118	0	0		
6/30/07-08	354,130	620,035	1.073	1.000	665,482	563,062	1,228,544	0.347	0	0		
6/30/08-09	362,309	369,959	1.077	1.000	398,553	164,421	562,974	0.155	0	0		
6/30/09-10	383,298	350,870	1.083	1.000	380,005	182,100	562,105	0.147	0	0		
6/30/10-11	394,924	582,594	1.092	1.000	635,991	115,943	751,934	0.190	0	0		
6/30/11-12	381,943	748,630	1.105	1.000	827,024	248,709	1,075,733	0.282	1	1	78,394	62
6/30/12-13	384,763	286,699	1.129	1.000	323,740	124,805	448,545	0.117	0	0		
6/30/13-14	364,582	508,065	1.147	1.000	582,881	158,317	741,197	0.203	1	0		
6/30/14-15	370,543	388,681	1.171	1.000	455,084	68,528	523,612	0.141	2	3	22,134	56
6/30/15-16	382,602	505,779	1.230	1.000	622,343	44,744	667,087	0.174	2	2	58,282	55
6/30/16-17	395,324	158,296	1.385	1.000	219,198	11,522	230,720	0.058	3	1	60,903	62
6/30/17-18	398,722	220,025	1.668	1.000	366,978	146,762	513,739	0.129	10	2	73,477	60
6/30/18-19	410,826	217,164	2.391	1.000	519,296	63,913	583,209	0.142	27	7	43,162	54
6/30/19-20	424,565	64,753	5.052	1.000	327,107	49,023	376,130	0.089		23	11,407	45
Total	9,674,021	30,934,156			31,171,105	7,682,565	38,853,669		48	40		

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, 2020

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	1.000	838,212	15,000	853,212	0.734	0.721
6/30/85-86	123,981	2.395	2,421,446	1.000	2,422,649	96,495	2,519,144	2.032	1.954
6/30/86-87	139,388	2.162	3,072,101	1.000	3,073,322	307,918	3,381,240	2.426	2.205
6/30/87-88	159,499	1.577	2,621,395	1.000	2,622,414	404,482	3,026,896	1.898	1.644
6/30/88-89	180,644	1.730	2,245,396	1.000	2,246,662	378,250	2,624,912	1.453	1.244
6/30/89-90	142,494	2.767	2,830,333	1.000	2,831,930	413,250	3,245,180	2.277	1.987
6/30/90-91	143,694	0.613	887,647	1.000	888,004	214,176	1,102,180	0.767	0.618
6/30/91-92	155,170	0.738	1,163,553	1.000	1,164,017	354,751	1,518,768	0.979	0.750
6/30/92-93	163,283	0.297	494,916	1.000	495,113	143,251	638,364	0.391	0.303
6/30/93-94	177,184	0.844	1,549,463	1.001	1,550,439	411,252	1,961,691	1.107	0.875
6/30/94-95	188,391	0.144	273,127	1.005	274,475	248,000	522,475	0.277	0.146
6/30/95-96	201,751	0.126	253,697	1.010	256,264	238,026	494,290	0.245	0.127
6/30/96-97	231,872	0.054	113,590	1.016	115,571	308,800	424,371	0.183	0.050
6/30/97-98	232,237	0.188	445,227	1.020	453,784	100,500	554,284	0.239	0.195
6/30/98-99	232,075	0.126	289,851	1.024	296,643	341,750	638,393	0.275	0.128
6/30/99-00	211,819	0.224	489,166	1.026	501,101	198,417	699,518	0.330	0.237
6/30/00-01	215,099	0.197	431,926	1.030	444,247	306,047	750,294	0.349	0.207
6/30/01-02	227,797	0.112	246,210	1.034	254,606	95,499	350,105	0.154	0.112
6/30/02-03	242,008	0.399	1,004,572	1.038	1,040,081	101,416	1,141,497	0.472	0.430
6/30/03-04	276,758	0.227	635,971	1.042	661,474	327,000	988,474	0.357	0.239
6/30/04-05	260,378	0.116	134,102	1.046	147,528	67,000	214,528	0.082	0.057
6/30/05-06	317,741	0.117	498,323	1.055	517,718	280,500	798,218	0.251	0.163
6/30/06-07	325,922	0.119	238,698	1.063	261,765	130,000	391,765	0.120	0.080
6/30/07-08	354,130	0.120	620,035	1.073	649,039	563,062	1,212,101	0.342	0.183
6/30/08-09	362,309	0.121	369,959	1.077	401,498	164,421	565,919	0.156	0.111
6/30/09-10	383,298	0.122	350,870	1.083	386,667	182,100	568,767	0.148	0.101
6/30/10-11	394,924	0.122	582,594	1.092	622,930	115,943	738,873	0.187	0.158
6/30/11-12	381,943	0.122	748,630	1.105	792,966	248,709	1,041,676	0.273	0.208
6/30/12-13	384,763	0.124	286,699	1.129	341,094	124,805	465,899	0.121	0.089
6/30/13-14	364,582	0.124	508,065	1.147	566,117	158,317	724,434	0.199	0.155
6/30/14-15	370,543	0.125	388,681	1.171	456,112	68,528	524,640	0.142	0.123
6/30/15-16	382,602	0.126	505,779	1.230	595,837	44,744	640,581	0.167	0.156
6/30/16-17	395,324	0.127	158,296	1.385	297,436	11,522	308,958	0.078	0.075
6/30/17-18	398,722	0.128	220,025	1.668	424,173	146,762	570,935	0.143	0.106
6/30/18-19	410,826	0.129	217,164	2.391	525,428	63,913	589,340	0.143	0.128
6/30/19-20	424,565	0.130	64,753	5.052	507,429	49,023	556,451	0.131	0.120
Total	9,674,021		28,200,002		29,924,746	7,423,628	37,348,374		

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, 2020

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	888,007	0.618	1.004	0.621	1.000	0.621	0.129	0.613	0.613
6/30/91-92	155,170	1,164,025	0.750	1.102	0.827	1.000	0.827	0.118	0.739	0.738
6/30/92-93	163,283	495,117	0.303	1.285	0.390	1.000	0.390	0.101	0.298	0.297
6/30/93-94	177,184	1,550,475	0.875	1.268	1.110	1.000	1.110	0.102	0.834	0.844
6/30/94-95	188,391	274,495	0.146	1.257	0.183	1.000	0.183	0.103	0.144	0.144
6/30/95-96	201,751	256,292	0.127	1.247	0.158	1.000	0.158	0.104	0.126	0.126
6/30/96-97	231,872	115,428	0.050	1.234	0.061	1.000	0.061	0.105	0.054	0.054
6/30/97-98	232,237	454,107	0.196	1.218	0.238	1.000	0.238	0.107	0.190	0.188
6/30/98-99	232,075	296,738	0.128	1.202	0.154	1.000	0.154	0.108	0.128	0.126
6/30/99-00	211,819	501,778	0.237	1.183	0.280	1.000	0.280	0.110	0.229	0.224
6/30/00-01	215,099	444,834	0.207	1.153	0.238	1.000	0.238	0.113	0.203	0.197
6/30/01-02	227,797	254,582	0.112	1.131	0.126	1.000	0.126	0.115	0.115	0.112
6/30/02-03	242,008	1,042,887	0.431	1.126	0.485	1.000	0.485	0.115	0.406	0.399
6/30/03-04	276,758	662,868	0.240	1.126	0.270	1.000	0.270	0.115	0.230	0.227
6/30/04-05	260,378	140,333	0.054	1.119	0.060	1.000	0.060	0.116	0.126	0.116
6/30/05-06	317,741	525,670	0.165	1.108	0.183	1.000	0.183	0.117	0.127	0.117
6/30/06-07	325,922	253,842	0.078	1.096	0.085	1.000	0.085	0.119	0.129	0.119
6/30/07-08	354,130	665,482	0.188	1.084	0.204	1.000	0.204	0.120	0.130	0.120
6/30/08-09	362,309	398,553	0.110	1.071	0.118	1.000	0.118	0.121	0.132	0.121
6/30/09-10	383,298	380,005	0.099	1.067	0.106	1.000	0.106	0.122	0.132	0.122
6/30/10-11	394,924	635,991	0.161	1.069	0.172	1.000	0.172	0.122	0.132	0.122
6/30/11-12	381,943	827,024	0.217	1.062	0.230	1.000	0.230	0.122	0.133	0.122
6/30/12-13	384,763	323,740	0.084	1.052	0.089	1.000	0.089	0.124	0.134	0.124
6/30/13-14	364,582	582,881	0.160	1.048	0.168	1.000	0.168	0.124	0.135	0.124
6/30/14-15	370,543	455,084	0.123	1.042	0.128	1.000	0.128	0.125	0.135	0.125
6/30/15-16	382,602	622,343	0.163	1.034	0.168	1.000	0.168	0.126	0.136	0.126
6/30/16-17	395,324	219,198	0.055	1.026	0.057	1.000	0.057	0.127	0.138	0.127
6/30/17-18	398,722	366,978	0.092	1.017	0.094	1.000	0.094	0.128	0.139	0.128
6/30/18-19	410,826	519,296	0.126	1.008	0.127	1.000	0.127	0.129	0.140	0.129
6/30/19-20	424,565	327,107	0.077	1.000	0.077	1.000	0.077	0.130		0.130
Total	8,811,712	15,645,157								

Trend Last 4 (ex 19-20):	-3.3%	Avg 3 (ex 19-20):	0.093
Trend Last 8 (ex 19-20):	-7.8%	Avg 5 (ex 19-20):	0.115
Trend Last 12 (ex 19-20):	-4.4%	Avg 10 (ex 19-20):	0.134
Prior Selected Trend:	0.0%	Prior Sel Avg:	0.140
Selected Trend:	0.0%	Sel. Loss Cost:	0.130

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, 2019

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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		9%	
(3)	Average Pmt Trend Statewide		0.950	
(4)	Credibility Weighted Trend		0.942	
		(Low)		(High)
(5)	Selected Range	0.933		0.961
(6)	Incremental Paid for 2020	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 @ 6/19	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, 2019

Commonwealth of Massachusetts

Workers Compensation

Reserve Analysis at June, 30, 2020

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				
2017	26	0				
2018	27	0				
2019	28	0				
2020	29	0				
					Selected Trend:	**0.860**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	431,926	431,926
June-02	111,843	169,158	211,386	237,447	244,070	244,070	244,070	244,070	246,210	246,210	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	982,602	1,003,703	1,004,572	1,004,572
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	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	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	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	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	614,857	620,035	620,035	620,035					
June-09	126,394	222,250	303,425	345,595	337,031	345,960	348,059	348,059	358,262	369,959	369,959	369,959						
June-10	173,596	323,966	367,986	373,360	374,510	374,510	349,231	350,070	350,870	350,870	350,870							
June-11	204,108	361,900	447,595	503,639	528,963	548,763	568,457	582,594	582,594	582,594								
June-12	169,232	317,366	416,322	526,284	584,656	637,971	676,716	712,364	748,630									
June-13	159,666	227,306	265,791	285,810	286,699	286,699	286,699	286,699										
June-14	86,121	261,428	375,084	466,071	507,849	508,065	508,065											
June-15	49,642	100,069	188,369	257,327	336,783	388,681												
June-16	101,585	204,682	320,856	427,154	505,779													
June-17	54,297	113,090	156,875	158,296														
June-18	64,657	169,427	220,025															
June-19	98,685	217,164																
June-20	64,753																	

Acc Yr Ending	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	271,340	271,340
June-84	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	1,219,902	1,219,902	1,219,902	1,219,902	
June-85	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	837,745	837,745	837,745		
June-86	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	2,421,446	2,421,446	2,421,446	2,421,446			
June-87	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	3,072,101	3,072,101	3,072,101	3,072,101				
June-88	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	2,621,395	2,621,395	2,621,395	2,621,395					
June-89	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	2,245,396						
June-90	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	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	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	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916	494,916										
June-94	1,383,838	1,403,763	1,423,826	1,444,130	1,464,767	1,485,375	1,506,355	1,527,717	1,549,463											
June-95	273,127	273,127	273,127	273,127	273,127	273,127	273,127	273,127												
June-96	253,697	253,697	253,697	253,697	253,697	253,697	253,697													
June-97	113,590	113,590	113,590	113,590	113,590	113,590														
June-98	445,227	445,227	445,227	445,227	445,227															
June-99	289,851	289,851	289,851	289,851																
June-00	489,166	489,166	489,166																	
June-01	431,926	431,926																		
June-02	246,210																			

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	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	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	1.056	1.021	1.001	1.000
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	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	1.000	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	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	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	1.000	1.008	1.000	1.000					
June-09	1.758	1.365	1.139	0.975	1.026	1.006	1.000	1.029	1.033	1.000	1.000						
June-10	1.866	1.136	1.015	1.003	1.000	0.933	1.002	1.002	1.000	1.000							
June-11	1.773	1.237	1.125	1.050	1.037	1.036	1.025	1.000	1.000								
June-12	1.875	1.312	1.264	1.111	1.091	1.061	1.053	1.051									
June-13	1.424	1.169	1.075	1.003	1.000	1.000	1.000										
June-14	3.036	1.435	1.243	1.090	1.000	1.000											
June-15	2.016	1.882	1.366	1.309	1.154												
June-16	2.015	1.568	1.331	1.184													
June-17	2.083	1.387	1.009														
June-18	2.620	1.299															
June-19	2.201																

Acc Yr Ending	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	420-432	432-444	444-456
June-83	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	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	1.000	1.000	1.000	1.000	
June-85	1.000	1.000	1.000	1.000	1.000	1.000	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	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	1.000	1.000	1.000	1.000			
June-87	1.008	1.008	1.148	1.020	1.020	1.020	1.020	1.020	1.020	1.007	1.000	1.000	1.000	1.000	1.000	1.000				
June-88	1.031	1.031	1.032	1.032	1.032	1.031	1.014	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
June-89	1.000	1.000	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	1.000	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	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
June-93	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014											
June-95	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000												
June-96	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
June-97	1.000	1.000	1.000	1.000	1.000	1.000														
June-98	1.000	1.000	1.000	1.000	1.000															
June-99	1.000	1.000	1.000	1.000																
June-00	1.000	1.000	1.000																	
June-01	1.000	1.000																		
June-02	1.000																			

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
Simple Avg																	
All Yrs	2.170	1.360	1.196	1.111	1.061	1.030	1.035	1.032	1.018	1.019	1.013	1.013	1.011	1.011	1.009	1.006	1.005
Latest 5	2.187	1.514	1.205	1.139	1.057	1.006	1.016	1.017	1.007	1.002	1.000	1.000	1.013	1.011	1.004	1.000	1.000
Latest 3	2.301	1.418	1.235	1.194	1.052	1.020	1.026	1.018	1.011	1.003	1.000	1.000	1.000	1.000	1.007	1.000	1.000
Volume Wtd																	
All Yrs	2.113	1.381	1.189	1.119	1.073	1.044	1.043	1.042	1.025	1.029	1.027	1.019	1.020	1.016	1.013	1.008	1.008
Latest 5	2.181	1.486	1.220	1.132	1.056	1.014	1.023	1.018	1.005	1.002	1.000	1.000	1.024	1.021	1.009	1.000	1.000
Latest 3	2.296	1.432	1.265	1.174	1.046	1.027	1.032	1.023	1.009	1.004	1.000	1.000	1.000	1.000	1.012	1.000	1.000
Dev Factor Selection																	
Industry 1	2.958	1.596	1.236	1.106	1.039	1.020	1.014	1.008	1.006	1.006	1.005	1.010	1.002	1.003	1.003	1.002	1.004
Industry 2		1.877	1.312	1.143	1.055	1.028	1.016	1.015	1.006	1.005	1.007	1.007	1.004	1.002	1.005	1.002	1.003
Prior	*2.111*	*1.412*	*1.222*	*1.117*	*1.019*	*1.020*	*1.013*	*1.033*	*1.020*	*1.008*	*1.000*	*1.010*	*1.024*	*1.011*	*1.007*	*1.000*	*1.000*
Selected	2.113	1.434	1.204	1.125	1.051	1.021	1.016	1.022	1.012	1.008	1.005	1.004	1.009	1.008	1.008	1.004	1.004
FacToUlt	5.052	2.391	1.668	1.385	1.230	1.171	1.147	1.129	1.105	1.092	1.083	1.077	1.073	1.063	1.055	1.046	1.042
Percent of Ult	19.8%	41.8%	60.0%	72.2%	81.3%	85.4%	87.2%	88.6%	90.5%	91.6%	92.3%	92.8%	93.2%	94.0%	94.8%	95.6%	95.9%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																					
All Yrs	1.005	1.006	1.014	1.006	1.004	1.004	1.003	1.003	1.003	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Latest 5	1.000	1.000	1.000	1.000	1.003	1.003	1.003	1.003	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Latest 3	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	1.000	1.000	1.000	1.000	1.000			
Volume Wtd																					
All Yrs	1.008	1.009	1.026	1.010	1.008	1.008	1.006	1.004	1.004	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Latest 5	1.000	1.000	1.000	1.000	1.008	1.008	1.006	1.005	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Latest 3	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	1.000	1.000	1.000	1.000	1.000			
Dev Factor Selection																					
Industry 1	1.003																				
Industry 2	1.002	1.001	1.001																		
Prior	*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*	*1.000*	*1.000*	*1.000*	*1.001*	
Selected	1.004	1.004	1.004	1.002	1.004	1.004	1.006	1.005	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
FacToUlt	1.038	1.034	1.030	1.026	1.024	1.020	1.016	1.010	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
Percent of Ult	96.3%	96.7%	97.1%	97.5%	97.7%	98.0%	98.4%	99.0%	99.5%	99.9%	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, 2020

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 6/19		As of 6/20		(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	1,445,283	1,451,058	1,445,283	1,451,058	0	0.0%	0	0.0%
6/30/84-85	853,598	857,009	853,598	857,009	0	0.0%	0	0.0%
6/30/85-86	2,519,000	2,519,000	2,519,000	2,519,000	0	0.0%	0	0.0%
6/30/86-87	3,382,000	3,396,919	3,381,000	3,396,919	(1,000)	0.0%	0	0.0%
6/30/87-88	3,027,000	3,041,006	3,027,000	3,041,006	0	0.0%	0	0.0%
6/30/88-89	2,626,270	2,636,764	2,626,270	2,636,764	0	0.0%	0	0.0%
6/30/89-90	3,246,827	3,259,801	3,246,827	3,259,801	0	0.0%	0	0.0%
6/30/90-91	1,102,925	1,107,332	1,102,925	1,107,332	0	0.0%	0	0.0%
6/30/91-92	1,519,822	1,525,896	1,519,822	1,525,896	0	0.0%	0	0.0%
6/30/92-93	638,805	641,358	638,805	641,358	0	0.0%	0	0.0%
6/30/93-94	1,943,000	1,987,443	1,962,000	2,009,733	19,000	1.0%	22,290	1.1%
6/30/94-95	521,648	523,733	521,648	523,733	0	0.0%	0	0.0%
6/30/95-96	496,640	501,557	496,640	501,557	0	0.0%	0	0.0%
6/30/96-97	426,614	430,838	426,614	430,838	0	0.0%	0	0.0%
6/30/97-98	551,184	556,642	551,184	556,642	0	0.0%	0	0.0%
6/30/98-99	637,917	644,233	637,917	644,233	0	0.0%	0	0.0%
6/30/99-00	694,459	701,335	694,459	701,335	0	0.0%	0	0.0%
6/30/00-01	745,353	752,733	745,353	752,733	0	0.0%	0	0.0%
6/30/01-02	345,126	348,543	345,126	348,543	0	0.0%	0	0.0%
6/30/02-03	1,156,000	1,218,000	1,141,000	1,144,000	(15,000)	-1.3%	(74,000)	-6.1%
6/30/03-04	996,000	997,000	988,000	990,000	(8,000)	-0.8%	(7,000)	-0.7%
6/30/04-05	209,000	220,000	207,000	215,000	(2,000)	-1.0%	(5,000)	-2.3%
6/30/05-06	806,000	815,000	798,000	806,000	(8,000)	-1.0%	(9,000)	-1.1%
6/30/06-07	393,000	407,000	384,000	392,000	(9,000)	-2.3%	(15,000)	-3.7%
6/30/07-08	1,232,000	1,254,000	1,212,000	1,229,000	(20,000)	-1.6%	(25,000)	-2.0%
6/30/08-09	576,000	583,000	563,000	566,000	(13,000)	-2.3%	(17,000)	-2.9%
6/30/09-10	576,000	588,000	562,000	569,000	(14,000)	-2.4%	(19,000)	-3.2%
6/30/10-11	764,000	813,280	739,000	752,000	(25,000)	-3.3%	(61,280)	-7.5%
6/30/11-12	1,040,000	1,091,000	1,042,000	1,076,000	2,000	0.2%	(15,000)	-1.4%
6/30/12-13	469,000	497,000	449,000	466,000	(20,000)	-4.3%	(31,000)	-6.2%
6/30/13-14	761,000	784,000	724,000	741,000	(37,000)	-4.9%	(43,000)	-5.5%
6/30/14-15	429,000	446,000	524,000	530,400	95,000	22.1%	84,400	18.9%
6/30/15-16	634,000	654,000	641,000	667,000	7,000	1.1%	13,000	2.0%
6/30/16-17	291,000	405,000	231,000	309,000	(60,000)	-20.6%	(96,000)	-23.7%
6/30/17-18	456,000	542,000	514,000	571,000	58,000	12.7%	29,000	5.4%
6/30/18-19	574,000	636,000	524,700	589,000	(49,300)	-8.6%	(47,000)	-7.4%
6/30/19-20								
Total	39,721,222	40,476,888	39,620,922	40,161,299	(100,300)	-0.3%	(315,590)	-0.8%

NOTES:
(2), (3) From prior Aon analysis as of June 30, 2019
(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, 2020

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	1.000	271,450	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	1.000	1,220,396	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	1.000	838,085	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	1.000	2,422,427	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	1.000	3,073,346	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	1.000	2,622,457	0.0%	0.0%	0	404,482	404,482	15.4%	1.000	404,482	404,482	404,482
6/30/88-89	2,245,396	1.000	2,246,306	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	1.000	2,831,480	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	1.000	888,007	0.0%	0.0%	0	214,176	214,176	24.1%	1.000	214,176	214,176	214,176
6/30/91-92	1,163,553	1.000	1,164,025	0.0%	0.0%	0	354,751	354,751	30.5%	1.000	354,751	354,751	354,751
6/30/92-93	494,916	1.000	495,117	0.0%	0.0%	0	143,251	143,251	28.9%	1.000	143,251	143,251	143,251
6/30/93-94	1,549,463	1.001	1,550,475	0.0%	0.0%	0	411,252	411,252	26.5%	1.000	411,252	411,252	411,252
6/30/94-95	273,127	1.005	274,495	0.0%	0.0%	0	248,000	248,000	90.3%	1.000	248,000	248,000	248,000
6/30/95-96	253,697	1.010	256,292	0.0%	0.0%	0	238,026	238,026	92.9%	1.000	238,026	238,026	238,026
6/30/96-97	113,590	1.016	115,428	0.0%	0.0%	0	308,800	308,800	267.5%	1.000	308,800	308,800	308,800
6/30/97-98	445,227	1.020	454,107	0.0%	0.0%	0	100,500	100,500	22.1%	1.000	100,500	100,500	100,500
6/30/98-99	289,851	1.024	296,738	0.0%	0.0%	0	341,750	341,750	115.2%	1.000	341,750	341,750	341,750
6/30/99-00	489,166	1.026	501,778	0.0%	0.0%	0	198,417	198,417	39.5%	1.000	198,417	198,417	198,417
6/30/00-01	431,926	1.030	444,834	0.0%	0.0%	0	306,047	306,047	68.8%	1.000	306,047	306,047	306,047
6/30/01-02	246,210	1.034	254,582	0.0%	0.0%	0	95,499	95,499	37.5%	1.000	95,499	95,499	95,499
6/30/02-03	1,004,572	1.038	1,042,887	0.0%	0.0%	0	101,416	101,416	9.7%	1.000	101,416	101,416	101,416
6/30/03-04	635,971	1.042	662,868	0.0%	0.0%	0	327,000	327,000	49.3%	1.000	327,000	327,000	327,000
6/30/04-05	134,102	1.046	140,333	0.0%	0.0%	0	67,000	67,000	47.7%	1.000	67,000	67,000	67,000
6/30/05-06	498,323	1.055	525,670	0.0%	0.0%	0	280,500	280,500	53.4%	1.000	280,500	280,500	280,500
6/30/06-07	238,698	1.063	253,842	0.0%	0.0%	0	130,000	130,000	51.2%	1.000	130,000	130,000	130,753
6/30/07-08	620,035	1.073	665,482	0.1%	0.1%	524	560,000	560,524	84.2%	1.010	565,600	563,062	566,123
6/30/08-09	369,959	1.077	398,553	0.1%	0.1%	574	162,501	163,075	40.9%	1.020	165,767	164,421	165,382
6/30/09-10	350,870	1.083	380,005	0.1%	0.2%	776	179,000	179,776	47.3%	1.030	184,424	182,100	183,349
6/30/10-11	582,594	1.092	635,991	0.2%	0.4%	2,318	112,500	114,818	18.1%	1.041	117,068	115,943	117,038
6/30/11-12	748,630	1.105	827,024	0.1%	0.5%	4,150	240,500	244,650	29.6%	1.051	252,768	248,709	250,787
6/30/12-13	286,699	1.129	323,740	0.2%	0.7%	2,228	120,000	122,228	37.8%	1.062	127,382	124,805	126,492
6/30/13-14	508,065	1.147	582,881	0.6%	1.3%	7,368	149,250	156,618	26.9%	1.072	160,016	158,317	164,847
6/30/14-15	388,681	1.171	455,084	0.9%	2.2%	9,961	60,000	69,961	15.4%	1.118	67,094	68,528	11,426
6/30/15-16	505,779	1.230	622,343	3.3%	5.5%	34,029	24,500	58,529	9.4%	1.264	30,959	44,744	61,752
6/30/16-17	158,296	1.385	219,198	5.0%	10.5%	23,043	0	23,043	10.5%	1.499	0	11,522	25,383
6/30/17-18	220,025	1.668	366,978	8.3%	18.8%	69,050	60,170	129,220	35.2%	2.731	164,303	146,762	50,817
6/30/18-19	217,164	2.391	519,296	5.8%	24.6%	127,825	0	127,825	24.6%	5.740	0	63,913	75,809
6/30/19-20	64,753	5.052	327,107	5.4%	30.0%	98,046	0	98,046	30.0%	5.740	0	49,023	
Total	30,934,156		32,414,017			379,893	7,495,638	7,875,531	24.3%		7,662,599	7,769,065	7,627,178

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, 2016

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	420-432	432-444	444-456	456-468
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	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	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	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	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	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	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	0	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	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	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	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	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	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	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	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	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	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	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	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	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	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	0	0	0	0																				
Jun-03	0	16,416	55,000	0	0	0	30,000	0	0	0	0	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	0	0	0	0																						
Jun-05	0	0	67,000	0	0	0	0	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	0	0	0	0																								
Jun-07	0	70,000	45,000	15,000	0	0	0	0	0	0	0	0	0	0																									
Jun-08	0	170,000	150,000	165,000	0	75,000	0	0	0	0	0	0	0																										
Jun-09	0	0	0	133,501	0	0	0	0	0	0	29,000	0																											
Jun-10	0	36,000	93,000	0	0	0	0	0	50,000	0	0																												
Jun-11	0	50,000	0	37,500	25,000	0	0	0	0	0																													
Jun-12	0	95,000	0	110,500	0	0	35,000	0	0																														
Jun-13	0	50,000	0	70,000	0	0	0	0																															
Jun-14	0	0	0	49,250	100,000	0	0																																
Jun-15	0	0	0	0	0	60,000																																	
Jun-16	0	0	0	24,500	0																																		
Jun-17	0	0	0	0																																			
Jun-18	0	0	60,170																																				
Jun-19	0	0																																					
Jun-20	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	432	444	456	468
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	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	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	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	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	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	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	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	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	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	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										
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											
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												
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													
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														
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															
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																
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																	
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																		
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																			
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																				
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																					
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																						
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																							
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																								
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																									
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																										
Jun-09	0	0	0	133,501	133,501	133,501	133,501	133,501	133,501	133,501	162,501	162,501																											
Jun-10	0	36,000	129,000	129,000	129,000	129,000	129,000	129,000	179,000	179,000	179,000																												
Jun-11	0	50,000	50,000	87,500	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	240,500	240,500	240,500																														
Jun-13	0	50,000	50,000	120,000	120,000	120,000	120,000	120,000																															
Jun-14	0	0	0	49,250	149,250	149,250	149,250																																
Jun-15	0	0	0	0	0	60,000																																	
Jun-16	0	0	0	24,500	24,500																																		
Jun-17	0	0	0	0																																			
Jun-18	0	0	60,170																																				
Jun-19	0	0																																					
Jun-20	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
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
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
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
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
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
Jun-87	0.000	0.000	0.003	0.000	0.000	0.014	0.003	0.002	0.000	0.010	0.013	0.008	0.037	0.012	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	0.008	0.018	0.011	0.000	0.017	0.012	0.000	0.000	0.015	0.000	0.000	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
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
Jun-91	0.000	0.007	0.032	0.000	0.100	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
Jun-92	0.000	0.000	0.069	0.037	0.068	0.030	0.101	0.000	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	0.057	0.000	0.045	0.107	0.081	0.000	0.000	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	0.044	0.076	0.025	0.060	0.051	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
Jun-95	0.000	0.577	0.107	0.128	0.091	0.000	0.000	0.000	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	0.098	0.633	0.088	0.000	0.000	0.000	0.000	0.109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-97	0.130	0.986	0.953	0.000	0.606	0.000	0.000	0.000	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	0.138	0.033	0.000	0.047	0.000	0.000	0.000	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	0.114	0.421	0.539	0.078	0.000	0.000	0.000	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	0.145	0.094	0.037	0.000	0.000	0.050	0.060	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-01	0.000	0.160	0.180	0.135	0.000	0.112	0.000	0.101	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-02	0.000	0.035	0.153	0.118	0.069	0.000	0.000	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-03	0.000	0.016	0.053	0.000	0.000	0.000	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-04	0.000	0.098	0.045	0.189	0.083	0.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-05	0.000	0.000	0.477	0.000	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-06	0.000	0.029	0.034	0.338	0.076	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-07	0.000	0.276	0.177	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
Jun-08	0.000	0.255	0.225	0.248	0.000	0.113	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-09	0.000	0.000	0.000	0.335	0.000	0.000	0.000	0.000	0.000	0.000	0.073	0.000								
Jun-10	0.000	0.095	0.245	0.000	0.000	0.000	0.000	0.000	0.132	0.000	0.000									
Jun-11	0.000	0.079	0.000	0.059	0.039	0.000	0.000	0.000	0.000	0.000										
Jun-12	0.000	0.115	0.000	0.134	0.000	0.000	0.042	0.000	0.000											
Jun-13	0.000	0.154	0.000	0.216	0.000	0.000	0.000	0.000												
Jun-14	0.000	0.000	0.000	0.084	0.172	0.000	0.000													
Jun-15	0.000	0.000	0.000	0.000	0.000	0.132														
Jun-16	0.000	0.000	0.000	0.039	0.000															
Jun-17	0.000	0.000	0.000	0.000																
Jun-18	0.000	0.000	0.164																	
Jun-19	0.000	0.000																		
Jun-20	0.000																			

Acc Yr Ending	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	420-432	432-444	444-456	456-468
All Prior Yrs	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	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	
Jun-84	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	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	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Jun-87	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-88	0.000	0.000	0.000	0.022	0.022	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
Jun-89	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000									
Jun-92	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	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												
Jun-95	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.000	0.000	0.000	0.000														
Jun-97	0.000	0.000	0.000	0.000															
Jun-98	0.000	0.000	0.000																
Jun-99	0.000	0.000																	
Jun-00	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
Simple Avg																				
All Yrs (ex P)	0.004	0.094	0.117	0.083	0.048	0.024	0.010	0.009	0.011	0.001	0.007	0.001	0.002	0.003	0.001	0.000	0.000	0.000	0.001	0.000
Latest 5	0.000	0.000	0.033	0.068	0.034	0.026	0.008	0.000	0.026	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Latest 3	0.000	0.000	0.055	0.013	0.057	0.044	0.014	0.000	0.044	0.000	0.024	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	0.071	0.095	0.072	0.032	0.021	0.008	0.006	0.007	0.001	0.005	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Latest 10	0.000	0.036	0.020	0.098	0.005	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
Latest 5	0.000	0.000	0.000	0.041	0.000	0.000	0.000	0.000	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*	*0.054*	*0.060*	*0.086*	*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*
Selected	NA	0.054	0.058	0.083	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
FacToUlt	NA	0.300	0.246	0.188	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

Averages	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	420-432	432-444	444-456	456-468
Simple Avg																			
All Yrs (ex P)	0.000	0.004	0.000	0.001	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	
Latest 5	0.000	0.000	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	0.000	0.000	0.000	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	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.000	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	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-83	0	0	0	0	0	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Jun-84	0	0	0	0	25,750	25,750	25,750	62,437	87,437	87,437	122,937	139,937	139,937
Jun-85	0	0	0	0	0	0	0	0	0	0	5,000	5,000	5,000
Jun-86	0	0	0	0	0	0	23,000	38,000	48,995	58,995	58,995	58,995	58,995
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
Jun-88	0	0	0	0	10,482	16,982	37,982	83,982	112,982	112,982	157,982	190,482	190,482
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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
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
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
Jun-09	0	0	0	133,501	133,501	133,501	133,501	133,501	133,501	133,501	162,501	162,501	
Jun-10	0	36,000	129,000	129,000	129,000	129,000	129,000	129,000	179,000	179,000	179,000		
Jun-11	0	50,000	50,000	87,500	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	240,500	240,500	240,500				
Jun-13	0	50,000	50,000	120,000	120,000	120,000	120,000	120,000					
Jun-14	0	0	0	49,250	149,250	149,250	149,250						
Jun-15	0	0	0	0	0	60,000							
Jun-16	0	0	0	24,500	24,500								
Jun-17	0	0	0	0									
Jun-18	0	0	60,170										
Jun-19	0	0											
Jun-20	0												

Acc Yr Ending	168	180	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	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	86,500	86,500	86,500	86,500
Jun-83	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	35,000	35,000	
Jun-84	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	223,937	223,937	223,937	223,937		
Jun-85	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	15,000	15,000	15,000	15,000			
Jun-86	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	96,495	96,495	96,495				
Jun-87	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	307,918	307,918	307,918					
Jun-88	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	404,482	404,482	404,482	404,482						
Jun-89	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	378,250	378,250	378,250							
Jun-90	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	413,250	413,250								
Jun-91	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	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	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	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	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	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	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800															
Jun-98	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500	100,500																
Jun-99	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750	341,750																	
Jun-00	198,417	198,417	198,417	198,417	198,417	198,417	198,417	198,417																		
Jun-01	306,047	306,047	306,047	306,047	306,047	306,047	306,047																			
Jun-02	95,499	95,499	95,499	95,499	95,499	95,499																				
Jun-03	101,416	101,416	101,416	101,416	101,416																					
Jun-04	327,000	327,000	327,000	327,000																						
Jun-05	67,000	67,000	67,000																							
Jun-06	280,500	280,500																								
Jun-07	130,000																									

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
All Prior Yrs													
Jun-83						1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.750
Jun-84					1.000	1.000	2.425	1.400	1.000	1.406	1.138	1.000	1.000
Jun-85											1.000	1.000	1.000
Jun-86							1.652	1.289	1.204	1.000	1.000	1.000	1.636
Jun-87			1.000	1.000	6.166	1.175	1.083	1.000	1.459	1.403	1.192	1.706	1.132
Jun-88					1.620	2.237	2.211	1.345	1.000	1.398	1.206	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
Jun-90			2.053	1.031	1.721	1.296	1.225	1.281	1.146	1.000	1.025	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
Jun-92			1.544	1.642	1.173	1.492	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
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
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
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
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
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
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
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
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
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
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
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
Jun-05			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
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
Jun-08		1.882	1.516	1.000	1.155	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	1.217	1.000		
Jun-10		3.583	1.000	1.000	1.000	1.000	1.000	1.388	1.000	1.000			
Jun-11		1.000	1.750	1.286	1.000	1.000	1.000	1.000	1.000				
Jun-12		1.000	2.163	1.000	1.000	1.170	1.000	1.000					
Jun-13		1.000	2.400	1.000	1.000	1.000	1.000						
Jun-14				3.030	1.000	1.000							
Jun-15													
Jun-16				1.000									
Jun-17													
Jun-18													
Jun-19													

Acc Yr Ending	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	420-432	432-444	444-456	456-468	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	1.000	1.000	1.000	1.000	
Jun-83	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.600	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	1.000	1.000			
Jun-85	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	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					
Jun-87	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.210	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	1.000	1.000	1.000	1.000							
Jun-89	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	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	1.000	1.000	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	1.000	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95	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	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																
Jun-98	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																	
Jun-99	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000																		
Jun-00	1.000	1.000	1.000	1.000	1.000	1.000	1.000																			
Jun-01	1.000	1.000	1.000	1.000	1.000	1.000																				
Jun-02	1.000	1.000	1.000	1.000	1.000																					
Jun-03	1.000	1.000	1.000	1.000																						
Jun-04	1.000	1.000	1.000																							
Jun-05	1.000	1.000																								
Jun-06	1.000																									

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
Simple Avg													
All Yrs (ex P)	22.252	2.642	1.822	1.312	1.280	1.127	1.142	1.066	1.029	1.078	1.021	1.030	1.061
Latest 5		1.000	2.400	1.508	1.000	1.034	1.000	1.078	1.000	1.043	1.000	1.000	1.000
Latest 3		1.000	1.000	2.015	1.000	1.057	1.000	1.129	1.000	1.072	1.000	1.000	1.000
Volume Wtd													
All Yrs (ex P)		2.151	1.563	1.186	1.120	1.078	1.051	1.042	1.016	1.052	1.015	1.024	1.017
Latest 5		1.000	3.875	1.250	1.102	1.049	1.000	1.043	1.000	1.023	1.000	1.000	1.000
Latest 3		1.000	1.000	2.356	1.223	1.074	1.000	1.104	1.000	1.033	1.000	1.000	1.000
Dev Factor Selection													
Prior	1.000	2.102	1.822	1.187	1.130	1.043	1.010	1.010	1.010	1.010	1.010	1.010	1.010
Selected	1.000	2.102	1.822	1.186	1.130	1.043	1.010	1.010	1.010	1.010	1.010	1.010	1.010
FacToUlt	5.740	5.740	2.731	1.499	1.264	1.118	1.072	1.062	1.051	1.041	1.030	1.020	1.010
Percent of Ult	17.4%	17.4%	36.6%	66.7%	79.1%	89.4%	93.3%	94.2%	95.1%	96.1%	97.1%	98.0%	99.0%

Averages	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	420-432	432-444	444-456	456-468	To Ult
Simple Avg																										
All Yrs (ex P)	1.009	1.000	1.000	1.000	1.100	1.000	1.000	1.035	1.000	1.017	1.014	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		
Latest 5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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)	1.008	1.000	1.000	1.000	1.002	1.000	1.000	1.021	1.000	1.016	1.017	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		
Latest 5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	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%	100.0%	100.0%	100.0%	100.0%

University of Massachusetts (Medical Center) - Cluster 4

Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
456	100.0%	0.0%	0.0%	0.0%	0.0%	0.981	0.971
444	100.0%	0.0%	0.0%	0.0%	0.0%	0.943	0.916
432	100.0%	0.0%	0.0%	0.0%	0.0%	0.907	0.864
420	100.0%	0.0%	0.0%	0.0%	0.0%	0.872	0.816
408	100.0%	0.0%	0.0%	0.0%	0.0%	0.838	0.769
396	100.0%	0.0%	0.0%	0.0%	0.0%	0.806	0.726
384	100.0%	0.0%	0.0%	0.0%	0.0%	0.775	0.685
372	100.0%	0.0%	0.0%	0.0%	0.0%	0.745	0.646
360	100.0%	0.0%	0.0%	0.0%	0.0%	0.717	0.609
348	100.0%	0.0%	0.0%	0.0%	0.0%	0.689	0.575
336	100.0%	0.0%	0.0%	0.0%	0.0%	0.662	0.542
324	99.9%	0.4%	0.1%	0.2%	0.1%	0.767	0.686
312	99.5%	0.5%	0.5%	0.2%	0.1%	0.949	0.929
300	99.0%	0.6%	1.0%	0.2%	0.1%	0.947	0.925
288	98.4%	0.4%	1.6%	0.1%	0.1%	0.936	0.908
276	98.0%	0.4%	2.0%	0.2%	0.1%	0.915	0.878
264	97.7%	0.2%	2.3%	0.1%	0.1%	0.896	0.851
252	97.5%	0.4%	2.5%	0.2%	0.1%	0.870	0.816
240	97.1%	0.4%	2.9%	0.2%	0.1%	0.856	0.796
228	96.7%	0.4%	3.3%	0.2%	0.1%	0.842	0.777
216	96.3%	0.4%	3.7%	0.2%	0.1%	0.827	0.758
204	95.9%	0.4%	4.1%	0.2%	0.1%	0.813	0.740
192	95.6%	0.8%	4.4%	0.4%	0.3%	0.799	0.721
180	94.8%	0.8%	5.2%	0.4%	0.3%	0.799	0.723
168	94.0%	0.9%	6.0%	0.5%	0.4%	0.796	0.719
156	93.2%	0.3%	6.8%	0.2%	0.2%	0.792	0.715
144	92.8%	0.5%	7.2%	0.3%	0.3%	0.772	0.689
132	92.3%	0.7%	7.7%	0.5%	0.4%	0.758	0.671
120	91.6%	1.1%	8.4%	0.7%	0.6%	0.751	0.662
108	90.5%	2.0%	9.5%	1.4%	1.2%	0.751	0.664
96	88.6%	1.4%	11.4%	1.0%	0.9%	0.767	0.686
84	87.2%	1.8%	12.8%	1.4%	1.2%	0.764	0.682
72	85.4%	4.1%	14.6%	3.3%	3.0%	0.764	0.683
60	81.3%	9.1%	18.7%	7.6%	7.0%	0.789	0.717
48	72.2%	12.3%	27.8%	10.7%	10.0%	0.831	0.772
36	60.0%	18.1%	40.0%	16.4%	15.7%	0.855	0.803
24	41.8%	22.0%	58.2%	20.8%	20.2%	0.871	0.824
12	19.8%	19.8%	80.2%	19.4%	19.2%	0.877	0.831
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, 2020

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	1,444	7,219	0.943	1,361	6,807
6/30/84-85	853	4,264	0.907	773	3,866
6/30/85-86	1,059	1,059	0.872	924	924
6/30/86-87	981	16,900	0.838	823	14,166
6/30/87-88	1,123	15,129	0.806	905	12,194
6/30/88-89	2,624	13,118	0.775	2,033	10,166
6/30/89-90	3,244	16,218	0.745	2,417	12,085
6/30/90-91	1,102	5,509	0.717	789	3,947
6/30/91-92	1,518	7,592	0.689	1,046	5,230
6/30/92-93	638	3,191	0.662	423	2,114
6/30/93-94	1,285	49,018	0.767	986	37,609
6/30/94-95	521	2,606	0.949	494	2,472
6/30/95-96	4,917	9,834	0.947	4,656	9,313
6/30/96-97	4,224	8,448	0.936	3,954	7,907
6/30/97-98	5,457	10,915	0.915	4,993	9,987
6/30/98-99	6,316	12,632	0.896	5,657	11,314
6/30/99-00	6,876	13,752	0.870	5,984	11,969
6/30/00-01	7,380	14,759	0.856	6,318	12,636
6/30/01-02	3,417	6,834	0.842	2,876	5,752
6/30/02-03	35,012	38,012	0.827	28,965	31,447
6/30/03-04	25,029	27,029	0.813	20,348	21,974
6/30/04-05	5,898	13,898	0.799	4,711	11,102
6/30/05-06	19,177	27,177	0.799	15,328	21,722
6/30/06-07	15,302	23,302	0.796	12,175	18,541
6/30/07-08	31,965	48,965	0.792	25,326	38,795
6/30/08-09	30,540	33,540	0.772	23,588	25,905
6/30/09-10	32,130	39,130	0.758	24,352	29,657
6/30/10-11	43,906	56,906	0.751	32,958	42,716
6/30/11-12	52,870	86,870	0.751	39,723	65,269
6/30/12-13	42,301	59,301	0.767	32,433	45,468
6/30/13-14	66,685	83,685	0.764	50,924	63,906
6/30/14-15	75,319	81,719	0.764	57,538	62,427
6/30/15-16	110,721	136,721	0.789	87,349	107,861
6/30/16-17	72,704	150,704	0.831	60,411	125,223
6/30/17-18	233,805	290,805	0.855	199,801	248,512
6/30/18-19	307,536	371,836	0.871	267,934	323,953
6/30/19-20	335,247	491,247	0.877	293,994	430,797
Total	1,591,128	2,287,505		1,325,272	1,903,240
			(7) Total Discount Factor:	0.833	0.832

	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, 2020

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	1,444	7,219	0.916	1,323	6,615
6/30/84-85	853	4,264	0.864	737	3,686
6/30/85-86	1,059	1,059	0.816	864	864
6/30/86-87	981	16,900	0.769	755	13,002
6/30/87-88	1,123	15,129	0.726	815	10,981
6/30/88-89	2,624	13,118	0.685	1,796	8,982
6/30/89-90	3,244	16,218	0.646	2,095	10,476
6/30/90-91	1,102	5,509	0.609	671	3,357
6/30/91-92	1,518	7,592	0.575	873	4,364
6/30/92-93	638	3,191	0.542	346	1,731
6/30/93-94	1,285	49,018	0.686	881	33,623
6/30/94-95	521	2,606	0.929	484	2,420
6/30/95-96	4,917	9,834	0.925	4,546	9,092
6/30/96-97	4,224	8,448	0.908	3,836	7,673
6/30/97-98	5,457	10,915	0.878	4,792	9,584
6/30/98-99	6,316	12,632	0.851	5,374	10,749
6/30/99-00	6,876	13,752	0.816	5,608	11,216
6/30/00-01	7,380	14,759	0.796	5,878	11,756
6/30/01-02	3,417	6,834	0.777	2,656	5,312
6/30/02-03	35,012	38,012	0.758	26,547	28,822
6/30/03-04	25,029	27,029	0.740	18,510	19,989
6/30/04-05	5,898	13,898	0.721	4,254	10,023
6/30/05-06	19,177	27,177	0.723	13,866	19,650
6/30/06-07	15,302	23,302	0.719	11,004	16,757
6/30/07-08	31,965	48,965	0.715	22,869	35,031
6/30/08-09	30,540	33,540	0.689	21,048	23,116
6/30/09-10	32,130	39,130	0.671	21,553	26,248
6/30/10-11	43,906	56,906	0.662	29,076	37,685
6/30/11-12	52,870	86,870	0.664	35,123	57,711
6/30/12-13	42,301	59,301	0.686	29,012	40,671
6/30/13-14	66,685	83,685	0.682	45,494	57,092
6/30/14-15	75,319	81,719	0.683	51,446	55,817
6/30/15-16	110,721	136,721	0.717	79,344	97,976
6/30/16-17	72,704	150,704	0.772	56,147	116,383
6/30/17-18	233,805	290,805	0.803	187,714	233,478
6/30/18-19	307,536	371,836	0.824	253,437	306,426
6/30/19-20	335,247	491,247	0.831	278,480	408,064
Total	1,591,128	2,287,505		1,229,257	1,763,862
			(7) Total Discount Factor:	0.773	0.771

	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, 2020

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

Calculation of Fiscal Year 7/01/20 - 21 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/20 - 06/30/21	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/20 - 06/30/21		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	328,340	335,999	327,566	774	8,433	98.6%	0.5%	36.1%	279	3,042	36.1%	36.1%
6/30/83-84	1,496,283	1,502,058	1,494,800	1,483	7,258	99.7%	0.1%	17.2%	254	1,245	17.2%	17.2%
6/30/84-85	1,016,598	1,020,009	1,015,470	1,128	4,539	99.7%	0.1%	18.0%	203	816	18.0%	18.0%
6/30/85-86	2,735,000	2,735,000	2,733,296	1,704	1,704	99.9%	0.1%	80.2%	1,368	1,368	80.2%	80.2%
6/30/86-87	3,779,000	3,794,919	3,777,375	1,625	17,544	99.7%	0.1%	19.8%	321	3,466	19.8%	19.8%
6/30/87-88	3,375,000	3,389,006	3,373,806	1,194	15,200	99.8%	0.1%	20.6%	246	3,136	20.6%	20.6%
6/30/88-89	3,115,270	3,125,764	3,112,432	2,838	13,332	99.7%	0.1%	19.3%	548	2,573	19.3%	19.3%
6/30/89-90	3,800,827	3,813,801	3,797,545	3,282	16,256	99.7%	0.1%	19.5%	639	3,168	19.5%	19.5%
6/30/90-91	1,404,925	1,409,332	1,403,520	1,405	5,812	99.7%	0.1%	19.5%	274	1,133	19.5%	19.5%
6/30/91-92	2,189,822	2,195,896	2,187,492	2,330	8,404	99.8%	0.1%	20.4%	476	1,717	20.4%	20.4%
6/30/92-93	1,035,977	1,044,458	1,033,363	2,614	11,095	99.3%	0.3%	37.9%	992	4,209	37.9%	37.9%
6/30/93-94	2,673,000	2,734,324	2,671,099	1,901	63,226	98.8%	0.3%	20.8%	395	13,124	20.8%	20.8%
6/30/94-95	943,906	952,133	941,284	2,622	10,849	99.3%	0.3%	35.2%	923	3,817	35.2%	35.2%
6/30/95-96	881,507	892,217	874,675	6,832	17,542	98.6%	0.5%	36.4%	2,486	6,383	36.4%	36.4%
6/30/96-97	624,614	632,798	620,228	4,386	12,570	98.7%	0.5%	37.1%	1,626	4,661	37.1%	37.1%
6/30/97-98	1,050,184	1,064,602	1,043,830	6,355	20,772	98.7%	0.5%	39.0%	2,477	8,097	39.0%	39.0%
6/30/98-99	947,917	954,233	940,822	7,094	13,410	98.9%	0.5%	46.4%	3,291	6,220	46.4%	46.4%
6/30/99-00	880,459	887,335	872,750	7,710	14,585	98.7%	0.5%	39.6%	3,057	5,782	39.6%	39.6%
6/30/00-01	951,353	958,733	943,388	7,965	15,345	98.8%	0.6%	49.2%	3,916	7,544	49.2%	49.2%
6/30/01-02	578,126	586,203	574,105	4,020	12,097	98.6%	0.6%	43.3%	1,743	5,243	43.3%	43.3%
6/30/02-03	1,376,000	1,383,700	1,340,099	35,901	43,601	97.1%	1.3%	43.4%	15,578	18,919	43.4%	43.4%
6/30/03-04	1,287,000	1,291,990	1,259,443	27,557	32,547	97.7%	1.2%	51.5%	14,189	16,759	51.5%	51.5%
6/30/04-05	376,000	393,500	367,518	8,482	25,982	95.5%	2.0%	44.7%	3,788	11,602	44.7%	44.7%
6/30/05-06	1,192,000	1,223,900	1,167,711	24,289	56,189	96.7%	2.0%	60.0%	14,583	33,735	60.0%	60.0%
6/30/06-07	626,000	634,000	605,124	20,876	28,876	96.1%	2.0%	50.7%	10,574	14,626	50.7%	50.7%
6/30/07-08	1,731,000	1,782,350	1,693,364	37,636	88,986	96.4%	2.0%	55.5%	20,886	49,381	55.5%	55.5%
6/30/08-09	1,004,000	1,035,350	966,581	37,419	68,769	94.8%	2.0%	38.4%	14,373	26,414	38.4%	38.4%
6/30/09-10	865,000	888,200	824,915	40,085	63,285	94.1%	2.0%	33.9%	13,597	21,467	33.9%	33.9%
6/30/10-11	1,079,000	1,112,150	1,025,472	53,528	86,678	93.6%	2.0%	31.3%	16,731	27,092	31.3%	31.3%
6/30/11-12	1,360,000	1,413,050	1,291,186	68,814	121,864	93.1%	2.0%	29.1%	20,015	35,446	29.1%	29.1%
6/30/12-13	742,000	774,700	680,762	61,238	93,938	89.8%	2.0%	19.5%	11,971	18,363	19.5%	19.5%
6/30/13-14	1,189,000	1,250,250	1,100,222	88,778	150,028	90.2%	2.0%	20.4%	18,136	30,649	20.4%	20.4%
6/30/14-15	686,000	711,000	594,765	91,235	116,235	85.1%	5.0%	33.7%	30,717	39,133	33.7%	33.7%
6/30/15-16	942,000	987,250	801,687	140,313	185,563	83.1%	5.0%	29.6%	41,534	54,928	29.6%	29.6%
6/30/16-17	467,000	563,100	361,053	105,947	202,047	70.1%	5.0%	16.7%	17,717	33,788	16.7%	16.7%
6/30/17-18	719,000	802,000	443,458	275,542	358,542	58.3%	10.0%	24.0%	66,095	86,005	24.0%	24.0%
6/30/18-19	734,700	833,650	365,246	369,454	468,404	46.6%	10.0%	18.7%	69,156	87,679	18.7%	18.7%
6/30/19-20	604,000	831,100	142,125	461,875	688,975	19.8%	10.0%	12.5%	57,595	85,915	12.5%	12.5%
Total	52,243,618	53,395,869	50,225,388	2,018,231	3,170,482				482,747	778,645	23.9%	24.6%

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, 2020

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	21,231		22,000	22,000	774	774		
6/30/83-84		50,961	50,972		51,000	51,000	39	39		
6/30/84-85	116,303	162,725	162,760	162,774	163,000	163,000	275	275	0.140	0.140
6/30/85-86	123,981	215,355	215,401	215,418	216,000	216,000	645	645	0.174	0.174
6/30/86-87	139,388	397,356	397,442	397,471	398,000	398,000	644	644	0.286	0.286
6/30/87-88	159,499	347,929	348,003	348,025	348,000	348,000	71	71	0.218	0.218
6/30/88-89	180,644	488,786	488,891	488,921	489,000	489,000	214	214	0.271	0.271
6/30/89-90	142,494	553,962	554,081	554,134	554,000	554,000	38	38	0.389	0.389
6/30/90-91	143,694	301,697	301,762	301,761	302,000	302,000	303	303	0.210	0.210
6/30/91-92	155,170	669,188	669,331	669,329	670,000	670,000	812	812	0.432	0.432
6/30/92-93	163,283	395,196	395,281	395,279	397,172	403,100	1,976	7,904	0.243	0.247
6/30/93-94	177,184	710,383	710,535	710,530	711,000	724,591	617	14,208	0.401	0.409
6/30/94-95	188,391	420,157	420,247	420,244	422,258	428,400	2,101	8,243	0.224	0.227
6/30/95-96	201,751	382,952	383,034	383,031	384,867	390,660	1,915	7,708	0.191	0.194
6/30/96-97	231,872	197,838	197,880	197,879	198,000	201,960	162	4,122	0.085	0.087
6/30/97-98	232,237	498,103	498,209	498,203	499,000	507,960	897	9,857	0.215	0.219
6/30/98-99	232,075	309,222	309,597	309,579	310,000	310,000	778	778	0.134	0.134
6/30/99-00	211,819	185,166	185,577	185,564	186,000	186,000	834	834	0.088	0.088
6/30/00-01	215,099	205,415	206,076	206,053	206,000	206,000	585	585	0.096	0.096
6/30/01-02	227,797	232,397	233,378	233,340	233,000	237,660	603	5,263	0.102	0.104
6/30/02-03	242,008	234,111	235,334	235,294	235,000	239,700	889	5,589	0.097	0.099
6/30/03-04	276,758	296,472	298,724	298,638	299,000	301,990	2,528	5,518	0.108	0.109
6/30/04-05	260,378	166,416	169,419	169,536	169,000	178,500	2,584	12,084	0.065	0.069
6/30/05-06	317,741	388,888	397,730	393,679	394,000	417,900	5,112	29,012	0.124	0.132
6/30/06-07	325,922	236,426	242,044	241,557	242,000	242,000	5,574	5,574	0.074	0.074
6/30/07-08	354,130	513,329	526,505	519,340	519,000	553,350	5,671	40,021	0.147	0.156
6/30/08-09	362,309	434,121	446,776	441,119	441,000	469,350	6,879	35,229	0.122	0.130
6/30/09-10	383,298	295,045	304,492	303,370	303,000	319,200	7,955	24,155	0.079	0.083
6/30/10-11	394,924	330,378	342,662	340,288	340,000	360,150	9,622	29,772	0.086	0.091
6/30/11-12	381,943	302,056	321,421	318,164	318,000	337,050	15,944	34,994	0.083	0.088
6/30/12-13	384,763	274,064	294,313	292,595	293,000	308,700	18,936	34,636	0.076	0.080
6/30/13-14	364,582	442,906	485,337	465,218	465,000	509,250	22,094	66,344	0.128	0.140
6/30/14-15	370,543	146,083	162,348	172,069	162,000	180,600	15,917	34,517	0.044	0.049
6/30/15-16	382,602	271,408	305,469	301,271	301,000	320,250	29,592	48,842	0.079	0.084
6/30/16-17	395,324	202,758	235,962	241,698	236,000	254,100	33,242	51,342	0.060	0.064
6/30/17-18	398,722	163,263	204,624	219,679	205,000	231,000	41,737	67,737	0.051	0.058
6/30/18-19	410,826	148,083	210,168	233,035	210,000	244,650	61,917	96,567	0.051	0.060
6/30/19-20	424,565	77,372	203,585	261,619	204,000	275,100	126,628	197,728	0.048	0.065
Total	9,674,021	11,795,593	12,136,600	12,125,707	12,222,697	12,678,571	427,103	882,977		
Tot 6/30/84-20	9,674,021	11,597,006	12,064,397	12,125,707	12,023,297	12,479,171	426,290	882,164	0.124	0.129

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, 2020

University of Massachusetts (Medical Center) - Cluster 4
Medical

Paid Loss Development Method

(1) Accident Year	(2) Payroll (000's)	(3) Paid Loss	(4) Paid LDF	(5) Adjustment for Tail	(6) Ultimate Loss Excluding Lump Sum	(7) Est Ult Lump Sum Payments	(8) Ultimate Loss Including Lump Sum	(9) Ultimate Loss Cost	(10) Paid Counts 7/1/18-19	(11) Paid Counts 7/1/19-20	(12) Average Outstanding Claim
All Prior Yrs		126,400							0	0	
6/30/82-83		21,226	1.000	1.000	21,231	N/A	21,231		0	0	
6/30/83-84		50,961	1.000	1.000	50,972	N/A	50,972		0	0	
6/30/84-85	116,303	162,725	1.000	1.000	162,760	N/A	162,760	0.140	0	0	
6/30/85-86	123,981	215,355	1.000	1.000	215,401	N/A	215,401	0.174	0	0	
6/30/86-87	139,388	397,356	1.000	1.000	397,442	N/A	397,442	0.285	0	0	
6/30/87-88	159,499	347,929	1.000	1.000	348,003	N/A	348,003	0.218	0	0	
6/30/88-89	180,644	488,786	1.000	1.000	488,891	N/A	488,891	0.271	0	0	
6/30/89-90	142,494	553,962	1.000	1.000	554,081	N/A	554,081	0.389	0	0	
6/30/90-91	143,694	301,697	1.000	1.000	301,762	N/A	301,762	0.210	0	0	
6/30/91-92	155,170	669,188	1.000	1.000	669,331	N/A	669,331	0.431	0	0	
6/30/92-93	163,283	395,196	1.000	1.000	395,281	N/A	395,281	0.242	0	0	
6/30/93-94	177,184	710,383	1.000	1.000	710,535	N/A	710,535	0.401	1	1	152
6/30/94-95	188,391	420,157	1.000	1.000	420,247	N/A	420,247	0.223	1	1	90
6/30/95-96	201,751	382,952	1.000	1.000	383,034	N/A	383,034	0.190	0	0	
6/30/96-97	231,872	197,838	1.000	1.000	197,880	N/A	197,880	0.085	1	1	42
6/30/97-98	232,237	498,103	1.000	1.000	498,209	N/A	498,209	0.215	1	0	
6/30/98-99	232,075	309,222	1.001	1.000	309,597	N/A	309,597	0.133	0	0	
6/30/99-00	211,819	185,166	1.002	1.000	185,577	N/A	185,577	0.088	0	0	
6/30/00-01	215,099	205,415	1.003	1.000	206,076	N/A	206,076	0.096	0	0	
6/30/01-02	227,797	232,397	1.004	1.000	233,378	N/A	233,378	0.102	1	1	981
6/30/02-03	242,008	234,111	1.005	1.000	235,334	N/A	235,334	0.097	1	0	
6/30/03-04	276,758	296,472	1.008	1.000	298,724	N/A	298,724	0.108	0	0	
6/30/04-05	260,378	166,416	1.018	1.000	169,419	N/A	169,419	0.065	1	1	3,003
6/30/05-06	317,741	388,888	1.023	1.000	397,730	N/A	397,730	0.125	2	1	8,842
6/30/06-07	325,922	236,426	1.024	1.000	242,044	N/A	242,044	0.074	0	0	
6/30/07-08	354,130	513,329	1.026	1.000	526,505	N/A	526,505	0.149	1	1	13,175
6/30/08-09	362,309	434,121	1.029	1.000	446,776	N/A	446,776	0.123	2	1	12,655
6/30/09-10	383,298	295,045	1.032	1.000	304,492	N/A	304,492	0.079	1	1	9,448
6/30/10-11	394,924	330,378	1.037	1.000	342,662	N/A	342,662	0.087	0	0	
6/30/11-12	381,943	302,056	1.064	1.000	321,421	N/A	321,421	0.084	1	1	19,365
6/30/12-13	384,763	274,064	1.074	1.000	294,313	N/A	294,313	0.076	1	1	20,250
6/30/13-14	364,582	442,906	1.096	1.000	485,337	N/A	485,337	0.133	1	2	21,215
6/30/14-15	370,543	146,083	1.111	1.000	162,348	N/A	162,348	0.044	2	2	8,132
6/30/15-16	382,602	271,408	1.125	1.000	305,469	N/A	305,469	0.080	2	0	
6/30/16-17	395,324	202,758	1.164	1.000	235,962	N/A	235,962	0.060	10	2	16,602
6/30/17-18	398,722	163,263	1.253	1.000	204,624	N/A	204,624	0.051	51	6	6,893
6/30/18-19	410,826	148,083	1.419	1.000	210,168	N/A	210,168	0.051	67	49	1,267
6/30/19-20	424,565	77,372	2.631	1.000	203,585	N/A	203,585	0.048		90	1,402
Total	9,674,021	11,795,593			12,136,600		12,136,600		148	162	

NOTES:
(2) Provided by Commonwealth of Massachusetts
(3), (4) From Section 6, Exhibit 2, Page 7
(5) Based on information from the MA WCRIB 10/1/18 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
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University of Massachusetts (Medical Center) - Cluster 4
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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	1.000	162,774	N/A	162,774	0.140	0.140
6/30/85-86	123,981	0.239	215,355	1.000	215,418	N/A	215,418	0.174	0.174
6/30/86-87	139,388	0.383	397,356	1.000	397,471	N/A	397,471	0.285	0.285
6/30/87-88	159,499	0.281	347,929	1.000	348,025	N/A	348,025	0.218	0.218
6/30/88-89	180,644	0.349	488,786	1.000	488,921	N/A	488,921	0.271	0.271
6/30/89-90	142,494	0.565	553,962	1.000	554,134	N/A	554,134	0.389	0.389
6/30/90-91	143,694	0.208	301,697	1.000	301,761	N/A	301,761	0.210	0.210
6/30/91-92	155,170	0.424	669,188	1.000	669,329	N/A	669,329	0.431	0.431
6/30/92-93	163,283	0.237	395,196	1.000	395,279	N/A	395,279	0.242	0.242
6/30/93-94	177,184	0.387	710,383	1.000	710,530	N/A	710,530	0.401	0.401
6/30/94-95	188,391	0.215	420,157	1.000	420,244	N/A	420,244	0.223	0.223
6/30/95-96	201,751	0.182	382,952	1.000	383,031	N/A	383,031	0.190	0.190
6/30/96-97	231,872	0.084	197,838	1.000	197,879	N/A	197,879	0.085	0.085
6/30/97-98	232,237	0.202	498,103	1.000	498,203	N/A	498,203	0.215	0.215
6/30/98-99	232,075	0.127	309,222	1.001	309,579	N/A	309,579	0.133	0.133
6/30/99-00	211,819	0.085	185,166	1.002	185,564	N/A	185,564	0.088	0.088
6/30/00-01	215,099	0.093	205,415	1.003	206,053	N/A	206,053	0.096	0.096
6/30/01-02	227,797	0.099	232,397	1.004	233,340	N/A	233,340	0.102	0.102
6/30/02-03	242,008	0.094	234,111	1.005	235,294	N/A	235,294	0.097	0.097
6/30/03-04	276,758	0.104	296,472	1.008	298,638	N/A	298,638	0.108	0.108
6/30/04-05	260,378	0.068	166,416	1.018	169,536	N/A	169,536	0.065	0.065
6/30/05-06	317,741	0.068	388,888	1.023	393,679	N/A	393,679	0.124	0.124
6/30/06-07	325,922	0.068	236,426	1.024	241,557	N/A	241,557	0.074	0.074
6/30/07-08	354,130	0.068	513,329	1.026	519,340	N/A	519,340	0.147	0.147
6/30/08-09	362,309	0.068	434,121	1.029	441,119	N/A	441,119	0.122	0.122
6/30/09-10	383,298	0.070	295,045	1.032	303,370	N/A	303,370	0.079	0.079
6/30/10-11	394,924	0.070	330,378	1.037	340,288	N/A	340,288	0.086	0.086
6/30/11-12	381,943	0.070	302,056	1.064	318,164	N/A	318,164	0.083	0.083
6/30/12-13	384,763	0.070	274,064	1.074	292,595	N/A	292,595	0.076	0.076
6/30/13-14	364,582	0.070	442,906	1.096	465,218	N/A	465,218	0.128	0.128
6/30/14-15	370,543	0.070	146,083	1.111	172,069	N/A	172,069	0.046	0.046
6/30/15-16	382,602	0.070	271,408	1.125	301,271	N/A	301,271	0.079	0.079
6/30/16-17	395,324	0.070	202,758	1.164	241,698	N/A	241,698	0.061	0.061
6/30/17-18	398,722	0.070	163,263	1.253	219,679	N/A	219,679	0.055	0.055
6/30/18-19	410,826	0.070	148,083	1.419	233,035	N/A	233,035	0.057	0.057
6/30/19-20	424,565	0.070	77,372	2.631	261,619	N/A	261,619	0.062	0.062
Total	9,674,021		11,597,006		12,125,707		12,125,707		

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
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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	301,762	0.210	1.194	0.251	1.000	0.251	0.059	0.209	0.208
6/30/91-92	155,170	669,331	0.431	1.189	0.513	1.000	0.513	0.059	0.424	0.424
6/30/92-93	163,283	395,281	0.242	1.189	0.288	1.000	0.288	0.059	0.237	0.237
6/30/93-94	177,184	710,535	0.401	1.178	0.473	1.000	0.473	0.059	0.388	0.387
6/30/94-95	188,391	420,247	0.223	1.170	0.261	1.000	0.261	0.060	0.216	0.215
6/30/95-96	201,751	383,034	0.190	1.155	0.219	1.000	0.219	0.061	0.183	0.182
6/30/96-97	231,872	197,880	0.085	1.137	0.097	1.000	0.097	0.062	0.085	0.084
6/30/97-98	232,237	498,209	0.215	1.135	0.243	1.000	0.243	0.062	0.204	0.202
6/30/98-99	232,075	309,597	0.133	1.135	0.151	1.000	0.151	0.062	0.129	0.127
6/30/99-00	211,819	185,577	0.088	1.135	0.099	1.000	0.099	0.062	0.087	0.085
6/30/00-01	215,099	206,076	0.096	1.109	0.106	1.000	0.106	0.063	0.094	0.093
6/30/01-02	227,797	233,378	0.102	1.101	0.113	1.000	0.113	0.064	0.100	0.099
6/30/02-03	242,008	235,334	0.097	1.073	0.104	1.000	0.104	0.065	0.096	0.094
6/30/03-04	276,758	298,724	0.108	1.046	0.113	1.000	0.113	0.067	0.107	0.104
6/30/04-05	260,378	169,419	0.065	1.036	0.067	1.000	0.067	0.068	0.087	0.068
6/30/05-06	317,741	397,730	0.125	1.032	0.129	1.000	0.129	0.068	0.087	0.068
6/30/06-07	325,922	242,044	0.074	1.032	0.077	1.000	0.077	0.068	0.087	0.068
6/30/07-08	354,130	526,505	0.149	1.032	0.153	1.000	0.153	0.068	0.087	0.068
6/30/08-09	362,309	446,776	0.123	1.027	0.127	1.000	0.127	0.068	0.088	0.068
6/30/09-10	383,298	304,492	0.079	1.000	0.079	1.000	0.079	0.070	0.090	0.070
6/30/10-11	394,924	342,662	0.087	1.000	0.087	1.000	0.087	0.070	0.090	0.070
6/30/11-12	381,943	321,421	0.084	1.000	0.084	1.000	0.084	0.070	0.090	0.070
6/30/12-13	384,763	294,313	0.076	1.000	0.076	1.000	0.076	0.070	0.090	0.070
6/30/13-14	364,582	485,337	0.133	1.000	0.133	1.000	0.133	0.070	0.090	0.070
6/30/14-15	370,543	162,348	0.044	1.000	0.044	1.000	0.044	0.070	0.090	0.070
6/30/15-16	382,602	305,469	0.080	1.000	0.080	1.000	0.080	0.070	0.090	0.070
6/30/16-17	395,324	235,962	0.060	1.000	0.060	1.000	0.060	0.070	0.090	0.070
6/30/17-18	398,722	204,624	0.051	1.000	0.051	1.000	0.051	0.070	0.090	0.070
6/30/18-19	410,826	210,168	0.051	1.000	0.051	1.000	0.051	0.070	0.090	0.070
6/30/19-20	424,565	203,585	0.048	1.000	0.048	1.000	0.048	0.070		0.070
Total	8,811,712	9,897,820								

Trend Last 4 (ex 19-20):	-13.8%	Avg 3 (ex 19-20):	0.054
Trend Last 8 (ex 19-20):	-8.3%	Avg 5 (ex 19-20):	0.057
Trend Last 12 (ex 19-20):	-8.1%	Avg 10 (ex 19-20):	0.075
Prior Selected Trend:	0.0%	Prior Sel Avg:	0.090
Selected Trend:	0.0%	Sel. Loss Cost:	0.070

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, 2019

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

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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	13%	
(3)	Average Pmt Trend Statewide	0.980	
(4)	Credibility Weighted Trend	0.950	
		(Low)	(High)
(5)	Selected Range	0.940	0.959
(6)	Incremental Paid for 2020	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	1	1
(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 @ 6/19	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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

University of Massachusetts (Medical Center) - Cluster 4
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
				Average		
		Incremental		Observed		Trend
Year	X	Paids	LN	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				
2017	26	0				
2018	27	0				
2019	28	0				
2020	28	0				
					Selected Trend:	**0.750**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	226,700	230,627
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	225,005	226,298	234,111
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	296,472	296,472	296,472	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	166,093	166,284	166,350	166,416	
June-06	111,267	215,773	247,375	290,539	295,723	304,040	318,675	338,665	353,952	368,605	379,144	382,941	386,684	388,400	388,888		
June-07	135,214	210,808	235,383	235,931	236,426	236,426	236,426	236,426	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	512,826	512,965	513,116	513,329				
June-09	147,783	237,019	285,263	290,878	311,776	330,161	342,462	384,890	396,420	430,454	433,315	434,121					
June-10	151,041	251,654	264,987	272,182	276,801	280,207	281,828	287,482	290,759	291,707	295,045						
June-11	207,552	306,733	317,839	322,382	326,484	328,928	330,378	330,378	330,378	330,378							
June-12	139,332	221,373	251,760	270,206	297,007	298,180	300,372	300,461	302,056								
June-13	127,443	223,391	256,039	266,425	269,907	272,508	273,350	274,064									
June-14	99,522	206,623	252,452	419,049	436,707	438,458	442,906										
June-15	68,762	116,468	133,363	140,457	143,342	146,083											
June-16	152,780	258,891	268,877	271,408	271,408												
June-17	95,466	186,703	200,928	202,758													
June-18	89,728	156,262	163,263														
June-19	104,778	148,083															
June-20	77,372																

Acc Yr Ending	216	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	21,226
June-84	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	50,961	50,961	50,961	50,961	
June-85	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	162,725	162,725	162,725	162,725		
June-86	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	215,355	215,355	215,355	215,355			
June-87	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	397,356	397,356	397,356	397,356				
June-88	332,429	332,429	333,094	334,344	338,304	341,814	346,679	347,929	347,929	347,929	347,929	347,929	347,929	347,929	347,929	347,929					
June-89	488,786	488,786	488,786	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	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	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	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	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196	395,196										
June-94	694,829	694,829	694,829	694,829	698,854	701,213	705,470	708,161	709,532	710,383											
June-95	416,634	416,984	417,700	418,185	418,614	419,003	419,416	419,765	420,157												
June-96	382,952	382,952	382,952	382,952	382,952	382,952	382,952	382,952													
June-97	196,392	196,765	197,155	197,391	197,598	197,746	197,838														
June-98	482,508	490,581	496,849	497,988	498,103	498,103															
June-99	309,222	309,222	309,222	309,222	309,222																
June-00	185,166	185,166	185,166	185,166																	
June-01	205,415	205,415	205,415																		
June-02	231,419	232,397																			
June-03	234,111																				

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	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	1.017	1.017	1.003
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	1.036	1.006	1.035	1.000
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	1.000	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	1.001	1.001	1.000	1.000		
June-06	1.939	1.146	1.174	1.018	1.028	1.048	1.063	1.045	1.041	1.029	1.010	1.010	1.004	1.001			
June-07	1.559	1.117	1.002	1.002	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000					
June-09	1.604	1.204	1.020	1.072	1.059	1.037	1.124	1.030	1.086	1.007	1.002						
June-10	1.666	1.053	1.027	1.017	1.012	1.006	1.020	1.011	1.003	1.011							
June-11	1.478	1.036	1.014	1.013	1.007	1.004	1.000	1.000	1.000								
June-12	1.589	1.137	1.073	1.099	1.004	1.007	1.000	1.005									
June-13	1.753	1.146	1.041	1.013	1.010	1.003	1.003										
June-14	2.076	1.222	1.660	1.042	1.004	1.010											
June-15	1.694	1.145	1.053	1.021	1.019												
June-16	1.695	1.039	1.009	1.000													
June-17	1.956	1.076	1.009														
June-18	1.742	1.045															
June-19	1.413																

Acc Yr Ending	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	420-432	432-444	444-456
June-83	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	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-85	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	1.000	1.000	1.000	1.000		
June-86	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	1.000	1.000	1.000	1.000			
June-87	1.000	1.000	1.000	1.000	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	1.000	1.002	1.004	1.012	1.010	1.014	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
June-89	1.000	1.000	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	1.000	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	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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
June-93	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	1.000	1.000	1.000	1.006	1.003	1.006	1.004	1.002	1.001											
June-95	1.001	1.002	1.001	1.001	1.001	1.001	1.001	1.001												
June-96	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
June-97	1.002	1.002	1.001	1.001	1.001	1.000														
June-98	1.017	1.013	1.002	1.000	1.000															
June-99	1.000	1.000	1.000	1.000																
June-00	1.000	1.000	1.000																	
June-01	1.000	1.000																		
June-02	1.004																			

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
Simple Avg																	
All Yrs	2.300	1.239	1.114	1.074	1.054	1.045	1.038	1.027	1.026	1.036	1.014	1.016	1.006	1.005	1.003	1.004	1.002
Latest 5	1.700	1.105	1.154	1.035	1.009	1.006	1.029	1.009	1.018	1.009	1.003	1.002	1.005	1.010	1.005	1.010	1.001
Latest 3	1.704	1.053	1.024	1.021	1.011	1.007	1.001	1.006	1.030	1.006	1.001	1.003	1.002	1.001	1.002	1.017	1.001
Volume Wtd																	
All Yrs	2.014	1.168	1.077	1.047	1.028	1.029	1.022	1.015	1.010	1.014	1.008	1.011	1.006	1.004	1.003	1.003	1.002
Latest 5	1.694	1.102	1.170	1.037	1.007	1.007	1.032	1.009	1.020	1.009	1.003	1.003	1.005	1.009	1.005	1.010	1.001
Latest 3	1.693	1.052	1.019	1.025	1.008	1.007	1.001	1.005	1.034	1.005	1.001	1.003	1.002	1.001	1.002	1.016	1.001
Dev Factor Se																	
Industry 1	1.957	1.147	1.057	1.025	1.015	1.009	1.011	1.009	1.009	1.009	1.010	1.008	1.008	1.009	1.009	1.008	1.008
Industry 2		1.281	1.080	1.034	1.020	1.017	1.009	1.011	1.009	1.009	1.006	1.007	1.009	1.008	1.008	1.012	1.007
Prior	*1.906*	*1.137*	*1.079*	*1.034*	*1.011*	*1.016*	*1.020*	*1.009*	*1.027*	*1.005*	*1.003*	*1.004*	*1.002*	*1.001*	*1.005*	*1.010*	*1.002*
Selected	1.854	1.132	1.077	1.034	1.013	1.014	1.020	1.009	1.026	1.005	1.003	1.003	1.002	1.001	1.005	1.010	1.002
FacToUlt	2.631	1.419	1.253	1.164	1.125	1.111	1.096	1.074	1.064	1.037	1.032	1.029	1.026	1.024	1.023	1.018	1.008
Percent of Ult	38.0%	70.5%	79.8%	85.9%	88.8%	90.0%	91.3%	93.1%	94.0%	96.4%	96.9%	97.2%	97.5%	97.7%	97.8%	98.2%	99.2%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																					
All Yrs	1.002	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	1.000	1.000	1.000	1.000	1.000	
Latest 5	1.004	1.003	1.001	1.000	1.001	1.002	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Latest 3	1.001	1.000	1.001	1.000	1.000	1.000	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Volume Wtd																					
All Yrs	1.002	1.001	1.001	1.001	1.001	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	1.000		
Latest 5	1.006	1.005	1.001	1.000	1.001	1.002	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
Latest 3	1.002	1.000	1.001	1.000	1.000	1.001	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
Dev Factor Se																					
Industry 1	1.007																				
Industry 2	1.006	1.007	1.006																		
Prior	*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*	*1.000*	*1.000*	*1.000*	*1.000*	
Selected	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	1.000	1.000	1.000	1.000	1.000
FacToUlt	1.005	1.004	1.003	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	1.000	1.000	1.000	1.000	1.000
Percent of Ult	99.5%	99.6%	99.7%	99.8%	99.9%	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, 2020

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 6/19		As of 6/20		(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	22,000	22,000	22,000	22,000	0	0.0%	0	0.0%
6/30/83-84	51,000	51,000	51,000	51,000	0	0.0%	0	0.0%
6/30/84-85	163,000	163,000	163,000	163,000	0	0.0%	0	0.0%
6/30/85-86	216,000	216,000	216,000	216,000	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	348,000	348,000	348,000	348,000	0	0.0%	0	0.0%
6/30/88-89	489,000	489,000	489,000	489,000	0	0.0%	0	0.0%
6/30/89-90	554,000	554,000	554,000	554,000	0	0.0%	0	0.0%
6/30/90-91	302,000	302,000	302,000	302,000	0	0.0%	0	0.0%
6/30/91-92	670,000	670,000	670,000	670,000	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	710,000	723,722	711,000	724,591	1,000	0.1%	869	0.1%
6/30/94-95	421,864	428,400	422,258	428,400	394	0.1%	0	0.0%
6/30/95-96	384,867	390,660	384,867	390,660	0	0.0%	0	0.0%
6/30/96-97	198,000	201,960	198,000	201,960	0	0.0%	0	0.0%
6/30/97-98	499,000	508,980	499,000	507,960	0	0.0%	(1,020)	-0.2%
6/30/98-99	310,000	310,000	310,000	310,000	0	0.0%	0	0.0%
6/30/99-00	186,000	186,000	186,000	186,000	0	0.0%	0	0.0%
6/30/00-01	206,000	206,000	206,000	206,000	0	0.0%	0	0.0%
6/30/01-02	233,000	237,660	233,000	237,660	0	0.0%	0	0.0%
6/30/02-03	236,000	240,720	235,000	239,700	(1,000)	-0.4%	(1,020)	-0.4%
6/30/03-04	302,000	305,020	299,000	301,990	(3,000)	-1.0%	(3,030)	-1.0%
6/30/04-05	170,000	179,550	169,000	178,500	(1,000)	-0.6%	(1,050)	-0.6%
6/30/05-06	395,000	417,900	394,000	417,900	(1,000)	-0.3%	0	0.0%
6/30/06-07	243,000	244,000	242,000	242,000	(1,000)	-0.4%	(2,000)	-0.8%
6/30/07-08	522,000	554,400	519,000	553,350	(3,000)	-0.6%	(1,050)	-0.2%
6/30/08-09	443,000	469,350	441,000	469,350	(2,000)	-0.5%	0	0.0%
6/30/09-10	303,000	319,200	303,000	319,200	0	0.0%	0	0.0%
6/30/10-11	352,000	369,600	340,000	360,150	(12,000)	-3.4%	(9,450)	-2.6%
6/30/11-12	323,000	340,200	318,000	337,050	(5,000)	-1.5%	(3,150)	-0.9%
6/30/12-13	300,000	319,200	293,000	308,700	(7,000)	-2.3%	(10,500)	-3.3%
6/30/13-14	472,000	512,400	465,000	509,250	(7,000)	-1.5%	(3,150)	-0.6%
6/30/14-15	161,000	189,000	162,000	180,600	1,000	0.6%	(8,400)	-4.4%
6/30/15-16	316,000	336,000	301,000	320,250	(15,000)	-4.7%	(15,750)	-4.7%
6/30/16-17	252,000	286,650	236,000	254,100	(16,000)	-6.3%	(32,550)	-11.4%
6/30/17-18	223,000	277,200	205,000	231,000	(18,000)	-8.1%	(46,200)	-16.7%
6/30/18-19	285,000	355,950	210,000	244,650	(75,000)	-26.3%	(111,300)	-31.3%
6/30/19-20								
Total	12,183,303	12,652,222	12,018,697	12,403,471	(164,606)	-1.4%	(248,751)	-2.0%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2019

(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, 2020

University of Massachusetts (Medical Center) - Cluster 4
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
456	100.0%	0.0%	0.0%	0.0%	0.0%	0.981	0.971
444	100.0%	0.0%	0.0%	0.0%	0.0%	0.943	0.916
432	100.0%	0.0%	0.0%	0.0%	0.0%	0.907	0.864
420	100.0%	0.0%	0.0%	0.0%	0.0%	0.872	0.816
408	100.0%	0.0%	0.0%	0.0%	0.0%	0.838	0.769
396	100.0%	0.0%	0.0%	0.0%	0.0%	0.806	0.726
384	100.0%	0.0%	0.0%	0.0%	0.0%	0.775	0.685
372	100.0%	0.0%	0.0%	0.0%	0.0%	0.745	0.646
360	100.0%	0.0%	0.0%	0.0%	0.0%	0.717	0.609
348	100.0%	0.0%	0.0%	0.0%	0.0%	0.689	0.575
336	100.0%	0.0%	0.0%	0.0%	0.0%	0.662	0.542
324	100.0%	0.0%	0.0%	0.0%	0.0%	0.637	0.512
312	100.0%	0.0%	0.0%	0.0%	0.0%	0.612	0.483
300	100.0%	0.0%	0.0%	0.0%	0.0%	0.589	0.455
288	100.0%	0.0%	0.0%	0.0%	0.0%	0.566	0.430
276	100.0%	0.1%	0.0%	0.0%	0.0%	0.544	0.405
264	99.9%	0.1%	0.1%	0.0%	0.0%	0.900	0.867
252	99.8%	0.1%	0.2%	0.0%	0.0%	0.917	0.887
240	99.7%	0.1%	0.3%	0.0%	0.0%	0.913	0.879
228	99.6%	0.1%	0.4%	0.0%	0.0%	0.902	0.863
216	99.5%	0.2%	0.5%	0.1%	0.1%	0.889	0.844
204	99.2%	1.0%	0.8%	0.5%	0.4%	0.894	0.851
192	98.2%	0.5%	1.8%	0.2%	0.2%	0.929	0.899
180	97.8%	0.1%	2.2%	0.1%	0.0%	0.911	0.873
168	97.7%	0.2%	2.3%	0.1%	0.1%	0.880	0.830
156	97.5%	0.3%	2.5%	0.2%	0.2%	0.856	0.797
144	97.2%	0.3%	2.8%	0.2%	0.1%	0.842	0.777
132	96.9%	0.5%	3.1%	0.3%	0.3%	0.824	0.754
120	96.4%	2.4%	3.6%	1.7%	1.4%	0.818	0.746
108	94.0%	0.9%	6.0%	0.6%	0.5%	0.865	0.812
96	93.1%	1.9%	6.9%	1.4%	1.2%	0.850	0.792
84	91.3%	1.3%	8.7%	1.0%	0.9%	0.852	0.795
72	90.0%	1.1%	10.0%	0.9%	0.8%	0.840	0.778
60	88.8%	2.9%	11.2%	2.4%	2.2%	0.825	0.758
48	85.9%	6.1%	14.1%	5.4%	5.0%	0.832	0.768
36	79.8%	9.3%	20.2%	8.5%	8.1%	0.855	0.800
24	70.5%	32.5%	29.5%	30.6%	29.7%	0.872	0.823
12	38.0%	38.0%	62.0%	37.3%	36.9%	0.913	0.878
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
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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	774	774	0.981	759	759
6/30/83-84	39	39	0.943	37	37
6/30/84-85	275	275	0.907	249	249
6/30/85-86	645	645	0.872	562	562
6/30/86-87	644	644	0.838	539	539
6/30/87-88	71	71	0.806	57	57
6/30/88-89	214	214	0.775	166	166
6/30/89-90	38	38	0.745	28	28
6/30/90-91	303	303	0.717	217	217
6/30/91-92	812	812	0.689	559	559
6/30/92-93	1,976	7,904	0.662	1,309	5,236
6/30/93-94	617	14,208	0.637	393	9,050
6/30/94-95	2,101	8,243	0.612	1,287	5,048
6/30/95-96	1,915	7,708	0.589	1,128	4,539
6/30/96-97	162	4,122	0.566	92	2,334
6/30/97-98	897	9,857	0.544	489	5,367
6/30/98-99	778	778	0.900	700	700
6/30/99-00	834	834	0.917	765	765
6/30/00-01	585	585	0.913	534	534
6/30/01-02	603	5,263	0.902	544	4,747
6/30/02-03	889	5,589	0.889	790	4,968
6/30/03-04	2,528	5,518	0.894	2,260	4,933
6/30/04-05	2,584	12,084	0.929	2,400	11,227
6/30/05-06	5,112	29,012	0.911	4,657	26,430
6/30/06-07	5,574	5,574	0.880	4,907	4,907
6/30/07-08	5,671	40,021	0.856	4,855	34,268
6/30/08-09	6,879	35,229	0.842	5,789	29,650
6/30/09-10	7,955	24,155	0.824	6,557	19,909
6/30/10-11	9,622	29,772	0.818	7,869	24,347
6/30/11-12	15,944	34,994	0.865	13,792	30,270
6/30/12-13	18,936	34,636	0.850	16,101	29,449
6/30/13-14	22,094	66,344	0.852	18,830	56,543
6/30/14-15	15,917	34,517	0.840	13,370	28,994
6/30/15-16	29,592	48,842	0.825	24,421	40,307
6/30/16-17	33,242	51,342	0.832	27,669	42,735
6/30/17-18	41,737	67,737	0.855	35,689	57,921
6/30/18-19	61,917	96,567	0.872	54,005	84,228
6/30/19-20	126,628	197,728	0.913	115,606	180,518
Total	427,103	882,977		369,981	753,097

	(Low)	(High)
(7) Total Discount Factor:	0.866	0.853

	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 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, 2020

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	774	774	0.971	752	752
6/30/83-84	39	39	0.916	36	36
6/30/84-85	275	275	0.864	238	238
6/30/85-86	645	645	0.816	526	526
6/30/86-87	644	644	0.769	495	495
6/30/87-88	71	71	0.726	52	52
6/30/88-89	214	214	0.685	147	147
6/30/89-90	38	38	0.646	25	25
6/30/90-91	303	303	0.609	185	185
6/30/91-92	812	812	0.575	467	467
6/30/92-93	1,976	7,904	0.542	1,072	4,287
6/30/93-94	617	14,208	0.512	316	7,270
6/30/94-95	2,101	8,243	0.483	1,014	3,979
6/30/95-96	1,915	7,708	0.455	872	3,510
6/30/96-97	162	4,122	0.430	70	1,771
6/30/97-98	897	9,857	0.405	364	3,995
6/30/98-99	778	778	0.867	675	675
6/30/99-00	834	834	0.887	740	740
6/30/00-01	585	585	0.879	514	514
6/30/01-02	603	5,263	0.863	520	4,541
6/30/02-03	889	5,589	0.844	750	4,717
6/30/03-04	2,528	5,518	0.851	2,151	4,694
6/30/04-05	2,584	12,084	0.899	2,324	10,869
6/30/05-06	5,112	29,012	0.873	4,465	25,340
6/30/06-07	5,574	5,574	0.830	4,627	4,627
6/30/07-08	5,671	40,021	0.797	4,519	31,891
6/30/08-09	6,879	35,229	0.777	5,347	27,384
6/30/09-10	7,955	24,155	0.754	5,999	18,215
6/30/10-11	9,622	29,772	0.746	7,181	22,219
6/30/11-12	15,944	34,994	0.812	12,951	28,425
6/30/12-13	18,936	34,636	0.792	14,994	27,425
6/30/13-14	22,094	66,344	0.795	17,559	52,728
6/30/14-15	15,917	34,517	0.778	12,383	26,853
6/30/15-16	29,592	48,842	0.758	22,432	37,024
6/30/16-17	33,242	51,342	0.768	25,541	39,447
6/30/17-18	41,737	67,737	0.800	33,377	54,169
6/30/18-19	61,917	96,567	0.823	50,952	79,466
6/30/19-20	126,628	197,728	0.878	111,229	173,682
Total	427,103	882,977		347,857	703,379
			(7) Total Discount Factor:	0.814	0.797

	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 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, 2020

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			3,022,846	3,034,925	3,020	15,099		
6/30/82-83		743,272	743,562		750,705	765,570	7,433	22,298		
6/30/83-84		917,731	918,071		926,908	945,263	9,177	27,532		
6/30/84-85	357,749	1,492,038	1,492,603	1,492,887	1,506,958	1,536,799	14,920	44,761	0.421	0.430
6/30/85-86	380,112	1,868,907	1,869,650	1,869,906	1,887,596	1,924,974	18,689	56,067	0.497	0.506
6/30/86-87	423,770	3,043,038	3,044,222	3,044,142	3,044,000	3,058,253	962	15,215	0.718	0.722
6/30/87-88	480,405	4,397,996	4,399,659	4,399,636	4,400,000	4,419,986	2,004	21,990	0.916	0.920
6/30/88-89	495,261	1,515,210	1,515,738	1,516,047	1,516,000	1,522,786	790	7,576	0.306	0.307
6/30/89-90	502,691	3,850,424	3,858,414	3,857,881	3,858,000	3,869,676	7,576	19,252	0.767	0.770
6/30/90-91	482,143	1,393,607	1,398,724	1,398,711	1,399,000	1,407,543	5,393	13,936	0.290	0.292
6/30/91-92	492,539	1,393,717	1,402,162	1,402,112	1,402,000	1,407,654	8,283	13,937	0.285	0.286
6/30/92-93	524,541	1,147,496	1,157,801	1,157,722	1,170,446	1,204,871	22,950	57,375	0.223	0.230
6/30/93-94	584,853	1,243,744	1,258,363	1,258,229	1,258,000	1,305,931	14,256	62,187	0.215	0.223
6/30/94-95	587,701	1,816,968	1,843,817	1,843,264	1,843,000	1,907,816	26,032	90,848	0.314	0.325
6/30/95-96	614,868	1,269,047	1,290,973	1,290,937	1,294,428	1,332,499	25,381	63,452	0.211	0.217
6/30/96-97	700,686	1,179,732	1,213,175	1,213,412	1,213,000	1,273,650	33,268	93,918	0.173	0.182
6/30/97-98	684,415	2,506,497	2,590,267	2,587,001	2,587,000	2,590,000	80,503	83,503	0.378	0.378
6/30/98-99	707,796	1,564,695	1,623,645	1,622,706	1,623,000	1,640,000	58,305	75,305	0.229	0.232
6/30/99-00	760,477	1,182,336	1,228,599	1,230,168	1,229,000	1,242,000	46,664	59,664	0.162	0.163
6/30/00-01	811,600	1,781,656	1,863,917	1,862,982	1,863,000	1,864,000	81,344	82,344	0.230	0.230
6/30/01-02	835,038	2,654,825	2,799,731	2,794,769	2,795,000	2,800,000	140,175	145,175	0.335	0.335
6/30/02-03	825,340	1,438,134	1,539,086	1,540,518	1,539,000	1,556,000	100,866	117,866	0.186	0.189
6/30/03-04	849,216	1,500,008	1,626,904	1,629,018	1,627,000	1,645,000	126,993	144,993	0.192	0.194
6/30/04-05	992,508	1,023,564	1,127,488	1,221,106	1,127,000	1,233,000	103,436	209,436	0.114	0.124
6/30/05-06	962,878	1,616,327	1,824,641	1,853,412	1,825,000	1,946,000	208,673	329,673	0.190	0.202
6/30/06-07	1,032,930	968,708	1,115,336	1,273,162	1,115,000	1,273,000	146,292	304,292	0.108	0.123
6/30/07-08	1,063,597	2,710,776	3,138,059	3,094,074	3,094,000	3,138,000	383,224	427,224	0.291	0.295
6/30/08-09	1,073,805	2,065,463	2,471,621	2,472,963	2,348,400	2,473,000	282,937	407,537	0.219	0.230
6/30/09-10	1,084,749	3,486,195	4,249,356	3,968,174	3,769,600	4,249,000	283,405	762,805	0.348	0.392
6/30/10-11	1,134,164	2,443,142	3,016,708	3,006,391	2,855,700	3,017,000	412,558	573,858	0.252	0.266
6/30/11-12	1,202,674	2,326,323	3,007,199	2,993,658	2,844,300	3,007,000	517,977	680,677	0.236	0.250
6/30/12-13	1,284,741	2,101,133	2,806,937	2,913,828	2,666,650	2,914,000	565,517	812,867	0.208	0.227
6/30/13-14	1,346,902	2,241,244	3,202,406	3,247,959	3,041,900	3,313,000	800,656	1,071,756	0.226	0.246
6/30/14-15	1,404,093	2,083,025	3,169,706	3,343,625	3,170,000	3,511,000	1,086,975	1,427,975	0.226	0.250
6/30/15-16	1,454,612	2,493,778	4,188,236	3,959,658	3,960,000	4,188,000	1,466,222	1,694,222	0.272	0.288
6/30/16-17	1,461,588	2,039,493	3,624,792	3,806,838	3,552,500	3,845,000	1,513,007	1,805,507	0.243	0.263
6/30/17-18	1,457,740	1,767,754	4,050,267	4,024,487	3,822,800	4,091,000	2,055,046	2,323,246	0.262	0.281
6/30/18-19	1,500,205	864,868	2,943,726	3,594,081	2,796,800	3,630,000	1,931,932	2,765,132	0.186	0.242
6/30/19-20	1,508,678	302,226	2,316,581	3,710,887	2,328,585	3,748,000	2,026,359	3,445,774	0.154	0.248
Total	32,067,064	73,454,922	86,932,142	87,496,350	88,074,122	93,831,197	14,619,201	20,376,276		
Tot 6/30/84-20	32,067,064	68,774,093	85,270,509	87,496,350	83,373,663	89,085,439	14,599,571	20,311,346	0.260	0.278

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim	Average Age
All Prior Yrs		3,004,076							0	0		
6/30/82-83		716,272	1.000	1.000	716,562	27,000	743,562		0	0		
6/30/83-84		837,731	1.000	1.000	838,071	80,000	918,071		0	0		
6/30/84-85	357,749	1,393,062	1.000	1.000	1,393,627	98,976	1,492,603	0.417	0	0		
6/30/85-86	380,112	1,833,907	1.000	1.000	1,834,650	35,000	1,869,650	0.492	0	0		
6/30/86-87	423,770	2,921,538	1.000	1.000	2,922,722	121,500	3,044,222	0.718	1	1	1,184	94
6/30/87-88	480,405	4,103,153	1.000	1.000	4,104,816	294,843	4,399,659	0.916	0	0		
6/30/88-89	495,261	1,302,910	1.000	1.000	1,303,438	212,300	1,515,738	0.306	0	0		
6/30/89-90	502,691	3,320,712	1.002	1.000	3,328,702	529,712	3,858,414	0.768	0	0		
6/30/90-91	482,143	1,160,107	1.004	1.000	1,165,224	233,500	1,398,724	0.290	0	0		
6/30/91-92	492,539	1,137,534	1.007	1.000	1,145,979	256,183	1,402,162	0.285	0	0		
6/30/92-93	524,541	986,496	1.010	1.000	996,801	161,000	1,157,801	0.221	0	0		
6/30/93-94	584,853	1,084,744	1.013	1.000	1,099,363	159,000	1,258,363	0.215	1	1	14,620	61
6/30/94-95	587,701	1,447,763	1.019	1.000	1,474,612	369,205	1,843,817	0.314	1	1	26,849	83
6/30/95-96	614,868	927,586	1.024	1.000	949,512	341,461	1,290,973	0.210	0	0		
6/30/96-97	700,686	924,850	1.029	1.000	951,445	261,730	1,213,175	0.173	0	1	26,595	72
6/30/97-98	684,415	2,241,497	1.034	1.000	2,317,483	272,784	2,590,267	0.378	2	2	37,993	87
6/30/98-99	707,796	1,359,445	1.039	1.000	1,412,558	211,088	1,623,645	0.229	1	1	53,113	74
6/30/99-00	760,477	844,236	1.044	1.000	881,606	346,993	1,228,599	0.162	0	0		
6/30/00-01	811,600	1,508,154	1.049	1.000	1,582,786	281,131	1,863,917	0.230	1	1	74,633	70
6/30/01-02	835,038	2,211,575	1.060	1.000	2,344,228	455,503	2,799,731	0.335	1	1	132,652	76
6/30/02-03	825,340	1,180,634	1.078	1.000	1,273,197	265,889	1,539,086	0.186	1	0		
6/30/03-04	849,216	1,176,508	1.099	1.000	1,292,846	334,058	1,626,904	0.192	0	1	116,339	64
6/30/04-05	992,508	825,463	1.117	1.000	922,185	205,303	1,127,488	0.114	0	0		
6/30/05-06	962,878	1,370,654	1.145	1.000	1,569,350	255,291	1,824,641	0.189	1	1	198,696	71
6/30/06-07	1,032,930	783,708	1.178	1.000	923,155	192,181	1,115,336	0.108	0	0		
6/30/07-08	1,063,597	1,929,526	1.206	1.000	2,326,803	811,256	3,138,059	0.295	1	1	397,277	78
6/30/08-09	1,073,805	1,735,462	1.226	1.000	2,127,271	344,350	2,471,621	0.230	2	2	195,904	63
6/30/09-10	1,084,749	2,820,695	1.259	1.000	3,552,096	697,259	4,249,356	0.392	4	4	182,850	67
6/30/10-11	1,134,164	1,811,958	1.297	1.000	2,350,906	665,802	3,016,708	0.266	3	0		
6/30/11-12	1,202,674	1,891,059	1.343	1.000	2,539,150	468,049	3,007,199	0.250	2	1	648,090	74
6/30/12-13	1,284,741	1,673,685	1.389	1.000	2,324,739	482,198	2,806,937	0.218	4	3	217,018	63
6/30/13-14	1,346,902	1,871,243	1.460	1.000	2,732,664	469,742	3,202,406	0.238	5	3	287,140	47
6/30/14-15	1,404,093	1,645,526	1.554	1.000	2,557,906	611,800	3,169,706	0.226	7	5	182,476	60
6/30/15-16	1,454,612	2,284,595	1.658	1.000	3,787,181	401,055	4,188,236	0.288	17	12	125,216	65
6/30/16-17	1,461,588	1,580,493	1.823	1.000	2,881,614	743,178	3,624,792	0.248	19	13	100,086	59
6/30/17-18	1,457,740	1,554,754	2.179	1.000	3,387,452	662,815	4,050,267	0.278	47	20	91,635	56
6/30/18-19	1,500,205	861,868	2.914	1.000	2,511,368	432,358	2,943,726	0.196	74	35	47,129	56
6/30/19-20	1,508,678	302,226	6.393	1.000	1,932,132	384,448	2,316,581	0.154		57	28,595	53
Total	32,067,064	62,567,403			73,756,201	13,175,941	86,932,142		195	167		

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, 2020

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	1.000	1,393,911	98,976	1,492,887	0.417	0.390
6/30/85-86	380,112	0.649	1,833,907	1.000	1,834,906	35,000	1,869,906	0.492	0.483
6/30/86-87	423,770	0.643	2,921,538	1.000	2,922,642	121,500	3,044,142	0.718	0.690
6/30/87-88	480,405	0.843	4,103,153	1.000	4,104,793	294,843	4,399,636	0.916	0.854
6/30/88-89	495,261	0.417	1,302,910	1.000	1,303,747	212,300	1,516,047	0.306	0.263
6/30/89-90	502,691	0.618	3,320,712	1.002	3,328,169	529,712	3,857,881	0.767	0.662
6/30/90-91	482,143	0.241	1,160,107	1.004	1,165,211	233,500	1,398,711	0.290	0.242
6/30/91-92	492,539	0.231	1,137,534	1.007	1,145,929	256,183	1,402,112	0.285	0.233
6/30/92-93	524,541	0.189	986,496	1.010	996,722	161,000	1,157,722	0.221	0.190
6/30/93-94	584,853	0.186	1,084,744	1.013	1,099,229	159,000	1,258,229	0.215	0.188
6/30/94-95	587,701	0.246	1,447,763	1.019	1,474,059	369,205	1,843,264	0.314	0.251
6/30/95-96	614,868	0.154	927,586	1.024	949,476	341,461	1,290,937	0.210	0.154
6/30/96-97	700,686	0.137	924,850	1.029	951,683	261,730	1,213,412	0.173	0.136
6/30/97-98	684,415	0.324	2,241,497	1.034	2,314,217	272,784	2,587,001	0.378	0.338
6/30/98-99	707,796	0.196	1,359,445	1.039	1,411,618	211,088	1,622,706	0.229	0.199
6/30/99-00	760,477	0.121	844,236	1.044	883,175	346,993	1,230,168	0.162	0.116
6/30/00-01	811,600	0.193	1,508,154	1.049	1,581,851	281,131	1,862,982	0.230	0.195
6/30/01-02	835,038	0.270	2,211,575	1.060	2,339,266	455,503	2,794,769	0.335	0.280
6/30/02-03	825,340	0.157	1,180,634	1.078	1,274,628	265,889	1,540,518	0.187	0.154
6/30/03-04	849,216	0.155	1,176,508	1.099	1,294,960	334,058	1,629,018	0.192	0.152
6/30/04-05	992,508	0.183	825,463	1.117	1,015,803	205,303	1,221,106	0.123	0.102
6/30/05-06	962,878	0.187	1,370,654	1.145	1,598,121	255,291	1,853,412	0.192	0.166
6/30/06-07	1,032,930	0.191	783,708	1.178	1,080,980	192,181	1,273,162	0.123	0.105
6/30/07-08	1,063,597	0.195	1,929,526	1.206	2,282,818	811,256	3,094,074	0.291	0.215
6/30/08-09	1,073,805	0.199	1,735,462	1.226	2,128,613	344,350	2,472,963	0.230	0.198
6/30/09-10	1,084,749	0.202	2,820,695	1.259	3,270,914	697,259	3,968,174	0.366	0.302
6/30/10-11	1,134,164	0.203	1,811,958	1.297	2,340,589	665,802	3,006,391	0.265	0.206
6/30/11-12	1,202,674	0.207	1,891,059	1.343	2,525,609	468,049	2,993,658	0.249	0.210
6/30/12-13	1,284,741	0.211	1,673,685	1.389	2,431,630	482,198	2,913,828	0.227	0.189
6/30/13-14	1,346,902	0.214	1,871,243	1.460	2,778,218	469,742	3,247,959	0.241	0.206
6/30/14-15	1,404,093	0.217	1,645,526	1.554	2,731,826	611,800	3,343,625	0.238	0.195
6/30/15-16	1,454,612	0.221	2,284,595	1.658	3,558,603	401,055	3,959,658	0.272	0.245
6/30/16-17	1,461,588	0.225	1,580,493	1.823	3,063,660	743,178	3,806,838	0.260	0.210
6/30/17-18	1,457,740	0.229	1,554,754	2.179	3,361,672	662,815	4,024,487	0.276	0.231
6/30/18-19	1,500,205	0.233	861,868	2.914	3,161,723	432,358	3,594,081	0.240	0.211
6/30/19-20	1,508,678	0.238	302,226	6.393	3,326,438	384,448	3,710,887	0.246	0.220
Total	32,067,064		58,009,324		74,427,409	13,068,941	87,496,350		

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, 2020

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Calculation of Initial Expected Loss Rate

(1) Accident Year	(2) Payroll (000's)	(3) Exp Ult Loss Excluding Lump Sum	(4) Unadjusted Loss Cost	(5) Benefit Level Factor	(6) Adjusted Loss Cost	(7) Trend Factor	(8) Trended Adjusted Loss Cost	(9) Detrended Selected Loss Cost	(10) Prior Selected Loss Cost	(11) 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	1,165,224	0.242	1.004	0.243	1.348	0.327	0.177	0.239	0.241
6/30/91-92	492,539	1,145,979	0.233	1.102	0.256	1.335	0.342	0.163	0.229	0.231
6/30/92-93	524,541	996,801	0.190	1.285	0.244	1.321	0.323	0.141	0.186	0.189
6/30/93-94	584,853	1,099,363	0.188	1.268	0.238	1.308	0.312	0.145	0.179	0.186
6/30/94-95	587,701	1,474,612	0.251	1.257	0.315	1.295	0.408	0.147	0.241	0.246
6/30/95-96	614,868	949,512	0.154	1.247	0.193	1.282	0.247	0.150	0.149	0.154
6/30/96-97	700,686	951,445	0.136	1.234	0.168	1.270	0.213	0.153	0.131	0.137
6/30/97-98	684,415	2,317,483	0.339	1.218	0.413	1.257	0.519	0.157	0.302	0.324
6/30/98-99	707,796	1,412,558	0.200	1.202	0.240	1.245	0.299	0.160	0.182	0.196
6/30/99-00	760,477	881,606	0.116	1.183	0.137	1.232	0.169	0.165	0.113	0.121
6/30/00-01	811,600	1,582,786	0.195	1.153	0.225	1.220	0.274	0.171	0.180	0.193
6/30/01-02	835,038	2,344,228	0.281	1.131	0.317	1.208	0.383	0.176	0.255	0.270
6/30/02-03	825,340	1,273,197	0.154	1.126	0.174	1.196	0.208	0.178	0.150	0.157
6/30/03-04	849,216	1,292,846	0.152	1.126	0.171	1.184	0.203	0.180	0.148	0.155
6/30/04-05	992,508	922,185	0.093	1.119	0.104	1.173	0.122	0.183	0.139	0.183
6/30/05-06	962,878	1,569,350	0.163	1.108	0.181	1.161	0.210	0.187	0.144	0.187
6/30/06-07	1,032,930	923,155	0.089	1.096	0.098	1.149	0.113	0.191	0.150	0.191
6/30/07-08	1,063,597	2,326,803	0.219	1.084	0.237	1.138	0.270	0.195	0.157	0.195
6/30/08-09	1,073,805	2,127,271	0.198	1.071	0.212	1.127	0.239	0.199	0.163	0.199
6/30/09-10	1,084,749	3,552,096	0.327	1.067	0.349	1.116	0.390	0.202	0.169	0.202
6/30/10-11	1,134,164	2,350,906	0.207	1.069	0.222	1.105	0.245	0.203	0.174	0.203
6/30/11-12	1,202,674	2,539,150	0.211	1.062	0.224	1.094	0.245	0.207	0.180	0.207
6/30/12-13	1,284,741	2,324,739	0.181	1.052	0.190	1.083	0.206	0.211	0.187	0.211
6/30/13-14	1,346,902	2,732,664	0.203	1.048	0.213	1.072	0.228	0.214	0.193	0.214
6/30/14-15	1,404,093	2,557,906	0.182	1.042	0.190	1.062	0.202	0.217	0.200	0.217
6/30/15-16	1,454,612	3,787,181	0.260	1.034	0.269	1.051	0.283	0.221	0.208	0.221
6/30/16-17	1,461,588	2,881,614	0.197	1.026	0.202	1.041	0.211	0.225	0.216	0.225
6/30/17-18	1,457,740	3,387,452	0.232	1.017	0.236	1.030	0.243	0.229	0.224	0.229
6/30/18-19	1,500,205	2,511,368	0.167	1.008	0.169	1.020	0.172	0.233	0.233	0.233
6/30/19-20	1,508,678	1,932,132	0.128	1.000	0.128	1.010	0.129	0.238		0.238
Total	29,427,076	57,313,614								

Trend Last 4 (ex 19-20):	-11.7%	Avg 3 (ex 19-20):	0.209
Trend Last 8 (ex 19-20):	-0.8%	Avg 5 (ex 19-20):	0.222
Trend Last 12 (ex 19-20):	-2.1%	Avg 10 (ex 19-20):	0.242
Prior Selected Trend:	3.0%	Prior Sel Avg:	0.240
Selected Trend:	1.0%	Sel. Loss Cost:	0.240

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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.950	
(2)	Credibility	15%	
(3)	Average Pmt Trend Statewide	0.950	
(4)	Credibility Weighted Trend	0.950	
		(Low)	(High)
(5)	Selected Range	0.945	0.960
(6)	Incremental Paid for 2020	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)	0	0
(11)	Projected Number of Years	2	4
(12)	Estimated Reserve	0	0
(13)	Paid to Date (82 & Prior)	3,004,076	3,004,076
(14)	Est Ult Paid for 1982 & Prior	3,004,076	3,004,076
(14a)	Paid Counts During Fiscal Year	0	0
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	3,004,076	3,004,076
(16)	Lump Sum Ultimates	15,750	15,750
(17)	Ult Loss Including Lump Sums	**3,019,826**	**3,019,826**
(18)	Implied Tail	1.000	1.000
(19)	Ult Loss Inc Lump Sums @ 6/19	3,019,826	3,019,826

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, 2019

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				
2017	26	0				
2018	27	0				
2019	28	0				
2020	29	0				
					Selected Trend:	**0.950**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(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*
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	1,406,664	1,439,888
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	2,030,119	2,089,520	2,150,003
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	1,144,152	1,172,937	1,180,634	1,180,634
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	1,167,101	1,167,101	1,167,101	1,176,508	
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	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	1,273,089	1,306,981	1,338,534	1,370,654			
June-07	271,385	517,910	631,652	710,911	719,279	741,612	769,416	783,708	783,708	783,708	783,708	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	1,743,580	1,803,467	1,865,935	1,929,526					
June-09	286,738	569,698	809,591	1,006,874	1,150,080	1,267,290	1,367,159	1,453,260	1,515,587	1,628,227	1,681,610	1,735,462						
June-10	418,176	997,028	1,315,276	1,658,156	1,884,889	2,102,819	2,299,652	2,447,833	2,579,668	2,707,061	2,820,695							
June-11	441,106	954,293	1,366,571	1,466,786	1,533,060	1,599,427	1,689,571	1,770,369	1,811,958	1,811,958								
June-12	412,473	870,425	1,295,826	1,604,006	1,727,037	1,778,724	1,830,824	1,883,222	1,891,059									
June-13	360,464	710,865	979,073	1,207,494	1,361,567	1,482,689	1,578,972	1,673,685										
June-14	466,274	972,487	1,248,894	1,467,060	1,636,242	1,775,011	1,871,243											
June-15	513,416	935,315	1,168,489	1,350,939	1,507,703	1,645,526												
June-16	552,170	1,131,899	1,487,788	1,847,511	2,284,595													
June-17	423,610	977,257	1,378,705	1,580,493														
June-18	619,145	1,261,395	1,554,754															
June-19	416,549	861,868																
June-20	302,226																	

Acc Yr Ending	*228*	*240*	*252*	*264*	*276*	*288*	*300*	*312*	*324*	*336*	*348*	*360*	*372*	*384*	*396*	*408*	*420*	*432*	*444*	*456*
June-83	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	716,272	716,272	716,272	716,272
June-84	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	837,731	837,731	
June-85	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	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	1,833,907	1,833,907	1,833,907			
June-87	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	2,708,228	2,776,870	2,847,872	2,921,538				
June-88	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	4,103,153	4,103,153	4,103,153	4,103,153					
June-89	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	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	3,320,712	3,320,712	3,320,712	3,320,712							
June-91	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	1,160,107	1,160,107								
June-92	1,135,353	1,135,353	1,135,353	1,136,695	1,136,799	1,137,283	1,137,534	1,137,534	1,137,534	1,137,534	1,137,534									
June-93	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496	986,496										
June-94	907,933	930,019	952,106	974,192	996,338	1,018,425	1,040,511	1,062,597	1,084,744											
June-95	1,179,286	1,223,263	1,267,764	1,313,000	1,358,170	1,404,158	1,448,149	1,447,763												
June-96	927,586	927,586	927,586	927,586	927,586	927,586	927,586													
June-97	923,657	923,657	923,657	923,657	923,657	924,850														
June-98	1,934,781	2,009,408	2,085,383	2,162,744	2,241,497															
June-99	1,250,390	1,286,089	1,322,440	1,359,445																
June-00	844,236	844,236	844,236																	
June-01	1,473,716	1,508,154																		
June-02	2,211,575																			

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*
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	1.039
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	1.029	1.029
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	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	1.024	1.024	1.023	1.023
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	1.030	1.029	1.029	1.029	
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	1.025	1.025	1.007	1.000		
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	1.000	1.000	1.000	1.008			
June-05	1.817	1.491	1.163	1.075	1.032	1.024	1.001	1.000	1.000	1.000	1.000	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	1.055	1.027	1.024	1.024					
June-07	1.908	1.220	1.125	1.012	1.031	1.037	1.019	1.000	1.000	1.000	1.000	1.000	1.000						
June-08	2.563	1.392	1.223	1.141	1.114	1.060	1.039	1.036	1.033	1.034	1.035	1.034							
June-09	1.987	1.421	1.244	1.142	1.102	1.079	1.063	1.043	1.074	1.033	1.032								
June-10	2.384	1.319	1.261	1.137	1.116	1.094	1.064	1.054	1.049	1.042									
June-11	2.163	1.432	1.073	1.045	1.043	1.056	1.048	1.023	1.000										
June-12	2.110	1.489	1.238	1.077	1.030	1.029	1.029	1.004											
June-13	1.972	1.377	1.233	1.128	1.089	1.065	1.060												
June-14	2.086	1.284	1.175	1.115	1.085	1.054													
June-15	1.822	1.249	1.156	1.116	1.091														
June-16	2.050	1.314	1.242	1.237															
June-17	2.307	1.411	1.146																
June-18	2.037	1.233																	
June-19	2.069																		

Acc Yr Ending	*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*	*420-432*	*432-444*	*444-456*
June-83	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	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	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-87	1.020	1.021	1.024	1.032	1.020	1.020	1.021	1.020	1.021	1.021	1.024	1.025	1.026	1.026				
June-88	1.023	1.024	1.024	1.023	1.023	1.023	1.023	1.019	1.013	1.000	1.000	1.000	1.000					
June-89	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	1.025	1.019	1.019	1.026	1.025	1.013	1.000	1.000	1.000	1.000	1.000							
June-91	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
June-92	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
June-93	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	1.024	1.023	1.023	1.022	1.022	1.021	1.021											
June-95	1.036	1.036	1.034	1.034	1.031	1.000												
June-96	1.000	1.000	1.000	1.000	1.000													
June-97	1.000	1.000	1.000	1.001														
June-98	1.038	1.037	1.036															
June-99	1.028	1.028																
June-00	1.000																	

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*
Simple Avg																			
All Yrs	2.249	1.375	1.202	1.129	1.089	1.067	1.052	1.032	1.033	1.027	1.024	1.023	1.024	1.025	1.021	1.018	1.016	1.018	1.013
Latest 5	2.057	1.298	1.190	1.134	1.068	1.060	1.053	1.032	1.031	1.029	1.024	1.012	1.010	1.016	1.016	1.014	1.016	1.024	1.018
Latest 3	2.138	1.319	1.181	1.156	1.088	1.049	1.045	1.027	1.041	1.036	1.022	1.020	1.008	1.008	1.008	1.015	1.018	1.017	1.017
Volume Wtd																			
All Yrs	2.179	1.363	1.200	1.127	1.088	1.068	1.050	1.034	1.035	1.030	1.027	1.027	1.027	1.029	1.025	1.022	1.019	1.020	1.018
Latest 5	2.047	1.296	1.190	1.139	1.066	1.061	1.053	1.033	1.035	1.034	1.029	1.016	1.012	1.019	1.019	1.017	1.019	1.027	1.023
Latest 3	2.125	1.312	1.184	1.164	1.088	1.049	1.045	1.030	1.041	1.037	1.027	1.025	1.011	1.010	1.009	1.018	1.020	1.022	1.020
Dev Factor Selection																			
Industry 1	2.958	1.596	1.236	1.106	1.039	1.020	1.014	1.008	1.006	1.006	1.005	1.010	1.002	1.003	1.003	1.002	1.004	1.003	
Industry 2		1.877	1.312	1.143	1.055	1.028	1.016	1.015	1.006	1.005	1.007	1.007	1.004	1.002	1.005	1.002	1.003	1.002	1.001
Prior	*2.194*	*1.337*	*1.195*	*1.100*	*1.073*	*1.067*	*1.049*	*1.036*	*1.037*	*1.029*	*1.027*	*1.012*	*1.025*	*1.029*	*1.026*	*1.021*	*1.020*	*1.017*	*1.010*
Selected	2.194	1.337	1.195	1.100	1.066	1.064	1.051	1.034	1.035	1.030	1.027	1.016	1.024	1.029	1.025	1.017	1.019	1.017	1.010
FacToUlt	6.393	2.914	2.179	1.823	1.658	1.554	1.460	1.389	1.343	1.297	1.259	1.226	1.206	1.178	1.145	1.117	1.099	1.078	1.060
Percent of Ult	15.6%	34.3%	45.9%	54.8%	60.3%	64.3%	68.5%	72.0%	74.5%	77.1%	79.4%	81.6%	82.9%	84.9%	87.3%	89.5%	91.0%	92.7%	94.3%

Averages	*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*	*420-432*	*432-444*	*444-456*	*To Ult*
Simple Avg																			
All Yrs	1.011	1.011	1.010	1.009	1.009	1.006	1.005	1.004	1.003	1.002	1.003	1.004	1.004	1.005	1.000	1.000	1.000	1.000	
Latest 5	1.013	1.020	1.019	1.011	1.011	1.004	1.004	1.000	1.003	1.004	1.005	1.005	1.005	1.005					
Latest 3	1.022	1.022	1.012	1.012	1.018	1.007	1.007	1.000	1.000	1.000	1.000	1.008	1.009	1.009	1.000	1.000			
Volume Wtd																			
All Yrs	1.015	1.014	1.014	1.014	1.013	1.009	1.008	1.007	1.006	1.003	1.004	1.005	1.006	1.010	1.000	1.000	1.000	1.000	
Latest 5	1.019	1.024	1.023	1.013	1.012	1.004	1.003	1.000	1.005	1.004	1.005	1.006	1.006	1.010					
Latest 3	1.027	1.026	1.020	1.015	1.020	1.006	1.007	1.000	1.000	1.000	1.000	1.008	1.008	1.012	1.000	1.000			
Dev Factor Selection																			
Industry 1																			
Industry 2	1.001																		
Prior	*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*	*1.000*	*1.000*	*1.000*	*1.001*	
Selected	1.005	1.005	1.005	1.005	1.005	1.005	1.005	1.003	1.003	1.003	1.002	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FacToUlt	1.049	1.044	1.039	1.034	1.029	1.024	1.019	1.013	1.010	1.007	1.004	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Percent of Ult	95.3%	95.8%	96.2%	96.7%	97.2%	97.7%	98.2%	98.7%	99.0%	99.3%	99.6%	99.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	3,022,846	3,034,925	3,022,846	3,034,925	0	0.0%	0	0.0%
6/30/82-83	758,137	773,003	750,705	765,570	(7,433)	-1.0%	(7,433)	-1.0%
6/30/83-84	936,086	954,440	926,908	945,263	(9,177)	-1.0%	(9,177)	-1.0%
6/30/84-85	1,521,879	1,551,720	1,506,958	1,536,799	(14,920)	-1.0%	(14,920)	-1.0%
6/30/85-86	1,906,285	1,943,663	1,887,596	1,924,974	(18,689)	-1.0%	(18,689)	-1.0%
6/30/86-87	2,971,000	2,971,000	3,044,000	3,058,253	73,000	2.5%	87,253	2.9%
6/30/87-88	4,400,000	4,419,986	4,400,000	4,419,986	0	0.0%	0	0.0%
6/30/88-89	1,516,000	1,522,786	1,516,000	1,522,786	0	0.0%	0	0.0%
6/30/89-90	3,852,000	3,869,676	3,858,000	3,869,676	6,000	0.2%	0	0.0%
6/30/90-91	1,394,000	1,414,511	1,399,000	1,407,543	5,000	0.4%	(6,968)	-0.5%
6/30/91-92	1,395,000	1,463,403	1,402,000	1,407,654	7,000	0.5%	(55,749)	-3.8%
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	1,229,000	1,282,677	1,258,000	1,305,931	29,000	2.4%	23,254	1.8%
6/30/94-95	1,829,000	1,908,222	1,843,000	1,907,816	14,000	0.8%	(406)	0.0%
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	1,195,000	1,254,750	1,213,000	1,273,650	18,000	1.5%	18,900	1.5%
6/30/97-98	2,459,000	2,460,000	2,587,000	2,590,000	128,000	5.2%	130,000	5.3%
6/30/98-99	1,551,000	1,567,000	1,623,000	1,640,000	72,000	4.6%	73,000	4.7%
6/30/99-00	1,207,000	1,219,000	1,229,000	1,242,000	22,000	1.8%	23,000	1.9%
6/30/00-01	1,796,000	1,797,000	1,863,000	1,864,000	67,000	3.7%	67,000	3.7%
6/30/01-02	2,703,000	2,708,000	2,795,000	2,800,000	92,000	3.4%	92,000	3.4%
6/30/02-03	1,489,000	1,505,000	1,539,000	1,556,000	50,000	3.4%	51,000	3.4%
6/30/03-04	1,605,000	1,623,000	1,627,000	1,645,000	22,000	1.4%	22,000	1.4%
6/30/04-05	1,128,000	1,187,000	1,127,000	1,233,000	(1,000)	-0.1%	46,000	3.9%
6/30/05-06	1,775,000	1,884,000	1,825,000	1,946,000	50,000	2.8%	62,000	3.3%
6/30/06-07	1,116,000	1,211,000	1,115,000	1,273,000	(1,000)	-0.1%	62,000	5.1%
6/30/07-08	2,947,000	3,038,000	3,094,000	3,138,000	147,000	5.0%	100,000	3.3%
6/30/08-09	2,231,550	2,406,000	2,348,400	2,473,000	116,850	5.2%	67,000	2.8%
6/30/09-10	3,599,550	4,116,000	3,769,600	4,249,000	170,050	4.7%	133,000	3.2%
6/30/10-11	2,802,500	3,044,000	2,855,700	3,017,000	53,200	1.9%	(27,000)	-0.9%
6/30/11-12	2,796,800	3,045,000	2,844,300	3,007,000	47,500	1.7%	(38,000)	-1.2%
6/30/12-13	2,603,950	2,788,000	2,666,650	2,914,000	62,700	2.4%	126,000	4.5%
6/30/13-14	3,012,450	3,264,000	3,041,900	3,313,000	29,450	1.0%	49,000	1.5%
6/30/14-15	2,946,000	3,238,000	3,170,000	3,511,000	224,000	7.6%	273,000	8.4%
6/30/15-16	3,643,000	3,768,000	3,960,000	4,188,000	317,000	8.7%	420,000	11.1%
6/30/16-17	3,609,340	3,830,000	3,552,500	3,845,000	(56,840)	-1.6%	15,000	0.4%
6/30/17-18	3,825,650	4,331,000	3,822,800	4,091,000	(2,850)	-0.1%	(240,000)	-5.5%
6/30/18-19	3,068,380	3,912,000	2,796,800	3,630,000	(271,580)	-8.9%	(282,000)	-7.2%
6/30/19-20								
Total	84,306,277	88,843,132	85,745,537	90,083,197	1,439,261	1.7%	1,240,065	1.4%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2019

(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, 2020

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	1.000	3,004,076	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	1.000	716,562	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	1.000	838,071	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	1.000	1,393,627	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	1.000	1,834,650	0.0%	0.0%	0	35,000	35,000	1.9%	1.000	35,000	35,000	35,000
6/30/86-87	2,921,538	1.000	2,922,722	0.0%	0.0%	0	121,500	121,500	4.2%	1.000	121,500	121,500	121,500
6/30/87-88	4,103,153	1.000	4,104,816	0.0%	0.0%	0	294,843	294,843	7.2%	1.000	294,843	294,843	294,843
6/30/88-89	1,302,910	1.000	1,303,438	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	1.002	3,328,702	0.0%	0.0%	0	529,712	529,712	15.9%	1.000	529,712	529,712	529,712
6/30/90-91	1,160,107	1.004	1,165,224	0.0%	0.0%	0	233,500	233,500	20.0%	1.000	233,500	233,500	233,500
6/30/91-92	1,137,534	1.007	1,145,979	0.0%	0.0%	0	256,183	256,183	22.4%	1.000	256,183	256,183	256,183
6/30/92-93	986,496	1.010	996,801	0.0%	0.0%	0	161,000	161,000	16.2%	1.000	161,000	161,000	161,000
6/30/93-94	1,084,744	1.013	1,099,363	0.0%	0.0%	0	159,000	159,000	14.5%	1.000	159,000	159,000	159,000
6/30/94-95	1,447,763	1.019	1,474,612	0.0%	0.0%	0	369,205	369,205	25.0%	1.000	369,205	369,205	369,205
6/30/95-96	927,586	1.024	949,512	0.0%	0.0%	0	341,461	341,461	36.0%	1.000	341,461	341,461	350,466
6/30/96-97	924,850	1.029	951,445	0.1%	0.1%	951	254,882	255,833	26.9%	1.050	267,626	261,730	261,721
6/30/97-98	2,241,497	1.034	2,317,483	0.0%	0.1%	2,317	265,000	267,317	11.5%	1.050	278,250	272,784	272,719
6/30/98-99	1,359,445	1.039	1,412,558	0.0%	0.1%	1,413	205,250	206,663	14.6%	1.050	215,513	211,088	211,051
6/30/99-00	844,236	1.044	881,606	0.0%	0.1%	882	338,100	338,982	38.5%	1.050	355,005	346,993	346,982
6/30/00-01	1,508,154	1.049	1,582,786	0.0%	0.1%	1,583	273,502	275,085	17.4%	1.050	287,177	281,131	281,098
6/30/01-02	2,211,575	1.060	2,344,228	0.0%	0.1%	2,344	443,250	445,594	19.0%	1.050	465,413	455,503	457,840
6/30/02-03	1,180,634	1.078	1,273,197	0.0%	0.1%	1,273	257,500	258,773	20.3%	1.060	273,006	265,889	230,007
6/30/03-04	1,176,508	1.099	1,292,846	0.0%	0.1%	1,293	323,500	324,793	25.1%	1.061	343,323	334,058	335,113
6/30/04-05	825,463	1.117	922,185	0.1%	0.2%	1,844	198,101	199,945	21.7%	1.063	210,660	205,303	205,566
6/30/05-06	1,370,654	1.145	1,569,350	0.0%	0.2%	3,139	245,673	248,811	15.9%	1.066	261,771	255,291	255,589
6/30/06-07	783,708	1.178	923,155	0.0%	0.2%	1,846	185,000	186,846	20.2%	1.068	197,516	192,181	192,528
6/30/07-08	1,929,526	1.206	2,326,803	0.0%	0.2%	4,654	781,250	785,904	33.8%	1.071	836,609	811,256	812,622
6/30/08-09	1,735,462	1.226	2,127,271	0.0%	0.2%	4,255	330,001	334,256	15.7%	1.074	354,445	344,350	346,235
6/30/09-10	2,820,695	1.259	3,552,096	0.0%	0.2%	7,104	665,500	672,604	18.9%	1.085	721,914	697,259	704,046
6/30/10-11	1,811,958	1.297	2,350,906	0.1%	0.3%	7,514	631,184	638,698	27.2%	1.098	692,906	665,802	675,637
6/30/11-12	1,891,059	1.343	2,539,150	0.3%	0.6%	15,832	435,264	451,096	17.8%	1.114	485,002	468,049	494,813
6/30/12-13	1,673,685	1.389	2,324,739	0.7%	1.4%	31,513	427,448	458,961	19.7%	1.182	505,435	482,198	497,388
6/30/13-14	1,871,243	1.460	2,732,664	1.6%	3.0%	81,371	370,001	451,372	16.5%	1.319	488,111	469,742	509,445
6/30/14-15	1,645,526	1.554	2,557,906	1.1%	4.0%	103,207	437,499	540,706	21.1%	1.561	682,893	611,800	493,150
6/30/15-16	2,284,595	1.658	3,787,181	1.8%	5.8%	219,755	209,183	428,939	11.3%	1.784	373,171	401,055	461,674
6/30/16-17	1,580,493	1.823	2,881,614	2.8%	8.6%	247,492	459,000	706,492	24.5%	2.338	1,073,353	743,178	734,394
6/30/17-18	1,554,754	2.179	3,387,452	4.4%	13.0%	441,301	213,000	654,301	19.3%	3.871	824,575	662,815	638,960
6/30/18-19	861,868	2.914	2,511,368	4.9%	17.9%	450,463	3,000	453,463	18.1%	10.453	31,358	432,358	517,819
6/30/19-20	302,226	6.393	1,932,132	2.0%	19.9%	384,448	0	384,448	19.9%	22.949	0	384,448	
Total	62,567,403		76,760,277			2,017,795	10,887,518	12,905,313	16.8%		13,160,462	13,191,691	12,880,833

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, 2016

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	420-432	432-444	444-456	456-468
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	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	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	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	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	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	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	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	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	0	0	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	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	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	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	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	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	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	0	0	0	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	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	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	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	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	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	0	0	50,000	35,000																					
Jun-04	0	7,000	0	22,000	87,500	32,000	100,000	75,000	0	0	0	0	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	0	0	0	1																							
Jun-06	0	30,000	20,000	75,000	75,673	0	0	0	0	0	0	45,000	0	0	0																								
Jun-07	0	40,000	75,000	35,000	0	0	20,000	15,000	0	0	0	0	0	0																									
Jun-08	0	33,000	183,500	27,500	74,750	82,500	168,333	128,333	83,333	0	0	0	0																										
Jun-09	0	35,000	30,000	60,000	70,000	0	55,000	80,000	0	0	0	1																											
Jun-10	0	71,500	174,000	140,000	40,000	122,000	8,000	47,500	46,250	16,250	0																												
Jun-11	0	25,000	293,500	146,183	92,500	9,000	20,000	0	45,000	1																													
Jun-12	0	0	17,500	222,000	160,762	0	0	35,000	2																														
Jun-13	72,000	0	130,000	102,447	40,000	20,000	25,000	38,001																															
Jun-14	87,000	10,000	75,000	18,750	96,250	58,001	25,000																																
Jun-15	0	0	142,500	115,000	40,000	139,999																																	
Jun-16	0	17,000	59,430	102,750	30,003																																		
Jun-17	0	85,000	198,000	176,000																																			
Jun-18	0	0	213,000																																				
Jun-19	3,000	0																																					
Jun-20	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	432	444	456	468
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	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	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	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	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	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	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	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	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	529,712	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	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	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											
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												
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													
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														
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	254,882	254,882	254,882	254,882	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	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	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																				
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	222,500	257,500																					
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																						
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	198,101																							
Jun-06	0	30,000	50,000	125,000	200,673	200,673	200,673	200,673	200,673	200,673	200,673	245,673	245,673	245,673	245,673																								
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																									
Jun-08	0	33,000	216,500	244,000	318,750	401,250	569,583	697,917	781,250	781,250	781,250	781,250	781,250																										
Jun-09	0	35,000	65,000	125,000	195,000	195,000	250,000	330,000	330,000	330,000	330,000	330,001																											
Jun-10	0	71,500	245,500	385,500	425,500	547,500	555,500	603,000	649,250	665,500	665,500																												
Jun-11	0	25,000	318,500	464,683	557,183	566,183	586,183	586,183	631,183	631,184																													
Jun-12	0	0	17,500	239,500	400,262	400,262	400,262	435,262	435,264																														
Jun-13	72,000	72,000	202,000	304,447	344,447	364,447	389,447	427,448																															
Jun-14	87,000	97,000	172,000	190,750	287,000	345,001	370,001																																
Jun-15	0	0	142,500	257,500	297,500	437,499																																	
Jun-16	0	17,000	76,430	179,180	209,183																																		
Jun-17	0	85,000	283,000	459,000																																			
Jun-18	0	0	213,000																																				
Jun-19	3,000	3,000																																					
Jun-20	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
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
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
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
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
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
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
Jun-88	0.000	0.000	0.005	0.000	0.009	0.007	0.020	0.011	0.004	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.004
Jun-89	0.000	0.025	0.000	0.005	0.000	0.052	0.000	0.023	0.000	0.000	0.058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-90	0.000	0.000	0.008	0.009	0.011	0.023	0.009	0.000	0.016	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	0.041	0.028	0.000	0.000	0.000	0.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	0.026	0.021	0.000
Jun-92	0.000	0.000	0.013	0.078	0.000	0.000	0.000	0.010	0.000	0.017	0.008	0.000	0.000	0.000	0.000	0.000	0.065	0.031	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
Jun-94	0.003	0.000	0.023	0.014	0.015	0.059	0.000	0.032	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	0.072	0.070	0.037	0.027	0.015	0.000	0.000	0.014	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-96	0.024	0.102	0.011	0.016	0.074	0.021	0.000	0.000	0.042	0.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-97	0.000	0.052	0.119	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
Jun-98	0.000	0.035	0.039	0.011	0.011	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Jun-99	0.000	0.004	0.007	0.065	0.046	0.000	0.000	0.000	0.000	0.000	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-00	0.000	0.108	0.155	0.014	0.050	0.023	0.034	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-01	0.017	0.002	0.039	0.047	0.030	0.000	0.006	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-02	0.020	0.008	0.028	0.048	0.032	0.045	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
Jun-03	0.000	0.041	0.024	0.035	0.000	0.027	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.039	0.027	
Jun-04	0.000	0.005	0.000	0.017	0.068	0.025	0.077	0.058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Jun-05	0.000	0.016	0.042	0.049	0.054	0.022	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000			
Jun-06	0.000	0.019	0.013	0.048	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.029	0.000	0.000	0.000				
Jun-07	0.000	0.043	0.081	0.038	0.000	0.000	0.022	0.016	0.000	0.000	0.000	0.000	0.000	0.000					
Jun-08	0.000	0.014	0.079	0.012	0.032	0.035	0.072	0.055	0.036	0.000	0.000	0.000	0.000						
Jun-09	0.000	0.016	0.014	0.028	0.033	0.000	0.026	0.038	0.000	0.000	0.000	0.000							
Jun-10	0.000	0.020	0.049	0.039	0.011	0.034	0.002	0.013	0.013	0.005	0.000								
Jun-11	0.000	0.011	0.125	0.062	0.039	0.004	0.009	0.000	0.019	0.000									
Jun-12	0.000	0.000	0.007	0.087	0.063	0.000	0.000	0.014	0.000										
Jun-13	0.031	0.000	0.056	0.044	0.017	0.009	0.011	0.016											
Jun-14	0.032	0.004	0.027	0.007	0.035	0.021	0.009												
Jun-15	0.000	0.000	0.056	0.045	0.016	0.055													
Jun-16	0.000	0.004	0.016	0.027	0.008														
Jun-17	0.000	0.029	0.069	0.061															
Jun-18	0.000	0.000	0.063																
Jun-19	0.001	0.000																	
Jun-20	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
Simple Avg																			
All Yrs (ex P)	0.003	0.019	0.036	0.029	0.023	0.016	0.011	0.016	0.007	0.005	0.003	0.002	0.000	0.001	0.001	0.001	0.006	0.004	0.002
Latest 5	0.000	0.007	0.046	0.037	0.028	0.018	0.006	0.016	0.014	0.001	0.000	0.006	0.000	0.000	0.000	0.000	0.008	0.005	0.000
Latest 3	0.000	0.010	0.049	0.044	0.020	0.028	0.007	0.010	0.011	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.009	0.000
Olympic Avg																			
All Yrs (ex P)	0.003	0.017	0.034	0.029	0.022	0.015	0.009	0.015	0.006	0.003	0.001	0.001	0.000	0.000	0.000	0.000	0.003	0.003	0.000
Latest 10	0.004	0.005	0.044	0.040	0.024	0.013	0.014	0.019	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Latest 5	0.000	0.001	0.049	0.039	0.023	0.011	0.007	0.015	0.011	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*	*0.020*	*0.046*	*0.044*	*0.034*	*0.014*	*0.010*	*0.025*	*0.008*	*0.003*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.001*	*0.000*	*0.000*
Selected	NA	0.020	0.049	0.044	0.028	0.018	0.011	0.016	0.007	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
FacToUlt	NA	0.199	0.179	0.130	0.086	0.058	0.040	0.030	0.014	0.006	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001

Acc Yr Ending	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	420-432	432-444	444-456	456-468
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	0.000	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	
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	0.000	0.000		
Jun-85	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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	0.000	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	0.000	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	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000							
Jun-90	0.000	0.010	0.010	0.010	0.000	0.054	0.000	0.000	0.000	0.000	0.000	0.000								
Jun-91	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Jun-93	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												
Jun-95	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.000	0.000	0.000	0.000	0.000														
Jun-97	0.000	0.000	0.000	0.000	0.000															
Jun-98	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.000	0.000																	
Jun-00	0.000	0.000																		
Jun-01	0.000																			
Averages	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	420-432	432-444	444-456	456-468
Simple Avg																				
All Yrs (ex P)	0.000	0.001	0.001	0.001	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	
Latest 5	0.000	0.000	0.000	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	0.000	0.000	0.000	0.000	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	0.000	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.000	0.000	0.000	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	*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*	*0.000*	
Selected	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	0.000	0.000
FacToUlt	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

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
All Prior Yrs	0	0	0	0	0	0	0	0	0	0	0	0	0	2,750	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
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
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
Jun-86	0	0	0	0	0	0	0	0	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
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
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
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
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
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
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
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
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
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
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
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	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
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
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
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	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
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
Jun-06	0	30,000	50,000	125,000	200,673	200,673	200,673	200,673	200,673	200,673	200,673	245,673	245,673	245,673	245,673
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	
Jun-08	0	33,000	216,500	244,000	318,750	401,250	569,583	697,917	781,250	781,250	781,250	781,250	781,250		
Jun-09	0	35,000	65,000	125,000	195,000	195,000	250,000	330,000	330,000	330,000	330,000	330,001			
Jun-10	0	71,500	245,500	385,500	425,500	547,500	555,500	603,000	649,250	665,500	665,500				
Jun-11	0	25,000	318,500	464,683	557,183	566,183	586,183	586,183	631,183	631,184					
Jun-12	0	0	17,500	239,500	400,262	400,262	400,262	435,262	435,264						
Jun-13	72,000	72,000	202,000	304,447	344,447	364,447	389,447	427,448							
Jun-14	87,000	97,000	172,000	190,750	287,000	345,001	370,001								
Jun-15	0	0	142,500	257,500	297,500	437,499									
Jun-16	0	17,000	76,430	179,180	209,183										
Jun-17	0	85,000	283,000	459,000											
Jun-18	0	0	213,000												
Jun-19	3,000	3,000													
Jun-20	0														

Acc Yr Ending	192	204	216	228	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	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	15,750	15,750	15,750
Jun-83	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	27,000	27,000	27,000	
Jun-84	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	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	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	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	121,500					
Jun-88	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	294,843	294,843	294,843	294,843						
Jun-89	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	249,712	249,712	249,712	249,712	249,712	283,045	316,379	349,712	349,712	529,712	529,712	529,712	529,712	529,712	529,712	529,712								
Jun-91	178,500	208,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500	233,500									
Jun-92	146,183	221,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183	256,183										
Jun-93	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	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	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205	369,205													
Jun-96	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461	341,461														
Jun-97	224,882	224,882	224,882	254,882	254,882	254,882	254,882	254,882	254,882															
Jun-98	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000																
Jun-99	205,250	205,250	205,250	205,250	205,250	205,250	205,250																	
Jun-00	338,100	338,100	338,100	338,100	338,100	338,100																		
Jun-01	273,502	273,502	273,502	273,502	273,502																			
Jun-02	443,250	443,250	443,250	443,250																				
Jun-03	172,500	222,500	257,500																					
Jun-04	323,500	323,500																						
Jun-05	198,101																							

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
All Prior Yrs														5.727	1.000
Jun-83									1.000	1.000	1.000	1.000	1.000	2.250	1.000
Jun-84								1.344	1.000	1.000	1.280	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
Jun-86									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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	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	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	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	1.224	1.000	1.000	1.000	
Jun-07		2.875	1.304	1.000	1.000	1.133	1.088	1.000	1.000	1.000	1.000	1.000	1.000		
Jun-08		6.561	1.127	1.306	1.259	1.420	1.225	1.119	1.000	1.000	1.000	1.000			
Jun-09		1.857	1.923	1.560	1.000	1.282	1.320	1.000	1.000	1.000	1.000				
Jun-10		3.434	1.570	1.104	1.287	1.015	1.086	1.077	1.025	1.000					
Jun-11		12.740	1.459	1.199	1.016	1.035	1.000	1.077	1.000						
Jun-12			13.686	1.671	1.000	1.000	1.087	1.000							
Jun-13	1.000	2.806	1.507	1.131	1.058	1.069	1.098								
Jun-14	1.115	1.773	1.109	1.505	1.202	1.072									
Jun-15			1.807	1.155	1.471										
Jun-16		4.496	2.344	1.167											
Jun-17		3.329	1.622												
Jun-18															
Jun-19	1.000														

Acc Yr Ending	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	420-432	432-444	444-456	456-468	To Ult
All Prior Yrs	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	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			
Jun-85	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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					
Jun-87	1.000	1.000	1.000	1.000	1.000	1.000	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	1.065	1.061	1.000	1.000	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-89	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	1.000	1.133	1.118	1.105	1.000	1.515	1.000	1.000	1.000	1.000	1.000	1.000									
Jun-91	1.168	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										
Jun-92	1.513	1.158	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	1.000	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	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000															
Jun-97	1.000	1.000	1.133	1.000	1.000	1.000	1.000	1.000																
Jun-98	1.000	1.000	1.000	1.000	1.000	1.000	1.000																	
Jun-99	1.000	1.000	1.000	1.000	1.000	1.000																		
Jun-00	1.000	1.000	1.000	1.000	1.000																			
Jun-01	1.000	1.000	1.000	1.000																				
Jun-02	1.000	1.000	1.000																					
Jun-03	1.290	1.157																						
Jun-04	1.000																							

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
Simple Avg															
All Yrs (ex P)	1.700	3.244	2.381	1.405	1.245	1.109	1.165	1.082	1.059	1.029	1.019	1.001	1.023	1.052	1.007
Latest 5		3.200	1.678	1.326	1.149	1.038	1.118	1.055	1.005	1.000	1.045	1.000	1.000	1.000	1.000
Latest 3		3.913	1.924	1.276	1.244	1.047	1.062	1.051	1.008	1.000	1.000	1.000	1.000	1.000	1.000
Volume Wtd															
All Yrs (ex P)		2.969	1.569	1.277	1.162	1.094	1.116	1.057	1.029	1.017	1.010	1.001	1.008	1.003	1.005
Latest 5		4.457	1.588	1.313	1.120	1.035	1.092	1.066	1.006	1.000	1.027	1.000	1.000	1.000	1.000
Latest 3		5.612	1.784	1.265	1.235	1.045	1.053	1.056	1.010	1.000	1.000	1.000	1.000	1.000	1.000

Averages	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	420-432	432-444	444-456	456-468	To Ult
Simple Avg																								
All Yrs (ex P)	1.044	1.024	1.010	1.000	1.007	1.007	1.007	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		
Latest 5	1.058	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						
Latest 3	1.097	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	1.000				
Volume Wtd																								
All Yrs (ex P)	1.033	1.025	1.011	1.000	1.009	1.010	1.010	1.000	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	1.000		
Latest 5	1.032	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						
Latest 3	1.053	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	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
Prior	*2.196*	*2.700*	*1.594*	*1.313*	*1.143*	*1.183*	*1.117*	*1.066*	*1.016*	*1.012*	*1.011*	*1.003*	*1.003*	*1.002*	*1.002*
Selected	2.196	2.700	1.655	1.311	1.143	1.183	1.116	1.061	1.015	1.012	1.010	1.003	1.003	1.002	1.002
FacToUlt	22.949	10.453	3.871	2.338	1.784	1.561	1.319	1.182	1.114	1.098	1.085	1.074	1.071	1.068	1.066
Percent of Ult	4.4%	9.6%	25.8%	42.8%	56.1%	64.1%	75.8%	84.6%	89.7%	91.1%	92.2%	93.1%	93.4%	93.7%	93.9%

Dev Factor Selection	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	420-432	432-444	444-456	456-468	To Ult
Prior	*1.002*	*1.001*	*1.010*	*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*	*1.000*	*1.000*	*1.000*	
Selected	1.002	1.001	1.010	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	1.000	1.000	1.000	1.000
FacToUlt	1.063	1.061	1.060	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	1.000	1.000	1.000	1.000
Percent of Ult	94.0%	94.2%	94.3%	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%	100.0%	100.0%	100.0%	100.0%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Massachusetts Colleges & Universities - Cluster 4
Indemnity

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
456	100.0%	0.0%	0.0%	0.0%	0.0%	0.981	0.971
444	100.0%	0.0%	0.0%	0.0%	0.0%	0.943	0.916
432	100.0%	0.0%	0.0%	0.0%	0.0%	0.907	0.864
420	100.0%	0.0%	0.0%	0.0%	0.0%	0.872	0.816
408	100.0%	0.0%	0.0%	0.0%	0.0%	0.838	0.769
396	100.0%	0.0%	0.0%	0.0%	0.0%	0.806	0.726
384	100.0%	0.2%	0.0%	0.1%	0.0%	0.775	0.685
372	99.8%	0.2%	0.2%	0.1%	0.0%	0.941	0.916
360	99.6%	0.3%	0.4%	0.1%	0.1%	0.939	0.913
348	99.3%	0.3%	0.7%	0.1%	0.1%	0.934	0.906
336	99.0%	0.3%	1.0%	0.1%	0.1%	0.922	0.888
324	98.7%	0.5%	1.3%	0.2%	0.1%	0.907	0.867
312	98.2%	0.5%	1.8%	0.2%	0.1%	0.902	0.860
300	97.7%	0.5%	2.3%	0.2%	0.1%	0.891	0.845
288	97.2%	0.5%	2.8%	0.2%	0.1%	0.878	0.827
276	96.7%	0.5%	3.3%	0.2%	0.1%	0.865	0.809
264	96.2%	0.5%	3.8%	0.2%	0.1%	0.850	0.790
252	95.8%	0.5%	4.2%	0.2%	0.1%	0.836	0.770
240	95.3%	0.9%	4.7%	0.4%	0.3%	0.822	0.752
228	94.3%	1.6%	5.7%	0.8%	0.5%	0.822	0.753
216	92.7%	1.7%	7.3%	0.9%	0.6%	0.832	0.768
204	91.0%	1.5%	9.0%	0.8%	0.6%	0.835	0.772
192	89.5%	2.2%	10.5%	1.2%	0.9%	0.828	0.763
180	87.3%	2.4%	12.7%	1.4%	1.1%	0.828	0.763
168	84.9%	2.0%	15.1%	1.2%	0.9%	0.826	0.760
156	82.9%	1.3%	17.1%	0.8%	0.6%	0.816	0.747
144	81.6%	2.2%	18.4%	1.4%	1.1%	0.799	0.724
132	79.4%	2.3%	20.6%	1.5%	1.3%	0.790	0.713
120	77.1%	2.6%	22.9%	1.8%	1.5%	0.782	0.703
108	74.5%	2.5%	25.5%	1.8%	1.5%	0.776	0.695
96	72.0%	3.5%	28.0%	2.6%	2.3%	0.767	0.683
84	68.5%	4.1%	31.5%	3.2%	2.8%	0.764	0.681
72	64.3%	4.0%	35.7%	3.2%	2.9%	0.763	0.681
60	60.3%	5.5%	39.7%	4.6%	4.2%	0.759	0.676
48	54.8%	9.0%	45.2%	7.8%	7.3%	0.760	0.678
36	45.9%	11.6%	54.1%	10.5%	10.0%	0.772	0.694
24	34.3%	18.7%	65.7%	17.6%	17.1%	0.784	0.711
12	15.6%	15.6%	84.4%	15.3%	15.2%	0.804	0.737
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, 2020

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	3,020	15,099		2,905	14,524
6/30/82-83	7,433	22,298	0.981	7,288	21,865
6/30/83-84	9,177	27,532	0.943	8,653	25,959
6/30/84-85	14,920	44,761	0.907	13,527	40,581
6/30/85-86	18,689	56,067	0.872	16,292	48,876
6/30/86-87	962	15,215	0.838	806	12,753
6/30/87-88	2,004	21,990	0.806	1,615	17,723
6/30/88-89	790	7,576	0.775	612	5,871
6/30/89-90	7,576	19,252	0.941	7,128	18,113
6/30/90-91	5,393	13,936	0.939	5,064	13,087
6/30/91-92	8,283	13,937	0.934	7,739	13,022
6/30/92-93	22,950	57,375	0.922	21,160	52,899
6/30/93-94	14,256	62,187	0.907	12,937	56,433
6/30/94-95	26,032	90,848	0.902	23,473	81,917
6/30/95-96	25,381	63,452	0.891	22,615	56,538
6/30/96-97	33,268	93,918	0.878	29,219	82,487
6/30/97-98	80,503	83,503	0.865	69,601	72,195
6/30/98-99	58,305	75,305	0.850	49,584	64,041
6/30/99-00	46,664	59,664	0.836	39,016	49,886
6/30/00-01	81,344	82,344	0.822	66,849	67,671
6/30/01-02	140,175	145,175	0.822	115,215	119,324
6/30/02-03	100,866	117,866	0.832	83,970	98,122
6/30/03-04	126,993	144,993	0.835	106,048	121,079
6/30/04-05	103,436	209,436	0.828	85,664	173,451
6/30/05-06	208,673	329,673	0.828	172,770	272,952
6/30/06-07	146,292	304,292	0.826	120,831	251,332
6/30/07-08	383,224	427,224	0.816	312,587	348,477
6/30/08-09	282,937	407,537	0.799	225,963	325,472
6/30/09-10	283,405	762,805	0.790	223,990	602,885
6/30/10-11	412,558	573,858	0.782	322,794	448,998
6/30/11-12	517,977	680,677	0.776	401,726	527,911
6/30/12-13	565,517	812,867	0.767	433,496	623,101
6/30/13-14	800,656	1,071,756	0.764	611,892	819,077
6/30/14-15	1,086,975	1,427,975	0.763	829,805	1,090,126
6/30/15-16	1,466,222	1,694,222	0.759	1,112,776	1,285,815
6/30/16-17	1,513,007	1,805,507	0.760	1,150,152	1,372,504
6/30/17-18	2,055,046	2,323,246	0.772	1,586,981	1,794,095
6/30/18-19	1,931,932	2,765,132	0.784	1,515,600	2,169,244
6/30/19-20	2,026,359	3,445,774	0.804	1,630,041	2,771,844
Total	14,619,201	20,376,276		11,448,384	16,032,253

	(Low)	(High)
(7) Total Discount Factor:	0.783	0.787

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	3,020	15,099
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	1,510	7,550
(11) Discounted Value at 4%:	2,905	14,524

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, 2020

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	3,020	15,099		2,851	14,257
6/30/82-83	7,433	22,298	0.971	7,219	21,658
6/30/83-84	9,177	27,532	0.916	8,409	25,228
6/30/84-85	14,920	44,761	0.864	12,898	38,693
6/30/85-86	18,689	56,067	0.816	15,241	45,723
6/30/86-87	962	15,215	0.769	740	11,706
6/30/87-88	2,004	21,990	0.726	1,455	15,960
6/30/88-89	790	7,576	0.685	541	5,187
6/30/89-90	7,576	19,252	0.916	6,943	17,642
6/30/90-91	5,393	13,936	0.913	4,923	12,723
6/30/91-92	8,283	13,937	0.906	7,502	12,623
6/30/92-93	22,950	57,375	0.888	20,380	50,949
6/30/93-94	14,256	62,187	0.867	12,367	53,945
6/30/94-95	26,032	90,848	0.860	22,377	78,092
6/30/95-96	25,381	63,452	0.845	21,443	53,608
6/30/96-97	33,268	93,918	0.827	27,524	77,701
6/30/97-98	80,503	83,503	0.809	65,098	67,524
6/30/98-99	58,305	75,305	0.790	46,034	59,456
6/30/99-00	46,664	59,664	0.770	35,951	45,967
6/30/00-01	81,344	82,344	0.752	61,132	61,883
6/30/01-02	140,175	145,175	0.753	105,511	109,275
6/30/02-03	100,866	117,866	0.768	77,464	90,520
6/30/03-04	126,993	144,993	0.772	98,029	111,923
6/30/04-05	103,436	209,436	0.763	78,896	159,748
6/30/05-06	208,673	329,673	0.763	159,170	251,466
6/30/06-07	146,292	304,292	0.760	111,229	231,361
6/30/07-08	383,224	427,224	0.747	286,104	318,954
6/30/08-09	282,937	407,537	0.724	204,790	294,976
6/30/09-10	283,405	762,805	0.713	202,142	544,081
6/30/10-11	412,558	573,858	0.703	290,142	403,580
6/30/11-12	517,977	680,677	0.695	359,895	472,940
6/30/12-13	565,517	812,867	0.683	386,510	555,565
6/30/13-14	800,656	1,071,756	0.681	545,416	730,093
6/30/14-15	1,086,975	1,427,975	0.681	740,067	972,237
6/30/15-16	1,466,222	1,694,222	0.676	990,481	1,144,502
6/30/16-17	1,513,007	1,805,507	0.678	1,025,527	1,223,786
6/30/17-18	2,055,046	2,323,246	0.694	1,426,895	1,613,116
6/30/18-19	1,931,932	2,765,132	0.711	1,373,190	1,965,417
6/30/19-20	2,026,359	3,445,774	0.737	1,493,699	2,539,998
Total	14,619,201	20,376,276		10,336,186	14,504,062
			(7) Total Discount Factor:	0.707	0.712

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	3,020	15,099
(9) Projected Number of Years:	2	2
(10) Projected Paid Loss per Year:	1,510	7,550
(11) Discounted Value at 6%:	2,851	14,257

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, 2020

Massachusetts Colleges & Universities - Cluster 4

Total Indemnity (Including Lump Sums) + Medical

Calculation of Fiscal Year 7/01/20 - 21 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/20 - 06/30/21	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/20 - 06/30/21		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior yrs	3,361,301	3,373,380	3,358,281	3,020	15,099				0	0	0.0%	0.0%
6/30/82-83	804,015	819,146	796,317	7,698	22,829	98.1%	0.1%	5.3%	409	1,214	5.3%	5.3%
6/30/83-84	954,820	973,314	945,504	9,316	27,810	98.1%	0.1%	5.2%	484	1,444	5.2%	5.2%
6/30/84-85	1,620,414	1,650,819	1,604,929	15,485	45,890	98.1%	0.1%	5.3%	825	2,446	5.3%	5.3%
6/30/85-86	2,273,096	2,311,243	2,253,254	19,842	57,989	98.3%	0.1%	5.9%	1,169	3,416	5.9%	5.9%
6/30/86-87	3,284,000	3,298,989	3,282,577	1,423	16,413	99.7%	0.1%	29.5%	420	4,846	29.5%	29.5%
6/30/87-88	5,072,000	5,091,986	5,069,952	2,048	22,033	99.8%	0.1%	33.8%	691	7,440	33.8%	33.8%
6/30/88-89	1,943,000	1,949,786	1,941,224	1,776	8,562	99.7%	0.1%	30.1%	535	2,579	30.1%	30.1%
6/30/89-90	4,406,000	4,417,676	4,397,880	8,120	19,796	99.7%	0.1%	25.3%	2,053	5,006	25.3%	25.3%
6/30/90-91	1,872,000	1,880,543	1,866,079	5,921	14,464	99.5%	0.2%	36.8%	2,180	5,325	36.8%	36.8%
6/30/91-92	2,218,796	2,228,514	2,206,449	12,347	22,064	99.2%	0.2%	25.8%	3,191	5,703	25.8%	25.8%
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	2,000,425	2,053,512	1,980,276	20,149	73,235	97.7%	0.7%	30.4%	6,123	22,255	30.4%	30.4%
6/30/94-95	2,420,349	2,489,175	2,389,735	30,614	99,440	97.4%	0.7%	26.4%	8,090	26,277	26.4%	26.4%
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	2,135,590	2,200,830	2,090,529	45,061	110,301	96.4%	1.0%	27.9%	12,577	30,787	27.9%	27.9%
6/30/97-98	3,027,000	3,034,400	2,939,046	87,954	95,354	97.0%	1.0%	33.1%	29,084	31,530	33.1%	33.1%
6/30/98-99	2,001,000	2,021,780	1,930,224	70,776	91,556	96.0%	1.0%	24.8%	17,539	22,689	24.8%	24.8%
6/30/99-00	1,734,000	1,747,000	1,668,934	65,066	78,066	95.9%	1.0%	24.3%	15,824	18,986	24.3%	24.3%
6/30/00-01	2,452,000	2,453,000	2,346,467	105,533	106,533	95.7%	1.0%	23.1%	24,409	24,641	23.1%	23.1%
6/30/01-02	3,356,000	3,366,610	3,189,047	166,953	177,563	94.9%	1.0%	19.5%	32,578	34,648	19.5%	19.5%
6/30/02-03	2,193,640	2,225,000	2,070,822	122,818	154,178	93.7%	3.0%	47.9%	58,776	73,783	47.9%	47.9%
6/30/03-04	2,350,240	2,383,000	2,191,465	158,775	191,535	92.6%	3.0%	40.5%	64,359	77,638	40.5%	40.5%
6/30/04-05	1,824,760	1,949,000	1,683,527	141,233	265,473	89.2%	3.0%	27.8%	39,314	73,898	27.8%	27.8%
6/30/05-06	2,689,360	2,838,000	2,435,495	253,865	402,505	88.1%	3.0%	25.3%	64,135	101,686	25.3%	25.3%
6/30/06-07	1,850,980	2,031,000	1,651,123	199,857	379,877	85.1%	3.0%	20.1%	40,148	76,311	20.1%	20.1%
6/30/07-08	4,132,800	4,220,000	3,684,757	448,043	535,243	88.2%	3.0%	25.5%	114,181	136,403	25.5%	25.5%
6/30/08-09	3,472,460	3,654,000	3,112,931	359,529	541,069	87.4%	3.0%	23.7%	85,349	128,445	23.7%	23.7%
6/30/09-10	4,912,280	5,447,000	4,543,140	369,140	903,860	87.7%	3.0%	24.4%	90,118	220,660	24.4%	24.4%
6/30/10-11	4,118,920	4,350,000	3,610,828	508,092	739,172	85.3%	3.0%	20.4%	103,498	150,569	20.4%	20.4%
6/30/11-12	3,847,820	4,034,000	3,209,893	637,927	824,107	81.5%	3.0%	16.2%	103,172	133,283	16.2%	16.2%
6/30/12-13	3,573,490	3,861,000	2,883,565	689,925	977,435	77.6%	3.0%	13.4%	92,288	130,747	13.4%	13.4%
6/30/13-14	4,190,460	4,489,000	3,215,680	974,780	1,273,320	74.1%	3.0%	11.6%	112,903	147,481	11.6%	11.6%
6/30/14-15	4,308,760	4,696,900	3,024,944	1,283,816	1,671,956	67.2%	5.0%	15.2%	195,577	254,706	15.2%	15.2%
6/30/15-16	5,257,520	5,520,630	3,537,541	1,719,979	1,983,089	65.6%	5.0%	14.6%	250,309	288,599	14.6%	14.6%
6/30/16-17	4,618,740	4,996,730	2,871,232	1,747,508	2,125,498	59.7%	5.9%	14.7%	256,916	312,488	14.7%	14.7%
6/30/17-18	5,185,980	5,508,050	2,773,234	2,412,746	2,734,816	51.9%	7.9%	16.3%	393,779	446,344	16.3%	16.3%
6/30/18-19	3,783,660	4,792,785	1,483,373	2,300,287	3,309,412	34.6%	10.0%	15.3%	351,682	505,963	15.3%	15.3%
6/30/19-20	3,156,685	5,007,265	547,012	2,609,673	4,460,253	13.4%	15.0%	17.3%	452,025	772,567	17.3%	17.3%
Total	115,962,867	123,001,505	98,292,001	17,670,866	24,709,504				3,044,617	4,326,660	17.2%	17.5%

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) = (5) * (9)

(11) = (6) * (9)

(12) = (10) / (5)

(13) = (11) / (6)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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	338,455	0	0		
6/30/82-83		53,045	53,056		53,310	53,575	265	530		
6/30/83-84		27,773	27,779		27,912	28,051	139	278		
6/30/84-85	357,749	112,891	112,915	112,929	113,455	114,020	564	1,129	0.032	0.032
6/30/85-86	380,112	384,347	384,429	384,457	385,500	386,269	1,153	1,922	0.101	0.102
6/30/86-87	423,770	239,538	239,590	239,613	240,000	240,736	462	1,198	0.057	0.057
6/30/87-88	480,405	671,957	672,101	672,134	672,000	672,000	43	43	0.140	0.140
6/30/88-89	495,261	426,014	426,106	426,143	427,000	427,000	986	986	0.086	0.086
6/30/89-90	502,691	547,456	547,574	547,619	548,000	548,000	544	544	0.109	0.109
6/30/90-91	482,143	472,472	472,573	472,573	473,000	473,000	528	528	0.098	0.098
6/30/91-92	492,539	812,732	812,906	812,904	816,796	820,860	4,064	8,127	0.166	0.167
6/30/92-93	524,541	506,348	506,456	506,455	508,880	511,411	2,532	5,063	0.097	0.097
6/30/93-94	584,853	736,533	736,691	736,688	742,425	747,581	5,892	11,048	0.127	0.128
6/30/94-95	587,701	572,767	574,534	574,502	577,349	581,359	4,582	8,592	0.098	0.099
6/30/95-96	614,868	581,842	583,637	583,602	584,752	587,661	2,909	5,818	0.095	0.096
6/30/96-97	700,686	910,797	918,243	917,984	922,590	927,180	11,793	16,383	0.132	0.132
6/30/97-98	684,415	432,549	440,139	440,160	440,000	444,400	7,451	11,851	0.064	0.065
6/30/98-99	707,796	365,529	377,539	377,821	378,000	381,780	12,471	16,251	0.053	0.054
6/30/99-00	760,477	486,598	504,954	504,996	505,000	505,000	18,402	18,402	0.066	0.066
6/30/00-01	811,600	564,812	588,626	588,550	589,000	589,000	24,188	24,188	0.073	0.073
6/30/01-02	835,038	534,221	560,589	560,757	561,000	566,610	26,779	32,389	0.067	0.068
6/30/02-03	825,340	632,688	668,806	668,493	654,640	669,000	21,952	36,312	0.079	0.081
6/30/03-04	849,216	691,457	738,239	737,686	723,240	738,000	31,783	46,543	0.085	0.087
6/30/04-05	992,508	659,963	711,660	716,370	697,760	716,000	37,797	56,037	0.070	0.072
6/30/05-06	962,878	819,168	892,171	881,640	864,360	892,000	45,192	72,832	0.090	0.093
6/30/06-07	1,032,930	682,415	750,662	757,621	735,980	758,000	53,565	75,585	0.071	0.073
6/30/07-08	1,063,597	973,981	1,082,101	1,059,938	1,038,800	1,082,000	64,819	108,019	0.098	0.102
6/30/08-09	1,073,805	1,047,468	1,181,202	1,147,316	1,124,060	1,181,000	76,592	133,532	0.105	0.110
6/30/09-10	1,084,749	1,056,944	1,197,848	1,165,596	1,142,680	1,198,000	85,736	141,056	0.105	0.110
6/30/10-11	1,134,164	1,167,686	1,333,199	1,288,780	1,263,220	1,333,000	95,534	165,314	0.111	0.118
6/30/11-12	1,202,674	883,569	1,023,943	1,026,784	1,003,520	1,027,000	119,951	143,431	0.083	0.085
6/30/12-13	1,284,741	782,433	915,806	946,580	906,840	947,000	124,407	164,567	0.071	0.074
6/30/13-14	1,346,902	974,436	1,172,474	1,176,020	1,148,560	1,176,000	174,124	201,564	0.085	0.087
6/30/14-15	1,404,093	941,919	1,161,683	1,179,636	1,138,760	1,185,900	196,841	243,981	0.081	0.084
6/30/15-16	1,454,612	1,043,763	1,325,907	1,323,547	1,297,520	1,332,630	253,757	288,867	0.089	0.092
6/30/16-17	1,461,588	831,738	1,088,348	1,146,345	1,066,240	1,151,730	234,502	319,992	0.073	0.079
6/30/17-18	1,457,740	1,005,480	1,410,318	1,391,317	1,363,180	1,417,050	357,700	411,570	0.094	0.097
6/30/18-19	1,500,205	618,505	1,006,643	1,157,199	986,860	1,162,785	368,355	544,280	0.066	0.078
6/30/19-20	1,508,678	244,786	844,591	1,252,558	828,100	1,259,265	583,314	1,014,479	0.055	0.083
Total	32,067,064	24,837,079	28,046,039	28,483,313	27,888,744	29,170,308	3,051,665	4,333,228		
Tot 6/30/84-20	32,067,064	24,417,806	27,965,203	28,483,313	27,469,067	28,750,226	3,051,261	4,332,420	0.086	0.090

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim
All Prior Yrs		338,455							0	0	
6/30/82-83		53,045	1.000	1.000	53,056	N/A	53,056		0	0	
6/30/83-84		27,773	1.000	1.000	27,779	N/A	27,779		0	0	
6/30/84-85	357,749	112,891	1.000	1.000	112,915	N/A	112,915	0.032	0	0	
6/30/85-86	380,112	384,347	1.000	1.000	384,429	N/A	384,429	0.101	0	0	
6/30/86-87	423,770	239,538	1.000	1.000	239,590	N/A	239,590	0.057	1	0	
6/30/87-88	480,405	671,957	1.000	1.000	672,101	N/A	672,101	0.140	0	0	
6/30/88-89	495,261	426,014	1.000	1.000	426,106	N/A	426,106	0.086	0	0	
6/30/89-90	502,691	547,456	1.000	1.000	547,574	N/A	547,574	0.109	0	0	
6/30/90-91	482,143	472,472	1.000	1.000	472,573	N/A	472,573	0.098	0	0	
6/30/91-92	492,539	812,732	1.000	1.000	812,906	N/A	812,906	0.165	1	1	174
6/30/92-93	524,541	506,348	1.000	1.000	506,456	N/A	506,456	0.097	0	0	
6/30/93-94	584,853	736,533	1.000	1.000	736,691	N/A	736,691	0.126	2	2	79
6/30/94-95	587,701	572,767	1.003	1.000	574,534	N/A	574,534	0.098	1	1	1,767
6/30/95-96	614,868	581,842	1.003	1.000	583,637	N/A	583,637	0.095	0	0	
6/30/96-97	700,686	910,797	1.008	1.000	918,243	N/A	918,243	0.131	2	2	3,723
6/30/97-98	684,415	432,549	1.018	1.000	440,139	N/A	440,139	0.064	0	0	
6/30/98-99	707,796	365,529	1.033	1.000	377,539	N/A	377,539	0.053	1	1	12,010
6/30/99-00	760,477	486,598	1.038	1.000	504,954	N/A	504,954	0.066	0	0	
6/30/00-01	811,600	564,812	1.042	1.000	588,626	N/A	588,626	0.073	0	0	
6/30/01-02	835,038	534,221	1.049	1.000	560,589	N/A	560,589	0.067	1	0	
6/30/02-03	825,340	632,688	1.057	1.000	668,806	N/A	668,806	0.081	1	1	36,118
6/30/03-04	849,216	691,457	1.068	1.000	738,239	N/A	738,239	0.087	0	1	46,782
6/30/04-05	992,508	659,963	1.078	1.000	711,660	N/A	711,660	0.072	1	0	
6/30/05-06	962,878	819,168	1.089	1.000	892,171	N/A	892,171	0.093	2	2	36,501
6/30/06-07	1,032,930	682,415	1.100	1.000	750,662	N/A	750,662	0.073	1	0	
6/30/07-08	1,063,597	973,981	1.111	1.000	1,082,101	N/A	1,082,101	0.102	2	2	54,060
6/30/08-09	1,073,805	1,047,468	1.128	1.000	1,181,202	N/A	1,181,202	0.110	5	2	66,867
6/30/09-10	1,084,749	1,056,944	1.133	1.000	1,197,848	N/A	1,197,848	0.110	5	3	46,968
6/30/10-11	1,134,164	1,167,686	1.142	1.000	1,333,199	N/A	1,333,199	0.118	5	2	82,756
6/30/11-12	1,202,674	883,569	1.159	1.000	1,023,943	N/A	1,023,943	0.085	5	3	46,791
6/30/12-13	1,284,741	782,433	1.170	1.000	915,806	N/A	915,806	0.071	3	3	44,458
6/30/13-14	1,346,902	974,436	1.203	1.000	1,172,474	N/A	1,172,474	0.087	10	5	39,608
6/30/14-15	1,404,093	941,919	1.233	1.000	1,161,683	N/A	1,161,683	0.083	7	8	27,470
6/30/15-16	1,454,612	1,043,763	1.270	1.000	1,325,907	N/A	1,325,907	0.091	20	12	23,512
6/30/16-17	1,461,588	831,738	1.309	1.000	1,088,348	N/A	1,088,348	0.074	35	22	11,664
6/30/17-18	1,457,740	1,005,480	1.403	1.000	1,410,318	N/A	1,410,318	0.097	158	46	8,801
6/30/18-19	1,500,205	618,505	1.628	1.000	1,006,643	N/A	1,006,643	0.067	217	141	2,753
6/30/19-20	1,508,678	244,786	3.450	1.000	844,591	N/A	844,591	0.056		184	3,260
Total	32,067,064	24,837,079			28,046,039		28,046,039		486	444	

NOTES:

(2) Provided by Commonwealth of Massachusetts

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

(5) Based on information from the MA WCRIB 10/1/18 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, 2020

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	1.000	112,929	N/A	112,929	0.032	0.032
6/30/85-86	380,112	0.135	384,347	1.000	384,457	N/A	384,457	0.101	0.101
6/30/86-87	423,770	0.082	239,538	1.000	239,613	N/A	239,613	0.057	0.057
6/30/87-88	480,405	0.172	671,957	1.000	672,134	N/A	672,134	0.140	0.140
6/30/88-89	495,261	0.121	426,014	1.000	426,143	N/A	426,143	0.086	0.086
6/30/89-90	502,691	0.151	547,456	1.000	547,619	N/A	547,619	0.109	0.109
6/30/90-91	482,143	0.098	472,472	1.000	472,573	N/A	472,573	0.098	0.098
6/30/91-92	492,539	0.163	812,732	1.000	812,904	N/A	812,904	0.165	0.165
6/30/92-93	524,541	0.095	506,348	1.000	506,455	N/A	506,455	0.097	0.097
6/30/93-94	584,853	0.123	736,533	1.000	736,688	N/A	736,688	0.126	0.126
6/30/94-95	587,701	0.096	572,767	1.003	574,502	N/A	574,502	0.098	0.098
6/30/95-96	614,868	0.093	581,842	1.003	583,602	N/A	583,602	0.095	0.095
6/30/96-97	700,686	0.126	910,797	1.008	917,984	N/A	917,984	0.131	0.131
6/30/97-98	684,415	0.064	432,549	1.018	440,160	N/A	440,160	0.064	0.064
6/30/98-99	707,796	0.055	365,529	1.033	377,821	N/A	377,821	0.053	0.053
6/30/99-00	760,477	0.067	486,598	1.038	504,996	N/A	504,996	0.066	0.066
6/30/00-01	811,600	0.072	564,812	1.042	588,550	N/A	588,550	0.073	0.073
6/30/01-02	835,038	0.068	534,221	1.049	560,757	N/A	560,757	0.067	0.067
6/30/02-03	825,340	0.080	632,688	1.057	668,493	N/A	668,493	0.081	0.081
6/30/03-04	849,216	0.086	691,457	1.068	737,686	N/A	737,686	0.087	0.087
6/30/04-05	992,508	0.078	659,963	1.078	716,370	N/A	716,370	0.072	0.072
6/30/05-06	962,878	0.079	819,168	1.089	881,640	N/A	881,640	0.092	0.092
6/30/06-07	1,032,930	0.080	682,415	1.100	757,621	N/A	757,621	0.073	0.073
6/30/07-08	1,063,597	0.081	973,981	1.111	1,059,938	N/A	1,059,938	0.100	0.100
6/30/08-09	1,073,805	0.082	1,047,468	1.128	1,147,316	N/A	1,147,316	0.107	0.107
6/30/09-10	1,084,749	0.085	1,056,944	1.133	1,165,596	N/A	1,165,596	0.107	0.107
6/30/10-11	1,134,164	0.086	1,167,686	1.142	1,288,780	N/A	1,288,780	0.114	0.114
6/30/11-12	1,202,674	0.087	883,569	1.159	1,026,784	N/A	1,026,784	0.085	0.085
6/30/12-13	1,284,741	0.088	782,433	1.170	946,580	N/A	946,580	0.074	0.074
6/30/13-14	1,346,902	0.089	974,436	1.203	1,176,020	N/A	1,176,020	0.087	0.087
6/30/14-15	1,404,093	0.089	941,919	1.233	1,179,636	N/A	1,179,636	0.084	0.084
6/30/15-16	1,454,612	0.090	1,043,763	1.270	1,323,547	N/A	1,323,547	0.091	0.091
6/30/16-17	1,461,588	0.091	831,738	1.309	1,146,345	N/A	1,146,345	0.078	0.078
6/30/17-18	1,457,740	0.092	1,005,480	1.403	1,391,317	N/A	1,391,317	0.095	0.095
6/30/18-19	1,500,205	0.093	618,505	1.628	1,157,199	N/A	1,157,199	0.077	0.077
6/30/19-20	1,508,678	0.094	244,786	3.450	1,252,558	N/A	1,252,558	0.083	0.083
Total	32,067,064		24,417,806		28,483,313		28,483,313		

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, 2020

Massachusetts Colleges & Universities - Cluster 4
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
			Unadjusted	Benefit	Adjusted		Trended	Detrended	Prior	Current
Accident	Payroll	Expected	Loss	Level	Loss	Trend	Adjusted	Selected	Selected	Selected
Year	(000's)	Ult Loss	Cost	Factor	Cost	Factor	Loss Cost	Loss Cost	Loss Cost	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	472,573	0.098	1.194	0.117	1.348	0.158	0.059	0.098	0.098
6/30/91-92	492,539	812,906	0.165	1.189	0.196	1.335	0.262	0.060	0.162	0.163
6/30/92-93	524,541	506,456	0.097	1.189	0.115	1.321	0.152	0.060	0.095	0.095
6/30/93-94	584,853	736,691	0.126	1.178	0.148	1.308	0.194	0.062	0.120	0.123
6/30/94-95	587,701	574,534	0.098	1.170	0.114	1.295	0.148	0.063	0.096	0.096
6/30/95-96	614,868	583,637	0.095	1.155	0.110	1.282	0.141	0.064	0.093	0.093
6/30/96-97	700,686	918,243	0.131	1.137	0.149	1.270	0.189	0.066	0.118	0.126
6/30/97-98	684,415	440,139	0.064	1.135	0.073	1.257	0.092	0.067	0.065	0.064
6/30/98-99	707,796	377,539	0.053	1.135	0.061	1.245	0.075	0.067	0.054	0.055
6/30/99-00	760,477	504,954	0.066	1.135	0.075	1.232	0.093	0.068	0.066	0.067
6/30/00-01	811,600	588,626	0.073	1.109	0.080	1.220	0.098	0.070	0.072	0.072
6/30/01-02	835,038	560,589	0.067	1.101	0.074	1.208	0.089	0.071	0.068	0.068
6/30/02-03	825,340	668,806	0.081	1.073	0.087	1.196	0.104	0.074	0.081	0.080
6/30/03-04	849,216	738,239	0.087	1.046	0.091	1.184	0.108	0.077	0.086	0.086
6/30/04-05	992,508	711,660	0.072	1.036	0.074	1.173	0.087	0.078	0.079	0.078
6/30/05-06	962,878	892,171	0.093	1.032	0.096	1.161	0.111	0.079	0.080	0.079
6/30/06-07	1,032,930	750,662	0.073	1.032	0.075	1.149	0.086	0.080	0.081	0.080
6/30/07-08	1,063,597	1,082,101	0.102	1.032	0.105	1.138	0.119	0.081	0.082	0.081
6/30/08-09	1,073,805	1,181,202	0.110	1.027	0.113	1.127	0.127	0.082	0.083	0.082
6/30/09-10	1,084,749	1,197,848	0.110	1.000	0.110	1.116	0.123	0.085	0.086	0.085
6/30/10-11	1,134,164	1,333,199	0.118	1.000	0.118	1.105	0.130	0.086	0.087	0.086
6/30/11-12	1,202,674	1,023,943	0.085	1.000	0.085	1.094	0.093	0.087	0.088	0.087
6/30/12-13	1,284,741	915,806	0.071	1.000	0.071	1.083	0.077	0.088	0.089	0.088
6/30/13-14	1,346,902	1,172,474	0.087	1.000	0.087	1.072	0.093	0.089	0.089	0.089
6/30/14-15	1,404,093	1,161,683	0.083	1.000	0.083	1.062	0.088	0.089	0.090	0.089
6/30/15-16	1,454,612	1,325,907	0.091	1.000	0.091	1.051	0.096	0.090	0.091	0.090
6/30/16-17	1,461,588	1,088,348	0.074	1.000	0.074	1.041	0.077	0.091	0.092	0.091
6/30/17-18	1,457,740	1,410,318	0.097	1.000	0.097	1.030	0.100	0.092	0.093	0.092
6/30/18-19	1,500,205	1,006,643	0.067	1.000	0.067	1.020	0.068	0.093	0.094	0.093
6/30/19-20	1,508,678	844,591	0.056	1.000	0.056	1.010	0.057	0.094		0.094
Total	29,427,076	25,582,489								

Trend Last 4 (ex 19-20):	-6.4%	Avg 3 (ex 19-20):	0.082
Trend Last 8 (ex 19-20):	-0.6%	Avg 5 (ex 19-20):	0.086
Trend Last 12 (ex 19-20):	-3.5%	Avg 10 (ex 19-20):	0.095
Prior Selected Trend:	1.0%	Prior Sel Avg:	0.095
Selected Trend:	1.0%	Sel. Loss Cost:	0.095

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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

Massachusetts Colleges & Universities - Cluster 4
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.970	
(2)	Credibility	20%	
(3)	Average Pmt Trend Statewide	0.980	
(4)	Credibility Weighted Trend	0.978	
		(Low)	(High)
(5)	Selected Range	0.968	0.988
(6)	Incremental Paid for 2020	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	0
(11)	Projected Number of Years	3	3
(12)	Estimated Reserve	0	0
(13)	Paid to Date (82 & Prior)	338,455	338,455
(14)	Est Ult Paid for 1982 & Prior	338,455	338,455
(14a)	Paid Counts During Fiscal Year	0	0
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	338,455	338,455
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**338,455**	**338,455**
(18)	Implied Tail	1.000	1.000
(19)	Ult Loss Inc Lump Sums @ 6/19	338,455	338,455

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, 2019

Massachusetts Colleges & Universities - Cluster 4

Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
				Average		
		Incremental		Observed		Trend
Year	X	Paids	LN	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				
2017	26	0				
2018	27	0				
2019	28	0				
2020	29	0				
					Selected Trend:	**0.970**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(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
June-83	5,425	13,479	21,113	27,654	30,220	32,596	38,756	40,003	49,390	49,452
June-84	3,642	9,520	14,025	17,952	20,550	23,119	24,788	27,281	27,458	27,458
June-85	13,476	35,975	51,552	65,364	72,959	79,579	86,331	95,092	106,398	110,557
June-86	33,919	90,663	130,143	159,111	250,739	286,799	294,926	297,883	299,398	302,212
June-87	33,322	88,558	133,068	167,433	202,414	217,655	221,836	226,928	230,316	231,634
June-88	59,518	204,414	290,147	350,533	381,836	423,661	513,908	554,667	558,927	578,241
June-89	62,198	211,475	294,554	322,576	356,178	387,366	391,897	394,643	397,103	398,291
June-90	50,219	295,860	408,825	438,277	465,544	487,856	501,254	508,956	511,410	519,157
June-91	73,392	311,241	360,552	400,955	419,114	437,552	445,905	451,717	456,911	463,872
June-92	221,188	477,478	560,364	598,339	631,891	641,232	646,926	650,216	653,117	658,289
June-93	150,073	407,193	449,884	478,264	489,794	496,554	498,030	498,889	501,701	503,184
June-94	156,060	302,215	335,354	369,121	403,159	421,734	441,218	452,877	461,708	470,189
June-95	109,792	244,835	298,417	304,966	313,919	317,775	323,966	336,940	345,737	404,548
June-96	187,362	423,531	463,708	493,442	512,072	523,060	559,979	563,249	572,255	575,372
June-97	169,255	306,866	359,926	403,511	440,040	450,988	458,674	483,346	503,475	519,848
June-98	130,372	302,957	339,295	363,480	383,927	388,726	391,919	417,459	417,733	418,585
June-99	97,937	205,527	246,679	296,667	310,533	318,692	324,215	326,063	327,858	331,461
June-00	149,711	324,594	408,387	446,980	464,695	474,595	478,979	480,612	480,853	482,147
June-01	146,796	329,001	398,588	483,338	524,021	540,381	553,789	559,032	562,148	562,831
June-02	113,531	244,127	383,389	485,433	511,686	522,029	525,064	528,876	530,895	532,387
June-03	68,006	374,633	451,946	472,102	486,597	492,733	520,395	535,451	548,996	558,702
June-04	226,665	540,314	613,339	657,569	676,213	687,448	689,931	690,265	690,426	690,599
June-05	267,264	502,730	569,792	616,429	634,553	643,543	651,061	654,330	656,278	658,062
June-06	266,086	533,067	604,845	688,237	700,485	712,078	725,521	746,165	766,110	772,551
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	908,296
June-09	295,106	650,179	756,525	816,761	864,784	890,799	963,239	1,000,628	1,014,297	1,032,270
June-10	419,730	775,749	865,851	909,378	969,822	1,003,582	1,022,429	1,035,175	1,047,067	1,053,408
June-11	454,614	843,137	950,680	997,564	1,027,642	1,049,028	1,062,683	1,136,338	1,155,797	1,167,686
June-12	330,317	676,973	804,310	841,448	851,396	859,087	871,073	877,621	883,569	
June-13	291,036	557,666	662,793	737,262	766,215	779,506	781,148	782,433		
June-14	380,527	800,583	898,971	931,664	953,555	967,275	974,436			
June-15	425,720	650,664	818,632	862,923	908,646	941,919				
June-16	452,409	811,805	959,161	1,018,194	1,043,763					
June-17	304,508	653,025	775,115	831,738						
June-18	500,150	935,148	1,005,480							
June-19	306,185	618,505								
June-20	244,786									

Acc Yr Ending	132	144	156	168	180	192	204	216	228	240	252
June-83	49,902	49,902	49,902	52,680	52,680	52,680	52,680	53,045	53,045	53,045	53,045
June-84	27,458	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773	27,773
June-85	111,969	111,969	112,255	112,573	112,891	112,891	112,891	112,891	112,891	112,891	112,891
June-86	307,822	320,541	325,361	342,239	344,332	347,860	364,047	376,849	380,765	383,694	384,347
June-87	233,141	233,163	235,329	236,440	236,440	236,440	236,440	237,211	237,211	237,211	237,211
June-88	580,791	582,947	585,666	587,383	588,760	590,429	611,904	620,480	621,465	623,581	623,951
June-89	400,332	413,505	414,824	415,958	415,958	424,869	425,154	425,154	425,154	425,154	425,154
June-90	521,054	521,523	523,073	526,415	531,243	532,370	532,613	534,177	535,910	537,636	540,156
June-91	466,034	467,206	468,330	470,247	472,258	472,472	472,472	472,472	472,472	472,472	472,472
June-92	666,600	671,991	681,366	690,612	701,403	710,623	719,185	728,531	738,270	747,976	759,027
June-93	504,152	505,509	506,348	506,348	506,348	506,348	506,348	506,348	506,348	506,348	506,348
June-94	479,925	489,958	504,404	513,367	522,984	528,697	539,677	552,169	567,707	583,321	603,468
June-95	417,872	419,186	507,915	517,682	526,590	533,675	537,590	548,842	549,714	552,788	553,266
June-96	578,197	581,714	581,842	581,842	581,842	581,842	581,842	581,842	581,842	581,842	581,842
June-97	535,734	556,260	578,975	602,453	632,460	672,797	707,292	751,693	784,391	804,120	816,637
June-98	421,666	427,310	427,449	428,766	428,839	429,419	429,419	431,949	431,949	432,549	432,549
June-99	334,241	334,867	336,644	336,644	338,914	356,188	359,425	359,425	359,555	362,292	363,847
June-00	483,486	483,486	483,486	485,189	486,598	486,598	486,598	486,598	486,598	486,598	486,598
June-01	562,932	563,168	564,300	564,300	564,300	564,530	564,812	564,812	564,812	564,812	
June-02	533,222	533,611	533,769	533,801	533,801	533,801	533,801	534,221	534,221		
June-03	571,378	580,801	592,448	598,138	629,209	630,096	632,406	632,688			
June-04	690,599	690,599	690,884	691,090	691,090	691,090	691,457				
June-05	658,406	659,359	659,643	659,795	659,963	659,963					
June-06	782,793	794,068	800,226	808,822	819,168						
June-07	670,898	682,244	682,415	682,415							
June-08	914,081	923,731	973,981								
June-09	1,039,973	1,047,468									
June-10	1,056,944										

Acc Yr Ending	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456
June-83	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	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	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	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347	384,347			
June-87	237,211	238,056	238,056	238,056	238,056	238,056	238,056	238,056	239,258	239,258	239,258	239,538	239,538				
June-88	627,240	627,525	631,767	636,396	638,704	641,961	665,538	671,957	671,957	671,957	671,957	671,957					
June-89	425,154	425,840	425,973	426,014	426,014	426,014	426,014	426,014	426,014	426,014	426,014						
June-90	540,156	541,381	543,131	547,456	547,456	547,456	547,456	547,456	547,456	547,456							
June-91	472,472	472,472	472,472	472,472	472,472	472,472	472,472	472,472	472,472								
June-92	768,431	778,806	790,246	800,553	806,429	807,773	810,162	812,732									
June-93	506,348	506,348	506,348	506,348	506,348	506,348	506,348										
June-94	622,024	645,934	667,090	694,392	716,701	736,533											
June-95	561,548	569,946	571,816	572,784	572,767												
June-96	581,842	581,842	581,842	581,842													
June-97	826,538	844,583	910,797														
June-98	432,549	432,549															
June-99	365,529																

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
June-83	2.485	1.566	1.310	1.093	1.079	1.189	1.032	1.235	1.001	1.009
June-84	2.614	1.473	1.280	1.145	1.125	1.072	1.101	1.006	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
June-86	2.673	1.435	1.223	1.576	1.144	1.028	1.010	1.005	1.009	1.019
June-87	2.658	1.503	1.258	1.209	1.075	1.019	1.023	1.015	1.006	1.007
June-88	3.434	1.419	1.208	1.089	1.110	1.213	1.079	1.008	1.035	1.004
June-89	3.400	1.393	1.095	1.104	1.088	1.012	1.007	1.006	1.003	1.005
June-90	5.891	1.382	1.072	1.062	1.048	1.027	1.015	1.005	1.015	1.004
June-91	4.241	1.158	1.112	1.045	1.044	1.019	1.013	1.011	1.015	1.005
June-92	2.159	1.174	1.068	1.056	1.015	1.009	1.005	1.004	1.008	1.013
June-93	2.713	1.105	1.063	1.024	1.014	1.003	1.002	1.006	1.003	1.002
June-94	1.937	1.110	1.101	1.092	1.046	1.046	1.026	1.019	1.018	1.021
June-95	2.230	1.219	1.022	1.029	1.012	1.019	1.040	1.026	1.170	1.033
June-96	2.260	1.095	1.064	1.038	1.021	1.071	1.006	1.016	1.005	1.005
June-97	1.813	1.173	1.121	1.091	1.025	1.017	1.054	1.042	1.033	1.031
June-98	2.324	1.120	1.071	1.056	1.012	1.008	1.065	1.001	1.002	1.007
June-99	2.099	1.200	1.203	1.047	1.026	1.017	1.006	1.006	1.011	1.008
June-00	2.168	1.258	1.095	1.040	1.021	1.009	1.003	1.001	1.003	1.003
June-01	2.241	1.212	1.213	1.084	1.031	1.025	1.009	1.006	1.001	1.000
June-02	2.150	1.570	1.266	1.054	1.020	1.006	1.007	1.004	1.003	1.002
June-03	5.509	1.206	1.045	1.031	1.013	1.056	1.029	1.025	1.018	1.023
June-04	2.384	1.135	1.072	1.028	1.017	1.004	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
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	1.007
June-08	2.393	1.186	1.148	1.025	1.026	1.015	1.013	1.007	1.005	1.006
June-09	2.203	1.164	1.080	1.059	1.030	1.081	1.039	1.014	1.018	1.007
June-10	1.848	1.116	1.050	1.066	1.035	1.019	1.012	1.011	1.006	1.003
June-11	1.855	1.128	1.049	1.030	1.021	1.013	1.069	1.017	1.010	
June-12	2.049	1.188	1.046	1.012	1.009	1.014	1.008	1.007		
June-13	1.916	1.189	1.112	1.039	1.017	1.002	1.002			
June-14	2.104	1.123	1.036	1.023	1.014	1.007				
June-15	1.528	1.258	1.054	1.053	1.037					
June-16	1.794	1.182	1.062	1.025						
June-17	2.145	1.187	1.073							
June-18	1.870	1.075								
June-19	2.020									

Acc Yr Ending	132-144	144-156	156-168	168-180	180-192	192-204	204-216	216-228	228-240	240-252	252-264
June-83	1.000	1.000	1.056	1.000	1.000	1.000	1.007	1.000	1.000	1.000	1.000
June-84	1.011	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-85	1.000	1.003	1.003	1.003	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-86	1.041	1.015	1.052	1.006	1.010	1.047	1.035	1.010	1.008	1.002	1.000
June-87	1.000	1.009	1.005	1.000	1.000	1.000	1.003	1.000	1.000	1.000	1.000
June-88	1.004	1.005	1.003	1.002	1.003	1.036	1.014	1.002	1.003	1.001	1.005
June-89	1.033	1.003	1.003	1.000	1.021	1.001	1.000	1.000	1.000	1.000	1.000
June-90	1.001	1.003	1.006	1.009	1.002	1.000	1.003	1.003	1.003	1.005	1.000
June-91	1.003	1.002	1.004	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-92	1.008	1.014	1.014	1.016	1.013	1.012	1.013	1.013	1.013	1.015	1.012
June-93	1.003	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-94	1.021	1.029	1.018	1.019	1.011	1.021	1.023	1.028	1.028	1.035	1.031
June-95	1.003	1.212	1.019	1.017	1.013	1.007	1.021	1.002	1.006	1.001	1.015
June-96	1.006	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
June-97	1.038	1.041	1.041	1.050	1.064	1.051	1.063	1.043	1.025	1.016	1.012
June-98	1.013	1.000	1.003	1.000	1.001	1.000	1.006	1.000	1.001	1.000	1.000
June-99	1.002	1.005	1.000	1.007	1.051	1.009	1.000	1.000	1.008	1.004	1.005
June-00	1.000	1.000	1.004	1.003	1.000	1.000	1.000	1.000	1.000	1.000	
June-01	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
June-02	1.001	1.000	1.000	1.000	1.000	1.000	1.001	1.000			
June-03	1.016	1.020	1.010	1.052	1.001	1.004	1.000				
June-04	1.000	1.000	1.000	1.000	1.000	1.001					
June-05	1.001	1.000	1.000	1.000	1.000						
June-06	1.014	1.008	1.011	1.013							
June-07	1.017	1.000	1.000								
June-08	1.011	1.054									
June-09	1.007										

Acc Yr Ending	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	420-432	432-444	444-456
June-83	1.000	1.000	1.000	1.000	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	1.000	1.000	1.000	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	1.000	1.000	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	1.000	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-87	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.005	1.000	1.000	1.001	1.000				
June-88	1.000	1.007	1.007	1.004	1.005	1.037	1.010	1.000	1.000	1.000	1.000					
June-89	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
June-90	1.002	1.003	1.008	1.000	1.000	1.000	1.000	1.000	1.000							
June-91	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000								
June-92	1.014	1.015	1.013	1.007	1.002	1.003	1.003									
June-93	1.000	1.000	1.000	1.000	1.000	1.000										
June-94	1.038	1.033	1.041	1.032	1.028											
June-95	1.015	1.003	1.002	1.000												
June-96	1.000	1.000	1.000													
June-97	1.022	1.078														
June-98	1.000															

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
Simple Avg																		
All Yrs	2.477	1.240	1.120	1.075	1.040	1.036	1.027	1.022	1.016	1.009	1.009	1.017	1.010	1.008	1.008	1.009	1.009	1.005
Latest 5	1.871	1.165	1.067	1.031	1.020	1.011	1.026	1.011	1.013	1.007	1.010	1.013	1.004	1.013	1.000	1.001	1.000	1.000
Latest 3	2.011	1.148	1.063	1.034	1.023	1.008	1.026	1.012	1.011	1.006	1.012	1.021	1.004	1.004	1.000	1.001	1.000	1.000
Volume Wtd																		
All Yrs	2.126	1.182	1.088	1.051	1.029	1.026	1.022	1.012	1.014	1.008	1.010	1.018	1.008	1.010	1.009	1.010	1.011	1.007
Latest 5	1.845	1.157	1.065	1.030	1.020	1.011	1.028	1.011	1.012	1.007	1.010	1.015	1.004	1.013	1.000	1.001	1.000	1.000
Latest 3	1.986	1.142	1.063	1.033	1.023	1.008	1.030	1.012	1.011	1.006	1.011	1.024	1.004	1.005	1.000	1.001	1.000	1.000
Dev Factor Sel	.																	
Industry 1	1.968	1.147	1.054	1.025	1.017	1.010	1.012	1.012	1.010	1.009	1.010	1.009	1.009	1.009	1.008	1.008	1.007	1.007
Industry 2		1.281	1.080	1.034	1.020	1.017	1.009	1.011	1.009	1.009	1.006	1.007	1.009	1.008	1.008	1.012	1.007	1.006
Prior	*2.105*	*1.193*	*1.066*	*1.031*	*1.030*	*1.025*	*1.030*	*1.010*	*1.015*	*1.007*	*1.005*	*1.015*	*1.010*	*1.010*	*1.010*	*1.010*	*1.010*	*1.008*
Selected	2.120	1.160	1.072	1.030	1.030	1.025	1.028	1.010	1.015	1.007	1.005	1.015	1.010	1.010	1.010	1.010	1.010	1.007
FacToUlt	3.450	1.628	1.403	1.309	1.270	1.233	1.203	1.170	1.159	1.142	1.133	1.128	1.111	1.100	1.089	1.078	1.068	1.057
Percent of Ult	29.0%	61.4%	71.3%	76.4%	78.7%	81.1%	83.1%	85.4%	86.3%	87.6%	88.2%	88.7%	90.0%	90.9%	91.8%	92.7%	93.7%	94.6%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																				
All Yrs	1.005	1.004	1.005	1.006	1.009	1.005	1.003	1.003	1.004	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5	1.007	1.004	1.006	1.015	1.023	1.011	1.008	1.006	1.001	1.003	1.001	1.000	1.000	1.000						
Latest 3	1.003	1.001	1.006	1.007	1.027	1.014	1.011	1.010	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000				
Volume Wtd																				
All Yrs	1.007	1.006	1.007	1.009	1.016	1.008	1.006	1.005	1.006	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Latest 5	1.009	1.005	1.007	1.017	1.028	1.012	1.009	1.007	1.001	1.003	1.001	1.000	1.000	1.000						
Latest 3	1.002	1.001	1.007	1.010	1.034	1.016	1.013	1.010	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000				
Dev Factor Sel																				
Industry 1																				
Industry 2	1.007	1.006																		
Prior	*1.007*	*1.005*	*1.005*	*1.015*	*1.004*	*1.005*	*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*	
Selected	1.007	1.004	1.005	1.015	1.009	1.005	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
FacToUlt	1.049	1.042	1.038	1.033	1.018	1.008	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
Percent of Ult	95.3%	96.0%	96.4%	96.8%	98.3%	99.2%	99.7%	99.7%	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, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	338,455	338,455	338,455	338,455	0	0.0%	0	0.0%
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	385,500	386,269	385,500	386,269	0	0.0%	0	0.0%
6/30/86-87	240,000	240,736	240,000	240,736	0	0.0%	0	0.0%
6/30/87-88	672,000	672,000	672,000	672,000	0	0.0%	0	0.0%
6/30/88-89	427,000	427,000	427,000	427,000	0	0.0%	0	0.0%
6/30/89-90	548,000	548,000	548,000	548,000	0	0.0%	0	0.0%
6/30/90-91	473,000	473,000	473,000	473,000	0	0.0%	0	0.0%
6/30/91-92	814,213	818,263	816,796	820,860	2,583	0.3%	2,596	0.3%
6/30/92-93	508,880	511,411	508,880	511,411	0	0.0%	0	0.0%
6/30/93-94	722,434	727,451	742,425	747,581	19,991	2.8%	20,130	2.8%
6/30/94-95	577,366	581,375	577,349	581,359	(16)	0.0%	(16)	0.0%
6/30/95-96	584,752	587,661	584,752	587,661	0	0.0%	0	0.0%
6/30/96-97	857,265	862,540	922,590	927,180	65,325	7.6%	64,640	7.5%
6/30/97-98	444,000	448,440	440,000	444,400	(4,000)	-0.9%	(4,040)	-0.9%
6/30/98-99	375,000	378,750	378,000	381,780	3,000	0.8%	3,030	0.8%
6/30/99-00	504,000	504,000	505,000	505,000	1,000	0.2%	1,000	0.2%
6/30/00-01	589,000	589,000	589,000	589,000	0	0.0%	0	0.0%
6/30/01-02	562,000	567,620	561,000	566,610	(1,000)	-0.2%	(1,010)	-0.2%
6/30/02-03	657,580	672,000	654,640	669,000	(2,940)	-0.4%	(3,000)	-0.4%
6/30/03-04	726,180	741,000	723,240	738,000	(2,940)	-0.4%	(3,000)	-0.4%
6/30/04-05	700,700	720,000	697,760	716,000	(2,940)	-0.4%	(4,000)	-0.6%
6/30/05-06	857,500	885,000	864,360	892,000	6,860	0.8%	7,000	0.8%
6/30/06-07	738,920	762,000	735,980	758,000	(2,940)	-0.4%	(4,000)	-0.5%
6/30/07-08	997,640	1,036,000	1,038,800	1,082,000	41,160	4.1%	46,000	4.4%
6/30/08-09	1,117,200	1,172,000	1,124,060	1,181,000	6,860	0.6%	9,000	0.8%
6/30/09-10	1,140,720	1,195,000	1,142,680	1,198,000	1,960	0.2%	3,000	0.3%
6/30/10-11	1,260,280	1,331,000	1,263,220	1,333,000	2,940	0.2%	2,000	0.2%
6/30/11-12	1,000,580	1,026,000	1,003,520	1,027,000	2,940	0.3%	1,000	0.1%
6/30/12-13	926,640	969,000	906,840	947,000	(19,800)	-2.1%	(22,000)	-2.3%
6/30/13-14	1,164,240	1,191,000	1,148,560	1,176,000	(15,680)	-1.3%	(15,000)	-1.3%
6/30/14-15	1,126,020	1,179,870	1,138,760	1,185,900	12,740	1.1%	6,030	0.5%
6/30/15-16	1,301,440	1,334,640	1,297,520	1,332,630	(3,920)	-0.3%	(2,010)	-0.2%
6/30/16-17	1,056,440	1,159,770	1,066,240	1,151,730	9,800	0.9%	(8,040)	-0.7%
6/30/17-18	1,445,500	1,559,760	1,363,180	1,417,050	(82,320)	-5.7%	(142,710)	-9.1%
6/30/18-19	1,070,000	1,326,130	986,860	1,162,785	(83,140)	-7.8%	(163,345)	-12.3%
6/30/19-20								
Total	27,105,122	28,117,788	27,060,644	27,911,043	(44,477)	-0.2%	(206,746)	-0.7%

NOTES:
(2), (3) From prior Aon analysis as of June 30, 2019
(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, 2020

Massachusetts Colleges & Universities - Cluster 4
Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
456	100.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
444	100.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
432	100.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
420	100.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
408	100.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
396	100.0%	0.0%	0.0%	0.0%	0.0%	0.806	0.726
384	100.0%	0.0%	0.0%	0.0%	0.0%	0.775	0.685
372	100.0%	0.0%	0.0%	0.0%	0.0%	0.745	0.646
360	100.0%	0.0%	0.0%	0.0%	0.0%	0.717	0.609
348	100.0%	0.0%	0.0%	0.0%	0.0%	0.689	0.575
336	100.0%	0.0%	0.0%	0.0%	0.0%	0.662	0.542
324	100.0%	0.3%	0.0%	0.1%	0.1%	0.637	0.512
312	99.7%	0.0%	0.3%	0.0%	0.0%	0.955	0.937
300	99.7%	0.5%	0.3%	0.2%	0.1%	0.918	0.884
288	99.2%	0.9%	0.8%	0.4%	0.2%	0.944	0.919
276	98.3%	1.5%	1.7%	0.6%	0.4%	0.946	0.922
264	96.8%	0.5%	3.2%	0.2%	0.1%	0.942	0.916
252	96.4%	0.4%	3.6%	0.2%	0.1%	0.915	0.878
240	96.0%	0.7%	4.0%	0.3%	0.2%	0.890	0.843
228	95.3%	0.7%	4.7%	0.3%	0.2%	0.873	0.820
216	94.6%	0.9%	5.4%	0.5%	0.3%	0.858	0.799
204	93.7%	0.9%	6.3%	0.5%	0.4%	0.848	0.786
192	92.7%	0.9%	7.3%	0.5%	0.4%	0.836	0.771
180	91.8%	0.9%	8.2%	0.5%	0.4%	0.824	0.754
168	90.9%	0.9%	9.1%	0.5%	0.4%	0.811	0.738
156	90.0%	1.3%	10.0%	0.8%	0.6%	0.798	0.721
144	88.7%	0.4%	11.3%	0.3%	0.2%	0.792	0.714
132	88.2%	0.7%	11.8%	0.4%	0.4%	0.770	0.685
120	87.6%	1.3%	12.4%	0.9%	0.7%	0.753	0.663
108	86.3%	0.9%	13.7%	0.6%	0.5%	0.748	0.658
96	85.4%	2.3%	14.6%	1.7%	1.5%	0.735	0.642
84	83.1%	2.0%	16.9%	1.6%	1.4%	0.744	0.656
72	81.1%	2.4%	18.9%	1.9%	1.7%	0.744	0.656
60	78.7%	2.3%	21.3%	1.9%	1.8%	0.745	0.658
48	76.4%	5.1%	23.6%	4.5%	4.2%	0.742	0.655
36	71.3%	9.9%	28.7%	8.9%	8.5%	0.761	0.681
24	61.4%	32.5%	38.6%	30.6%	29.7%	0.795	0.727
12	29.0%	29.0%	71.0%	28.4%	28.2%	0.863	0.816
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, 2020

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	0		0	0
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	1,153	1,922	1.000	1,153	1,922
6/30/86-87	462	1,198	1.000	462	1,198
6/30/87-88	43	43	0.806	35	35
6/30/88-89	986	986	0.775	764	764
6/30/89-90	544	544	0.745	405	405
6/30/90-91	528	528	0.717	378	378
6/30/91-92	4,064	8,127	0.689	2,800	5,599
6/30/92-93	2,532	5,063	0.662	1,677	3,354
6/30/93-94	5,892	11,048	0.637	3,753	7,037
6/30/94-95	4,582	8,592	0.955	4,376	8,204
6/30/95-96	2,909	5,818	0.918	2,671	5,343
6/30/96-97	11,793	16,383	0.944	11,127	15,458
6/30/97-98	7,451	11,851	0.946	7,049	11,212
6/30/98-99	12,471	16,251	0.942	11,750	15,311
6/30/99-00	18,402	18,402	0.915	16,842	16,842
6/30/00-01	24,188	24,188	0.890	21,534	21,534
6/30/01-02	26,779	32,389	0.873	23,389	28,289
6/30/02-03	21,952	36,312	0.858	18,835	31,156
6/30/03-04	31,783	46,543	0.848	26,952	39,468
6/30/04-05	37,797	56,037	0.836	31,616	46,873
6/30/05-06	45,192	72,832	0.824	37,241	60,019
6/30/06-07	53,565	75,585	0.811	43,452	61,315
6/30/07-08	64,819	108,019	0.798	51,730	86,207
6/30/08-09	76,592	133,532	0.792	60,693	105,814
6/30/09-10	85,736	141,056	0.770	66,029	108,633
6/30/10-11	95,534	165,314	0.753	71,949	124,502
6/30/11-12	119,951	143,431	0.748	89,767	107,339
6/30/12-13	124,407	164,567	0.735	91,426	120,940
6/30/13-14	174,124	201,564	0.744	129,614	150,040
6/30/14-15	196,841	243,981	0.744	146,474	181,552
6/30/15-16	253,757	288,867	0.745	189,029	215,183
6/30/16-17	234,502	319,992	0.742	174,009	237,446
6/30/17-18	357,700	411,570	0.761	272,284	313,290
6/30/18-19	368,355	544,280	0.795	293,013	432,955
6/30/19-20	583,314	1,014,479	0.863	503,671	875,966
Total	3,051,665	4,333,228		2,408,918	3,443,520
			(7) Total Discount Factor:	0.789	0.795

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	0	0
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	0	0
(11) Discounted Value at 4%:	0	0

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, 2020

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	0		0	0
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	1,153	1,922	1.000	1,153	1,922
6/30/86-87	462	1,198	1.000	462	1,198
6/30/87-88	43	43	0.726	32	32
6/30/88-89	986	986	0.685	675	675
6/30/89-90	544	544	0.646	351	351
6/30/90-91	528	528	0.609	322	322
6/30/91-92	4,064	8,127	0.575	2,336	4,672
6/30/92-93	2,532	5,063	0.542	1,373	2,746
6/30/93-94	5,892	11,048	0.512	3,015	5,653
6/30/94-95	4,582	8,592	0.937	4,295	8,052
6/30/95-96	2,909	5,818	0.884	2,572	5,145
6/30/96-97	11,793	16,383	0.919	10,841	15,061
6/30/97-98	7,451	11,851	0.922	6,872	10,931
6/30/98-99	12,471	16,251	0.916	11,429	14,893
6/30/99-00	18,402	18,402	0.878	16,155	16,155
6/30/00-01	24,188	24,188	0.843	20,385	20,385
6/30/01-02	26,779	32,389	0.820	21,950	26,548
6/30/02-03	21,952	36,312	0.799	17,536	29,008
6/30/03-04	31,783	46,543	0.786	24,975	36,573
6/30/04-05	37,797	56,037	0.771	29,129	43,186
6/30/05-06	45,192	72,832	0.754	34,095	54,948
6/30/06-07	53,565	75,585	0.738	39,515	55,759
6/30/07-08	64,819	108,019	0.721	46,718	77,854
6/30/08-09	76,592	133,532	0.714	54,701	95,366
6/30/09-10	85,736	141,056	0.685	58,721	96,611
6/30/10-11	95,534	165,314	0.663	63,359	109,638
6/30/11-12	119,951	143,431	0.658	78,964	94,421
6/30/12-13	124,407	164,567	0.642	79,818	105,584
6/30/13-14	174,124	201,564	0.656	114,173	132,166
6/30/14-15	196,841	243,981	0.656	129,202	160,143
6/30/15-16	253,757	288,867	0.658	167,047	190,160
6/30/16-17	234,502	319,992	0.655	153,641	209,652
6/30/17-18	357,700	411,570	0.681	243,660	280,355
6/30/18-19	368,355	544,280	0.727	267,648	395,476
6/30/19-20	583,314	1,014,479	0.816	476,048	827,927
Total	3,051,665	4,333,228		2,184,137	3,131,505

	(Low)	(High)
(7) Total Discount Factor:	0.716	0.723

	Discount Calculation for All Prior Years	
	(Low)	(High)
(8) Estimated Total Reserve:	0	0
(9) Projected Number of Years:	3	3
(10) Projected Paid Loss per Year:	0	0
(11) Discounted Value at 6%:	0	0

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, 2020

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		45,989,577			48,450,934	49,833,672	2,461,357	3,844,095		
6/30/82-83		5,610,779	5,668,815		5,612,127	5,669,000	1,348	58,221		
6/30/83-84		8,215,842	8,352,275		8,268,752	8,436,000	52,910	220,158		
6/30/84-85	732,729	17,050,186	17,370,353	17,246,509	17,247,000	17,370,000	196,814	319,814	2.354	2.371
6/30/85-86	787,208	20,611,851	21,035,197	20,879,062	20,879,000	21,035,000	267,149	423,149	2.652	2.672
6/30/86-87	902,483	21,861,811	22,345,791	22,176,463	22,176,000	22,346,000	314,189	484,189	2.457	2.476
6/30/87-88	1,366,586	29,327,523	30,031,893	29,872,048	29,872,000	30,633,000	544,477	1,305,477	2.186	2.242
6/30/88-89	1,486,478	26,958,955	27,680,144	27,466,671	27,467,000	28,234,000	508,045	1,275,045	1.848	1.899
6/30/89-90	1,494,463	25,888,109	26,727,573	26,576,780	26,577,000	27,262,000	688,891	1,373,891	1.778	1.824
6/30/90-91	1,405,560	21,976,408	22,844,029	22,740,727	22,741,000	23,301,000	764,592	1,324,592	1.618	1.658
6/30/91-92	1,364,510	13,738,160	14,407,927	14,337,957	14,338,000	15,128,000	599,840	1,389,840	1.051	1.109
6/30/92-93	1,347,359	10,151,290	10,755,986	10,701,261	10,701,000	10,756,000	549,710	604,710	0.794	0.798
6/30/93-94	1,424,410	11,477,150	12,364,125	12,242,601	12,243,000	12,611,000	765,850	1,133,850	0.860	0.885
6/30/94-95	1,497,829	9,991,545	10,765,789	10,745,766	10,746,000	11,304,000	754,455	1,312,455	0.717	0.755
6/30/95-96	1,582,635	10,468,463	11,436,301	11,406,375	11,406,000	12,008,000	937,537	1,539,537	0.721	0.759
6/30/96-97	1,979,748	10,552,880	11,626,030	11,600,076	11,600,000	12,207,000	1,047,120	1,654,120	0.586	0.617
6/30/97-98	1,917,994	9,008,999	9,949,458	9,938,306	9,938,000	10,447,000	929,001	1,438,001	0.518	0.545
6/30/98-99	2,081,524	9,557,577	10,738,153	10,722,066	10,722,000	11,275,000	1,164,423	1,717,423	0.515	0.542
6/30/99-00	2,207,243	11,166,059	12,772,031	12,732,745	12,733,000	13,411,000	1,566,941	2,244,941	0.577	0.608
6/30/00-01	2,201,008	10,364,734	12,026,518	11,996,530	11,997,000	12,628,000	1,632,266	2,263,266	0.545	0.574
6/30/01-02	2,292,592	10,467,902	12,241,941	12,226,642	12,227,000	12,854,000	1,759,098	2,386,098	0.533	0.561
6/30/02-03	2,260,534	10,374,896	12,285,895	12,271,095	12,271,000	12,900,000	1,896,104	2,525,104	0.543	0.571
6/30/03-04	2,255,942	9,603,535	11,503,924	11,504,476	11,504,000	12,080,000	1,900,465	2,476,465	0.510	0.535
6/30/04-05	2,309,083	11,252,446	13,562,956	13,408,496	13,408,000	13,563,000	2,155,554	2,310,554	0.581	0.587
6/30/05-06	2,480,693	10,300,307	12,528,181	12,848,524	12,528,000	12,849,000	2,227,693	2,548,693	0.505	0.518
6/30/06-07	2,612,577	9,363,258	11,655,522	12,317,982	11,656,000	12,318,000	2,292,742	2,954,742	0.446	0.471
6/30/07-08	2,783,717	13,663,776	17,325,974	17,219,046	17,219,000	17,343,326	3,555,224	3,679,550	0.619	0.623
6/30/08-09	2,750,907	13,440,656	17,349,951	17,364,102	17,350,000	17,381,364	3,909,344	3,940,708	0.631	0.632
6/30/09-10	2,806,048	13,280,028	17,445,889	17,690,390	17,446,000	17,707,690	4,165,972	4,427,662	0.622	0.631
6/30/10-11	2,942,638	15,434,592	20,816,052	20,530,642	20,531,000	20,836,816	5,096,408	5,402,224	0.698	0.708
6/30/11-12	3,006,849	16,235,234	22,491,552	21,983,356	21,983,000	22,514,492	5,747,766	6,279,258	0.731	0.749
6/30/12-13	3,138,905	12,954,545	18,454,702	19,474,038	18,455,000	19,474,000	5,500,455	6,519,455	0.588	0.620
6/30/13-14	3,311,947	15,948,567	23,655,701	23,777,963	23,656,000	23,801,778	7,707,433	7,853,211	0.714	0.719
6/30/14-15	3,511,622	16,838,811	26,423,276	26,530,693	26,423,000	26,557,531	9,584,189	9,718,720	0.752	0.756
6/30/15-16	3,491,558	17,590,215	30,142,823	29,165,968	29,457,660	30,173,143	11,867,445	12,582,928	0.844	0.864
6/30/16-17	3,338,327	14,479,654	28,247,294	27,540,155	27,540,000	28,529,470	13,060,346	14,049,816	0.825	0.855
6/30/17-18	3,401,479	12,748,736	30,836,979	29,635,689	29,636,000	31,453,740	16,887,264	18,705,004	0.871	0.925
6/30/18-19	3,573,725	7,628,414	27,223,284	29,535,037	27,767,460	31,011,750	20,139,046	23,383,336	0.777	0.868
6/30/19-20	3,752,730	3,888,664	30,927,578	33,643,340	30,928,000	33,710,286	27,039,336	29,821,622	0.824	0.898
Total	81,801,638	565,462,135	684,017,861	672,049,579	727,700,933	752,954,058	162,238,799	187,491,924		
Tot 6/30/84-20	81,801,638	505,645,937	669,996,770	672,049,579	665,369,120	689,015,386	159,723,183	183,369,449	0.813	0.842

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim	Average Age
All Prior Yrs		44,329,363							6	6		80
6/30/82-83		5,567,029	1.010	1.000	5,624,956	43,859	5,668,815		0	0		
6/30/83-84		7,732,292	1.012	1.005	7,867,516	484,759	8,352,275		1	1	135,224	74
6/30/84-85	732,729	16,303,682	1.014	1.005	16,621,983	748,370	17,370,353	2.371	1	1	318,301	
6/30/85-86	787,208	19,505,318	1.016	1.005	19,925,897	1,109,300	21,035,197	2.672	3	2	210,290	76
6/30/86-87	902,483	20,341,947	1.019	1.005	20,822,127	1,523,664	22,345,791	2.476	5	5	96,036	79
6/30/87-88	1,366,586	27,256,119	1.021	1.005	27,955,310	2,076,583	30,031,893	2.198	6	5	139,838	76
6/30/88-89	1,486,478	23,987,722	1.025	1.005	24,701,483	2,978,661	27,680,144	1.862	5	4	178,440	72
6/30/89-90	1,494,463	23,172,484	1.031	1.005	24,005,158	2,722,414	26,727,573	1.788	6	7	118,954	75
6/30/90-91	1,405,560	19,478,806	1.039	1.005	20,340,183	2,503,846	22,844,029	1.625	4	4	215,344	84
6/30/91-92	1,364,510	12,356,424	1.049	1.005	13,022,737	1,385,190	14,407,927	1.056	4	4	166,578	75
6/30/92-93	1,347,359	8,893,417	1.062	1.005	9,494,969	1,261,018	10,755,986	0.798	1	1	601,551	82
6/30/93-94	1,424,410	10,170,628	1.076	1.010	11,053,680	1,310,445	12,364,125	0.868	6	5	176,610	78
6/30/94-95	1,497,829	8,459,327	1.091	1.000	9,228,200	1,537,589	10,765,789	0.719	2	2	384,437	77
6/30/95-96	1,582,635	9,122,781	1.105	1.000	10,083,869	1,352,432	11,436,301	0.723	2	2	480,544	87
6/30/96-97	1,979,748	8,644,061	1.123	1.000	9,704,745	1,921,286	11,626,030	0.587	3	3	353,561	72
6/30/97-98	1,917,994	6,606,804	1.139	1.000	7,524,161	2,425,296	9,949,458	0.519	1	1	917,358	78
6/30/98-99	2,081,524	7,409,513	1.155	1.000	8,558,780	2,179,373	10,738,153	0.516	4	2	574,634	51
6/30/99-00	2,207,243	9,147,511	1.171	1.000	10,712,443	2,059,589	12,772,031	0.579	3	2	782,466	75
6/30/00-01	2,201,008	8,762,305	1.185	1.000	10,379,667	1,646,850	12,026,518	0.546	6	4	404,341	68
6/30/01-02	2,292,592	8,462,483	1.201	1.000	10,165,101	2,076,840	12,241,941	0.534	2	2	851,309	54
6/30/02-03	2,260,534	8,436,502	1.216	1.000	10,261,945	2,023,950	12,285,895	0.543	3	1	1,825,443	55
6/30/03-04	2,255,942	7,846,771	1.232	1.000	9,663,734	1,840,190	11,503,924	0.510	4	3	605,654	63
6/30/04-05	2,309,083	8,890,244	1.245	1.000	11,068,641	2,494,314	13,562,956	0.587	4	3	726,132	69
6/30/05-06	2,480,693	7,882,306	1.264	1.000	9,963,675	2,564,506	12,528,181	0.505	4	5	416,274	61
6/30/06-07	2,612,577	7,489,169	1.288	1.000	9,643,947	2,011,575	11,655,522	0.446	3	3	718,259	61
6/30/07-08	2,783,717	11,005,127	1.312	1.000	14,439,635	2,886,339	17,325,974	0.622	6	5	686,902	68
6/30/08-09	2,750,907	10,695,038	1.342	1.000	14,350,555	2,999,395	17,349,951	0.631	4	5	731,104	54
6/30/09-10	2,806,048	10,417,814	1.372	1.000	14,294,185	3,151,704	17,445,889	0.622	5	5	775,274	63
6/30/10-11	2,942,638	12,380,417	1.404	1.000	17,383,343	3,432,709	20,816,052	0.707	9	5	1,000,585	60
6/30/11-12	3,006,849	13,211,162	1.440	1.000	19,028,941	3,462,611	22,491,552	0.748	16	9	646,420	62
6/30/12-13	3,138,905	10,608,593	1.480	1.000	15,696,555	2,758,146	18,454,702	0.588	19	14	363,426	52
6/30/13-14	3,311,947	13,187,313	1.532	1.000	20,206,040	3,449,661	23,655,701	0.714	33	28	250,669	62
6/30/14-15	3,511,622	13,871,320	1.607	1.000	22,286,683	4,136,593	26,423,276	0.752	49	35	240,439	53
6/30/15-16	3,491,558	14,878,912	1.722	1.000	25,622,436	4,520,387	30,142,823	0.863	91	57	188,483	53
6/30/16-17	3,338,327	13,089,854	1.882	1.000	24,631,263	3,616,031	28,247,294	0.846	96	75	153,885	52
6/30/17-18	3,401,479	11,919,631	2.237	1.000	26,665,236	4,171,743	30,836,979	0.907	237	113	130,492	51
6/30/18-19	3,573,725	7,528,914	3.098	1.000	23,320,852	3,902,432	27,223,284	0.762	428	173	91,283	48
6/30/19-20	3,752,730	3,813,664	6.808	1.000	25,964,080	4,963,498	30,927,578	0.824		401	55,238	46
Total	81,801,638	492,862,766			592,284,711	91,733,149	684,017,861		1,082	1,003		

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, 2020

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	16,303,682	1.014	16,498,139	748,370	17,246,509	2.354	2.252
6/30/85-86	787,208	2.072	19,505,318	1.016	19,769,762	1,109,300	20,879,062	2.652	2.511
6/30/86-87	902,483	1.895	20,341,947	1.019	20,652,800	1,523,664	22,176,463	2.457	2.288
6/30/87-88	1,366,586	1.960	27,256,119	1.021	27,795,466	2,076,583	29,872,048	2.186	2.034
6/30/88-89	1,486,478	1.400	23,987,722	1.025	24,488,010	2,978,661	27,466,671	1.848	1.647
6/30/89-90	1,494,463	1.528	23,172,484	1.031	23,854,366	2,722,414	26,576,780	1.778	1.596
6/30/90-91	1,405,560	1.436	19,478,806	1.039	20,236,881	2,503,846	22,740,727	1.618	1.440
6/30/91-92	1,364,510	0.941	12,356,424	1.049	12,952,767	1,385,190	14,337,957	1.051	0.949
6/30/92-93	1,347,359	0.692	8,893,417	1.062	9,440,243	1,261,018	10,701,261	0.794	0.701
6/30/93-94	1,424,410	0.756	10,170,628	1.076	10,932,156	1,310,445	12,242,601	0.859	0.767
6/30/94-95	1,497,829	0.600	8,459,327	1.091	9,208,176	1,537,589	10,745,766	0.717	0.615
6/30/95-96	1,582,635	0.617	9,122,781	1.105	10,053,943	1,352,432	11,406,375	0.721	0.635
6/30/96-97	1,979,748	0.478	8,644,061	1.123	9,678,790	1,921,286	11,600,076	0.586	0.489
6/30/97-98	1,917,994	0.388	6,606,804	1.139	7,513,009	2,425,296	9,938,306	0.518	0.392
6/30/98-99	2,081,524	0.405	7,409,513	1.155	8,542,693	2,179,373	10,722,066	0.515	0.410
6/30/99-00	2,207,243	0.473	9,147,511	1.171	10,673,156	2,059,589	12,732,745	0.577	0.484
6/30/00-01	2,201,008	0.463	8,762,305	1.185	10,349,680	1,646,850	11,996,530	0.545	0.470
6/30/01-02	2,292,592	0.439	8,462,483	1.201	10,149,802	2,076,840	12,226,642	0.533	0.443
6/30/02-03	2,260,534	0.450	8,436,502	1.216	10,247,145	2,023,950	12,271,095	0.543	0.453
6/30/03-04	2,255,942	0.428	7,846,771	1.232	9,664,286	1,840,190	11,504,476	0.510	0.428
6/30/04-05	2,309,083	0.445	8,890,244	1.245	10,914,181	2,494,314	13,408,496	0.581	0.473
6/30/05-06	2,480,693	0.463	7,882,306	1.264	10,284,018	2,564,506	12,848,524	0.518	0.415
6/30/06-07	2,612,577	0.483	7,489,169	1.288	10,306,407	2,011,575	12,317,982	0.471	0.394
6/30/07-08	2,783,717	0.503	11,005,127	1.312	14,332,707	2,886,339	17,219,046	0.619	0.515
6/30/08-09	2,750,907	0.524	10,695,038	1.342	14,364,707	2,999,395	17,364,102	0.631	0.522
6/30/09-10	2,806,048	0.542	10,417,814	1.372	14,538,686	3,151,704	17,690,390	0.630	0.518
6/30/10-11	2,942,638	0.557	12,380,417	1.404	17,097,933	3,432,709	20,530,642	0.698	0.581
6/30/11-12	3,006,849	0.578	13,211,162	1.440	18,520,745	3,462,611	21,983,356	0.731	0.616
6/30/12-13	3,138,905	0.600	10,608,593	1.480	16,715,892	2,758,146	19,474,038	0.620	0.533
6/30/13-14	3,311,947	0.621	13,187,313	1.532	20,328,303	3,449,661	23,777,963	0.718	0.614
6/30/14-15	3,511,622	0.643	13,871,320	1.607	22,394,101	4,136,593	26,530,693	0.756	0.638
6/30/15-16	3,491,558	0.667	14,878,912	1.722	24,645,581	4,520,387	29,165,968	0.835	0.706
6/30/16-17	3,338,327	0.693	13,089,854	1.882	23,924,124	3,616,031	27,540,155	0.825	0.717
6/30/17-18	3,401,479	0.720	11,919,631	2.237	25,463,946	4,171,743	29,635,689	0.871	0.749
6/30/18-19	3,573,725	0.748	7,528,914	3.098	25,632,605	3,902,432	29,535,037	0.826	0.717
6/30/19-20	3,752,730	0.777	3,813,664	6.808	28,679,841	4,963,498	33,643,340	0.897	0.764
Total	81,801,638		435,234,082		580,845,048	91,204,531	672,049,579		

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, 2020

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	20,340,183	1.447	1.004	1.453	2.427	3.528	0.328	1.443	1.436
6/30/91-92	1,364,510	13,022,737	0.954	1.102	1.052	2.357	2.478	0.308	0.941	0.941
6/30/92-93	1,347,359	9,494,969	0.705	1.285	0.905	2.288	2.072	0.272	0.697	0.692
6/30/93-94	1,424,410	11,053,680	0.776	1.268	0.984	2.221	2.186	0.284	0.754	0.756
6/30/94-95	1,497,829	9,228,200	0.616	1.257	0.774	2.157	1.670	0.295	0.601	0.600
6/30/95-96	1,582,635	10,083,869	0.637	1.247	0.794	2.094	1.663	0.306	0.620	0.617
6/30/96-97	1,979,748	9,704,745	0.490	1.234	0.605	2.033	1.230	0.319	0.479	0.478
6/30/97-98	1,917,994	7,524,161	0.392	1.218	0.478	1.974	0.943	0.333	0.388	0.388
6/30/98-99	2,081,524	8,558,780	0.411	1.202	0.494	1.916	0.947	0.347	0.405	0.405
6/30/99-00	2,207,243	10,712,443	0.485	1.183	0.574	1.860	1.068	0.363	0.472	0.473
6/30/00-01	2,201,008	10,379,667	0.472	1.153	0.544	1.806	0.982	0.384	0.462	0.463
6/30/01-02	2,292,592	10,165,101	0.443	1.131	0.501	1.754	0.879	0.404	0.442	0.439
6/30/02-03	2,260,534	10,261,945	0.454	1.126	0.511	1.702	0.871	0.417	0.454	0.450
6/30/03-04	2,255,942	9,663,734	0.428	1.126	0.483	1.653	0.798	0.430	0.430	0.428
6/30/04-05	2,309,083	11,068,641	0.479	1.119	0.537	1.605	0.861	0.445	0.407	0.445
6/30/05-06	2,480,693	9,963,675	0.402	1.108	0.445	1.558	0.693	0.463	0.430	0.463
6/30/06-07	2,612,577	9,643,947	0.369	1.096	0.405	1.513	0.612	0.483	0.454	0.483
6/30/07-08	2,783,717	14,439,635	0.519	1.084	0.562	1.469	0.826	0.503	0.480	0.503
6/30/08-09	2,750,907	14,350,555	0.522	1.071	0.559	1.426	0.797	0.524	0.507	0.524
6/30/09-10	2,806,048	14,294,185	0.509	1.067	0.544	1.384	0.753	0.542	0.532	0.542
6/30/10-11	2,942,638	17,383,343	0.591	1.069	0.631	1.344	0.848	0.557	0.555	0.557
6/30/11-12	3,006,849	19,028,941	0.633	1.062	0.672	1.305	0.877	0.578	0.584	0.578
6/30/12-13	3,138,905	15,696,555	0.500	1.052	0.526	1.267	0.666	0.600	0.616	0.600
6/30/13-14	3,311,947	20,206,040	0.610	1.048	0.639	1.230	0.786	0.621	0.646	0.621
6/30/14-15	3,511,622	22,286,683	0.635	1.042	0.662	1.194	0.790	0.643	0.679	0.643
6/30/15-16	3,491,558	25,622,436	0.734	1.034	0.759	1.159	0.880	0.667	0.715	0.667
6/30/16-17	3,338,327	24,631,263	0.738	1.026	0.757	1.126	0.852	0.693	0.753	0.693
6/30/17-18	3,401,479	26,665,236	0.784	1.017	0.797	1.093	0.871	0.720	0.794	0.720
6/30/18-19	3,573,725	23,320,852	0.653	1.008	0.658	1.061	0.698	0.748	0.837	0.748
6/30/19-20	3,752,730	25,964,080	0.692	1.000	0.692	1.030	0.713	0.777		0.777
Total	75,031,692	444,760,281								

Trend Last 4 (ex 19-20):	-3.7%	Avg 3 (ex 19-20):	0.807
Trend Last 8 (ex 19-20):	3.1%	Avg 5 (ex 19-20):	0.818
Trend Last 12 (ex 19-20):	2.9%	vg 10 (ex 19-20):	0.802
Prior Selected Trend:	4.5%	Prior Sel Avg:	0.875
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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
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All Other - Clusters 5-17 & 95
Indemnity

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.940	
(2)	Credibility	57%	
(3)	Average Pmt Trend Statewide	0.950	
(4)	Credibility Weighted Trend	0.944	
		(Low)	(High)
(5)	Selected Range	0.942	0.965
(6)	Incremental Paid for 2020	257,691	257,691
(7)	Estimated Reserve	4,147,906	7,104,921
(8)	Paid to Date (82 & Prior)	44,329,363	44,329,363
(9)	Est Ult Paid for 1982 & Prior	48,477,269	51,434,284

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	270,520	305,521
(11)	Projected Number of Years	7	7
(12)	Estimated Reserve	1,893,640	2,138,650
(13)	Paid to Date (82 & Prior)	44,329,363	44,071,671
(14)	Est Ult Paid for 1982 & Prior	46,223,002	46,210,322
(14a)	Paid Counts During Fiscal Year	6	6

		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	46,786,569	48,169,308
(16)	Lump Sum Ultimates	1,664,365	1,664,365
(17)	Ult Loss Including Lump Sums	**48,450,934**	**49,833,672**
(18)	Implied Tail	1.055	1.087
(19)	Ult Loss Inc Lump Sums @ 6/19	48,350,821	49,849,073

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 =	29
2001	10	1,385,608	14.142	1.014	S(x) =	58,174
2002	11	1,127,515	13.936	0.814	S(x-sq) =	116,699,074
2003	12	1,046,115	13.861	0.928	S(xy) =	793,222
2004	13	1,007,259	13.823	0.963	S(y) =	395
2005	14	889,985	13.699	0.884	D =	58,870
2006	15	854,725	13.659	0.960	slope =	-0.065
2007	16	901,012	13.711	1.054	Avg Trend =	0.935
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		
2017	26	362,696	12.801	0.751		
2018	27	303,381	12.623	0.836		
2019	28	250,487	12.431	0.826		
2020	29	257,691	12.460	1.029		
					Selected Trend:	**0.940**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(4) LN [(3)]

(5) Eg. 2019: 1.029 = 257691 / 303381

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	48,350,821	49,849,073	48,450,934	49,833,672	100,112	0.2%	(15,401)	0.0%
6/30/82-83	5,640,351	5,697,000	5,612,127	5,669,000	(28,224)	-0.5%	(28,000)	-0.5%
6/30/83-84	8,262,544	8,429,000	8,268,752	8,436,000	6,208	0.1%	7,000	0.1%
6/30/84-85	17,244,000	17,382,000	17,247,000	17,370,000	3,000	0.0%	(12,000)	-0.1%
6/30/85-86	20,824,000	20,997,000	20,879,000	21,035,000	55,000	0.3%	38,000	0.2%
6/30/86-87	21,997,000	22,179,000	22,176,000	22,346,000	179,000	0.8%	167,000	0.8%
6/30/87-88	29,806,000	30,570,000	29,872,000	30,633,000	66,000	0.2%	63,000	0.2%
6/30/88-89	27,394,000	28,193,000	27,467,000	28,234,000	73,000	0.3%	41,000	0.1%
6/30/89-90	26,491,000	27,182,000	26,577,000	27,262,000	86,000	0.3%	80,000	0.3%
6/30/90-91	22,854,000	23,418,000	22,741,000	23,301,000	(113,000)	-0.5%	(117,000)	-0.5%
6/30/91-92	14,358,000	15,152,000	14,338,000	15,128,000	(20,000)	-0.1%	(24,000)	-0.2%
6/30/92-93	10,802,000	10,861,000	10,701,000	10,756,000	(101,000)	-0.9%	(105,000)	-1.0%
6/30/93-94	12,243,000	12,617,000	12,243,000	12,611,000	0	0.0%	(6,000)	0.0%
6/30/94-95	10,812,000	11,383,000	10,746,000	11,304,000	(66,000)	-0.6%	(79,000)	-0.7%
6/30/95-96	11,499,000	12,118,000	11,406,000	12,008,000	(93,000)	-0.8%	(110,000)	-0.9%
6/30/96-97	11,692,000	12,320,000	11,600,000	12,207,000	(92,000)	-0.8%	(113,000)	-0.9%
6/30/97-98	10,038,000	10,568,000	9,938,000	10,447,000	(100,000)	-1.0%	(121,000)	-1.1%
6/30/98-99	10,825,000	11,404,000	10,722,000	11,275,000	(103,000)	-1.0%	(129,000)	-1.1%
6/30/99-00	12,824,000	13,534,000	12,733,000	13,411,000	(91,000)	-0.7%	(123,000)	-0.9%
6/30/00-01	12,111,000	12,776,000	11,997,000	12,628,000	(114,000)	-0.9%	(148,000)	-1.2%
6/30/01-02	12,406,000	13,070,000	12,227,000	12,854,000	(179,000)	-1.4%	(216,000)	-1.7%
6/30/02-03	12,478,000	13,145,000	12,271,000	12,900,000	(207,000)	-1.7%	(245,000)	-1.9%
6/30/03-04	11,585,000	12,187,000	11,504,000	12,080,000	(81,000)	-0.7%	(107,000)	-0.9%
6/30/04-05	13,302,000	13,688,000	13,408,000	13,563,000	106,000	0.8%	(125,000)	-0.9%
6/30/05-06	12,725,000	12,846,000	12,528,000	12,849,000	(197,000)	-1.5%	3,000	0.0%
6/30/06-07	11,908,000	12,400,000	11,656,000	12,318,000	(252,000)	-2.1%	(82,000)	-0.7%
6/30/07-08	16,829,000	17,523,506	17,219,000	17,343,326	390,000	2.3%	(180,180)	-1.0%
6/30/08-09	17,415,090	17,845,828	17,350,000	17,381,364	(65,090)	-0.4%	(464,464)	-2.6%
6/30/09-10	17,708,130	17,978,961	17,446,000	17,707,690	(262,130)	-1.5%	(271,271)	-1.5%
6/30/10-11	20,632,590	21,365,344	20,531,000	20,836,816	(101,590)	-0.5%	(528,528)	-2.5%
6/30/11-12	22,449,000	23,152,129	21,983,000	22,514,492	(466,000)	-2.1%	(637,637)	-2.8%
6/30/12-13	19,142,000	20,256,000	18,455,000	19,474,000	(687,000)	-3.6%	(782,000)	-3.9%
6/30/13-14	23,614,080	24,830,000	23,656,000	23,801,778	41,920	0.2%	(1,028,222)	-4.1%
6/30/14-15	26,463,540	27,590,000	26,423,000	26,557,531	(40,540)	-0.2%	(1,032,469)	-3.7%
6/30/15-16	29,152,380	30,501,000	29,457,660	30,173,143	305,280	1.0%	(327,857)	-1.1%
6/30/16-17	27,190,070	28,319,000	27,540,000	28,529,470	349,930	1.3%	210,470	0.7%
6/30/17-18	30,064,180	31,166,000	29,636,000	31,453,740	(428,180)	-1.4%	287,740	0.9%
6/30/18-19	29,266,840	34,111,000	27,767,460	31,011,750	(1,499,380)	-5.1%	(3,099,250)	-9.1%
6/30/19-20								
Total	700,398,616	728,603,841	696,772,933	719,243,772	(3,625,683)	-0.5%	(9,360,069)	-1.3%

NOTES:
(2), (3) From prior Aon analysis as of June 30, 2019
(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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	10,300,314
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	10,522,712	10,573,730
June-10	2,633,117	5,635,921	7,589,725	8,649,349	9,377,427	9,682,440	9,913,357	10,053,526	10,173,489	10,296,898
June-11	3,051,305	6,236,233	8,335,371	9,693,865	10,723,507	11,281,886	11,720,021	11,983,128	12,221,441	12,380,417
June-12	3,091,255	6,520,051	8,927,094	10,508,623	11,447,181	12,143,610	12,599,871	12,965,823	13,211,162	
June-13	3,164,952	6,219,894	8,032,100	9,109,069	9,525,823	10,032,096	10,379,197	10,608,593		
June-14	3,352,283	7,306,365	9,677,378	10,985,528	11,937,152	12,673,994	13,187,313			
June-15	3,469,231	7,330,865	10,059,402	11,997,955	13,160,624	13,871,320				
June-16	3,743,094	8,120,540	11,329,296	13,434,586	14,878,912					
June-17	3,508,611	7,778,444	10,840,564	13,089,854						
June-18	4,074,884	8,732,069	11,919,631							
June-19	3,704,302	7,528,914								
June-20	3,813,664									

Acc Yr Ending	132	144	156	168	180	192	204	216	228	240
June-83	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
June-84	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
June-85	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
June-86	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
June-87	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
June-88	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
June-89	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
June-90	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
June-91	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
June-92	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
June-93	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
June-94	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
June-95	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
June-96	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
June-97	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	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	6,458,417
June-99	6,235,873	6,377,337	6,494,424	6,587,838	6,682,288	6,778,115	6,925,083	7,070,436	7,202,887	7,277,152
June-00	7,749,526	7,893,815	8,042,197	8,192,773	8,347,186	8,503,330	8,663,410	8,825,026	8,949,196	9,048,086
June-01	7,426,582	7,654,033	7,849,861	8,020,910	8,190,421	8,343,041	8,462,386	8,560,385	8,661,070	8,762,305
June-02	8,009,207	8,123,218	8,235,728	8,305,377	8,337,160	8,368,599	8,400,043	8,431,421	8,462,483	
June-03	7,917,384	8,045,457	8,162,493	8,243,468	8,319,058	8,355,976	8,436,342	8,436,502		
June-04	7,170,376	7,302,807	7,438,524	7,571,596	7,689,498	7,782,878	7,846,771			
June-05	8,127,072	8,305,978	8,437,198	8,584,628	8,749,258	8,890,244				
June-06	7,637,818	7,685,159	7,730,889	7,786,383	7,882,306					
June-07	7,262,766	7,349,434	7,435,948	7,489,169						
June-08	10,537,637	10,769,549	11,005,127							
June-09	10,640,281	10,695,038								
June-10	10,417,814									

Acc Yr Ending	252	264	276	288	300	312	324	336	348	360
June-83	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
June-84	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
June-85	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
June-86	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
June-87	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	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	26,409,112
June-89	20,402,670	20,798,618	21,197,603	21,577,022	21,928,411	22,287,434	22,650,460	22,992,900	23,294,273	23,537,672
June-90	19,770,540	20,083,209	20,405,842	20,740,230	21,078,475	21,425,424	21,783,413	22,151,866	22,514,365	22,837,362
June-91	17,615,173	17,862,598	18,129,844	18,364,459	18,577,053	18,761,226	18,948,944	19,143,029	19,343,788	19,478,806
June-92	10,865,629	11,121,672	11,298,499	11,478,454	11,664,168	11,843,558	12,009,744	12,180,558	12,356,424	
June-93	8,148,509	8,300,461	8,427,178	8,541,121	8,721,600	8,791,819	8,842,067	8,893,417		
June-94	9,094,927	9,272,603	9,452,424	9,631,985	9,814,793	10,000,928	10,170,628			
June-95	7,982,201	8,105,050	8,207,710	8,290,079	8,373,947	8,459,327				
June-96	8,752,873	8,842,875	8,934,504	9,027,803	9,122,781					
June-97	8,386,898	8,470,482	8,557,462	8,644,061						
June-98	6,506,992	6,556,452	6,606,804							
June-99	7,343,610	7,409,513								
June-00	9,147,511									

Acc Yr Ending	372	384	396	408	420	432	444	456
June-83	5,513,211	5,568,431	5,567,029	5,567,029	5,567,029	5,567,029	5,567,029	5,567,029
June-84	7,482,504	7,520,670	7,560,195	7,600,776	7,642,735	7,686,135	7,732,292	
June-85	15,963,360	16,026,507	16,092,726	16,161,795	16,231,743	16,303,682		
June-86	18,865,007	19,041,560	19,224,102	19,367,365	19,505,318			
June-87	19,527,567	19,814,955	20,074,036	20,341,947				
June-88	26,729,296	27,001,152	27,256,119					
June-89	23,770,559	23,987,722						
June-90	23,172,484							

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	1.019
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	1.019	1.014
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	1.014	1.012	1.012
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	1.004	1.004	1.004	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	1.009	1.004	1.010	1.000	
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	1.018	1.016	1.012	1.008		
June-05	2.161	1.345	1.135	1.053	1.055	1.066	1.048	1.030	1.028	1.030	1.022	1.016	1.017	1.019	1.016			
June-06	2.141	1.282	1.109	1.101	1.113	1.055	1.023	1.011	1.033	1.016	1.006	1.006	1.007	1.012				
June-07	2.094	1.126	1.222	1.161	1.072	1.051	1.027	1.040	1.023	1.016	1.012	1.012	1.007					
June-08	2.229	1.360	1.221	1.127	1.079	1.052	1.030	1.023	1.022	1.023	1.022	1.022						
June-09	2.380	1.412	1.219	1.125	1.105	1.040	1.018	1.001	1.005	1.006	1.005							
June-10	2.140	1.347	1.140	1.084	1.033	1.024	1.014	1.012	1.012	1.012								
June-11	2.044	1.337	1.163	1.106	1.052	1.039	1.022	1.020	1.013									
June-12	2.109	1.369	1.177	1.089	1.061	1.038	1.029	1.019										
June-13	1.965	1.291	1.134	1.046	1.053	1.035	1.022											
June-14	2.180	1.325	1.135	1.087	1.062	1.041												
June-15	2.113	1.372	1.193	1.097	1.054													
June-16	2.169	1.395	1.186	1.108														
June-17	2.217	1.394	1.207															
June-18	2.143	1.365																
June-19	2.032																	

Acc Yr Ending	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	420-432	432-444	444-456
June-83	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	1.000	1.000	1.000	1.000
June-84	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	1.005	1.006	1.006	1.006	
June-85	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	1.004	1.004	1.004	1.004		
June-86	1.023	1.022	1.021	1.020	1.020	1.017	1.014	1.012	1.010	1.009	1.009	1.009	1.009	1.010	1.007	1.007			
June-87	1.023	1.017	1.015	1.016	1.019	1.016	1.017	1.017	1.016	1.016	1.016	1.016	1.015	1.013	1.013				
June-88	1.022	1.022	1.017	1.014	1.016	1.015	1.014	1.014	1.014	1.014	1.012	1.012	1.010	1.009					
June-89	1.022	1.020	1.019	1.019	1.018	1.016	1.016	1.016	1.015	1.013	1.010	1.010	1.009						
June-90	1.016	1.017	1.016	1.016	1.016	1.016	1.016	1.017	1.017	1.016	1.014	1.015							
June-91	1.014	1.014	1.014	1.015	1.013	1.012	1.010	1.010	1.010	1.010	1.007								
June-92	1.026	1.024	1.024	1.016	1.016	1.016	1.015	1.014	1.014	1.014									
June-93	1.027	1.024	1.019	1.015	1.014	1.021	1.008	1.006	1.006										
June-94	1.021	1.020	1.020	1.019	1.019	1.019	1.019	1.017											
June-95	1.022	1.016	1.015	1.013	1.010	1.010	1.010												
June-96	1.031	1.020	1.010	1.010	1.010	1.011													
June-97	1.012	1.010	1.010	1.010	1.010														
June-98	1.007	1.008	1.008	1.008															
June-99	1.010	1.009	1.009																
June-00	1.011	1.011																	
June-01	1.012																		

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
Simple Avg																		
All Yrs	2.261	1.382	1.200	1.128	1.087	1.062	1.050	1.040	1.037	1.032	1.032	1.030	1.026	1.025	1.024	1.024	1.021	1.021
Latest 5	2.135	1.370	1.171	1.085	1.056	1.035	1.021	1.015	1.015	1.014	1.013	1.015	1.012	1.012	1.011	1.011	1.011	1.011
Latest 3	2.131	1.385	1.195	1.097	1.056	1.038	1.025	1.017	1.010	1.014	1.013	1.013	1.011	1.016	1.011	1.007	1.005	1.010
Volume Wtd																		
All Yrs	2.214	1.374	1.194	1.120	1.081	1.057	1.046	1.037	1.035	1.032	1.032	1.032	1.027	1.026	1.025	1.024	1.021	1.021
Latest 5	2.135	1.371	1.174	1.088	1.056	1.036	1.021	1.015	1.014	1.014	1.014	1.015	1.012	1.012	1.011	1.011	1.011	1.011
Latest 3	2.130	1.384	1.195	1.098	1.056	1.038	1.025	1.017	1.010	1.014	1.013	1.014	1.011	1.016	1.011	1.007	1.005	1.010
Dev Factor Selection																		
Industry 1	2.958	1.596	1.236	1.106	1.039	1.020	1.014	1.008	1.006	1.006	1.005	1.010	1.002	1.003	1.003	1.002	1.004	1.003
Industry 2		1.877	1.312	1.143	1.055	1.028	1.016	1.015	1.006	1.005	1.007	1.007	1.004	1.002	1.005	1.002	1.003	1.002
Prior	2.187	1.375	1.179	1.097	1.070	1.049	1.037	1.030	1.028	1.025	1.024	1.022	1.019	1.020	1.014	1.014	1.012	1.013
Selected	2.198	1.385	1.189	1.093	1.072	1.049	1.036	1.027	1.026	1.023	1.023	1.023	1.019	1.019	1.015	1.011	1.012	1.013
FacToUlt	6.808	3.098	2.237	1.882	1.722	1.607	1.532	1.480	1.440	1.404	1.372	1.342	1.312	1.288	1.264	1.245	1.232	1.216
Percent of Ult	14.7%	32.3%	44.7%	53.1%	58.1%	62.2%	65.3%	67.6%	69.4%	71.2%	72.9%	74.5%	76.2%	77.7%	79.1%	80.3%	81.2%	82.2%

Averages	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	420-432	432-444	444-456	To Ult
Simple Avg																				
All Yrs	1.021	1.019	1.017	1.016	1.016	1.016	1.015	1.014	1.013	1.013	1.010	1.011	1.009	1.007	1.006	1.004	1.003	1.003	1.000	
Latest 5	1.010	1.012	1.010	1.012	1.013	1.015	1.013	1.013	1.012	1.014	1.012	1.012	1.009	1.008	1.006					
Latest 3	1.011	1.009	1.009	1.009	1.010	1.013	1.012	1.012	1.010	1.014	1.011	1.012	1.011	1.011	1.008	1.006	1.003			
Volume Wtd																				
All Yrs	1.020	1.019	1.017	1.016	1.016	1.016	1.014	1.014	1.013	1.013	1.011	1.011	1.009	1.008	1.008	1.005	1.004	1.003	1.000	
Latest 5	1.011	1.012	1.011	1.012	1.013	1.015	1.012	1.013	1.013	1.014	1.012	1.012	1.010	1.009	1.008					
Latest 3	1.011	1.009	1.009	1.010	1.010	1.013	1.013	1.013	1.010	1.014	1.011	1.012	1.011	1.011	1.009	1.006	1.004			
Dev Factor Selection																				
Industry 1																				
Industry 2	1.001	1.001																		
Prior	1.014	1.013	1.015	1.015	1.015	1.016	1.014	1.013	1.014	1.013	1.009	1.008	1.006	1.004	1.002	1.002	1.002	1.002	1.016	
Selected	1.014	1.012	1.014	1.014	1.014	1.016	1.013	1.014	1.013	1.013	1.009	1.008	1.006	1.004	1.002	1.002	1.002	1.002	1.002	1.010
FacToUlt	1.201	1.185	1.171	1.155	1.139	1.123	1.105	1.091	1.076	1.062	1.049	1.039	1.031	1.025	1.021	1.019	1.016	1.014	1.012	1.010
Percent of Ult	83.3%	84.4%	85.4%	86.6%	87.8%	89.1%	90.5%	91.7%	92.9%	94.1%	95.4%	96.2%	97.0%	97.6%	98.0%	98.2%	98.4%	98.6%	98.8%	99.0%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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	44,329,363	1.071	47,477,938	0.0%	0.0%	0	1,660,214	1,660,214	3.5%	1.005	1,668,515	1,664,365	1,668,515
6/30/82-83	5,567,029	1.010	5,624,956	0.0%	0.0%	0	43,750	43,750	0.8%	1.005	43,969	43,859	43,969
6/30/83-84	7,732,292	1.017	7,867,516	0.0%	0.0%	0	483,550	483,550	6.1%	1.005	485,968	484,759	485,968
6/30/84-85	16,303,682	1.020	16,621,983	0.0%	0.0%	0	746,504	746,504	4.5%	1.005	750,237	748,370	750,237
6/30/85-86	19,505,318	1.022	19,925,897	0.0%	0.0%	0	1,106,534	1,106,534	5.6%	1.005	1,112,066	1,109,300	1,112,066
6/30/86-87	20,341,947	1.024	20,822,127	0.0%	0.0%	0	1,519,864	1,519,864	7.3%	1.005	1,527,463	1,523,664	1,527,463
6/30/87-88	27,256,119	1.026	27,955,310	0.0%	0.0%	0	2,071,404	2,071,404	7.4%	1.005	2,081,761	2,076,583	2,081,761
6/30/88-89	23,987,722	1.030	24,701,483	0.0%	0.0%	0	2,971,233	2,971,233	12.0%	1.005	2,986,089	2,978,661	2,940,864
6/30/89-90	23,172,484	1.036	24,005,158	0.0%	0.0%	0	2,715,625	2,715,625	11.3%	1.005	2,729,203	2,722,414	2,729,203
6/30/90-91	19,478,806	1.044	20,340,183	0.0%	0.0%	0	2,497,602	2,497,602	12.3%	1.005	2,510,090	2,503,846	2,510,090
6/30/91-92	12,356,424	1.054	13,022,737	0.0%	0.0%	0	1,381,736	1,381,736	10.6%	1.005	1,388,644	1,385,190	1,388,644
6/30/92-93	8,893,417	1.068	9,494,969	0.0%	0.0%	0	1,257,873	1,257,873	13.2%	1.005	1,264,162	1,261,018	1,264,798
6/30/93-94	10,170,628	1.087	11,053,680	0.0%	0.0%	0	1,306,522	1,306,522	11.8%	1.006	1,314,368	1,310,445	1,314,375
6/30/94-95	8,459,327	1.091	9,228,200	0.0%	0.0%	0	1,532,218	1,532,218	16.6%	1.007	1,542,960	1,537,589	1,543,753
6/30/95-96	9,122,781	1.105	10,083,869	0.0%	0.0%	0	1,345,682	1,345,682	13.3%	1.010	1,359,182	1,352,432	1,357,862
6/30/96-97	8,644,061	1.123	9,704,745	0.0%	0.0%	0	1,908,819	1,908,819	19.7%	1.013	1,933,752	1,921,286	1,933,911
6/30/97-98	6,606,804	1.139	7,524,161	0.1%	0.1%	7,524	2,402,195	2,409,719	32.0%	1.016	2,440,874	2,425,296	2,441,362
6/30/98-99	7,409,513	1.155	8,558,780	0.1%	0.2%	17,118	2,148,064	2,165,182	25.3%	1.021	2,193,564	2,179,373	2,193,521
6/30/99-00	9,147,511	1.171	10,712,443	0.1%	0.3%	29,017	2,018,548	2,047,566	19.1%	1.026	2,071,611	2,059,589	2,075,490
6/30/00-01	8,762,305	1.185	10,379,667	0.1%	0.4%	38,495	1,602,429	1,640,924	15.8%	1.031	1,652,776	1,646,850	1,669,374
6/30/01-02	8,462,483	1.201	10,165,101	0.1%	0.5%	48,807	2,005,419	2,054,226	20.2%	1.047	2,099,454	2,076,840	2,098,433
6/30/02-03	8,436,502	1.216	10,261,945	0.1%	0.6%	59,534	1,938,393	1,997,927	19.5%	1.058	2,049,974	2,023,950	2,034,937
6/30/03-04	7,846,771	1.232	9,663,734	0.1%	0.7%	65,727	1,756,764	1,822,491	18.9%	1.058	1,857,889	1,840,190	1,802,784
6/30/04-05	8,890,244	1.245	11,068,641	0.1%	0.8%	86,351	2,362,202	2,448,553	22.1%	1.075	2,540,075	2,494,314	2,510,598
6/30/05-06	7,882,306	1.264	9,963,675	0.2%	1.0%	97,658	2,418,001	2,515,659	25.2%	1.081	2,613,353	2,564,506	2,579,976
6/30/06-07	7,489,169	1.288	9,643,947	0.2%	1.2%	113,812	1,874,089	1,987,901	20.6%	1.086	2,035,250	2,011,575	2,031,075
6/30/07-08	11,005,127	1.312	14,439,635	0.2%	1.4%	197,422	2,658,649	2,856,071	19.8%	1.097	2,916,606	2,886,339	2,884,839
6/30/08-09	10,695,038	1.342	14,350,555	0.2%	1.6%	223,404	2,745,619	2,969,022	20.7%	1.103	3,029,768	2,999,395	3,029,558
6/30/09-10	10,417,814	1.372	14,294,185	0.2%	1.8%	251,115	2,862,214	3,113,328	21.8%	1.115	3,190,080	3,151,704	3,201,093
6/30/10-11	12,380,417	1.404	17,383,343	0.1%	1.9%	329,942	3,054,176	3,384,118	19.5%	1.140	3,481,300	3,432,709	3,420,519
6/30/11-12	13,211,162	1.440	19,028,941	0.3%	2.2%	412,798	3,024,073	3,436,871	18.1%	1.154	3,488,351	3,462,611	3,548,435
6/30/12-13	10,608,593	1.480	15,696,555	0.4%	2.6%	408,620	2,345,951	2,754,571	17.5%	1.177	2,761,722	2,758,146	2,890,564
6/30/13-14	13,187,313	1.532	20,206,040	1.1%	3.7%	753,786	2,761,254	3,515,040	17.4%	1.226	3,384,281	3,449,661	3,784,912
6/30/14-15	13,871,320	1.607	22,286,683	1.7%	5.4%	1,200,792	2,967,491	4,168,283	18.7%	1.383	4,104,903	4,136,593	4,153,012
6/30/15-16	14,878,912	1.722	25,622,436	2.1%	7.5%	1,911,981	2,711,303	4,623,285	18.0%	1.629	4,417,490	4,520,387	4,607,317
6/30/16-17	13,089,854	1.882	24,631,263	3.2%	10.7%	2,634,935	1,389,800	4,024,735	16.3%	2.308	3,207,327	3,616,031	3,403,444
6/30/17-18	11,919,631	2.237	26,665,236	3.7%	14.4%	3,850,024	829,105	4,679,129	17.5%	4.420	3,664,357	4,171,743	3,891,529
6/30/18-19	7,528,914	3.098	23,320,852	3.1%	17.5%	4,083,428	99,500	4,182,928	17.9%	13.849	1,377,966	3,902,432	4,862,457
6/30/19-20	3,813,664	6.808	25,964,080	1.5%	19.0%	4,933,466	75,000	5,008,466	19.3%	60.784	4,558,791	4,963,498	
Total	492,862,766		639,762,650			21,755,757	72,599,368	94,355,126	14.7%		89,836,192	93,397,514	89,768,709

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, 2019

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
All Prior Yrs	0	0	0	0	0	0	0	22,500	0	0	137,500	40,000	80,500
Jun-83	0	0	0	0	0	0	0	0	0	0	35,000	7,750	1,000
Jun-84	0	0	0	0	0	0	91,600	53,250	15,000	55,000	59,700	57,000	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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	0
Jun-06	0	159,500	370,000	715,000	208,000	359,500	359,500	89,000	0	0	140,000	0	0
Jun-07	26,000	238,583	574,002	426,500	153,002	153,002	120,000	90,000	28,000	65,000	0	0	0
Jun-08	0	282,500	346,648	610,000	610,000	174,962	459,538	62,000	43,000	0	50,000	0	20,001
Jun-09	250,000	140,000	501,500	501,500	370,926	384,000	186,001	207,691	50,000	55,001	99,000	0	
Jun-10	0	385,501	385,501	536,711	679,197	380,304	405,000	50,000	40,000	0	0		
Jun-11	307,191	319,191	604,218	357,283	873,292	282,000	214,001	15,000	30,000	52,000			
Jun-12	0	294,800	409,461	1,071,604	420,200	532,901	194,104	101,000	2				
Jun-13	37,000	127,500	406,096	801,278	615,076	98,000	236,000	25,001					
Jun-14	15,000	6,251	1,012,351	775,950	490,000	399,200	62,502						
Jun-15	0	319,341	896,354	661,545	631,000	459,251							
Jun-16	21,500	94,701	983,000	859,000	753,102								
Jun-17	2,200	154,600	448,000	785,000									
Jun-18	6,368	207,700	615,036										
Jun-19	0	99,500											
Jun-20	75,000												

Acc Yr Ending	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
All Prior Yrs	250,234	367,000	139,604	85,000	0	57,500	55,001	30,000	12,250	84,000	140,000	66,000	0
Jun-83	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-84	57,000	0	0	0	85,000	0	0	0	0	0	10,000	0	0
Jun-85	40,000	0	49,000	32,000	0	25,000	0	0	0	0	0	0	0
Jun-86	0	0	0	0	30,000	55,000	64,000	16,000	45,000	58,275	87,801	0	0
Jun-87	65,000	50,000	164,999	50,000	80,000	80,000	10,000	0	0	0	0	0	0
Jun-88	0	0	0	155,000	20,000	0	100,000	90,000	0	0	0	0	0
Jun-89	40,000	25,000	0	63,500	185,000	50,000	110,000	62,500	0	0	0	0	0
Jun-90	15,000	0	25,000	106,000	60,000	0	15,000	0	0	0	0	0	0
Jun-91	0	10,000	153,000	72,500	255,000	120,000	0	0	0	0	0	0	0
Jun-92	86,268	20,867	20,867	86,500	35,000	0	0	0	0	0	0	0	40,000
Jun-93	0	0	0	50,000	40,000	35,000	35,000	0	0	13,500	0	0	14,500
Jun-94	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-95	80,000	0	12,500	0	0	0	0	0	1	0	0	0	0
Jun-96	18,400	16,600	0	0	0	0	0	99,999	0	0	0	0	
Jun-97	0	40,000	40,000	0	0	0	0	0	0	0	0		
Jun-98	69,000	69,000	0	0	0	0	0	0	0	0			
Jun-99	0	0	45,000	0	0	0	25,000	25,000	0				
Jun-00	0	0	0	0	0	45,000	80,000	0					
Jun-01	0	0	0	1	0	0	0						
Jun-02	5,000	1	0	0	0	0							
Jun-03	1	0	45,894	95,000	0								
Jun-04	0	40,000	0	55,000									
Jun-05	20,000	0	1										
Jun-06	17,500	1											
Jun-07	0												

Acc Yr Ending	312-324	324-336	336-348	348-360	360-372	372-384	384-396	396-408	408-420	420-432	432-444	444-456	456-468
All Prior Yrs	78,125	0	0	7,500	7,500	0	0	0	0	0	0	0	0
Jun-83	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		
Jun-85	0	0	0	0	0	0	0	0	0	0			
Jun-86	0	0	0	0	0	0	0	0	0				
Jun-87	0	0	0	0	0	0	0	0					
Jun-88	0	0	0	0	0	0	0						
Jun-89	0	0	0	0	0	45,000							
Jun-90	0	0	0	0	0								
Jun-91	0	0	0	0									
Jun-92	0	0	0										
Jun-93	15,500	0											
Jun-94	0												

Cumulative Lump Sum Payments

Acc Yr Ending	12	24	36	48	60	72	84	96	108	120	132	144	156
All Prior Yrs	0	0	0	0	0	0	0	22,500	22,500	22,500	160,000	200,000	280,500
Jun-83	0	0	0	0	0	0	0	0	0	0	35,000	42,750	43,750
Jun-84	0	0	0	0	0	0	91,600	144,850	159,850	214,850	274,550	331,550	331,550
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	2,400,500	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	1,874,089	1,874,089	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	2,588,648	2,638,648	2,638,648	2,658,649
Jun-09	250,000	390,000	891,500	1,393,000	1,763,926	2,147,926	2,333,927	2,541,618	2,591,618	2,646,619	2,745,619	2,745,619	
Jun-10	0	385,501	771,002	1,307,713	1,986,910	2,367,214	2,772,214	2,822,214	2,862,214	2,862,214	2,862,214		
Jun-11	307,191	626,381	1,230,599	1,587,882	2,461,175	2,743,175	2,957,176	2,972,176	3,002,176	3,054,176			
Jun-12	0	294,800	704,261	1,775,865	2,196,065	2,728,967	2,923,071	3,024,071	3,024,073				
Jun-13	37,000	164,500	570,596	1,371,874	1,986,950	2,084,950	2,320,950	2,345,951					
Jun-14	15,000	21,251	1,033,602	1,809,552	2,299,552	2,698,752	2,761,254						
Jun-15	0	319,341	1,215,695	1,877,240	2,508,240	2,967,491							
Jun-16	21,500	116,201	1,099,201	1,958,201	2,711,303								
Jun-17	2,200	156,800	604,800	1,389,800									
Jun-18	6,368	214,068	829,105										
Jun-19	0	99,500											
Jun-20	75,000												

Acc Yr Ending	168	180	192	204	216	228	240	252	264	276	288	300	312
All Prior Yrs	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
Jun-83	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	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
Jun-85	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
Jun-86	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
Jun-87	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
Jun-88	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
Jun-89	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
Jun-90	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
Jun-91	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	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	1,381,736
Jun-93	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	1,227,873	1,242,373
Jun-94	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	1,306,522	1,306,522
Jun-95	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	1,532,218	1,532,218	1,532,218	1,532,218
Jun-96	1,229,083	1,245,683	1,245,683	1,245,683	1,245,683	1,245,683	1,245,683	1,345,682	1,345,682	1,345,682	1,345,682	1,345,682	
Jun-97	1,828,819	1,868,819	1,908,819	1,908,819	1,908,819	1,908,819	1,908,819	1,908,819	1,908,819	1,908,819	1,908,819		
Jun-98	2,333,195	2,402,195	2,402,195	2,402,195	2,402,195	2,402,195	2,402,195	2,402,195	2,402,195	2,402,195			
Jun-99	2,053,064	2,053,064	2,098,064	2,098,064	2,098,064	2,098,064	2,123,064	2,148,064	2,148,064				
Jun-00	1,893,548	1,893,548	1,893,548	1,893,548	1,893,548	1,938,548	2,018,548	2,018,548					
Jun-01	1,602,428	1,602,428	1,602,428	1,602,429	1,602,429	1,602,429	1,602,429						
Jun-02	2,005,418	2,005,419	2,005,419	2,005,419	2,005,419	2,005,419							
Jun-03	1,797,500	1,797,500	1,843,393	1,938,393	1,938,393								
Jun-04	1,661,764	1,701,764	1,701,764	1,756,764									
Jun-05	2,362,201	2,362,201	2,362,202										
Jun-06	2,418,000	2,418,001											
Jun-07	1,874,089												

Acc Yr Ending	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	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	1,660,214	1,660,214	1,660,214	1,660,214
Jun-83	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	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550	483,550		
Jun-85	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504	746,504			
Jun-86	1,106,534	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	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	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404	2,071,404						
Jun-89	2,926,233	2,926,233	2,926,233	2,926,233	2,926,233	2,971,233							
Jun-90	2,715,625	2,715,625	2,715,625	2,715,625	2,715,625								
Jun-91	2,497,602	2,497,602	2,497,602	2,497,602									
Jun-92	1,381,736	1,381,736	1,381,736										
Jun-93	1,257,873	1,257,873											
Jun-94	1,306,522												

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*
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	0.008	0.003	0.002	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
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
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
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
Jun-87	0.000	0.001	0.006	0.005	0.007	0.003	0.009	0.008	0.004	0.003	0.001	0.000	0.001	0.003	0.002	0.008	0.002	0.004
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
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
Jun-90	0.000	0.005	0.012	0.014	0.022	0.010	0.006	0.021	0.002	0.006	0.000	0.007	0.000	0.001	0.000	0.001	0.004	0.002
Jun-91	0.000	0.004	0.018	0.020	0.014	0.016	0.010	0.001	0.007	0.000	0.000	0.003	0.000	0.000	0.000	0.008	0.004	0.013
Jun-92	0.001	0.008	0.014	0.010	0.006	0.012	0.000	0.009	0.006	0.008	0.008	0.002	0.001	0.007	0.002	0.002	0.007	0.003
Jun-93	0.001	0.015	0.019	0.024	0.017	0.006	0.005	0.002	0.008	0.009	0.000	0.006	0.000	0.000	0.000	0.000	0.005	0.004
Jun-94	0.001	0.025	0.018	0.017	0.015	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
Jun-95	0.020	0.024	0.040	0.030	0.010	0.013	0.002	0.000	0.000	0.007	0.006	0.004	0.000	0.009	0.000	0.001	0.000	0.000
Jun-96	0.001	0.024	0.046	0.022	0.010	0.003	0.000	0.004	0.000	0.000	0.003	0.006	0.000	0.002	0.002	0.000	0.000	0.000
Jun-97	0.002	0.051	0.033	0.033	0.021	0.011	0.000	0.011	0.011	0.006	0.009	0.000	0.000	0.000	0.004	0.004	0.000	0.000
Jun-98	0.038	0.047	0.038	0.067	0.037	0.011	0.009	0.012	0.003	0.000	0.001	0.027	0.010	0.009	0.009	0.000	0.000	0.000
Jun-99	0.024	0.015	0.057	0.028	0.022	0.020	0.023	0.014	0.008	0.020	0.002	0.008	0.000	0.000	0.000	0.005	0.000	0.000
Jun-00	0.009	0.045	0.029	0.025	0.009	0.018	0.017	0.010	0.005	0.007	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun-01	0.001	0.018	0.032	0.007	0.024	0.024	0.014	0.021	0.008	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000
Jun-02	0.000	0.011	0.036	0.028	0.043	0.028	0.011	0.026	0.002	0.005	0.005	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Jun-03	0.000	0.008	0.058	0.042	0.021	0.025	0.007	0.006	0.001	0.001	0.001	0.006	0.000	0.000	0.000	0.004	0.009	0.000
Jun-04	0.005	0.003	0.031	0.054	0.037	0.020	0.003	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.006	
Jun-05	0.001	0.005	0.038	0.086	0.034	0.014	0.009	0.009	0.014	0.000	0.000	0.002	0.000	0.002	0.000	0.000		
Jun-06	0.000	0.016	0.037	0.072	0.021	0.036	0.036	0.009	0.000	0.000	0.014	0.000	0.000	0.002	0.000			
Jun-07	0.003	0.025	0.060	0.044	0.016	0.016	0.012	0.009	0.003	0.007	0.000	0.000	0.000	0.000				
Jun-08	0.000	0.020	0.024	0.042	0.042	0.012	0.032	0.004	0.003	0.000	0.003	0.000	0.001					
Jun-09	0.017	0.010	0.035	0.035	0.026	0.027	0.013	0.014	0.003	0.004	0.007	0.000						
Jun-10	0.000	0.027	0.027	0.038	0.048	0.027	0.028	0.003	0.003	0.000	0.000							
Jun-11	0.018	0.018	0.035	0.021	0.050	0.016	0.012	0.001	0.002	0.003								
Jun-12	0.000	0.015	0.022	0.056	0.022	0.028	0.010	0.005	0.000									
Jun-13	0.002	0.008	0.026	0.051	0.039	0.006	0.015	0.002										
Jun-14	0.001	0.000	0.050	0.038	0.024	0.020	0.003											
Jun-15	0.000	0.014	0.040	0.030	0.028	0.021												
Jun-16	0.001	0.004	0.038	0.034	0.029													
Jun-17	0.000	0.006	0.018	0.032														
Jun-18	0.000	0.008	0.023															
Jun-19	0.000	0.004																
Jun-20	0.003																	

Acc Yr Ending	*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*	*420-432*	*432-444*	*444-456*	*456-468*
All Prior Yrs	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	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	
Jun-84	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	0.000		
Jun-85	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-86	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	0.000	0.000	0.000	0.000				
Jun-87	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-88	0.000	0.004	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-89	0.002	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002							
Jun-90	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-91	0.006	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	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000										
Jun-93	0.004	0.004	0.000	0.000	0.001	0.000	0.000	0.002	0.002	0.000											
Jun-94	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000												
Jun-95	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Jun-96	0.000	0.000	0.010	0.000	0.000	0.000	0.000														
Jun-97	0.000	0.000	0.000	0.000	0.000	0.000															
Jun-98	0.000	0.000	0.000	0.000	0.000																
Jun-99	0.000	0.003	0.003	0.000																	
Jun-00	0.004	0.007	0.000																		
Jun-01	0.000	0.000																			
Jun-02	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*
Simple Avg																			
All Yrs (ex P)	0.004	0.013	0.027	0.029	0.021	0.014	0.010	0.008	0.005	0.004	0.003	0.004	0.001	0.002	0.001	0.002	0.002	0.002	0.001
Latest 5	0.001	0.007	0.034	0.037	0.029	0.018	0.014	0.005	0.002	0.003	0.005	0.000	0.000	0.001	0.001	0.001	0.003	0.000	0.001
Latest 3	0.001	0.006	0.027	0.032	0.027	0.016	0.009	0.003	0.002	0.002	0.003	0.000	0.000	0.001	0.001	0.001	0.005	0.000	0.001
Olympic Avg																			
All Yrs (ex P)	0.003	0.013	0.027	0.028	0.021	0.014	0.010	0.008	0.004	0.004	0.003	0.003	0.001	0.002	0.001	0.001	0.002	0.002	0.001
Latest 10	0.001	0.010	0.031	0.037	0.032	0.021	0.017	0.007	0.003	0.002	0.002	0.000	0.000	0.001	0.001	0.001	0.001	0.000	0.000
Latest 5	0.000	0.006	0.034	0.035	0.027	0.019	0.013	0.003	0.003	0.002	0.003	0.000	0.000	0.001	0.000	0.000	0.002	0.000	0.000
Dev Factor Selection																			
Prior	*NA*	*0.015*	*0.034*	*0.041*	*0.032*	*0.018*	*0.016*	*0.011*	*0.004*	*0.002*	*0.001*	*0.002*	*0.002*	*0.002*	*0.002*	*0.002*	*0.001*	*0.001*	*0.001*
Selected	NA	0.015	0.031	0.037	0.032	0.021	0.017	0.011	0.004	0.003	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001
FacToUlt	NA	0.190	0.175	0.144	0.107	0.075	0.054	0.037	0.026	0.022	0.019	0.018	0.016	0.014	0.012	0.010	0.008	0.007	0.006

Averages	*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*	*420-432*	*432-444*	*444-456*	*456-468*
Simple Avg																				
All Yrs (ex P)	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	
Latest 5	0.002	0.003	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					
Latest 3	0.003	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000			
Olympic Avg																				
All Yrs (ex P)	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				
Latest 10	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000										
Latest 5	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
Dev Factor Selection																				
Prior	*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	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	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

Acc Yr Ending	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	1,893,548	1,938,548
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	1,602,429	1,602,429	1,602,429
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	2,005,419	2,005,419	2,005,419	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	1,797,500	1,843,393	1,938,393	1,938,393	
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	1,661,764	1,701,764	1,701,764	1,756,764		
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	2,342,201	2,362,201	2,362,201	2,362,202			
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	2,400,500	2,400,500	2,418,000	2,418,001				
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	1,874,089	1,874,089	1,874,089	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	2,588,648	2,638,648	2,638,648	2,658,649						
Jun-09	250,000	390,000	891,500	1,393,000	1,763,926	2,147,926	2,333,927	2,541,618	2,591,618	2,646,619	2,745,619	2,745,619							
Jun-10	0	385,501	771,002	1,307,713	1,986,910	2,367,214	2,772,214	2,822,214	2,862,214	2,862,214	2,862,214								
Jun-11	307,191	626,381	1,230,599	1,587,882	2,461,175	2,743,175	2,957,176	2,972,176	3,002,176	3,054,176									
Jun-12	0	294,800	704,261	1,775,865	2,196,065	2,728,967	2,923,071	3,024,071	3,024,073										
Jun-13	37,000	164,500	570,596	1,371,874	1,986,950	2,084,950	2,320,950	2,345,951											
Jun-14	15,000	21,251	1,033,602	1,809,552	2,299,552	2,698,752	2,761,254												
Jun-15	0	319,341	1,215,695	1,877,240	2,508,240	2,967,491													
Jun-16	21,500	116,201	1,099,201	1,958,201	2,711,303														
Jun-17	2,200	156,800	604,800	1,389,800															
Jun-18	6,368	214,068	829,105																
Jun-19	0	99,500																	
Jun-20	75,000																		

Acc Yr Ending	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
All Prior Yrs	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	1,660,214	1,660,214	1,660,214	1,660,214
Jun-83	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	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	483,550	483,550	483,550		
Jun-85	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	746,504	746,504			
Jun-86	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	1,106,534	1,106,534	1,106,534	1,106,534				
Jun-87	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	1,519,864	1,519,864	1,519,864	1,519,864					
Jun-88	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	2,071,404	2,071,404	2,071,404	2,071,404						
Jun-89	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	2,926,233	2,926,233	2,971,233							
Jun-90	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	2,715,625	2,715,625	2,715,625								
Jun-91	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	2,497,602	2,497,602									
Jun-92	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736	1,341,736	1,381,736	1,381,736	1,381,736	1,381,736										
Jun-93	1,214,373	1,214,373	1,214,373	1,227,873	1,227,873	1,227,873	1,242,373	1,257,873	1,257,873											
Jun-94	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	1,532,217	1,532,217	1,532,218	1,532,218	1,532,218	1,532,218	1,532,218													
Jun-96	1,245,683	1,345,682	1,345,682	1,345,682	1,345,682	1,345,682														
Jun-97	1,908,819	1,908,819	1,908,819	1,908,819	1,908,819															
Jun-98	2,402,195	2,402,195	2,402,195	2,402,195																
Jun-99	2,123,064	2,148,064	2,148,064																	
Jun-00	2,018,548	2,018,548																		
Jun-01	1,602,429																			

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
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
Jun-83											1.221	1.023	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
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
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
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
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
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
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
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
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
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
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
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
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
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	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	1.000	1.012
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	1.000	1.024	1.041
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	1.000	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	1.000	1.000	1.000	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	1.000	1.026	1.052	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	1.000	1.024	1.000	1.032			
Jun-05	10.886	7.229	2.959	1.264	1.083	1.054	1.051	1.069	1.000	1.000	1.009	1.000	1.009	1.000	1.000				
Jun-06		3.320	2.350	1.167	1.248	1.198	1.041	1.000	1.000	1.062	1.000	1.000	1.007	1.000					
Jun-07	10.176	3.169	1.509	1.121	1.108	1.076	1.053	1.016	1.036	1.000	1.000	1.000	1.000						
Jun-08		2.227	1.970	1.492	1.095	1.227	1.025	1.017	1.000	1.019	1.000	1.008							
Jun-09	1.560	2.286	1.563	1.266	1.218	1.087	1.089	1.020	1.021	1.037	1.000								
Jun-10		2.000	1.696	1.519	1.191	1.171	1.018	1.014	1.000	1.000									
Jun-11	2.039	1.965	1.290	1.550	1.115	1.078	1.005	1.010	1.017										
Jun-12		2.389	2.522	1.237	1.243	1.071	1.035	1.000											
Jun-13	4.446	3.469	2.404	1.448	1.049	1.113	1.011												
Jun-14	1.417		1.751	1.271	1.174	1.023													
Jun-15		3.807	1.544	1.336	1.183														
Jun-16	5.405	9.459	1.781	1.385															
Jun-17	71.273	3.857	2.298																
Jun-18	33.614	3.873																	
Jun-19																			

Acc Yr Ending	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	420-432	432-444	444-456	456-468	To Ult
All Prior Yrs	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	1.000	1.000	1.000	1.000	
Jun-83	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	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	1.021	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			
Jun-85	1.000	1.000	1.000	1.000	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	1.018	1.049	1.061	1.086	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	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	1.045	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
Jun-89	1.022	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.015								
Jun-90	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
Jun-91	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000										
Jun-92	1.000	1.000	1.000	1.000	1.000	1.030	1.000	1.000	1.000											
Jun-93	1.000	1.000	1.011	1.000	1.000	1.012	1.012	1.000												
Jun-94	1.000	1.000	1.000	1.000	1.000	1.000	1.000													
Jun-95	1.000	1.000	1.000	1.000	1.000	1.000														
Jun-96	1.080	1.000	1.000	1.000	1.000															
Jun-97	1.000	1.000	1.000	1.000																
Jun-98	1.000	1.000	1.000																	
Jun-99	1.012	1.000																		
Jun-00	1.000																			

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
Simple Avg																			
All Yrs (ex P)	15.427	3.498	1.834	1.396	1.246	1.129	1.131	1.073	1.077	1.040	1.050	1.017	1.021	1.007	1.018	1.022	1.029	1.014	1.014
Latest 5	36.764	5.249	1.956	1.335	1.153	1.091	1.031	1.012	1.015	1.024	1.002	1.002	1.003	1.005	1.005	1.017	1.000	1.005	1.011
Latest 3		5.730	1.875	1.331	1.135	1.069	1.017	1.008	1.013	1.019	1.000	1.003	1.005	1.008	1.009	1.028	1.000	1.008	1.018
Volume Wtd																			
All Yrs (ex P)	4.890	2.769	1.697	1.319	1.167	1.102	1.076	1.042	1.033	1.026	1.028	1.013	1.013	1.007	1.016	1.023	1.024	1.013	1.015
Latest 5		5.778	1.858	1.331	1.155	1.088	1.030	1.012	1.013	1.024	1.002	1.002	1.004	1.004	1.005	1.017	1.000	1.004	1.011
Latest 3		5.201	1.790	1.332	1.141	1.066	1.017	1.008	1.013	1.018	1.000	1.003	1.006	1.006	1.008	1.027	1.000	1.008	1.019
Dev Factor Selection																			
Prior	*4.389*	*2.897*	*1.881*	*1.416*	*1.186*	*1.132*	*1.044*	*1.025*	*1.012*	*1.025*	*1.011*	*1.004*	*1.010*	*1.005*	*1.005*	*1.010*	*1.000*	*1.010*	*1.015*
Selected	4.389	3.133	1.915	1.416	1.178	1.129	1.041	1.021	1.012	1.023	1.010	1.006	1.010	1.005	1.005	1.017	1.000	1.010	1.015
FacToUlt	60.784	13.849	4.420	2.308	1.629	1.383	1.226	1.177	1.154	1.140	1.115	1.103	1.097	1.086	1.081	1.075	1.058	1.058	1.047
Percent of Ult	1.6%	7.2%	22.6%	43.3%	61.4%	72.3%	81.6%	84.9%	86.7%	87.7%	89.7%	90.6%	91.2%	92.1%	92.5%	93.0%	94.6%	94.6%	95.5%

Averages	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	420-432	432-444	444-456	456-468	To Ult
Simple Avg																				
All Yrs (ex P)	1.010	1.003	1.004	1.007	1.000	1.003	1.001	1.000	1.000	1.000	1.000	1.002	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5	1.018	1.000	1.000	1.000	1.000	1.008	1.002	1.000	1.000	1.000	1.000	1.003	1.000	1.000						
Latest 3	1.004	1.000	1.000	1.000	1.000	1.004	1.004	1.000	1.000	1.000	1.000	1.005	1.000	1.000	1.000	1.000				
Volume Wtd																				
All Yrs (ex P)	1.010	1.002	1.003	1.004	1.000	1.003	1.001	1.000	1.000	1.000	1.000	1.005	1.000	1.000	1.000	1.000	1.000	1.000		
Latest 5	1.013	1.000	1.000	1.000	1.000	1.007	1.002	1.000	1.000	1.000	1.000	1.005	1.000	1.000						
Latest 3	1.004	1.000	1.000	1.000	1.000	1.004	1.004	1.000	1.000	1.000	1.000	1.007	1.000	1.000	1.000	1.000				
Dev Factor Selection																				
Prior	*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*	*1.000*	*1.000*	*1.000*	*1.010*	
Selected	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	1.000	1.000	1.000	1.000	1.005
FacToUlt	1.031	1.026	1.021	1.016	1.013	1.010	1.007	1.006	1.005	1.005	1.005	1.005	1.005	1.005	1.005	1.005	1.005	1.005	1.005	1.005
Percent of Ult	97.0%	97.4%	97.9%	98.4%	98.7%	99.0%	99.3%	99.4%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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	Percent	Pres Value of Increm.	Pres Value of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	1.0%	0.0%	0.2%	0.1%	1.000	1.000
456	99.0%	0.2%	1.0%	0.0%	0.0%	0.981	0.971
444	98.8%	0.2%	1.2%	0.0%	0.0%	0.949	0.925
432	98.6%	0.2%	1.4%	0.0%	0.0%	0.922	0.886
420	98.4%	0.2%	1.6%	0.1%	0.0%	0.898	0.853
408	98.2%	0.2%	1.8%	0.1%	0.0%	0.876	0.822
396	98.0%	0.4%	2.0%	0.1%	0.1%	0.856	0.795
384	97.6%	0.6%	2.4%	0.2%	0.1%	0.848	0.786
372	97.0%	0.8%	3.0%	0.2%	0.1%	0.848	0.786
360	96.2%	0.9%	3.8%	0.3%	0.2%	0.849	0.789
348	95.4%	1.2%	4.6%	0.4%	0.2%	0.848	0.787
336	94.1%	1.2%	5.9%	0.4%	0.2%	0.850	0.791
324	92.9%	1.3%	7.1%	0.4%	0.3%	0.845	0.784
312	91.7%	1.2%	8.3%	0.4%	0.3%	0.838	0.775
300	90.5%	1.4%	9.5%	0.5%	0.3%	0.828	0.761
288	89.1%	1.3%	10.9%	0.5%	0.3%	0.819	0.751
276	87.8%	1.2%	12.2%	0.5%	0.3%	0.808	0.735
264	86.6%	1.2%	13.4%	0.5%	0.3%	0.796	0.719
252	85.4%	1.0%	14.6%	0.4%	0.3%	0.782	0.702
240	84.4%	1.2%	15.6%	0.5%	0.4%	0.767	0.682
228	83.3%	1.0%	16.7%	0.5%	0.4%	0.754	0.666
216	82.2%	1.0%	17.8%	0.5%	0.4%	0.740	0.648
204	81.2%	0.9%	18.8%	0.5%	0.3%	0.726	0.631
192	80.3%	1.2%	19.7%	0.7%	0.5%	0.711	0.612
180	79.1%	1.5%	20.9%	0.8%	0.6%	0.701	0.600
168	77.7%	1.4%	22.3%	0.8%	0.7%	0.694	0.593
156	76.2%	1.7%	23.8%	1.0%	0.8%	0.686	0.584
144	74.5%	1.6%	25.5%	1.0%	0.8%	0.681	0.579
132	72.9%	1.7%	27.1%	1.1%	0.9%	0.674	0.572
120	71.2%	1.8%	28.8%	1.2%	1.0%	0.668	0.564
108	69.4%	1.8%	30.6%	1.3%	1.1%	0.662	0.558
96	67.6%	2.3%	32.4%	1.7%	1.5%	0.656	0.552
84	65.3%	3.0%	34.7%	2.3%	2.1%	0.654	0.551
72	62.2%	4.2%	37.8%	3.4%	3.0%	0.657	0.556
60	58.1%	4.9%	41.9%	4.1%	3.8%	0.667	0.569
48	53.1%	8.4%	46.9%	7.4%	6.9%	0.677	0.582
36	44.7%	12.4%	55.3%	11.3%	10.7%	0.701	0.614
24	32.3%	17.6%	67.7%	16.6%	16.1%	0.730	0.651
12	14.7%	14.7%	85.3%	14.4%	14.3%	0.760	0.688
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, 2020

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	2,461,357	3,844,095		2,152,666	3,361,989
6/30/82-83	1,348	58,221	0.981	1,322	57,090
6/30/83-84	52,910	220,158	0.949	50,209	208,916
6/30/84-85	196,814	319,814	0.922	181,437	294,827
6/30/85-86	267,149	423,149	0.898	239,857	379,920
6/30/86-87	314,189	484,189	0.876	275,223	424,139
6/30/87-88	544,477	1,305,477	0.856	465,934	1,117,157
6/30/88-89	508,045	1,275,045	0.848	431,050	1,081,811
6/30/89-90	688,891	1,373,891	0.848	584,135	1,164,970
6/30/90-91	764,592	1,324,592	0.849	649,290	1,124,841
6/30/91-92	599,840	1,389,840	0.848	508,574	1,178,375
6/30/92-93	549,710	604,710	0.850	467,123	513,860
6/30/93-94	765,850	1,133,850	0.845	647,044	957,957
6/30/94-95	754,455	1,312,455	0.838	632,140	1,099,675
6/30/95-96	937,537	1,539,537	0.828	775,961	1,274,212
6/30/96-97	1,047,120	1,654,120	0.819	858,082	1,355,499
6/30/97-98	929,001	1,438,001	0.808	750,540	1,161,760
6/30/98-99	1,164,423	1,717,423	0.796	926,389	1,366,344
6/30/99-00	1,566,941	2,244,941	0.782	1,225,979	1,756,448
6/30/00-01	1,632,266	2,263,266	0.767	1,251,249	1,734,955
6/30/01-02	1,759,098	2,386,098	0.754	1,326,468	1,799,265
6/30/02-03	1,896,104	2,525,104	0.740	1,403,082	1,868,531
6/30/03-04	1,900,465	2,476,465	0.726	1,379,781	1,797,970
6/30/04-05	2,155,554	2,310,554	0.711	1,531,983	1,642,144
6/30/05-06	2,227,693	2,548,693	0.701	1,560,670	1,785,555
6/30/06-07	2,292,742	2,954,742	0.694	1,590,252	2,049,417
6/30/07-08	3,555,224	3,679,550	0.686	2,438,673	2,523,954
6/30/08-09	3,909,344	3,940,708	0.681	2,661,590	2,682,944
6/30/09-10	4,165,972	4,427,662	0.674	2,809,614	2,986,103
6/30/10-11	5,096,408	5,402,224	0.668	3,402,631	3,606,810
6/30/11-12	5,747,766	6,279,258	0.662	3,804,074	4,155,834
6/30/12-13	5,500,455	6,519,455	0.656	3,607,920	4,276,314
6/30/13-14	7,707,433	7,853,211	0.654	5,041,310	5,136,661
6/30/14-15	9,584,189	9,718,720	0.657	6,297,654	6,386,052
6/30/15-16	11,867,445	12,582,928	0.667	7,909,708	8,386,581
6/30/16-17	13,060,346	14,049,816	0.677	8,836,470	9,505,934
6/30/17-18	16,887,264	18,705,004	0.701	11,837,078	13,111,218
6/30/18-19	20,139,046	23,383,336	0.730	14,705,674	17,074,678
6/30/19-20	27,039,336	29,821,622	0.760	20,537,866	22,651,165
Total	162,238,799	187,491,924		115,756,701	135,041,871
			(7) Total Discount Factor:	0.713	0.720

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	2,461,357	3,844,095
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	351,622	549,156
(11) Discounted Value at 4%:	2,152,666	3,361,989

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, 2020

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	2,461,357	3,844,095		2,021,777	3,157,569
6/30/82-83	1,348	58,221	0.971	1,309	56,549
6/30/83-84	52,910	220,158	0.925	48,950	203,681
6/30/84-85	196,814	319,814	0.886	174,460	283,490
6/30/85-86	267,149	423,149	0.853	227,780	360,791
6/30/86-87	314,189	484,189	0.822	258,390	398,199
6/30/87-88	544,477	1,305,477	0.795	432,790	1,037,689
6/30/88-89	508,045	1,275,045	0.786	399,239	1,001,974
6/30/89-90	688,891	1,373,891	0.786	541,589	1,080,119
6/30/90-91	764,592	1,324,592	0.789	603,066	1,044,762
6/30/91-92	599,840	1,389,840	0.787	472,352	1,094,447
6/30/92-93	549,710	604,710	0.791	434,588	478,070
6/30/93-94	765,850	1,133,850	0.784	600,542	889,109
6/30/94-95	754,455	1,312,455	0.775	584,600	1,016,974
6/30/95-96	937,537	1,539,537	0.761	713,686	1,171,950
6/30/96-97	1,047,120	1,654,120	0.751	785,905	1,241,483
6/30/97-98	929,001	1,438,001	0.735	683,110	1,057,386
6/30/98-99	1,164,423	1,717,423	0.719	837,501	1,235,242
6/30/99-00	1,566,941	2,244,941	0.702	1,100,289	1,576,373
6/30/00-01	1,632,266	2,263,266	0.682	1,112,777	1,542,953
6/30/01-02	1,759,098	2,386,098	0.666	1,171,599	1,589,196
6/30/02-03	1,896,104	2,525,104	0.648	1,229,343	1,637,157
6/30/03-04	1,900,465	2,476,465	0.631	1,199,263	1,562,740
6/30/04-05	2,155,554	2,310,554	0.612	1,319,432	1,414,309
6/30/05-06	2,227,693	2,548,693	0.600	1,337,171	1,529,851
6/30/06-07	2,292,742	2,954,742	0.593	1,358,735	1,751,052
6/30/07-08	3,555,224	3,679,550	0.584	2,076,498	2,149,113
6/30/08-09	3,909,344	3,940,708	0.579	2,262,941	2,281,097
6/30/09-10	4,165,972	4,427,662	0.572	2,382,476	2,532,134
6/30/10-11	5,096,408	5,402,224	0.564	2,876,640	3,049,256
6/30/11-12	5,747,766	6,279,258	0.558	3,208,591	3,505,287
6/30/12-13	5,500,455	6,519,455	0.552	3,035,654	3,598,032
6/30/13-14	7,707,433	7,853,211	0.551	4,244,997	4,325,287
6/30/14-15	9,584,189	9,718,720	0.556	5,326,540	5,401,307
6/30/15-16	11,867,445	12,582,928	0.569	6,749,769	7,156,709
6/30/16-17	13,060,346	14,049,816	0.582	7,604,728	8,180,873
6/30/17-18	16,887,264	18,705,004	0.614	10,364,341	11,479,956
6/30/18-19	20,139,046	23,383,336	0.651	13,109,122	15,220,930
6/30/19-20	27,039,336	29,821,622	0.688	18,596,552	20,510,095
Total	162,238,799	187,491,924		101,489,097	118,803,191
			(7) Total Discount Factor:	0.626	0.634

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	2,461,357	3,844,095
(9) Projected Number of Years:	7	7
(10) Projected Paid Loss per Year:	351,622	549,156
(11) Discounted Value at 6%:	2,021,777	3,157,569

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, 2020

All Other - Clusters 5-17 & 95
Total Indemnity (Including Lump Sums) + Medical

Calculation of Fiscal Year 7/01/20 - 21 Payments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Cumulative	Incremental Paid		Estimated Payments from		FY 07/01/20 - 06/30/21	
Accident	Est Ult Losses	Est Ult Losses	Paid Losses	Reserves	Reserves	Percent	as a % of	as a % of	07/01/20 - 06/30/21		as a % of Reserves	
Year	(Low)	(High)	to Date	(Low)	(High)	Paid	Ultimates	Reserves	(Low)	(High)	(Low)	(High)
All Prior Yrs	51,514,549	52,902,047	49,048,363	2,466,186	3,853,683				242,718	266,989	9.8%	6.9%
6/30/82-83	6,124,267	6,187,961	6,122,919	1,348	65,042	99.5%	0.3%	46.4%	625	30,156	46.4%	46.4%
6/30/83-84	9,070,752	9,246,020	9,013,620	57,133	232,400	98.4%	0.5%	31.6%	18,072	73,512	31.6%	31.6%
6/30/84-85	18,370,956	18,513,486	18,174,143	196,814	339,344	98.5%	0.5%	34.4%	67,698	116,724	34.4%	34.4%
6/30/85-86	22,780,445	22,965,110	22,505,157	275,288	459,953	98.4%	0.5%	31.1%	85,640	143,088	31.1%	31.1%
6/30/86-87	23,924,215	24,120,570	23,599,543	324,672	521,027	98.2%	0.5%	28.4%	92,224	148,000	28.4%	28.4%
6/30/87-88	33,148,535	33,959,940	32,577,244	571,291	1,382,696	97.1%	0.5%	17.2%	98,103	237,439	17.2%	17.2%
6/30/88-89	31,118,000	31,923,530	30,550,778	567,222	1,372,752	96.9%	0.5%	16.2%	92,162	223,045	16.2%	16.2%
6/30/89-90	30,530,000	31,258,570	29,766,013	763,987	1,492,557	96.3%	0.5%	13.7%	104,597	204,346	13.7%	13.7%
6/30/90-91	26,340,000	26,935,990	25,496,290	843,710	1,439,700	95.7%	0.5%	11.7%	98,426	167,954	11.7%	11.7%
6/30/91-92	17,204,000	18,022,660	16,532,708	671,292	1,489,952	93.9%	1.5%	24.4%	164,123	364,277	24.4%	24.4%
6/30/92-93	13,303,000	13,385,030	12,681,464	621,536	703,566	95.0%	1.5%	30.2%	187,769	212,551	30.2%	30.2%
6/30/93-94	15,340,000	15,740,990	14,482,043	857,957	1,258,947	93.2%	1.5%	22.0%	188,952	277,263	22.0%	22.0%
6/30/94-95	13,463,000	14,049,180	12,614,468	848,532	1,434,712	91.7%	1.5%	17.9%	152,151	257,259	17.9%	17.9%
6/30/95-96	13,590,000	14,213,840	12,564,956	1,025,044	1,648,884	90.4%	1.3%	13.7%	140,489	225,990	13.7%	13.7%
6/30/96-97	14,510,000	15,146,100	13,332,428	1,177,572	1,813,672	89.9%	1.3%	12.9%	151,772	233,757	12.9%	12.9%
6/30/97-98	12,090,000	12,623,550	11,054,968	1,035,032	1,568,582	89.5%	1.3%	12.3%	127,719	193,557	12.3%	12.3%
6/30/98-99	13,593,000	14,176,730	12,273,123	1,319,877	1,903,607	88.4%	1.3%	11.2%	147,817	213,190	11.2%	11.2%
6/30/99-00	16,295,000	17,045,260	14,515,549	1,779,451	2,529,711	87.1%	1.3%	10.2%	181,307	257,750	10.2%	10.2%
6/30/00-01	15,580,000	16,282,660	13,706,883	1,873,117	2,575,777	86.0%	1.5%	10.7%	201,227	276,713	10.7%	10.7%
6/30/01-02	15,525,000	16,221,020	13,519,351	2,005,649	2,701,669	85.2%	2.0%	13.5%	270,521	364,400	13.5%	13.5%
6/30/02-03	15,973,000	16,676,040	13,742,312	2,230,688	2,933,728	84.2%	2.0%	12.6%	282,045	370,936	12.6%	12.6%
6/30/03-04	15,115,000	15,766,280	12,846,017	2,268,983	2,920,263	83.2%	2.0%	11.9%	270,055	347,571	11.9%	11.9%
6/30/04-05	18,508,000	18,846,000	15,833,755	2,674,245	3,012,245	84.8%	2.0%	13.1%	351,337	395,743	13.1%	13.1%
6/30/05-06	16,628,000	17,115,000	13,873,474	2,754,526	3,241,526	82.2%	2.0%	11.3%	310,024	364,836	11.3%	11.3%
6/30/06-07	17,556,000	18,594,000	14,595,597	2,960,403	3,998,403	80.8%	1.5%	7.7%	227,614	307,422	7.7%	7.7%
6/30/07-08	22,219,000	22,452,326	17,804,302	4,414,698	4,648,024	79.7%	1.0%	5.1%	225,821	237,756	5.1%	5.1%
6/30/08-09	22,750,000	23,036,364	17,906,227	4,843,773	5,130,137	78.2%	1.5%	6.9%	332,654	352,320	6.9%	6.9%
6/30/09-10	23,046,000	23,430,690	17,769,280	5,276,720	5,661,410	76.5%	1.8%	7.4%	392,609	421,232	7.4%	7.4%
6/30/10-11	26,831,000	27,471,816	20,589,133	6,241,867	6,882,683	75.8%	0.6%	2.6%	163,873	180,696	2.6%	2.6%
6/30/11-12	28,283,000	29,113,492	21,270,356	7,012,644	7,843,136	74.1%	1.7%	6.6%	464,265	519,247	6.6%	6.6%
6/30/12-13	24,155,000	25,327,000	17,323,613	6,831,387	8,003,387	70.0%	4.1%	13.7%	933,652	1,093,830	13.7%	13.7%
6/30/13-14	30,356,000	30,861,778	21,011,541	9,344,459	9,850,237	68.6%	1.4%	4.4%	409,673	431,846	4.4%	4.4%
6/30/14-15	33,423,000	33,871,531	21,881,419	11,541,581	11,990,112	65.0%	3.6%	10.3%	1,192,647	1,238,996	10.3%	10.3%
6/30/15-16	36,957,660	38,213,143	22,968,690	13,988,970	15,244,453	61.1%	3.9%	10.1%	1,410,475	1,537,063	10.1%	10.1%
6/30/16-17	34,740,000	36,201,470	19,328,715	15,411,285	16,872,755	54.5%	6.6%	14.5%	2,241,411	2,453,966	14.5%	14.5%
6/30/17-18	36,936,000	39,253,740	17,215,372	19,720,628	22,038,368	45.2%	9.3%	17.0%	3,346,625	3,739,949	17.0%	17.0%
6/30/18-19	34,867,460	38,456,750	10,787,089	24,080,371	27,669,661	29.4%	15.8%	22.3%	5,379,859	6,181,751	22.3%	22.3%
6/30/19-20	38,528,000	41,793,286	5,288,490	33,239,510	36,504,796	13.2%	16.3%	18.7%	6,222,347	6,833,600	18.7%	18.7%
Total	890,286,840	921,400,949	696,167,394	194,119,446	225,233,556				26,971,097	31,496,720	13.9%	14.0%

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, 2020

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 7/1/19-20	MassDOT 7/1/19-20	MassDOT / Paid Counts	MassDOT OS (Low)	MassDOT OS (High)	Total Paid 7/1/19-20	MassDOT 7/1/19-20	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	45,989,577	48,450,934	49,833,672	2,461,357	3,844,095	6					257,691								160,200	250,196	53,400	83,399	2,407,957	3,760,697
6/30/82-83	5,610,779	5,612,127	5,669,000	1,348	58,221	0					0								88	3,789	29	1,263	1,319	56,958
6/30/83-84	8,215,842	8,268,752	8,436,000	52,910	220,158	1					46,157								3,444	14,329	1,148	4,776	51,763	215,382
6/30/84-85	17,050,186	17,247,000	17,370,000	196,814	319,814	1	1	100.0%	196,814	319,814	71,939	71,939	100.0%	196,814	319,814				12,810	20,815	74,144	120,482	122,669	199,332
6/30/85-86	20,611,851	20,879,000	21,035,000	267,149	423,149	2	1	50.0%	133,574	211,574	137,952	73,666	53.4%	142,656	225,959				17,388	27,541	97,873	155,025	169,276	268,124
6/30/86-87	21,861,811	22,176,000	22,346,000	314,189	484,189	5					267,911								20,449	31,514	6,816	10,505	307,373	473,684
6/30/87-88	29,327,523	29,872,000	30,633,000	544,477	1,305,477	5	1	20.0%	108,895	261,095	254,967	55,635	21.8%	118,807	284,861				35,438	84,968	87,714	210,308	456,763	1,095,169
6/30/88-89	26,958,955	27,467,000	28,234,000	508,045	1,275,045	4					262,163	45,000	17.2%	87,205	218,860				33,067	82,987	40,091	100,616	467,954	1,174,429
6/30/89-90	25,888,109	26,577,000	27,262,000	688,891	1,373,891	7	1	14.3%	98,413	196,270	335,122	64,226	19.2%	132,026	263,306				44,837	89,421	91,759	182,999	597,133	1,190,892
6/30/90-91	21,976,408	22,741,000	23,301,000	764,592	1,324,592	4	1	25.0%	191,148	331,148	135,018	45,756	33.9%	259,112	448,890				49,764	86,212	166,675	288,750	597,918	1,035,842
6/30/91-92	13,738,160	14,338,000	15,128,000	599,840	1,389,840	4					175,866								39,041	90,459	13,014	30,153	586,826	1,359,687
6/30/92-93	10,151,290	10,701,000	10,756,000	549,710	604,710	1					51,350								35,778	39,358	11,926	13,119	537,784	591,590
6/30/93-94	11,477,150	12,243,000	12,611,000	765,850	1,133,850	5	1	20.0%	153,170	226,770	169,700	24,809	14.6%	111,962	165,761				49,846	73,798	62,269	92,190	703,581	1,041,660
6/30/94-95	9,991,545	10,746,000	11,304,000	754,455	1,312,455	2					85,379								49,104	85,422	16,368	28,474	738,087	1,283,981
6/30/95-96	10,468,463	11,406,000	12,008,000	937,537	1,539,537	2					94,979								61,020	100,202	20,340	33,401	917,197	1,506,136
6/30/96-97	10,552,880	11,600,000	12,207,000	1,047,120	1,654,120	3					86,599								68,153	107,660	22,718	35,887	1,024,402	1,618,233
6/30/97-98	9,008,999	9,938,000	10,447,000	929,001	1,438,001	1					50,351					1,917,994	137,500	7.2%	66,599	103,089	66,599	103,089	862,402	1,334,912
6/30/98-99	9,557,577	10,722,000	11,275,000	1,164,423	1,717,423	2					65,903					2,081,524	136,688	6.6%	76,465	112,779	38,232	56,389	1,126,191	1,661,034
6/30/99-00	11,166,059	12,733,000	13,411,000	1,566,941	2,244,941	2					99,425					2,207,243	137,892	6.2%	97,891	140,247	97,891	140,247	1,469,050	2,104,693
6/30/00-01	10,364,734	11,997,000	12,628,000	1,632,266	2,263,266	4	1	25.0%	408,067	565,817	101,234	23,150	22.9%	373,265	517,562	2,201,008	145,149	6.6%	107,642	149,254	296,325	410,878	1,335,942	1,852,389
6/30/01-02	10,467,902	12,227,000	12,854,000	1,759,098	2,386,098	2					31,062					2,292,592	140,223	6.1%	107,593	145,942	53,796	72,971	1,705,301	2,313,127
6/30/02-03	10,374,896	12,271,000	12,900,000	1,896,104	2,525,104	1					160					2,260,534	140,250	6.2%	117,640	156,665	117,640	156,665	1,778,465	2,368,440
6/30/03-04	9,603,535	11,504,000	12,080,000	1,900,465	2,476,465	3					118,893					2,255,942	137,408	6.1%	115,756	150,839	115,756	150,839	1,784,709	2,325,625
6/30/04-05	11,252,446	13,408,000	13,563,000	2,155,554	2,310,554	3	1	33.3%	718,518	770,185	140,987	5,059	3.6%	77,348	82,910	2,309,083	145,033	6.3%	135,390	145,125	106,369	114,018	2,049,185	2,196,536
6/30/05-06	10,300,307	12,528,000	12,849,000	2,227,693	2,548,693	5					95,924					2,480,693	156,390	6.3%	140,441	160,677	70,220	80,339	2,157,473	2,468,355
6/30/06-07	9,363,258	11,656,000	12,318,000	2,292,742	2,954,742	3	1	33.3%	764,247	984,914	53,222	271	0.5%	11,678	15,050	2,612,577	157,146	6.0%	137,908	177,727	95,831	123,501	2,196,911	2,831,241
6/30/07-08	13,663,776	17,219,000	17,343,326	3,555,224	3,679,550	5	1	20.0%	711,045	735,910	255,579	53,895	21.1%	749,707	775,924	2,783,717	168,663	6.1%	215,407	222,940	380,620	393,930	3,174,604	3,285,620
6/30/08-09	13,440,656	17,350,000	17,381,364	3,909,344	3,940,708	5					54,757					2,750,907	180,456	6.6%	256,447	258,505	256,447	258,505	3,652,896	3,682,203
6/30/09-10	13,280,028	17,446,000	17,707,690	4,165,972	4,427,662	5					120,916					2,806,048	203,138	7.2%	301,586	320,531	150,793	160,265	4,015,179	4,267,397
6/30/10-11	15,434,592	20,531,000	20,836,816	5,096,408	5,402,224	5					210,976					2,942,638	196,775	6.7%	340,797	361,247	136,319	144,499	4,960,089	5,257,725
6/30/11-12	16,235,234	21,983,000	22,514,492	5,747,766	6,279,258	9	1	11.1%	638,641	697,695	245,341	808	0.3%	18,930	20,680	3,006,849	207,250	6.9%	396,171	432,805	285,014	311,369	5,462,751	5,967,888
6/30/12-13	12,954,545	18,455,000	19,474,000	5,500,455	6,519,455	14					254,397					3,138,905	218,884	7.0%	383,562	454,619	191,781	227,310	5,308,674	6,292,145
6/30/13-14	15,948,567	23,656,000	23,801,778	7,707,433	7,853,211	28	2	7.1%	550,531	560,944	575,821	18,964	3.3%	253,831	258,632	3,311,947	231,765	7.0%	539,354	549,556	543,080	553,352	7,164,353	7,299,859
6/30/14-15	16,838,811	26,423,000	26,557,531	9,584,189	9,718,720	35	3	8.6%	821,502	833,033	1,169,947	133,735	11.4%	1,095,552	1,110,930	3,511,622	252,444	7.2%	688,989	698,660	784,930	795,948	8,799,259	8,922,772
6/30/15-16	17,590,215	29,457,660	30,173,143	11,867,445	12,582,928	57	7	12.3%	1,457,405	1,545,272	2,197,428	211,208	9.6%	1,140,652	1,209,422	3,491,558	239,716	6.9%	814,771	863,893	976,190	1,035,044	10,891,254	11,547,883
6/30/16-17	14,479,654	27,540,000	28,529,470	13,060,346	14,049,816	75	7	9.3%	1,218,966	1,311,316	3,034,290	275,578	9.1%	1,186,157	1,276,022	3,338,327	202,091	6.1%	790,630	850,529	922,473	992,360	12,137,873	13,057,455
6/30/17-18	12,748,736	29,636,000	31,453,740	16,887,264	18,705,004	113	9	8.0%	1,345,003	1,489,779	3,802,598	278,970	7.3%	1,238,901	1,372,256	3,401,479	204,258	6.0%	1,014,076	1,123,230	1,106,701	1,225,826	15,780,563	17,479,178
6/30/18-19	7,628,414	27,767,460	31,011,750	20,139,046	23,383,336	173	20	11.6%	2,328,213	2,703,276	3,924,112	638,255	16.3%	3,275,605	3,803,287	3,573,725	213,686	6.0%	1,204,188	1,398,176	1,736,762	2,016,545	18,402,284	21,366,791
6/30/19-20	3,888,664	30,928,000	33,710,286	27,039,336	29,821,622	401	33	8.2%	2,225,182	2,454,148	3,888,664	270,881	7.0%	1,883,536	2,077,347	3,752,730	247,944	6.6%	1,786,494	1,970,321	1,875,783	2,068,796	25,163,553	27,752,826
Total	565,462,135	727,700,933	752,954,058	162,238,799	187,491,924	1,003	92	9.2%	14,069,335	16,198,960	22,924,780	2,291,804	10.0%	12,353,744	14,447,472						11,171,836	12,984,033	151,066,963	174,507,890
																	Sel. FY97 & Prior	6.51%						

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, 2019

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)	7/1/18-19	7/1/18-19	Paid Counts	(Low)	(High)	7/1/18-19	7/1/18-19	Total Paid	(Low)	(High)	($000)	($000)	Total Payroll	(Low)	(High)	(Low)	(High)	(Low)	(High)
All Prior Yrs	45,731,885	48,350,821	49,849,073	2,618,936	4,117,188	6					250,487								170,339	267,787	56,780	89,262	2,562,156	4,027,926
6/30/82-83	5,610,779	5,640,351	5,697,000	29,572	86,221	0					0								1,923	5,608	641	1,869	28,930	84,351
6/30/83-84	8,169,685	8,262,544	8,429,000	92,859	259,315	1					43,400								6,040	16,866	2,013	5,622	90,846	253,693
6/30/84-85	16,978,247	17,244,000	17,382,000	265,753	403,753	1	1	100.0%	265,753	403,753	69,948	69,948	100.0%	265,753	403,753				17,285	26,261	100,108	152,091	165,645	251,662
6/30/85-86	20,473,899	20,824,000	20,997,000	350,101	523,101	3	1	33.3%	116,700	174,367	143,263	71,002	49.6%	173,513	259,254				22,771	34,023	104,328	155,881	245,773	367,220
6/30/86-87	21,593,900	21,997,000	22,179,000	403,100	585,100	5					259,080								26,218	38,056	8,739	12,685	394,361	572,415
6/30/87-88	29,072,556	29,806,000	30,570,000	733,444	1,497,444	6	1	16.7%	122,241	249,574	271,856	53,624	19.7%	144,673	295,373				47,704	97,396	104,873	214,114	628,571	1,283,330
6/30/88-89	26,696,792	27,394,000	28,193,000	697,208	1,496,208	5	1	20.0%	139,442	299,242	232,887	23,574	10.1%	70,573	151,451				45,347	97,315	85,121	182,669	612,087	1,313,539
6/30/89-90	25,552,987	26,491,000	27,182,000	938,013	1,629,013	6	1	16.7%	156,335	271,502	322,997	61,905	19.2%	179,777	312,212				61,009	105,953	132,374	229,889	805,639	1,399,124
6/30/90-91	21,841,390	22,854,000	23,418,000	1,012,610	1,576,610	4	1	25.0%	253,152	394,152	200,759	44,102	22.0%	222,449	346,348				65,861	102,545	180,488	281,015	832,122	1,295,595
6/30/91-92	13,562,294	14,358,000	15,152,000	795,706	1,589,706	4					170,814								51,754	103,396	17,251	34,465	778,455	1,555,241
6/30/92-93	10,099,940	10,802,000	10,861,000	702,060	761,060	1					65,748								45,663	49,500	15,221	16,500	686,839	744,560
6/30/93-94	11,307,450	12,243,000	12,617,000	935,550	1,309,550	6	2	33.3%	311,850	436,517	186,135	43,807	23.5%	220,180	308,200				60,849	85,175	140,515	196,688	795,035	1,112,862
6/30/94-95	9,906,165	10,812,000	11,383,000	905,835	1,476,835	2					83,868								58,917	96,055	19,639	32,018	886,196	1,444,816
6/30/95-96	10,373,485	11,499,000	12,118,000	1,125,515	1,744,515	2					93,299								73,205	113,465	24,402	37,822	1,101,114	1,706,694
6/30/96-97	10,466,281	11,692,000	12,320,000	1,225,719	1,853,719	3					86,980								79,722	120,568	26,574	40,189	1,199,145	1,813,530
6/30/97-98	8,958,647	10,038,000	10,568,000	1,079,353	1,609,353	1					49,461					1,917,994	137,500	7.2%	77,378	115,373	77,378	115,373	1,001,975	1,493,979
6/30/98-99	9,491,674	10,825,000	11,404,000	1,333,326	1,912,326	4					91,457					2,081,524	136,688	6.6%	87,556	125,577	43,778	62,789	1,289,548	1,849,538
6/30/99-00	11,066,635	12,824,000	13,534,000	1,757,365	2,467,365	3	1	33.3%	585,788	822,455	178,890	1,225	0.7%	12,038	16,901	2,207,243	137,892	6.2%	109,787	154,143	109,787	154,143	1,647,578	2,313,222
6/30/00-01	10,263,499	12,111,000	12,776,000	1,847,501	2,512,501	6	1	16.7%	307,917	418,750	100,685	22,741	22.6%	417,283	567,483	2,201,008	145,149	6.6%	121,836	165,690	282,345	383,974	1,565,155	2,128,526
6/30/01-02	10,436,840	12,406,000	13,070,000	1,969,160	2,633,160	2					31,378					2,292,592	140,223	6.1%	120,441	161,054	60,220	80,527	1,908,940	2,552,633
6/30/02-03	10,374,736	12,478,000	13,145,000	2,103,264	2,770,264	3					175,366					2,260,534	140,250	6.2%	130,493	171,875	130,493	171,875	1,972,772	2,598,389
6/30/03-04	9,484,642	11,585,000	12,187,000	2,100,358	2,702,358	4					93,381					2,255,942	137,408	6.1%	127,931	164,598	127,931	164,598	1,972,427	2,537,759
6/30/04-05	11,111,459	13,302,000	13,688,000	2,190,541	2,576,541	4					164,630					2,309,083	145,033	6.3%	137,587	161,832	45,862	53,944	2,144,678	2,522,597
6/30/05-06	10,204,383	12,725,000	12,846,000	2,520,617	2,641,617	4					72,994					2,480,693	156,390	6.3%	158,907	166,536	79,454	83,268	2,441,164	2,558,350
6/30/06-07	9,310,037	11,908,000	12,400,000	2,597,963	3,089,963	3	1	33.3%	865,988	1,029,988	86,513	327	0.4%	9,827	11,688	2,612,577	157,146	6.0%	156,267	185,860	107,453	127,803	2,490,510	2,962,161
6/30/07-08	13,408,197	16,829,000	17,523,506	3,420,803	4,115,309	6	1	16.7%	570,134	685,885	231,912	52,944	22.8%	780,948	939,500	2,783,717	168,663	6.1%	207,263	249,342	328,220	394,857	3,092,583	3,720,452
6/30/08-09	13,385,900	17,415,090	17,845,828	4,029,190	4,459,928	4					165,551					2,750,907	180,456	6.6%	264,309	292,565	264,309	292,565	3,764,881	4,167,363
6/30/09-10	13,159,112	17,708,130	17,978,961	4,549,018	4,819,849	5					123,409					2,806,048	203,138	7.2%	329,316	348,922	164,658	174,461	4,384,360	4,645,388
6/30/10-11	15,223,617	20,632,590	21,365,344	5,408,973	6,141,727	9					268,313					2,942,638	196,775	6.7%	361,699	410,698	144,679	164,279	5,264,294	5,977,448
6/30/11-12	15,989,893	22,449,000	23,152,129	6,459,107	7,162,236	16	2	12.5%	807,388	895,279	466,952	21,588	4.6%	298,622	331,130	3,006,849	207,250	6.9%	445,201	493,665	371,912	412,398	6,087,195	6,749,838
6/30/12-13	12,700,148	19,142,000	20,256,000	6,441,853	7,555,853	19	1	5.3%	339,045	397,676	583,101	-8,697	-1.5%	-96,077	-112,692	3,138,905	218,884	7.0%	449,208	526,890	339,045	397,676	6,102,808	7,158,176
6/30/13-14	15,372,746	23,614,080	24,830,000	8,241,334	9,457,254	33	4	12.1%	998,950	1,146,334	1,136,042	44,189	3.9%	320,565	367,861	3,311,947	231,765	7.0%	576,716	661,804	660,761	758,249	7,580,573	8,699,005
6/30/14-15	15,668,864	26,463,540	27,590,000	10,794,676	11,921,136	49	4	8.2%	881,198	973,154	1,793,669	209,067	11.7%	1,258,211	1,389,509	3,511,622	252,444	7.2%	776,009	856,988	873,907	965,102	9,920,769	10,956,034
6/30/15-16	15,392,788	29,152,380	30,501,000	13,759,592	15,108,212	91	8	8.8%	1,209,634	1,328,194	2,964,290	266,420	9.0%	1,236,664	1,357,874	3,491,558	239,716	6.9%	944,678	1,037,269	1,062,092	1,166,191	12,697,500	13,942,021
6/30/16-17	11,445,364	27,190,070	28,319,000	15,744,706	16,873,636	96	11	11.5%	1,804,081	1,933,437	3,510,121	266,402	7.6%	1,194,949	1,280,629	3,338,327	202,091	6.1%	953,133	1,021,474	1,033,738	1,107,859	14,710,968	15,765,776
6/30/17-18	8,946,138	30,064,180	31,166,000	21,118,042	22,219,862	237	18	7.6%	1,603,902	1,687,584	4,864,885	377,122	7.8%	1,637,055	1,722,468	3,401,479	204,258	6.0%	1,268,133	1,334,297	1,385,581	1,457,873	19,732,461	20,761,989
6/30/18-19	3,704,302	29,266,840	34,111,000	25,562,538	30,406,698	428	38	8.9%	2,269,571	2,699,660	3,704,302	479,766	13.0%	3,310,751	3,938,146	3,573,725	213,686	6.0%	1,528,479	1,818,129	1,528,479	1,818,129	24,034,059	28,588,569
Total	542,537,355	700,398,616	728,603,841	157,861,262	186,066,487	1,082	98	9.1%	13,609,070	16,247,505	23,338,825	2,101,057	9.0%	11,657,756	13,887,087						10,241,150	12,190,716	147,620,112	173,875,771

Sel. FY97 & Prior 6.50%

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, 2020

All Other - Clusters 5-17 & 95
Medical

Summary of Ultimate Losses

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
			Ult Loss -	Ult Loss -	Aon	Aon	Outstanding	Outstanding	Ult Loss	Ult Loss
Accident	Payroll		Paid Loss	Paid BF	Selected Ult	Selected Ult	Losses	Losses	Cost	Cost
Year	(000's)	Paid Loss	Method	Method	(Low)	(High)	(Low)	(High)	(Low)	(High)
All Prior Yrs		3,058,786			3,063,616	3,068,374	4,829	9,588		
6/30/82-83		512,140	513,822		512,140	518,961	0	6,821		
6/30/83-84		797,778	802,000		802,000	810,020	4,222	12,242		
6/30/84-85	732,729	1,123,956	1,132,164	1,132,403	1,123,956	1,143,486	0	19,530	0.153	0.156
6/30/85-86	787,208	1,893,306	1,910,947	1,911,110	1,901,445	1,930,110	8,139	36,804	0.242	0.245
6/30/86-87	902,483	1,737,732	1,757,431	1,756,952	1,748,215	1,774,570	10,483	36,838	0.194	0.197
6/30/87-88	1,366,586	3,249,721	3,293,133	3,294,219	3,276,535	3,326,940	26,814	77,219	0.240	0.243
6/30/88-89	1,486,478	3,591,823	3,650,724	3,652,980	3,651,000	3,689,530	59,177	97,707	0.246	0.248
6/30/89-90	1,494,463	3,877,904	3,953,321	3,956,591	3,953,000	3,996,570	75,096	118,666	0.265	0.267
6/30/90-91	1,405,560	3,519,882	3,599,101	3,598,723	3,599,000	3,634,990	79,118	115,108	0.256	0.259
6/30/91-92	1,364,510	2,794,548	2,866,016	2,865,509	2,866,000	2,894,660	71,452	100,112	0.210	0.212
6/30/92-93	1,347,359	2,530,174	2,602,665	2,602,031	2,602,000	2,629,030	71,826	98,856	0.193	0.195
6/30/93-94	1,424,410	3,004,893	3,098,772	3,097,424	3,097,000	3,129,990	92,107	125,097	0.217	0.220
6/30/94-95	1,497,829	2,622,923	2,718,392	2,717,351	2,717,000	2,745,180	94,077	122,257	0.181	0.183
6/30/95-96	1,582,635	2,096,493	2,183,665	2,183,935	2,184,000	2,205,840	87,507	109,347	0.138	0.139
6/30/96-97	1,979,748	2,779,548	2,909,598	2,909,721	2,910,000	2,939,100	130,452	159,552	0.147	0.148
6/30/97-98	1,917,994	2,045,969	2,152,405	2,155,323	2,152,000	2,176,550	106,031	130,581	0.112	0.113
6/30/98-99	2,081,524	2,715,546	2,871,099	2,872,545	2,871,000	2,901,730	155,454	186,184	0.138	0.139
6/30/99-00	2,207,243	3,349,490	3,562,604	3,561,587	3,562,000	3,634,260	212,510	284,770	0.161	0.165
6/30/00-01	2,201,008	3,342,150	3,583,235	3,582,651	3,583,000	3,654,660	240,850	312,510	0.163	0.166
6/30/01-02	2,292,592	3,051,449	3,297,737	3,300,787	3,298,000	3,367,020	246,551	315,571	0.144	0.147
6/30/02-03	2,260,534	3,367,417	3,701,624	3,702,393	3,702,000	3,776,040	334,583	408,623	0.164	0.167
6/30/03-04	2,255,942	3,242,482	3,610,703	3,613,793	3,611,000	3,686,280	368,518	443,798	0.160	0.163
6/30/04-05	2,309,083	4,581,309	5,179,769	5,053,676	5,100,000	5,283,000	518,691	701,691	0.221	0.229
6/30/05-06	2,480,693	3,573,167	4,140,045	4,182,698	4,100,000	4,266,000	526,833	692,833	0.165	0.172
6/30/06-07	2,612,577	5,232,338	6,153,378	5,941,089	5,900,000	6,276,000	667,662	1,043,662	0.226	0.240
6/30/07-08	2,783,717	4,140,526	4,991,110	5,008,939	5,000,000	5,109,000	859,474	968,474	0.180	0.184
6/30/08-09	2,750,907	4,465,571	5,490,587	5,420,124	5,400,000	5,655,000	934,429	1,189,429	0.196	0.206
6/30/09-10	2,806,048	4,489,253	5,556,693	5,528,038	5,600,000	5,723,000	1,110,747	1,233,747	0.200	0.204
6/30/10-11	2,942,638	5,154,541	6,442,176	6,299,320	6,300,000	6,635,000	1,145,459	1,480,459	0.214	0.225
6/30/11-12	3,006,849	5,035,122	6,406,985	6,300,775	6,300,000	6,599,000	1,264,878	1,563,878	0.210	0.219
6/30/12-13	3,138,905	4,369,068	5,665,793	5,795,440	5,700,000	5,853,000	1,330,932	1,483,932	0.182	0.186
6/30/13-14	3,311,947	5,062,974	6,724,078	6,703,701	6,700,000	7,060,000	1,637,026	1,997,026	0.202	0.213
6/30/14-15	3,511,622	5,042,608	6,911,327	6,965,702	7,000,000	7,314,000	1,957,392	2,271,392	0.199	0.208
6/30/15-16	3,491,558	5,378,475	7,657,491	7,504,223	7,500,000	8,040,000	2,121,525	2,661,525	0.215	0.230
6/30/16-17	3,338,327	4,849,061	7,306,937	7,169,160	7,200,000	7,672,000	2,350,939	2,822,939	0.216	0.230
6/30/17-18	3,401,479	4,466,636	7,428,501	7,296,765	7,300,000	7,800,000	2,833,364	3,333,364	0.215	0.229
6/30/18-19	3,573,725	3,158,675	6,487,522	7,023,517	7,100,000	7,445,000	3,941,325	4,286,325	0.199	0.208
6/30/19-20	3,752,730	1,399,826	6,615,055	7,697,850	7,600,000	8,083,000	6,200,174	6,683,174	0.203	0.215
Total	81,801,638	130,705,259	158,928,604	158,359,044	162,585,907	168,446,891	31,880,648	37,741,632		
Tot 6/30/84-20	81,801,638	126,336,555	157,612,782	158,359,044	158,208,151	164,049,536	31,871,596	37,712,981	0.193	0.201

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, 2020

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 7/1/18-19	Paid Counts 7/1/19-20	Average Outstanding Claim
All Prior Yrs		3,058,786							2	2	
6/30/82-83		512,140	1.003	1.000	513,822	N/A	513,822		0	0	
6/30/83-84		797,778	1.005	1.000	802,000	N/A	802,000		0	0	
6/30/84-85	732,729	1,123,956	1.007	1.000	1,132,164	N/A	1,132,164	0.155	0	0	
6/30/85-86	787,208	1,893,306	1.009	1.000	1,910,947	N/A	1,910,947	0.243	1	0	
6/30/86-87	902,483	1,737,732	1.011	1.000	1,757,431	N/A	1,757,431	0.195	1	2	9,849
6/30/87-88	1,366,586	3,249,721	1.013	1.000	3,293,133	N/A	3,293,133	0.241	5	3	14,471
6/30/88-89	1,486,478	3,591,823	1.016	1.000	3,650,724	N/A	3,650,724	0.246	1	4	14,725
6/30/89-90	1,494,463	3,877,904	1.019	1.000	3,953,321	N/A	3,953,321	0.265	4	4	18,854
6/30/90-91	1,405,560	3,519,882	1.023	1.000	3,599,101	N/A	3,599,101	0.256	5	7	11,317
6/30/91-92	1,364,510	2,794,548	1.026	1.000	2,866,016	N/A	2,866,016	0.210	3	3	23,822
6/30/92-93	1,347,359	2,530,174	1.029	1.000	2,602,665	N/A	2,602,665	0.193	3	3	24,164
6/30/93-94	1,424,410	3,004,893	1.031	1.000	3,098,772	N/A	3,098,772	0.218	6	6	15,646
6/30/94-95	1,497,829	2,622,923	1.036	1.000	2,718,392	N/A	2,718,392	0.181	8	6	15,912
6/30/95-96	1,582,635	2,096,493	1.042	1.000	2,183,665	N/A	2,183,665	0.138	2	2	43,586
6/30/96-97	1,979,748	2,779,548	1.047	1.000	2,909,598	N/A	2,909,598	0.147	4	4	32,512
6/30/97-98	1,917,994	2,045,969	1.052	1.000	2,152,405	N/A	2,152,405	0.112	3	3	35,478
6/30/98-99	2,081,524	2,715,546	1.057	1.000	2,871,099	N/A	2,871,099	0.138	8	6	25,925
6/30/99-00	2,207,243	3,349,490	1.064	1.000	3,562,604	N/A	3,562,604	0.161	10	10	21,311
6/30/00-01	2,201,008	3,342,150	1.072	1.000	3,583,235	N/A	3,583,235	0.163	7	6	40,181
6/30/01-02	2,292,592	3,051,449	1.081	1.000	3,297,737	N/A	3,297,737	0.144	11	11	22,390
6/30/02-03	2,260,534	3,367,417	1.099	1.000	3,701,624	N/A	3,701,624	0.164	7	5	66,841
6/30/03-04	2,255,942	3,242,482	1.114	1.000	3,610,703	N/A	3,610,703	0.160	15	12	30,685
6/30/04-05	2,309,083	4,581,309	1.131	1.000	5,179,769	N/A	5,179,769	0.224	9	6	99,743
6/30/05-06	2,480,693	3,573,167	1.159	1.000	4,140,045	N/A	4,140,045	0.167	18	10	56,688
6/30/06-07	2,612,577	5,232,338	1.176	1.000	6,153,378	N/A	6,153,378	0.236	13	9	102,338
6/30/07-08	2,783,717	4,140,526	1.205	1.000	4,991,110	N/A	4,991,110	0.179	12	16	53,162
6/30/08-09	2,750,907	4,465,571	1.230	1.000	5,490,587	N/A	5,490,587	0.200	17	9	113,891
6/30/09-10	2,806,048	4,489,253	1.238	1.000	5,556,693	N/A	5,556,693	0.198	16	12	88,953
6/30/10-11	2,942,638	5,154,541	1.250	1.000	6,442,176	N/A	6,442,176	0.219	26	17	75,743
6/30/11-12	3,006,849	5,035,122	1.272	1.000	6,406,985	N/A	6,406,985	0.213	30	26	52,764
6/30/12-13	3,138,905	4,369,068	1.297	1.000	5,665,793	N/A	5,665,793	0.181	30	26	49,874
6/30/13-14	3,311,947	5,062,974	1.328	1.000	6,724,078	N/A	6,724,078	0.203	46	36	46,142
6/30/14-15	3,511,622	5,042,608	1.371	1.000	6,911,327	N/A	6,911,327	0.197	68	44	42,471
6/30/15-16	3,491,558	5,378,475	1.424	1.000	7,657,491	N/A	7,657,491	0.219	118	70	32,557
6/30/16-17	3,338,327	4,849,061	1.507	1.000	7,306,937	N/A	7,306,937	0.219	164	88	27,930
6/30/17-18	3,401,479	4,466,636	1.663	1.000	7,428,501	N/A	7,428,501	0.218	628	170	17,423
6/30/18-19	3,573,725	3,158,675	2.054	1.000	6,487,522	N/A	6,487,522	0.182	870	523	6,365
6/30/19-20	3,752,730	1,399,826	4.726	1.000	6,615,055	N/A	6,615,055	0.176		792	6,585
Total	81,801,638	130,705,259			158,928,604		158,928,604		2,171	1,953	

NOTES:
(2) Provided by Commonwealth of Massachusetts
(3), (4) From Section 8, Exhibit 2, Page 7
(5) Based on information from the MA WCRIB 10/1/18 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, 2020

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	1.007	1,132,403	N/A	1,132,403	0.155	0.155
6/30/85-86	787,208	0.245	1,893,306	1.009	1,911,110	N/A	1,911,110	0.243	0.243
6/30/86-87	902,483	0.190	1,737,732	1.011	1,756,952	N/A	1,756,952	0.195	0.195
6/30/87-88	1,366,586	0.247	3,249,721	1.013	3,294,219	N/A	3,294,219	0.241	0.241
6/30/88-89	1,486,478	0.255	3,591,823	1.016	3,652,980	N/A	3,652,980	0.246	0.246
6/30/89-90	1,494,463	0.276	3,877,904	1.019	3,956,591	N/A	3,956,591	0.265	0.265
6/30/90-91	1,405,560	0.255	3,519,882	1.023	3,598,723	N/A	3,598,723	0.256	0.256
6/30/91-92	1,364,510	0.209	2,794,548	1.026	2,865,509	N/A	2,865,509	0.210	0.210
6/30/92-93	1,347,359	0.191	2,530,174	1.029	2,602,031	N/A	2,602,031	0.193	0.193
6/30/93-94	1,424,410	0.214	3,004,893	1.031	3,097,424	N/A	3,097,424	0.217	0.217
6/30/94-95	1,497,829	0.180	2,622,923	1.036	2,717,351	N/A	2,717,351	0.181	0.181
6/30/95-96	1,582,635	0.138	2,096,493	1.042	2,183,935	N/A	2,183,935	0.138	0.138
6/30/96-97	1,979,748	0.147	2,779,548	1.047	2,909,721	N/A	2,909,721	0.147	0.147
6/30/97-98	1,917,994	0.115	2,045,969	1.052	2,155,323	N/A	2,155,323	0.112	0.112
6/30/98-99	2,081,524	0.139	2,715,546	1.057	2,872,545	N/A	2,872,545	0.138	0.138
6/30/99-00	2,207,243	0.161	3,349,490	1.064	3,561,587	N/A	3,561,587	0.161	0.161
6/30/00-01	2,201,008	0.162	3,342,150	1.072	3,582,651	N/A	3,582,651	0.163	0.163
6/30/01-02	2,292,592	0.146	3,051,449	1.081	3,300,787	N/A	3,300,787	0.144	0.144
6/30/02-03	2,260,534	0.164	3,367,417	1.099	3,702,393	N/A	3,702,393	0.164	0.164
6/30/03-04	2,255,942	0.161	3,242,482	1.114	3,613,793	N/A	3,613,793	0.160	0.160
6/30/04-05	2,309,083	0.177	4,581,309	1.131	5,053,676	N/A	5,053,676	0.219	0.219
6/30/05-06	2,480,693	0.179	3,573,167	1.159	4,182,698	N/A	4,182,698	0.169	0.169
6/30/06-07	2,612,577	0.181	5,232,338	1.176	5,941,089	N/A	5,941,089	0.227	0.227
6/30/07-08	2,783,717	0.183	4,140,526	1.205	5,008,939	N/A	5,008,939	0.180	0.180
6/30/08-09	2,750,907	0.186	4,465,571	1.230	5,420,124	N/A	5,420,124	0.197	0.197
6/30/09-10	2,806,048	0.193	4,489,253	1.238	5,528,038	N/A	5,528,038	0.197	0.197
6/30/10-11	2,942,638	0.195	5,154,541	1.250	6,299,320	N/A	6,299,320	0.214	0.214
6/30/11-12	3,006,849	0.197	5,035,122	1.272	6,300,775	N/A	6,300,775	0.210	0.210
6/30/12-13	3,138,905	0.199	4,369,068	1.297	5,795,440	N/A	5,795,440	0.185	0.185
6/30/13-14	3,311,947	0.201	5,062,974	1.328	6,703,701	N/A	6,703,701	0.202	0.202
6/30/14-15	3,511,622	0.203	5,042,608	1.371	6,965,702	N/A	6,965,702	0.198	0.198
6/30/15-16	3,491,558	0.205	5,378,475	1.424	7,504,223	N/A	7,504,223	0.215	0.215
6/30/16-17	3,338,327	0.207	4,849,061	1.507	7,169,160	N/A	7,169,160	0.215	0.215
6/30/17-18	3,401,479	0.209	4,466,636	1.663	7,296,765	N/A	7,296,765	0.215	0.215
6/30/18-19	3,573,725	0.211	3,158,675	2.054	7,023,517	N/A	7,023,517	0.197	0.197
6/30/19-20	3,752,730	0.213	1,399,826	4.726	7,697,850	N/A	7,697,850	0.205	0.205
Total	81,801,638		126,336,555		158,359,044		158,359,044		

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, 2020

All Other - Clusters 5-17 & 95
Medical

Calculation of Initial Expected Loss Rate

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
			Unadjusted	Benefit	Adjusted		Trended	Detrended	Prior	Current
Accident	Payroll	Expected	Loss	Level	Loss	Trend	Adjusted	Selected	Selected	Selected
Year	(000's)	Ult Loss	Cost	Factor	Cost	Factor	Loss Cost	Loss Cost	Loss Cost	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	3,599,101	0.256	1.194	0.306	1.348	0.412	0.134	0.255	0.255
6/30/91-92	1,364,510	2,866,016	0.210	1.189	0.250	1.335	0.333	0.136	0.209	0.209
6/30/92-93	1,347,359	2,602,665	0.193	1.189	0.230	1.321	0.304	0.137	0.191	0.191
6/30/93-94	1,424,410	3,098,772	0.218	1.178	0.256	1.308	0.335	0.139	0.214	0.214
6/30/94-95	1,497,829	2,718,392	0.181	1.170	0.212	1.295	0.275	0.142	0.179	0.180
6/30/95-96	1,582,635	2,183,665	0.138	1.155	0.159	1.282	0.204	0.145	0.139	0.138
6/30/96-97	1,979,748	2,909,598	0.147	1.137	0.167	1.270	0.212	0.149	0.148	0.147
6/30/97-98	1,917,994	2,152,405	0.112	1.135	0.127	1.257	0.160	0.151	0.116	0.115
6/30/98-99	2,081,524	2,871,099	0.138	1.135	0.157	1.245	0.195	0.152	0.138	0.139
6/30/99-00	2,207,243	3,562,604	0.161	1.135	0.183	1.232	0.226	0.154	0.160	0.161
6/30/00-01	2,201,008	3,583,235	0.163	1.109	0.181	1.220	0.220	0.159	0.161	0.162
6/30/01-02	2,292,592	3,297,737	0.144	1.101	0.158	1.208	0.191	0.162	0.146	0.146
6/30/02-03	2,260,534	3,701,624	0.164	1.073	0.176	1.196	0.210	0.168	0.165	0.164
6/30/03-04	2,255,942	3,610,703	0.160	1.046	0.167	1.184	0.198	0.173	0.164	0.161
6/30/04-05	2,309,083	5,179,769	0.224	1.036	0.232	1.173	0.272	0.177	0.191	0.177
6/30/05-06	2,480,693	4,140,045	0.167	1.032	0.172	1.161	0.200	0.179	0.194	0.179
6/30/06-07	2,612,577	6,153,378	0.236	1.032	0.243	1.149	0.279	0.181	0.196	0.181
6/30/07-08	2,783,717	4,991,110	0.179	1.032	0.185	1.138	0.211	0.183	0.198	0.183
6/30/08-09	2,750,907	5,490,587	0.200	1.027	0.205	1.127	0.231	0.186	0.201	0.186
6/30/09-10	2,806,048	5,556,693	0.198	1.000	0.198	1.116	0.221	0.193	0.208	0.193
6/30/10-11	2,942,638	6,442,176	0.219	1.000	0.219	1.105	0.242	0.195	0.210	0.195
6/30/11-12	3,006,849	6,406,985	0.213	1.000	0.213	1.094	0.233	0.197	0.212	0.197
6/30/12-13	3,138,905	5,665,793	0.181	1.000	0.181	1.083	0.195	0.199	0.215	0.199
6/30/13-14	3,311,947	6,724,078	0.203	1.000	0.203	1.072	0.218	0.201	0.217	0.201
6/30/14-15	3,511,622	6,911,327	0.197	1.000	0.197	1.062	0.209	0.203	0.219	0.203
6/30/15-16	3,491,558	7,657,491	0.219	1.000	0.219	1.051	0.231	0.205	0.221	0.205
6/30/16-17	3,338,327	7,306,937	0.219	1.000	0.219	1.041	0.228	0.207	0.223	0.207
6/30/17-18	3,401,479	7,428,501	0.218	1.000	0.218	1.030	0.225	0.209	0.225	0.209
6/30/18-19	3,573,725	6,487,522	0.182	1.000	0.182	1.020	0.185	0.211	0.228	0.211
6/30/19-20	3,752,730	6,615,055	0.176	1.000	0.176	1.010	0.178	0.213		0.213
Total	75,031,692	141,915,061								

Trend Last 4 (ex 19-20):	-5.5%	Avg 3 (ex 19-20):	0.213
Trend Last 8 (ex 19-20):	0.2%	Avg 5 (ex 19-20):	0.215
Trend Last 12 (ex 19-20):	0.3%	Avg 10 (ex 19-20):	0.219
Prior Selected Trend:	1.0%	Prior Sel Avg:	0.230
Selected Trend:	1.0%	Sel. Loss Cost:	0.215

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, 2019
(11) Selected based on (9) and (4)

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

All Other - Clusters 5-17 & 95
Medical

Calculation of 1982 & Prior Reserves (Page 1)

Method 1

(1)	Average Payment Trend	0.865	
(2)	Credibility	53%	
(3)	Average Pmt Trend Statewide	0.980	
(4)	Credibility Weighted Trend	0.919	
		(Low)	(High)
(5)	Selected Range	0.827	0.938
(6)	Incremental Paid for 2020	564	564
(7)	Estimated Reserve	2,700	8,470
(8)	Paid to Date (82 & Prior)	3,058,786	3,058,786
(9)	Est Ult Paid for 1982 & Prior	3,061,487	3,067,257

Method 2

		(Current)	(Prior)
(10)	Avg Incremental Paid (3 yrs)	1,392	2,254
(11)	Projected Number of Years	5	5
(12)	Estimated Reserve	6,958	11,269
(13)	Paid to Date (82 & Prior)	3,058,786	3,058,223
(14)	Est Ult Paid for 1982 & Prior	3,065,745	3,069,492
(14a)	Paid Counts During Fiscal Year	2	2
		(Low)	(High)
(15)	Sel Ult Excluding Lump Sums	3,063,616	3,068,374
(16)	Lump Sum Ultimates	N/A	N/A
(17)	Ult Loss Including Lump Sums	**3,063,616**	**3,068,374**
(18)	Implied Tail	1.002	1.003
(19)	Ult Loss Inc Lump Sums @ 6/19	3,064,856	3,077,220

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, 2019

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

All Other - Clusters 5-17 & 95
Medical

Calculation of 1982 & Prior Reserves (Page 2)

(1)	(2)	(3)	(4)	(5)		
				Average		
		Incremental		Observed		Trend
Year	X	Paids	LN	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 =	29
2001	10	26,076	10.169	0.858	S(x) =	58,174
2002	11	28,013	10.240	1.074	S(x-sq) =	116,699,074
2003	12	24,232	10.095	0.865	S(xy) =	590,213
2004	13	32,198	10.380	1.329	S(y) =	294
2005	14	42,136	10.649	1.309	D =	58,870
2006	15	33,882	10.431	0.804	slope =	-0.135
2007	16	22,266	10.011	0.657	Avg Trend =	0.865
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		
2017	26	3,150	8.055	0.266		
2018	27	3,240	8.083	1.028		
2019	28	371	5.917	0.115		
2020	29	564	6.335	1.518		
					Selected Trend:	**0.865**

NOTES:

(3) 2020 provided by Commonwealth of Massachusetts. Prior years from Aon analysis as of June 30, 2019

(4) LN [(3)]

(5) Eg. 2020: 1.518 = 564 / 371

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	420	432	444	456
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	512,140	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	795,278	797,778	797,778	797,778	
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	1,123,956	1,123,956	1,123,956	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	1,892,840	1,893,204	1,893,306	1,893,306			
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	1,716,165	1,724,666	1,730,059	1,737,732				
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	3,200,620	3,213,256	3,234,564	3,249,721					
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	3,573,237	3,580,657	3,581,462	3,591,823						
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	3,861,755	3,867,795	3,874,257	3,877,904							
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	3,497,516	3,505,736	3,511,838	3,519,882								
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	2,786,796	2,789,160	2,790,289	2,794,548									
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	2,498,702	2,512,155	2,519,254	2,530,174										
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	2,943,707	2,962,553	2,981,489	3,004,893											
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	2,542,669	2,570,487	2,596,854	2,622,923												
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	2,083,737	2,087,948	2,092,195	2,096,493													
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	2,763,943	2,770,748	2,776,128	2,779,548														
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	2,025,376	2,030,306	2,037,072	2,045,969															
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	2,592,302	2,615,954	2,660,086	2,715,546																
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	3,114,564	3,186,632	3,284,468	3,349,490																	
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	3,122,934	3,182,178	3,266,624	3,342,150																		
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	2,860,506	2,939,983	2,983,296	3,051,449																			
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	3,234,764	3,289,330	3,331,832	3,367,417																				
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	3,140,203	3,175,883	3,231,766	3,242,482																					
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	4,435,668	4,481,807	4,534,211	4,581,309																						
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	3,469,314	3,515,073	3,547,792	3,573,167																							
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	5,070,176	5,100,951	5,176,947	5,232,338																								
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	4,012,733	4,048,757	4,071,658	4,140,526																									
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	4,377,822	4,407,183	4,450,028	4,465,571																										
June-10	1,396,833	3,068,894	3,532,579	3,829,758	4,051,519	4,138,029	4,249,098	4,308,361	4,342,050	4,465,213	4,489,253																											
June-11	1,591,468	3,339,318	3,962,771	4,360,928	4,611,079	4,788,257	4,948,871	5,039,589	5,112,900	5,154,541																												
June-12	1,578,463	3,469,608	4,122,296	4,485,953	4,743,217	4,835,420	4,914,674	4,996,900	5,035,122																													
June-13	1,503,155	3,061,873	3,660,432	3,906,111	4,088,215	4,176,679	4,284,733	4,369,068																														
June-14	1,466,358	3,390,257	4,222,870	4,548,827	4,770,478	4,932,962	5,062,974																															
June-15	1,879,802	3,553,784	4,190,765	4,739,997	4,912,345	5,042,608																																
June-16	2,006,652	3,783,256	4,707,647	5,110,667	5,378,475																																	
June-17	1,780,241	3,788,337	4,568,808	4,849,061																																		
June-18	1,793,068	3,812,384	4,466,636																																			
June-19	1,580,661	3,158,675																																				
June-20	1,399,826																																					

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	420-432	432-444	444-456
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	1.000	1.000	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	1.006	1.003	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	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	1.001	1.000	1.000	1.000			
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	1.010	1.005	1.003	1.004				
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	1.005	1.004	1.007	1.005					
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	1.004	1.002	1.000	1.003						
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	1.003	1.002	1.002	1.001							
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	1.003	1.002	1.002	1.002								
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	1.001	1.001	1.000	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	1.002	1.005	1.003	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	1.005	1.006	1.006	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	1.012	1.011	1.010	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	1.002	1.002	1.002	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	1.002	1.002	1.002	1.001														
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	1.003	1.002	1.003	1.004															
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	1.008	1.009	1.017	1.021																
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	1.019	1.023	1.031	1.020																	
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	1.025	1.019	1.027	1.023																		
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	1.026	1.028	1.015	1.023																			
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	1.022	1.017	1.013	1.011																				
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	1.021	1.011	1.018	1.003																					
June-05	3.109	1.309	1.125	1.068	1.045	1.049	1.027	1.030	1.018	1.012	1.011	1.008	1.010	1.012	1.010																						
June-06	2.272	1.183	1.086	1.063	1.046	1.028	1.023	1.019	1.010	1.010	1.007	1.013	1.009	1.007																							
June-07	2.782	1.283	1.059	1.056	1.033	1.038	1.015	1.013	1.015	1.015	1.006	1.015	1.011																								
June-08	2.031	1.158	1.076	1.035	1.046	1.017	1.014	1.008	1.006	1.009	1.006	1.017																									
June-09	2.098	1.236	1.092	1.053	1.031	1.028	1.008	1.037	1.007	1.010	1.003																										
June-10	2.197	1.151	1.084	1.058	1.021	1.027	1.014	1.008	1.028	1.005																											
June-11	2.098	1.187	1.100	1.057	1.038	1.034	1.018	1.015	1.008																												
June-12	2.198	1.188	1.088	1.057	1.019	1.016	1.017	1.008																													
June-13	2.037	1.195	1.067	1.047	1.022	1.026	1.020																														
June-14	2.312	1.246	1.077	1.049	1.034	1.026																															
June-15	1.891	1.179	1.131	1.036	1.027																																
June-16	1.885	1.244	1.086	1.052																																	
June-17	2.128	1.206	1.061																																		
June-18	2.126	1.172																																			
June-19	1.998																																				

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	420-432	432-444	444-456	To Ult
Simple Avg																																						
All Yrs	2.516	1.288	1.134	1.081	1.061	1.047	1.039	1.032	1.027	1.020	1.016	1.016	1.024	1.019	1.015	1.014	1.013	1.010	1.008	1.008	1.008	1.006	1.005	1.006	1.006	1.004	1.003	1.003	1.003	1.003	1.003	1.001	1.002	1.001	1.000	1.000	1.000	
Latest 5	2.006	1.209	1.084	1.048	1.028	1.026	1.015	1.015	1.013	1.010	1.007	1.012	1.017	1.016	1.025	1.017	1.014	1.017	1.014	1.009	1.008	1.006	1.005	1.005	1.005	1.003	1.002	1.003	1.004	1.004	1.003	1.002	1.002					
Latest 3	2.084	1.207	1.093	1.046	1.027	1.023	1.018	1.010	1.014	1.008	1.005	1.015	1.010	1.010	1.015	1.015	1.015	1.024	1.021	1.013	1.009	1.003	1.005	1.006	1.007	1.004	1.002	1.002	1.002	1.002	1.005	1.003	1.001	1.001	1.000			
Volume Wtd																																						
All Yrs	2.314	1.243	1.109	1.062	1.045	1.034	1.027	1.023	1.020	1.016	1.014	1.015	1.017	1.015	1.016	1.014	1.014	1.011	1.009	1.007	1.007	1.005	1.004	1.005	1.006	1.004	1.003	1.003	1.003	1.003	1.004	1.002	1.002	1.001	1.000	1.000		
Latest 5	2.002	1.209	1.085	1.048	1.028	1.026	1.015	1.015	1.013	1.010	1.007	1.013	1.016	1.015	1.023	1.017	1.014	1.018	1.015	1.010	1.008	1.006	1.005	1.005	1.005	1.003	1.002	1.003	1.004	1.003	1.004	1.002						
Latest 3	2.088	1.207	1.092	1.046	1.028	1.023	1.018	1.010	1.014	1.008	1.005	1.015	1.010	1.010	1.014	1.014	1.015	1.024	1.022	1.014	1.009	1.003	1.005	1.007	1.007	1.004	1.002	1.002	1.002	1.002	1.005	1.003	1.002	1.001				
Dev Factor S	.																																					
Industry 1	1.957	1.147	1.057	1.025	1.015	1.009	1.011	1.009	1.009	1.009	1.010	1.008	1.008	1.009	1.009	1.008	1.008	1.007																				
Industry 2		1.281	1.080	1.034	1.020	1.017	1.009	1.011	1.009	1.009	1.006	1.007	1.009	1.008	1.008	1.012	1.007	1.006	1.007	1.006																		
Prior	2.301	1.239	1.108	1.058	1.038	1.033	1.023	1.023	1.018	1.011	1.009	1.020	1.025	1.015	1.030	1.017	1.013	1.013	1.008	1.008	1.006	1.005	1.005	1.005	1.005	1.005	1.002	1.003	1.003	1.003	1.003	1.003	1.002	1.002	1.002	1.002	1.004	
Selected	2.301	1.235	1.104	1.058	1.039	1.032	1.024	1.019	1.018	1.010	1.007	1.020	1.025	1.015	1.025	1.015	1.013	1.017	1.008	1.008	1.006	1.005	1.005	1.005	1.005	1.005	1.003	1.003	1.003	1.003	1.003	1.003	1.002	1.002	1.002	1.002	1.002	1.003
FacToUlt	4.726	2.054	1.663	1.507	1.424	1.371	1.328	1.297	1.272	1.250	1.238	1.230	1.205	1.176	1.159	1.131	1.114	1.099	1.081	1.072	1.064	1.057	1.052	1.047	1.042	1.036	1.031	1.029	1.026	1.023	1.019	1.016	1.013	1.011	1.009	1.007	1.005	1.003
Percent of Ult	21.2%	48.7%	60.1%	66.4%	70.2%	73.0%	75.3%	77.1%	78.6%	80.0%	80.8%	81.3%	83.0%	85.0%	86.3%	88.4%	89.8%	91.0%	92.5%	93.3%	94.0%	94.6%	95.1%	95.5%	96.0%	96.5%	97.0%	97.2%	97.5%	97.8%	98.1%	98.4%	98.7%	98.9%	99.1%	99.3%	99.5%	99.7%

Commonwealth of Massachusetts
Workers Compensation
Reserve Analysis at June, 30, 2020

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 6/19		As of 6/20		(Dollar)	(Percent)	(Dollar)	(Percent)
Year	Low	High	Low	High	Low	Low	High	High
All Prior Yrs	3,064,856	3,077,220	3,063,616	3,068,374	(1,240)	0.0%	(8,846)	-0.3%
6/30/82-83	512,140	519,478	512,140	518,961	0	0.0%	(517)	-0.1%
6/30/83-84	803,000	810,827	802,000	810,020	(1,000)	-0.1%	(807)	-0.1%
6/30/84-85	1,123,956	1,144,626	1,123,956	1,143,486	0	0.0%	(1,140)	-0.1%
6/30/85-86	1,903,435	1,932,130	1,901,445	1,930,110	(1,990)	-0.1%	(2,020)	-0.1%
6/30/86-87	1,742,245	1,768,510	1,748,215	1,774,570	5,970	0.3%	6,060	0.3%
6/30/87-88	3,267,580	3,318,860	3,276,535	3,326,940	8,955	0.3%	8,080	0.2%
6/30/88-89	3,647,000	3,686,500	3,651,000	3,689,530	4,000	0.1%	3,030	0.1%
6/30/89-90	3,957,000	4,000,610	3,953,000	3,996,570	(4,000)	-0.1%	(4,040)	-0.1%
6/30/90-91	3,598,000	3,633,980	3,599,000	3,634,990	1,000	0.0%	1,010	0.0%
6/30/91-92	2,867,000	2,895,670	2,866,000	2,894,660	(1,000)	0.0%	(1,010)	0.0%
6/30/92-93	2,595,000	2,620,950	2,602,000	2,629,030	7,000	0.3%	8,080	0.3%
6/30/93-94	3,085,000	3,117,870	3,097,000	3,129,990	12,000	0.4%	12,120	0.4%
6/30/94-95	2,701,000	2,729,020	2,717,000	2,745,180	16,000	0.6%	16,160	0.6%
6/30/95-96	2,188,000	2,209,880	2,184,000	2,205,840	(4,000)	-0.2%	(4,040)	-0.2%
6/30/96-97	2,917,000	2,947,180	2,910,000	2,939,100	(7,000)	-0.2%	(8,080)	-0.3%
6/30/97-98	2,151,000	2,177,560	2,152,000	2,176,550	1,000	0.0%	(1,010)	0.0%
6/30/98-99	2,826,000	2,857,290	2,871,000	2,901,730	45,000	1.6%	44,440	1.6%
6/30/99-00	3,518,000	3,589,380	3,562,000	3,634,260	44,000	1.3%	44,880	1.3%
6/30/00-01	3,526,000	3,598,560	3,583,000	3,654,660	57,000	1.6%	56,100	1.6%
6/30/01-02	3,262,000	3,334,380	3,298,000	3,367,020	36,000	1.1%	32,640	1.0%
6/30/02-03	3,691,000	3,768,900	3,702,000	3,776,040	11,000	0.3%	7,140	0.2%
6/30/03-04	3,642,000	3,720,960	3,611,000	3,686,280	(31,000)	-0.9%	(34,680)	-0.9%
6/30/04-05	5,100,000	5,366,000	5,100,000	5,283,000	0	0.0%	(83,000)	-1.5%
6/30/05-06	4,200,000	4,359,000	4,100,000	4,266,000	(100,000)	-2.4%	(93,000)	-2.1%
6/30/06-07	6,000,000	6,374,000	5,900,000	6,276,000	(100,000)	-1.7%	(98,000)	-1.5%
6/30/07-08	5,000,000	5,208,000	5,000,000	5,109,000	0	0.0%	(99,000)	-1.9%
6/30/08-09	5,500,000	5,693,000	5,400,000	5,655,000	(100,000)	-1.8%	(38,000)	-0.7%
6/30/09-10	5,600,000	5,825,000	5,600,000	5,723,000	0	0.0%	(102,000)	-1.8%
6/30/10-11	6,400,000	6,734,000	6,300,000	6,635,000	(100,000)	-1.6%	(99,000)	-1.5%
6/30/11-12	6,500,000	6,732,000	6,300,000	6,599,000	(200,000)	-3.1%	(133,000)	-2.0%
6/30/12-13	5,700,000	6,048,000	5,700,000	5,853,000	0	0.0%	(195,000)	-3.2%
6/30/13-14	6,800,000	7,266,000	6,700,000	7,060,000	(100,000)	-1.5%	(206,000)	-2.8%
6/30/14-15	7,100,000	7,606,000	7,000,000	7,314,000	(100,000)	-1.4%	(292,000)	-3.8%
6/30/15-16	7,600,000	8,153,000	7,500,000	8,040,000	(100,000)	-1.3%	(113,000)	-1.4%
6/30/16-17	7,400,000	8,075,000	7,200,000	7,672,000	(200,000)	-2.7%	(403,000)	-5.0%
6/30/17-18	7,600,000	8,345,000	7,300,000	7,800,000	(300,000)	-3.9%	(545,000)	-6.5%
6/30/18-19	7,900,000	8,423,000	7,100,000	7,445,000	(800,000)	-10.1%	(978,000)	-11.6%
6/30/19-20								
Total	156,988,212	163,667,342	154,985,907	160,363,891	(2,002,305)	-1.3%	(3,303,450)	-2.0%

NOTES:

(2), (3) From prior Aon analysis as of June 30, 2019

(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

All Other - Clusters 5-17 & 95

Medical

Calculation of Discount Factors

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cumulative	Incremental		Pres Value	Pres Value		
	Paid Loss	Paid Loss	Percent	of Increm.	of Increm.	Discount Factor At:	
Maturity	Development	Development	Unpaid	Pmts (4%)	Pmts (6%)	4%	6%
468	100.0%	0.3%	0.0%	0.1%	0.0%	1.000	1.000
456	99.7%	0.2%	0.3%	0.0%	0.0%	0.981	0.971
444	99.5%	0.2%	0.5%	0.0%	0.0%	0.957	0.937
432	99.3%	0.2%	0.7%	0.0%	0.0%	0.937	0.908
420	99.1%	0.2%	0.9%	0.1%	0.0%	0.918	0.881
408	98.9%	0.2%	1.1%	0.1%	0.0%	0.900	0.856
396	98.7%	0.3%	1.3%	0.1%	0.0%	0.883	0.832
384	98.4%	0.3%	1.6%	0.1%	0.0%	0.873	0.819
372	98.1%	0.3%	1.9%	0.1%	0.0%	0.861	0.803
360	97.8%	0.3%	2.2%	0.1%	0.1%	0.848	0.786
348	97.5%	0.3%	2.5%	0.1%	0.1%	0.835	0.769
336	97.2%	0.2%	2.8%	0.1%	0.0%	0.821	0.751
324	97.0%	0.5%	3.0%	0.2%	0.1%	0.805	0.730
312	96.5%	0.5%	3.5%	0.2%	0.1%	0.803	0.727
300	96.0%	0.5%	4.0%	0.2%	0.1%	0.797	0.720
288	95.5%	0.5%	4.5%	0.2%	0.1%	0.789	0.711
276	95.1%	0.5%	4.9%	0.2%	0.1%	0.780	0.699
264	94.6%	0.6%	5.4%	0.2%	0.2%	0.770	0.687
252	94.0%	0.7%	6.0%	0.3%	0.2%	0.763	0.679
240	93.3%	0.7%	6.7%	0.3%	0.2%	0.761	0.677
228	92.5%	1.6%	7.5%	0.8%	0.5%	0.757	0.672
216	91.0%	1.2%	9.0%	0.6%	0.4%	0.771	0.692
204	89.8%	1.4%	10.2%	0.7%	0.5%	0.769	0.689
192	88.4%	2.1%	11.6%	1.2%	0.9%	0.768	0.688
180	86.3%	1.3%	13.7%	0.7%	0.5%	0.776	0.699
168	85.0%	2.1%	15.0%	1.2%	0.9%	0.766	0.686
156	83.0%	1.6%	17.0%	1.0%	0.8%	0.766	0.687
144	81.3%	0.5%	18.7%	0.3%	0.3%	0.758	0.676
132	80.8%	0.8%	19.2%	0.5%	0.4%	0.736	0.647
120	80.0%	1.4%	20.0%	1.0%	0.8%	0.718	0.625
108	78.6%	1.5%	21.4%	1.1%	0.9%	0.710	0.615
96	77.1%	1.8%	22.9%	1.4%	1.2%	0.702	0.605
84	75.3%	2.3%	24.7%	1.8%	1.6%	0.697	0.600
72	73.0%	2.7%	27.0%	2.2%	2.0%	0.697	0.601
60	70.2%	3.9%	29.8%	3.2%	3.0%	0.699	0.604
48	66.4%	6.2%	33.6%	5.4%	5.1%	0.708	0.616
36	60.1%	11.4%	39.9%	10.4%	9.9%	0.727	0.642
24	48.7%	27.5%	51.3%	26.0%	25.2%	0.762	0.687
12	21.2%	21.2%	78.8%	20.8%	20.6%	0.819	0.761
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, 2020

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	4,829	9,588		4,386	8,708
6/30/82-83	0	6,821	0.981	0	6,688
6/30/83-84	4,222	12,242	0.957	4,041	11,717
6/30/84-85	0	19,530	0.937	0	18,296
6/30/85-86	8,139	36,804	0.918	7,471	33,783
6/30/86-87	10,483	36,838	0.900	9,434	33,150
6/30/87-88	26,814	77,219	0.883	23,664	68,149
6/30/88-89	59,177	97,707	0.873	51,647	85,274
6/30/89-90	75,096	118,666	0.861	64,657	102,170
6/30/90-91	79,118	115,108	0.848	67,110	97,638
6/30/91-92	71,452	100,112	0.835	59,659	83,589
6/30/92-93	71,826	98,856	0.821	59,002	81,206
6/30/93-94	92,107	125,097	0.805	74,168	100,733
6/30/94-95	94,077	122,257	0.803	75,507	98,125
6/30/95-96	87,507	109,347	0.797	69,730	87,134
6/30/96-97	130,452	159,552	0.789	102,941	125,905
6/30/97-98	106,031	130,581	0.780	82,713	101,864
6/30/98-99	155,454	186,184	0.770	119,730	143,399
6/30/99-00	212,510	284,770	0.763	162,190	217,339
6/30/00-01	240,850	312,510	0.761	183,340	237,889
6/30/01-02	246,551	315,571	0.757	186,537	238,756
6/30/02-03	334,583	408,623	0.771	258,038	315,140
6/30/03-04	368,518	443,798	0.769	283,379	341,267
6/30/04-05	518,691	701,691	0.768	398,196	538,685
6/30/05-06	526,833	692,833	0.776	408,839	537,661
6/30/06-07	667,662	1,043,662	0.766	511,535	799,611
6/30/07-08	859,474	968,474	0.766	658,676	742,211
6/30/08-09	934,429	1,189,429	0.758	708,417	901,740
6/30/09-10	1,110,747	1,233,747	0.736	817,577	908,113
6/30/10-11	1,145,459	1,480,459	0.718	822,858	1,063,510
6/30/11-12	1,264,878	1,563,878	0.710	898,085	1,110,380
6/30/12-13	1,330,932	1,483,932	0.702	934,188	1,041,579
6/30/13-14	1,637,026	1,997,026	0.697	1,141,646	1,392,706
6/30/14-15	1,957,392	2,271,392	0.697	1,364,959	1,583,922
6/30/15-16	2,121,525	2,661,525	0.699	1,482,709	1,860,109
6/30/16-17	2,350,939	2,822,939	0.708	1,663,433	1,997,402
6/30/17-18	2,833,364	3,333,364	0.727	2,060,677	2,424,322
6/30/18-19	3,941,325	4,286,325	0.762	3,003,387	3,266,285
6/30/19-20	6,200,174	6,683,174	0.819	5,079,555	5,475,258
Total	31,880,648	37,741,632		23,904,082	28,281,409
			(7) Total Discount Factor:	0.750	0.749

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	4,829	9,588
(9) Projected Number of Years:	5	5
(10) Projected Paid Loss per Year:	966	1,918
(11) Discounted Value at 4%:	4,386	8,708

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, 2020

All Other - Clusters 5-17 & 95
Medical

Outstanding Loss Discounting - 6.0%

(1)	(2)	(3)	(4)	(5)	(6)
	Undiscounted Outstanding Losses		Discount Factor at	Discounted Outstanding Losses	
Accident Year	(Low)	(High)	6.0%	(Low)	(High)
All Prior Yrs	4,829	9,588		4,191	8,320
6/30/82-83	0	6,821	0.971	0	6,625
6/30/83-84	4,222	12,242	0.937	3,956	11,472
6/30/84-85	0	19,530	0.908	0	17,732
6/30/85-86	8,139	36,804	0.881	7,172	32,431
6/30/86-87	10,483	36,838	0.856	8,974	31,533
6/30/87-88	26,814	77,219	0.832	22,310	64,250
6/30/88-89	59,177	97,707	0.819	48,469	80,027
6/30/89-90	75,096	118,666	0.803	60,326	95,327
6/30/90-91	79,118	115,108	0.786	62,211	90,510
6/30/91-92	71,452	100,112	0.769	54,926	76,957
6/30/92-93	71,826	98,856	0.751	53,939	74,238
6/30/93-94	92,107	125,097	0.730	67,206	91,277
6/30/94-95	94,077	122,257	0.727	68,415	88,908
6/30/95-96	87,507	109,347	0.720	63,036	78,769
6/30/96-97	130,452	159,552	0.711	92,719	113,402
6/30/97-98	106,031	130,581	0.699	74,161	91,332
6/30/98-99	155,454	186,184	0.687	106,800	127,913
6/30/99-00	212,510	284,770	0.679	144,211	193,248
6/30/00-01	240,850	312,510	0.677	163,036	211,543
6/30/01-02	246,551	315,571	0.672	165,578	211,930
6/30/02-03	334,583	408,623	0.692	231,506	282,736
6/30/03-04	368,518	443,798	0.689	254,013	305,902
6/30/04-05	518,691	701,691	0.688	356,827	482,719
6/30/05-06	526,833	692,833	0.699	368,434	484,524
6/30/06-07	667,662	1,043,662	0.686	458,216	716,265
6/30/07-08	859,474	968,474	0.687	590,340	665,208
6/30/08-09	934,429	1,189,429	0.676	631,817	804,236
6/30/09-10	1,110,747	1,233,747	0.647	718,960	798,575
6/30/10-11	1,145,459	1,480,459	0.625	715,532	924,796
6/30/11-12	1,264,878	1,563,878	0.615	777,546	961,348
6/30/12-13	1,330,932	1,483,932	0.605	805,408	897,995
6/30/13-14	1,637,026	1,997,026	0.600	982,773	1,198,895
6/30/14-15	1,957,392	2,271,392	0.601	1,177,024	1,365,839
6/30/15-16	2,121,525	2,661,525	0.604	1,281,941	1,608,238
6/30/16-17	2,350,939	2,822,939	0.616	1,448,839	1,739,723
6/30/17-18	2,833,364	3,333,364	0.642	1,820,033	2,141,212
6/30/18-19	3,941,325	4,286,325	0.687	2,709,418	2,946,585
6/30/19-20	6,200,174	6,683,174	0.761	4,719,703	5,087,372
Total	31,880,648	37,741,632		21,319,967	25,209,913

	(Low)	(High)
(7) Total Discount Factor:	0.669	0.668

	Discount Calculation for All Prior Years (Low)	(High)
(8) Estimated Total Reserve:	4,829	9,588
(9) Projected Number of Years:	5	5
(10) Projected Paid Loss per Year:	966	1,918
(11) Discounted Value at 6%:	4,191	8,320

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, 2020

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)
		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)	7/1/19-20	7/1/19-20	Paid Counts	(Low)	(High)	7/1/19-20	7/1/19-20	Total Paid	(Low)	(High)	($000)	($000)	Total Payroll	(Low)	(High)	(Low)	(High)	(Low)	(High)
All Prior Yrs	3,058,786	3,063,616	3,068,374	4,829	9,588	2					564								314	624	314	624	4,515	8,964
6/30/82-83	512,140	512,140	518,961	0	6,821	0					0								0	444	0	444	0	6,377
6/30/83-84	797,778	802,000	810,020	4,222	12,242	0					0								275	797	92	266	4,130	11,976
6/30/84-85	1,123,956	1,123,956	1,143,486	0	19,530	0					0								0	1,271	0	424	0	19,106
6/30/85-86	1,893,306	1,901,445	1,930,110	8,139	36,804	0					0								530	2,395	177	798	7,963	36,006
6/30/86-87	1,737,732	1,748,215	1,774,570	10,483	36,838	2					7,672								682	2,398	227	799	10,256	36,039
6/30/87-88	3,249,721	3,276,535	3,326,940	26,814	77,219	3					15,158								1,745	5,026	582	1,675	26,232	75,543
6/30/88-89	3,591,823	3,651,000	3,689,530	59,177	97,707	4	1	25.0%	14,794	24,427	10,360	3,000	29.0%	17,136	28,293				3,852	6,359	11,927	19,693	47,250	78,014
6/30/89-90	3,877,904	3,953,000	3,996,570	75,096	118,666	4					3,647								4,888	7,723	1,629	2,574	73,467	116,092
6/30/90-91	3,519,882	3,599,000	3,634,990	79,118	115,108	7	1	14.3%	11,303	16,444	8,044	840	10.4%	8,262	12,020				5,149	7,492	8,238	11,985	70,880	103,123
6/30/91-92	2,794,548	2,866,000	2,894,660	71,452	100,112	3					4,259								4,651	6,516	1,550	2,172	69,902	97,940
6/30/92-93	2,530,174	2,602,000	2,629,030	71,826	98,856	3					10,920								4,675	6,434	1,558	2,145	70,267	96,711
6/30/93-94	3,004,893	3,097,000	3,129,990	92,107	125,097	6	2	33.3%	30,702	41,699	23,404	7,745	33.1%	30,480	41,397				5,995	8,142	5,995	8,142	86,112	116,955
6/30/94-95	2,622,923	2,717,000	2,745,180	94,077	122,257	6	1	16.7%	15,680	20,376	26,069	3,426	13.1%	12,363	16,067				6,123	7,957	11,389	14,800	82,688	107,457
6/30/95-96	2,096,493	2,184,000	2,205,840	87,507	109,347	2					4,298								5,695	7,117	1,898	2,372	85,609	106,975
6/30/96-97	2,779,548	2,910,000	2,939,100	130,452	159,552	4					3,421								8,491	10,385	4,245	5,192	126,207	154,360
6/30/97-98	2,045,969	2,152,000	2,176,550	106,031	130,581	3					8,898					1,917,994	137,500	7.2%	7,601	9,361	7,601	9,361	98,429	121,219
6/30/98-99	2,715,546	2,871,000	2,901,730	155,454	186,184	6					55,461					2,081,524	136,688	6.6%	10,208	12,226	5,104	6,113	150,349	180,070
6/30/99-00	3,349,490	3,562,000	3,634,260	212,510	284,770	10	2	20.0%	42,502	56,954	65,022	20,067	30.9%	65,586	87,888	2,207,243	137,892	6.2%	13,276	17,790	13,276	17,790	199,234	266,980
6/30/00-01	3,342,150	3,583,000	3,654,660	240,850	312,510	6	1	16.7%	40,142	52,085	75,526	213	0.3%	681	883	2,201,008	145,149	6.6%	15,883	20,609	11,822	15,339	229,028	297,171
6/30/01-02	3,051,449	3,298,000	3,367,020	246,551	315,571	11					68,153					2,292,592	140,223	6.1%	15,080	19,301	5,027	6,434	241,524	309,137
6/30/02-03	3,367,417	3,702,000	3,776,040	334,583	408,623	5	2	40.0%	133,833	163,449	35,585	13,624	38.3%	128,094	156,439	2,260,534	140,250	6.2%	20,759	25,352	77,296	94,401	257,287	314,222
6/30/03-04	3,242,482	3,611,000	3,686,280	368,518	443,798	12	1	8.3%	30,710	36,983	10,716	2,145	20.0%	73,760	88,828	2,255,942	137,408	6.1%	22,446	27,031	26,578	32,007	341,940	411,791
6/30/04-05	4,581,309	5,100,000	5,283,000	518,691	701,691	6	1	16.7%	86,449	116,949	47,098	6,080	12.9%	66,955	90,578	2,309,083	145,033	6.3%	32,579	44,073	61,994	83,866	456,697	617,825
6/30/05-06	3,573,167	4,100,000	4,266,000	526,833	692,833	10	1	10.0%	52,683	69,283	25,375	3,267	12.9%	67,829	89,201	2,480,693	156,390	6.3%	33,213	43,678	42,948	56,481	483,884	636,352
6/30/06-07	5,232,338	5,900,000	6,276,000	667,662	1,043,662	9	4	44.4%	296,738	463,850	55,392	47,404	85.6%	571,377	893,153	2,612,577	157,146	6.0%	40,160	62,776	40,160	62,776	627,502	980,886
6/30/07-08	4,140,526	5,000,000	5,109,000	859,474	968,474	16	2	12.5%	107,434	121,059	68,868	2,170	3.2%	27,087	30,522	2,783,717	168,663	6.1%	52,075	58,679	79,754	89,869	779,720	878,605
6/30/08-09	4,465,571	5,400,000	5,655,000	934,429	1,189,429	9	2	22.2%	207,651	264,318	15,543	1,100	7.1%	66,125	84,170	2,750,907	180,456	6.6%	61,297	78,025	134,474	171,171	799,955	1,018,258
6/30/09-10	4,489,253	5,600,000	5,723,000	1,110,747	1,233,747	12	1	8.3%	92,562	102,812	24,039	11,624	48.4%	537,107	596,585	2,806,048	203,138	7.2%	80,410	89,314	86,486	96,063	1,024,261	1,137,684
6/30/10-11	5,154,541	6,300,000	6,635,000	1,145,459	1,480,459	17					41,641					2,942,638	196,775	6.7%	76,597	98,999	38,299	49,499	1,107,161	1,430,960
6/30/11-12	5,035,122	6,300,000	6,599,000	1,264,878	1,563,878	26	2	7.7%	97,298	120,298	38,222	1,935	5.1%	64,036	79,173	3,006,849	207,250	6.9%	87,183	107,792	82,839	102,421	1,182,039	1,461,457
6/30/12-13	4,369,068	5,700,000	5,853,000	1,330,932	1,483,932	26	1	3.8%	51,190	57,074	84,335	455	0.5%	7,175	8,000	3,138,905	218,884	7.0%	92,810	103,479	50,392	56,184	1,280,541	1,427,748
6/30/13-14	5,062,974	6,700,000	7,060,000	1,637,026	1,997,026	36	8	22.2%	363,784	443,784	130,012	31,390	24.1%	395,240	482,158	3,311,947	231,765	7.0%	114,557	139,749	202,875	247,489	1,434,151	1,749,537
6/30/14-15	5,042,608	7,000,000	7,314,000	1,957,392	2,271,392	44	3	6.8%	133,459	154,868	130,263	5,648	4.3%	84,876	98,491	3,511,622	252,444	7.2%	140,713	163,286	130,198	151,084	1,827,194	2,120,308
6/30/15-16	5,378,475	7,500,000	8,040,000	2,121,525	2,661,525	70	7	10.0%	212,153	266,153	267,808	62,586	23.4%	495,797	621,994	3,491,558	239,716	6.9%	145,655	182,730	145,655	182,730	1,975,870	2,478,796
6/30/16-17	4,849,061	7,200,000	7,672,000	2,350,939	2,822,939	88	11	12.5%	293,867	352,867	280,252	29,883	10.7%	250,674	301,002	3,338,327	202,091	6.1%	142,318	170,891	142,318	170,891	2,208,621	2,652,048
6/30/17-18	4,466,636	7,300,000	7,800,000	2,833,364	3,333,364	170	15	8.8%	250,003	294,120	654,252	97,760	14.9%	423,367	498,078	3,401,479	204,258	6.0%	170,143	200,168	170,143	200,168	2,663,222	3,133,197
6/30/18-19	3,158,675	7,100,000	7,445,000	3,941,325	4,286,325	523	52	9.9%	391,872	426,174	1,578,014	353,960	22.4%	884,067	961,453	3,573,725	213,686	6.0%	235,666	256,295	235,666	256,295	3,705,659	4,030,030
6/30/19-20	1,399,826	7,600,000	8,083,000	6,200,174	6,683,174	792	64	8.1%	501,024	540,054	1,399,826	157,871	11.3%	699,250	753,722	3,752,730	247,944	6.6%	409,647	441,559	409,647	441,559	5,790,527	6,241,615
Total	130,705,259	162,585,907	168,446,891	31,880,648	37,741,632	1,953	185	9.5%	3,457,832	4,206,080	5,278,114	864,192	16.4%	4,977,324	6,020,095						2,250,374	2,674,099	29,630,274	35,067,533

Sel. FY97 & Prior 6.51%

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, 2019

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)
		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)	7/1/18-19	7/1/18-19	Paid Counts	(Low)	(High)	7/1/18-19	7/1/18-19	Total Paid	(Low)	(High)	($000)	($000)	Total Payroll	(Low)	(High)	(Low)	(High)	(Low)	(High)
All Prior Yrs	3,058,223	3,064,856	3,077,220	6,634	18,998	2					371								431	1,236	431	1,236	6,202	17,762
6/30/82-83	512,140	512,140	519,478	0	7,338	0					0								0	477	0	477	0	6,861
6/30/83-84	797,778	803,000	810,827	5,222	13,049	0					0								340	849	113	283	5,109	12,766
6/30/84-85	1,123,956	1,123,956	1,144,626	0	20,669	0					0								0	1,344	0	448	0	20,221
6/30/85-86	1,893,306	1,903,435	1,932,130	10,129	38,824	1					101								659	2,525	220	842	9,910	37,982
6/30/86-87	1,730,059	1,742,245	1,768,510	12,186	38,451	1					5,393								793	2,501	264	834	11,921	37,617
6/30/87-88	3,234,564	3,267,580	3,318,860	33,016	84,296	5					21,308								2,147	5,483	716	1,828	32,301	82,469
6/30/88-89	3,581,462	3,647,000	3,686,500	65,538	105,038	1					805								4,263	6,832	1,421	2,277	64,117	102,760
6/30/89-90	3,874,257	3,957,000	4,000,610	82,743	126,353	4					6,462								5,382	8,218	1,794	2,739	80,949	123,614
6/30/90-91	3,511,838	3,598,000	3,633,980	86,162	122,142	5					6,101								5,604	7,944	1,868	2,648	84,294	119,494
6/30/91-92	2,790,289	2,867,000	2,895,670	76,711	105,381	3					1,130								4,989	6,854	1,663	2,285	75,047	103,096
6/30/92-93	2,519,254	2,595,000	2,620,950	75,746	101,696	3					7,099								4,927	6,614	1,642	2,205	74,104	99,491
6/30/93-94	2,981,489	3,085,000	3,117,870	103,511	136,381	6	2	33.3%	34,504	45,460	18,936	5,369	28.4%	29,349	38,669				6,732	8,870	6,732	8,870	96,778	127,510
6/30/94-95	2,596,854	2,701,000	2,729,020	104,146	132,166	8	1	12.5%	13,018	16,521	26,367	3,099	11.8%	12,240	15,534				6,774	8,596	10,677	13,550	93,469	118,616
6/30/95-96	2,092,195	2,188,000	2,209,880	95,805	117,685	2					4,247								6,231	7,654	2,077	2,551	93,728	115,133
6/30/96-97	2,776,128	2,917,000	2,947,180	140,872	171,052	4					5,380								9,163	11,125	4,581	5,563	136,291	165,490
6/30/97-98	2,037,072	2,151,000	2,177,560	113,928	140,488	3					6,766					1,917,994	137,500	7.2%	8,167	10,072	8,167	10,072	105,761	130,417
6/30/98-99	2,660,086	2,826,000	2,857,290	165,914	197,204	8					44,132					2,081,524	136,688	6.6%	10,895	12,950	5,448	6,475	160,467	190,729
6/30/99-00	3,284,468	3,518,000	3,589,380	233,532	304,912	10	2	20.0%	46,706	60,982	97,836	18,487	18.9%	44,128	57,616	2,207,243	137,892	6.2%	14,589	19,049	14,589	19,049	218,943	285,863
6/30/00-01	3,266,624	3,526,000	3,598,560	259,376	331,936	7	2	28.6%	74,107	94,839	84,446	2,055	2.4%	6,313	8,078	2,201,008	145,149	6.6%	17,105	21,890	18,642	23,857	240,734	308,079
6/30/01-02	2,983,296	3,262,000	3,334,380	278,704	351,084	11					43,314					2,292,592	140,223	6.1%	17,047	21,474	5,682	7,158	273,021	343,926
6/30/02-03	3,331,832	3,691,000	3,768,900	359,168	437,068	7	1	14.3%	51,310	62,438	42,502	13,999	32.9%	118,305	143,964	2,260,534	140,250	6.2%	22,284	27,117	36,797	44,778	322,371	392,291
6/30/03-04	3,231,766	3,642,000	3,720,960	410,234	489,194	15	1	6.7%	27,349	32,613	55,883	383	0.7%	2,812	3,353	2,255,942	137,408	6.1%	24,987	29,796	26,168	31,205	384,066	457,989
6/30/04-05	4,534,211	5,100,000	5,366,000	565,789	831,789	9	1	11.1%	62,865	92,421	52,404	1,534	2.9%	16,558	24,342	2,309,083	145,033	6.3%	35,537	52,244	38,320	56,336	527,469	775,453
6/30/05-06	3,547,792	4,200,000	4,359,000	652,208	811,208	18	1	5.6%	36,234	45,067	32,719	68	0.2%	1,355	1,686	2,480,693	156,390	6.3%	41,117	51,141	38,675	48,104	613,532	763,104
6/30/06-07	5,176,947	6,000,000	6,374,000	823,053	1,197,053	13	5	38.5%	316,559	460,405	75,995	60,933	80.2%	659,927	959,801	2,612,577	157,146	6.0%	49,506	72,002	49,506	72,002	773,547	1,125,051
6/30/07-08	4,071,658	5,000,000	5,208,000	928,342	1,136,342	12					22,902					2,783,717	168,663	6.1%	56,247	68,850	28,124	34,425	900,218	1,101,917
6/30/08-09	4,450,028	5,500,000	5,693,000	1,049,972	1,242,972	17	2	11.8%	123,526	146,232	42,844	1,400	3.3%	34,305	40,611	2,750,907	180,456	6.6%	68,877	81,537	96,201	113,885	953,771	1,129,087
6/30/09-10	4,465,213	5,600,000	5,825,000	1,134,787	1,359,787	16	1	6.3%	70,924	84,987	123,163	10,585	8.6%	97,522	116,859	2,806,048	203,138	7.2%	82,150	98,439	76,537	91,713	1,058,249	1,268,074
6/30/10-11	5,112,900	6,400,000	6,734,000	1,287,100	1,621,100	26	2	7.7%	99,008	124,700	73,310	539	0.7%	9,468	11,925	2,942,638	196,775	6.7%	86,069	108,403	92,538	116,552	1,194,562	1,504,549
6/30/11-12	4,996,900	6,500,000	6,732,000	1,503,100	1,735,100	30	4	13.3%	200,413	231,347	82,226	1,098	1.3%	20,072	23,171	3,006,849	207,250	6.9%	103,603	119,594	108,030	124,704	1,395,071	1,610,397
6/30/12-13	4,284,733	5,700,000	6,048,000	1,415,267	1,763,267	30	2	6.7%	94,351	117,551	108,054	472	0.4%	6,179	7,698	3,138,905	218,884	7.0%	98,690	122,957	66,407	82,736	1,348,860	1,680,531
6/30/13-14	4,932,962	6,800,000	7,266,000	1,867,038	2,333,038	46	7	15.2%	284,114	355,028	162,484	44,898	27.6%	515,904	644,671	3,311,947	231,765	7.0%	130,652	163,262	220,438	275,458	1,646,600	2,057,580
6/30/14-15	4,912,345	7,100,000	7,606,000	2,187,655	2,693,655	68	6	8.8%	193,028	237,675	172,348	30,926	17.9%	392,548	483,344	3,511,622	252,444	7.2%	157,266	193,642	202,440	249,264	1,985,214	2,444,390
6/30/15-16	5,110,667	7,600,000	8,153,000	2,489,333	3,042,333	118	10	8.5%	210,960	257,825	403,020	17,928	4.4%	110,735	135,334	3,491,558	239,716	6.9%	170,908	208,874	170,908	208,874	2,318,426	2,833,459
6/30/16-17	4,568,808	7,400,000	8,075,000	2,831,192	3,506,192	164	18	11.0%	310,741	384,826	780,471	79,337	10.2%	287,798	356,413	3,338,327	202,091	6.1%	171,391	212,253	171,391	212,253	2,659,801	3,293,938
6/30/17-18	3,812,384	7,600,000	8,345,000	3,787,616	4,532,616	628	53	8.4%	319,655	382,530	2,019,316	187,927	9.3%	352,492	421,825	3,401,479	204,258	6.0%	227,445	272,182	227,445	272,182	3,560,171	4,260,434
6/30/18-19	1,580,661	7,900,000	8,423,000	6,319,339	6,842,339	870	72	8.3%	522,980	566,263	1,580,661	132,216	8.4%	528,587	572,334	3,573,725	213,686	6.0%	377,857	409,129	377,857	409,129	5,941,482	6,433,210
Total	125,427,145	156,988,212	163,667,342	31,561,067	38,240,196	2,171	193	8.9%	3,092,354	3,799,709	6,210,496	613,252	9.9%	3,246,598	4,067,227						2,114,512	2,558,844	29,446,556	35,681,352

Sel. FY97 & Prio 6.50%

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)

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(22) Selected judgementally based on (10), (15), (20)

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(24) = (5) - (22)

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