BWC Board of Directors

# Actuarial Committee Agenda

**William Green Building**
**September 25, 2008**
Level 2, Room 3
2:00 p.m. – 4:00 p.m.

## Call to Order

Chuck Bryan, Chairman

## Roll Call

Larry Rhodebeck, Scribe

## Approve Minutes of August 28, 2008 meeting

Chuck Bryan, Chairman

## Follow up from prior meetings

1. Actuarial Review of legislation
2. Reserve Requirements of other exclusive states
3. Benefit levels - Deloitte report comparisons

## New Business/Action Items

1. Audit of the Actuarial Reserve as of 6-30-2008
    a. Executive summary – replacement
    b. GASB 10 report – Oliver Wyman
    c. Alternative reserving methods report
2. Adjudicating Committee Policy review

## Discussion Items*

1. Public Employer Taxing District rate indication
2. Public Employer State Agency Rate Estimates
3. CAO Report
4. Committee calendar

## Adjourn

Chuck Bryan, Chairman

*Not all discussion items have materials included.

**Next Meeting: Thursday, October 30, 2008, 2:00 pm – 4:00 pm Level 2 Room 3**

# Appendix 1-Policy

## Override Policy

**Purpose/Benefit**

The Override Policy has been modified to ensure that any override or block to an individual employer's or group calculated experience modifier (EM), experience claim cost or claim reserve will be processed according to proper internal controls. The policy will ensure that overrides are made as directed by the source document, that proper authorization is obtained and that management is properly informed.

**Guiding Principles**

The term "override" refers to the process in which the individual employer's EM, claim cost or claim reserve is manually calculated and revised for rate making purposes outside of the established rate making process or rate adjustment guidelines. The override is usually associated with a deviation from the source system data or established rate calculation rules/laws used to generate the premium rate. Overrides are manually applied to the EM, experience claim cost or claim reserve for specific policy years or payroll periods. Overrides may result in financial impacts to employers and the state fund. It is very important that they are made with sound internal controls to assure integrity and compliance to applicable laws.

Employer premium rates are calculated by the rate making system based on actual payroll and claim losses, pursuant to OAC 4123-17-03. As the result of business or court decisions however it is sometimes necessary and wise to adjust an employer's EM, experience claim cost or claim reserve even when the controlling payroll and losses are accurately captured on the source systems, pursuant to ORC4123.34 (C) (or see Appendix) allowing the Administrator to determine the appropriate rates. It is also the policy of the Adjudication Unit to postpone collection of outstanding balance during the appeal process to the Adjudication Committee. Therefore the Override function can also be used to block or reverse the financial premium impact to an individual employer or a group plan during the administrative appeal (Adjudication) process. In the case of a block placed upon the individual employers EM or group rating EM, subsequent events that would normally cause a recalculation of the experience will be postponed as well until final adjudication of the protested issue as no legal authority exist to permanently perform blocks.

Overrides can be generated from various sources including: court orders, Administrator Designee/Adjudication orders, rate adjustment processes requiring an override pursuant to Ohio Administrative or Revised code, Executive decisions (not dictated by rules/laws, just deciding the final amount or rate) and system corrections.

**Policy**

Security profiles have been established in Rates & Payments to allow only Underwriters in the Rate Adjustment unit of the Actuarial Division to process manual overrides to employer's and group EMs. The Supervisor of Rate Adjustments will not be allowed to update EMs but will assign the work to underwriting staff.

Before an EM override is made the Supervisor of Rate Adjustments will assure the following information is captured to authorize an Underwriter to make the adjustment: requestor, reason for override, policy demographic information, policy year/periods affected, calculated EM, adjusted EM and authorizing signature(s). This information will then be permanently placed in the appropriate risk file.

Description of Override Types and Documentation Required for Approval:

The goal for the supporting documentation is to ensure that BWC establishes standard documentation protocols so that Executive Staff can expect to see the same supporting evidence based on the type of request.

- Court Orders:
  - Description: Involves court orders from a hearing or settlement of dispute
  - Documentation Required for Approval: Official Court Orders or Settlement Agreement approved by the court.

- Administrative Designee/Adjudication Committee Orders:
  - Description: Involves orders issued from either adjudicatory body as a result of the filing of an employer's dispute, pursuant toOAC 4123-14-06 . Executive Staff sign off of any override ordered through the adjudication process is for acknowledgement only, not approval. NOTE: Adjudicating Committee will also request that an override be performed to eliminate or reverse the financial impact of a rate adjustment to stop invoices from being generated during the appeal process. This is commonly used for group rating protests.
  - Documentation Required for Approval: Official order from the Adjudication Committee or the Administrators Designee. Documentation may also include any information included in the hearing process, including but not limited to: protest letters, statement of facts, monetary impact of override, and communication to employer/group administrator.

Executive Decision:

- Description: Involves a directive given by Executive Staff to override or revise the data to arrive at a determined outcome. This would include situations such as a determination after review that the EM is too high and BWC is collecting more premium than needed from the employer, a claim has questionable cost used in the experience or the MIRA reserve is found to be excessive for the type of injury or future liability of the claim, pursuant toORC 4123.34 . (or see Appendix)
- Documentation Required for Approval:
- Justification
- OAC or ORC citation, when applicable
- The specific issue or on what grounds they are protesting,
- The reason for BWC to grant override of calculated data (or what our obligation is) to do the override.
- All calculations and worksheets completed to arrive at the revised EM, claim cost or MIRA reserve amount and any document referring to the monetary impact of the override.
- A detailed explanation as to why the protest or issue was not directed to the adjudication process.
- If the issue has previous been addressed at the Adjudication level, the previous hearing orders and statement of facts must be included as documentation.

System Correction (Fix):

- Description: Occurs where the actual amount or percentage cannot be accurately displayed or used in the premium rate calculation due to system limitations. In most cases, the amount or percentage is calculated pursuant to rate making rules off line and verified for accuracy. This function is used primarily to resolve interface failures within the rate making system, such as the payroll suspension project or claim cost discrepancies.
- Documentation Required for Approval:
- Statement from IT analyst or system managers that override is necessary in lieu of any system enhancement or program change
- All calculations and worksheets completed to arrive at the revised EM, claim cost or MIRA reserve amount
- A detailed description of the issue or problem involving the systems

Rate Adjustment/Procedure Overrides:

- Description: Involves EM overrides as a result of the employer returning to the state fund or BWC granting the employer the right to use out of state experience in the calculation of the Ohio premium rates, pursuant to OAC 4123-17-03.1 and OAC 4123-19-05 respectively.
- Documentation Required for Approval:
- OAC or ORC citation

- All calculations and worksheets completed to arrive at the revised EM.

EM Block

- Description: Block occurs where an experience modifier for either an individual policy or group EM is blocked from being recalculated as a result of an event that has caused the policy/group to be set up for re-rate.
- Is primarily used in the appeal process to Adjudication as a result of the Adjudication policy to postpone any collection efforts on outstanding balances during the appeal process.
- Can also be used when a system error has been identified and BWC determines that there will be a financial impact due to the system error if the policy is re-rated.
- Is a temporary "work around" fix pending final resolution approval as no legal authority exist for a permanent Block.
- Documentation Required for Approval:
- A detailed explanation of the issue
- All calculations and worksheets completed to describe the potential financial impact to all parties if the policy/group was re-rated.
- Where large numbers of policies may be involved in a protest, a block may be the most efficient way to temporarily place balance adjustments in appeal or hold status pending final resolution of the issue.

NOTE: In addition to the items listed above under "Documentation Required for Approval", all override requests must be submitted on the override request form completed in its entirety by the Actuarial Division and have attached the documentation required for approval.

"Authorizing approvals or signatures" represents that each signature agrees with the need to override the data in question and authorizes the processing of the override. Each override type requires the following authorizing approvals:

- Court Orders: an official magistrate , however executive signatures will be obtained for acknowledgement purposes only
- Administrative Designee/Adjudicating Committee orders: official orders, however executive signatures will be obtained for acknowledgement purposes only
- Executive Decision: BWC Administrator, Chief of Customer Services, Chief Actuarial Officer and Director of Actuarial,
- System corrections: BWC Administrator, Chief Information Officer, Chief of Customer Services, Chief Actuarial Officer and Director of Actuarial

- Rate Adjustment Unit Override (pursuant to OAC or ORC): BWC Administrator, Chief of Customer Services, Chief Actuarial Officer and Director of Actuarial.

An IT report will be produced monthly that captures all EM overrides/blocks, experience claim cost adjustments and claim reserve overrides completed that month. The EM Override report will be sent to the Chief Actuarial Officer, Chief of Customer Services, Director of Actuarial, as well as made available to others as necessary especially those who requested the overrides. The report will be reconciled with the EM override activity log listing all approved requests and the updating Underwriter prepared by Rate Adjustment Unit each month.

**Customers Impacted:**

Internal

- Actuarial Division-Rate Adjustment Unit
- Executive Staff
- Internal Audit

External

- None

[DRAFT-8/28/08]

# ADJUDICATING COMMITTEE POLICY

R.C. 4123.291(C) provides that "[t]he bureau of workers' compensation board of directors, based upon recommendations of the workers' compensation actuarial committee, shall establish the policy for all adjudicating committee procedures, including, but not limited to, specific criteria for manual premium rate adjustment."

R.C. 4123.291 provides state fund employers the right to file a request, petition or protest from a BWC business unit decision that impacts the employer's premium or risk experience. The primary function of the Adjudicating Committee is to consider the employer's protest and determine whether BWC's initial decision was done in compliance with Ohio statute, rule and/or agency policy.

When an appeal or protest has been filed, the Adjudicating Committee will evaluate all the relevant facts, evidence, applicable law, Governor Strickland's Executive Order 2008-04S ("Implementing Common Sense Business Regulation), and BWC policy in its consideration of the premium or risk experience matter at issue. To the extent permitted by Ohio law, Executive Order 2008-04S, and BWC policy, the Adjudicating Committee may exercise its discretion in providing requested relief where extenuating circumstances exist for such relief. In determining whether extenuating circumstances exist, the Adjudicating Committee shall follow the same procedure as set forth in BWC policies relating to employer complaints on premium and risk experience matters.

There may be instances where an Adjudicating Committee order will require a manual premium rate adjustment to facilitate relief granted to an employer. A manual premium rate adjustment, also known as a manual override, is a deviation from the systematic rate calculation and occurs as a result of several events such as: system limitations or errors, rules requiring a manual calculation of the rate, decisions made by the courts, BWC adjudication committee hearing process or an executive decision. It is a process that involves manually updating an Experience Modifier (EM), Claim Cost or MIRA reserves that is not supported by the system or is not supported by the source system data.

In instances where a manual premium rate adjustment is required to facilitate relief granted to an employer, the Adjudicating Committee will immediately refer its order to the appropriate BWC business unit for further action consistent with the order. The Adjudicating Committee has no authority to independently process a manual premium adjustment. Upon referral, the appropriate BWC business unit and the BWC Actuarial Department must then follow the specific internal control procedures set forth in the BWC Override Policy to process the manual premium adjustment (see Appendix).

# Override Policy

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Employer premium rates are calculated by the rate making system based on actual payroll and claim losses, pursuant to OAC 4123-17-03. As the result of business or court decisions, however, it is sometimes necessary and appropriate to adjust an employer's EM, experience claim cost or claim reserve even when the controlling payroll and losses are accurately captured on the source systems, pursuant to ORC 4123.34 (C) (Appendix) allowing the Administrator to determine the appropriate rates. It is also the policy of the Adjudication Unit to postpone collection of outstanding balance during the appeal process to the Adjudication Committee. Therefore, the Override function can also be used to block or reverse the financial premium impact to an individual employer or a group plan during the administrative appeal (Adjudication) process. In the case of a block placed upon the individual employers EM or group rating EM, subsequent events that would normally cause a recalculation of the experience will also be postponed until final adjudication of the protested issue (note: permanent blocks are not authorized).

Overrides can be generated from various sources including: court orders, Administrator Designee/Adjudication orders, rate adjustment processes requiring an override pursuant to Ohio Administrative or Revised code, Executive decisions (not dictated by rules/laws, just deciding the final amount or rate) and system corrections.

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**Customers Impacted:**

Internal

- Actuarial Division-Rate Adjustment Unit
- Executive Staff
- Internal Audit

External

- None

**Appendix:**

**4123.34 Setting premium rates; Surplus Fund; basic rates and experience rating; premium payment security fund; premium discounts for employers using safety programs; premium rates for construction industry**

The administrator of workers' compensation, in the exercise of the powers and discretion conferred upon him in section 4123.29 of the Revised Code, shall fix and maintain, with the advice and consent of the workers' compensation oversight commission, for each class of occupation or industry, the lowest possible rates of premium consistent with the maintenance of a solvent state insurance fund and the creation and maintenance of a reasonable surplus, after the payment of legitimate claims for injury, occupational disease, and death that he authorizes to be paid from the state insurance fund for the benefit of injured, diseased, and the dependents of killed employees. In establishing rates, the administrator shall take into account the necessity of ensuring sufficient money is set aside in the premium payment security fund to cover any defaults in premium obligations. The administrator shall observe all of the following requirements in fixing the rates of premium for the risks of occupations or industries:

(A) He shall keep an accurate account of the money paid in premiums by each of the several classes of occupations or industries, and the losses on account of injuries, occupational disease, and death of employees thereof, and also keep an account of the money received from each individual employer and the amount of losses incurred against the state insurance fund on account of injuries, occupational disease, and death of the employees of the employer.

(B) Ten per cent of the money paid into the state insurance fund shall be set aside for the creation of a surplus until the surplus amounts to the sum of one hundred thousand dollars, after which time, whenever necessary in the judgment of the administrator to guarantee a solvent state insurance fund, a sum not exceeding five per cent of all the money paid into the state insurance fund shall be credited to the surplus fund. A revision of basic rates shall be made annually on the first day of July.

Notwithstanding any provision of the law to the contrary, one hundred eighty days after the effective date on which self-insuring employers first may elect under *division (D) of section 4121.66 of the Revised Code to directly pay for rehabilitation* expenses, the administrator shall calculate the deficit, if any, in the portion of surplus fund that is used for reimbursement to self-insuring employers for all expenses other than handicapped reimbursement under section 4123.343 of the Revised Code. Without regard to whether a self-insuring employer makes the election under division (D) of section 4121.66 of the Revised Code, the administrator shall assess all self-insuring employers the amount he determines necessary to reduce the deficit over a period not to exceed five years from the effective date of this amendment. After the initial assessment, the administrator, from time to time, may determine whether the surplus fund has such a deficit and may assess all self-insuring employers who participated in the portion of the surplus fund during the accrual of the deficit and who during that time period have not made the election under division (D) of section

4121.66 of the Revised Code the amount he determines necessary to reduce the deficit.

Revisions of basic rates shall be in accordance with the oldest four of the last five calendar years of the combined accident and occupational disease experience of the administrator in the administration of this chapter, as shown by the accounts kept as provided in this section; and the administrator shall adopt rules, with the advice and consent of the oversight commission, governing rate revisions, the object of which shall be to make an equitable distribution of losses among the several classes of occupation or industry, which rules shall be general in their application.

(C) The administrator may apply that form of rating system which he finds is best calculated to merit rate or individually rate the risk more equitably, predicated upon the basis of its individual industrial accident and occupational disease experience, and may encourage and stimulate accident prevention. The administrator shall develop fixed and equitable rules controlling the rating system, which rules shall conserve to each risk the basic principles of workers' compensation insurance.

(D) The administrator, from the money paid into the state insurance fund, shall set aside into an account of the state insurance fund titled a premium payment security fund sufficient money to pay for any premiums due from an employer and uncollected that are in excess of the employer's premium security deposit.

The fund shall be in the custody of the treasurer of state. All investment earnings of the fund shall be deposited in the fund. Disbursements from the fund shall be made by the bureau of workers' compensation upon order of the administrator to the state insurance fund. The use of the moneys held by the premium payment security fund is restricted to reimbursement to the state
insurance fund of premiums due and uncollected in excess of an employer's premium security deposit. The moneys constituting the premium payment security fund shall be maintained without regard to or reliance upon any other fund. This section does not prevent the deposit or investment of the premium payment security fund with any other fund created by this chapter, but the premium payment security fund is separate and distinct for every other purpose and a strict accounting thereof shall be maintained.

(E) The administrator may grant discounts on premium rates for employers who meet either of the following requirements:

(1) Have not incurred a compensable injury for one year or more and who maintain an employee safety committee or similar organization or make periodic safety inspections of the workplace.

(2) Successfully complete a loss prevention program prescribed by the superintendent of the division of safety and hygiene and conducted by the division or by any other person approved by the superintendent.

(F)(1) In determining the premium rates for the construction industry the administrator shall calculate the employers' premiums based upon the actual remuneration construction industry employees receive from construction industry employers, provided that the amount of remuneration the administrator uses in calculating the premiums shall not exceed an average weekly wage equal to one hundred fifty per cent of the statewide average weekly wage as defined in division (C) of section 4123.62 of the Revised Code.

(2) Division (F)(1) of this section shall not be construed as affecting the manner in which benefits to a claimant are awarded under this chapter.

(3) As used in division (F) of this section, "construction industry" includes any activity performed in connection with the erection, alteration, repair, replacement, renovation, installation, or demolition of any building, structure, highway, or bridge.

# EXAMPLES OF GOOD CAUSE TO GRANT RELIEF TO AN EMPLOYER

## GENERAL PROTESTS

Many employers' requests for relief may be granted if good cause exists to justify the relief being sought. Examples of good cause include:

- acts of nature such as tornado or flood, or a significant loss event such as a water line break or fire (such event must be causally related to employer's inability to act);
- notification of BWC matter not reaching the intended employer;
- BWC (or Attorney General Office) error;
- serious illness, injury or death of essential personnel;
- key personnel / owner called to active military duty.
- Fraudulent or illegal activity of employee (employer must demonstrate it initiated criminal and/or civil action against employee)

## 50/50 PREMIUM PAYMENT PLAN PROTESTS

For the 50/50 Premium Payment Plan, the Adjudicating Committee may grant relief if:

- The employer can show it mistakenly used the Ohio Business Gateway (OBG) to make payment to BWC. Such relief will only be granted one time for any employer.

## DRUG-FREE WORKPLACE PROGRAM PROTESTS

For the Drug-Free Workplace Program, the Adjudicating Committee may grant relief if:

- BWC failed to credit the employer for premium payment, which resulted in the *employer being placed inappropriately into lapsed status, leading to disapproval* of initial participation;
- BWC failed to properly calculate the number of days of lapsed coverage in the past 18 months prior to the start of the program year for which the employer has applied to participate;
- BWC failed to note that monies due the BWC (as shown on the uw400s) had not been certified to the Ohio Attorney General and inputted "not being current" to deny the employer initial participation;
- Employer documents proof of timely submission of U-140 (DFWP Application) and was not allowed into requested program year and employer shows that program is, or can be, in place within reasonable time.

The following **do not** constitute good cause for relief:

- Employer has been disapproved for participation initially due to failure to meet DFWP program eligibility requirements;
- Receiving "bad" advice from a drug-free vendor.
- Employer disqualified from DFWP including from Level 0/comparable program participation;
- Employer denied entry into DFWP due to the continuous participation rule which doesn't allow starting DFWP and obtaining a discount, then failing to meet program requirements resulting in disqualification or withdrawal and then requesting to start again in the program.
- Employer being denied a higher-level discount (and not being disqualified) for failure to meet the requirements associated with that particular program level (either Level 2 or Level 3).
- Employer denied a claim frequency and/or severity bonus based upon inaccurate information related to return to work dates that the employer was required to ensure was accurate.

## GROUP RATING PROTESTS

For group rating issues, the Adjudicating Committee may grant relief if:

- BWC charged one or more claims to the wrong policy;
- The Attorney General's Office applied payment to the wrong account;
- There is a legitimate homogeneity issue;
- There has been fraudulent or illegal activity, by a third party, that affects the group rating status of the employer;
- Where same issue appealed and granted for previous rating year and request is to apply to next rating year.

## ONE CLAIM PROGRAM PROTESTS

For the One Claim Program, relief may be granted for good cause if:

- Claims assigned to wrong risk;
- Claims originally allowed, now disallowed;
- Claim costs exceeding TLL due to payments made in error.

## PREMIUM DISCOUNT PROGRAM PLUS (PDF+) PROTESTS

For the PDP+, the Adjudicating Committee may grant relief if:

- BWC calculated cumulative lapses greater than 59 days within the last 18 months or 5 rating years when no lapse occurred or was previously adjudicated and corrected;
- Employer was denied participation due to BWC's belief that a monies owed balance was undisputed when in fact the balance was pending or currently disputed (including amounts due for Premium Discount);
- There is fraudulent or illegal activity by a third party;
- Where same issue appealed and granted for previous rating year and request is to apply to next rating year.

Good cause relief **cannot be** considered if:

- The employer has already participated in Premium Discount Program and is limited to three consecutive twelve month years;
- Once the employer uses and or completes its years of eligibility but hasn't been out of the program for two years is not eligible for the Premium Discount Program extension;
- While participating in the Premium Discount Program extension, the employer fails to meet both the claims frequency and claims severity objectives in OAC 4123-17-70 paragraphs (F)(6), (F)(7), and (F)(8), is not eligible to participate for the second year of the PDP+ extension;
- Except for BWC or clerical error, the employer disagrees with the number of claims used in the frequency and days missed used in the severity calculations in OAC 4123-17-70 paragraphs (F)(6), (F)(7), and (F)(8).

Note:

- To participate in the PDF+, the employer must be experience rated pursuant to rule 4123-17-03 of the Ohio OAC. The employer must have an Experience Modification (EM) of .90 percent or greater for the policy year of the program;
- The employer cannot participate in either group or retrospective rating in the same policy year as the Premium Discount Program;

## PROFESSIONAL EMPLOYER ORGANIZATION PROTESTS

For matters involving a Professional Employer Organization (PEO), if the employer can demonstrate that the manual classification necessary for proper reporting of payroll is not assigned to the PEO policy, the Adjudicating Committee may recognize this as good cause for relief.

## RETROACTIVE CANCELLATION DATE PROTESTS

For a Retroactive Cancellation Date matter, the Adjudicating Committee may grant relief if:

- The employer was unaware of the need to cancel its coverage, and allows coverage to lapse because the business is closed;
- BWC is notified of the closure of the business by the employer, but fails to properly record the closure.

## RETROSPECTIVE RATING PROGRAM PROTESTS

For the Retrospective Rating Program, the Adjudicating Committee may grant relief if:

- BWC calculates cumulative lapses >15 days within the last 5 rating years when no lapse occurred or was previously adjudicated and corrected;
- Employer was denied participation due to an undisputed monies owed balance when in fact the balance was pending or currently disputed (including amounts due for retrospective rating).

## SAFETY COUNCIL INCENTIVE PROGRAM PROTESTS

For Safety Council Incentives issues, the Adjudicating Committee may grant relief if:

- There was administrative error by either the safety council or BWC
- The employer claims to have enrolled in the Safety Council Incentive Program and can provide supporting documentation of enrollment.

For Safety Council Incentive Program issues, the following **are not** considered good cause for relief:

- Failure to attend the required number of meetings;
- Lapsed workers' compensation coverage;
- Failure to submit required semiannual reports by June 30;
- Failure to enroll by deadline date;
- Personnel changes for employer;
- Chief Executive Officer does not attend any sponsored safety council events;
- No actual payroll report available when Safety Council Incentive rebates are calculated;
- Employer's lack of knowledge of Safety Council Incentive Program requirements.

## SUPPLEMENTAL (Elective) COVERAGE PROTESTS

For Supplemental (Elective) Coverage issues, the Adjudicating Committee may grant relief if:

- The employer is requesting that it not carry supplemental coverage, and if this is the first time the employer has had coverage. In this instance, relief may be granted on a one-time basis if the employer can show that it did not intend to have elective coverage.
- The employer/owner is requesting that it be granted supplemental coverage on aretroactive basis, and it appears the employer had been reporting the owner's payroll in the premium reports under the mistaken belief that the employer had obtained coverage for the owner.

## PENALTY ABATEMENT PROTESTS

An employer may obtain Penalty Abatement relief if it has not previously been granted such relief more than once in the last five (5) years. In addition, Penalty Abatement relief can only be considered if the employer has submitted and reconciled with BWC all payroll reports for all prior reporting periods. Penalty Abatement relief may be granted for good cause if:

- BWC error has been corrected and the required payment has been posted to the policy eliminating a lapse in coverage.
- Employer has documented good cause or excusable neglect for late filing and/or payment and has not been granted penalty abatement twice in last 5 years.
- Employer is paying multiple payroll periods and seeking penalty relief and has not been granted relief more than twice in the last 5 years..

## RATE AND RESERVE PROTESTS

For Rate and Reserve issues, the following may be considered to determine whether good cause exists to grant relief:

- Catastrophic claim adjustment, especially the requirement concerning whether the injuries meet the PTD requirement;
- Whether an out- of- state EM should be adopted by Ohio for an employer new to Ohio's system when that employer is moving its operation to Ohio;
- Adjustments due to subrogation efforts;
- Reserves on a claim where there was a period of incarceration;
- Rate calculations for a self-insured employer that is returning to the State Insurance Fund.

## MISCELLANEOUS PROTESTS (No good cause relief)

When considering an Experience Combine protest, the following **do not** constitute good cause for relief:

- Successions accomplished under a lease agreement;
- Successions accomplished under a "lease-purchase" agreement;
- Successions accomplished through a "management contract" agreement.

When considering a Retrospective Rating Program protest, the following do not constitute good cause for relief:

- Failure to submit audited financial statements using Generally Accepted Accounting Principles (GAAP);
- Lack of knowledge of program rules and legal requirements;
- The employer was accepted and included on a group roster for the same policy year in which application for retrospective rating has been submitted;
- MIRA claim reserve claim predictions, medical, or compensation payments used for the experience rating calculation for retrospective rating plan minimum premium percentages; OR
- Premium based on reserves (the value of the MIRA reserve predictions on claims evaluated as of the end of the tenth year); OR
- Premium based on paid losses (compensation payments, including death and PTD, and medical payments made in covered claims).

When considering Audit Protests, Manual Classification Protests, and Premium Relief Requests, good cause relief is not applicable. Instead, the Adjudicating Committee will evaluate all the relevant facts, applicable law, and BWC policy to determine whether BWC properly applied the law or agency policy.

For paper work errors that an employer might make, BWC's policy is to provide a warning letter for the initial violation of a minor, procedural regulatory or paperwork violation. BWC will generally not impose a penalty for such violations unless the Administrator determines that: (1) the violation has the potential to cause serious harm to the public safety or interest; (2) the violation involves a person or business knowingly or willfully engaging in misconduct; or, (3) the violation is of a law concerning the assessment or collection of any premium, assessment, or debt to BWC.

6/30/08 AUDIT OF LOSS RESERVES

1. What are the procedures for verifying the accuracy of the historical payment patterns? Does the auditor review this? Do we have requirements similar to that for the NAIC opinion? (Page vii discussion)
   **The payments are given to the auditors.**

**Note: Deloitte is recommending that we require an actuarial opinion similar in form to the NAIC opinion for our reserves.**

**(See attached explanation of data quality procedures)**

2. I need an example of how you determine the constant persistency from 6 to 29 periods using the historical data. Why do we need to use a constant persistency factor- could not this distort the timing of the payments?
   **We calculate the constant persistency that is equal to the cumulative persistency using 18 years of 4-year average persistencies beginning with the 5.5-6.5 period. For example (a four year period), if the persistencies were 0.9, 0.7, 0.85, and 0.8 the calculation would be as follows:**

   **0.9*0.7*0.85*0.8 = (x)^4**
   **0.4284 = (x)^4**
   **x = 0.809**

   **We use the constant persistency to make use of the most data. The actual persistencies, on a development year to development year basis, do not necessarily always decline, so this is a way to get the average overall decline built in. It also provides more stable results from valuation to valuation.**

   **Comment: Another area of judgment where actuaries can differ. Even this methodology will not assure that the persistency rates decline, but it is more likely.**

3. For permanent total disability, how do we pick up the element of increased life expectancy? If there is increased life expectancy, the number of weeks of benefits should be increasing. Wouldn't the sole reliance on historical data tend to understate the reserve requirement? (page viii discussion)
   **The number of weeks of benefits is used as an exposure base. If mortality is decreasing, then the payments per weeks of benefits would increase. It would show up as an increase in the column of numbers for each age of development (Appendix B.12).**

   **Comment: We do not pick up future mortality until it shows up in the experience. There is a chance that the reserves are understated.**

4. The medical trend is stated as 9%. Do we need to adjust these factors for the upcoming changes in the medical fee schedules? (x)

**The assumptions can be changed to reflect known(or reasonably expected) changes in the future, such as implementation of medical fee schedules.**

5. Is there an advantage to using the paid losses per lost time claim? (p.2) We could use just the paid losses- that would include consideration of the number of claims as well as the amount of paid losses per claim.
   **Because we are comparing different accident years, we use lost time claims as an index or equalizer.**

   **AY 2004 + AY 2003 – average cost per injury – applies to appl basis.**

6. In an earlier answer you indicated you had selected an age of 42 years as the average claimant age- is there any basis for the selection of that age (p.3)? Once selected which mortality rate do we use?
   **Average Age is based on analysis of lost time claims from 2001-2007. Age of accident year determining the current mortality factor.**

   **Methodology**
   **Comment: Judgment area.**

7. What are the "indexed persistency assumptions" as opposed to "unindexed"? (p. 3)
   **Indexed adjusts the payments using the medical component of CPI.**

8. How exactly does the inflation rate assumption affect the overall calculation? For example, we are selecting 9% for all fiscal years. This is the sort of assumption that the Actuarial Committee will discuss when discussing reserves.

   **We can give you the impact of changing inflation assumptions.**

   **Comment: This produces a feel for the effect.**

9. Is there anything different about the other categories of providers for medical payments on compensation-physicians, pharmacies, chiropractors, rehabilitation, and health-other, medical only? I can envision pharmacy being different due to the pharmacy benefit managers- there can be assumptions about reductions in cost due to renegotiation of the pharmacy benefit manager contracts or rebates. Do we have any different assumptions on pharmacy benefit managers?
   **We have not varied assumptions by provider type.**

   Comment: We need to have presented the different trends by provider type- I thought the trend was 9% regardless of the provider type.

10. TT and PTD: How do differences between the prior audit and the current audit factor into the current year projections? (p. 65)
    **The most recent payments are included in the development patterns, which**

**will result in new reserves and new expected payments that are different than in the prior analysis.**

**Comment: An area of potential judgment.**

11. What does the term "profile of relationships by age of development" mean? (p.63)
**Profile refers to the average medical cost or average TT cost per ultimate lost time claim or beneficiary level, as it relates or compares to the most recent accident year at the next age of development during the same calendar period.**

12. PTD: Is it possible that the reduction in PTD awards will later be associated with an unusual increase in later years? For example, the IC may be harder on granting PTD initially but as the claim develops it becomes a PTD.
**It may be possible.**

**Comment: This area deserves further analysis and is another potential area of inadequacy.**

13. Do we do any checking to be sure our average benefits correspond to what is actually being paid? (p.64)
**We propose to look at individual claim files to determine the relationship.**

**Comment: There should be validity checking to compare assumed to actual.**

14. TT: Is this the same methodology as applied in medical?
**Somewhat similar method.**

15. Appendix B7: We need specific citations as to the source on the footnotes- e.g. the report name, the date, and so on. I want the committee to become familiar with what external data we are using and the protocol for assuring it is correct. We may ask for these reports to be provided to us and discuss with the preparer of the report any weaknesses it has and whether it is being used correctly in the reserve study.
**Provided by BWC in chart form with the exception of columns 5, 6, and 7.**

**Comment: Separate studies are available.**

16. Appendix B8: How did we get "prior to 1977?"
**We use annuity factors back to 1952 and a prior to 1952 to calculate prior to 1977.**

17. How is the decreasing mortality taken into account?
    **We have not made any explicit adjustment.**

    **Comment: Decreasing mortality can be an important factor in PTD and PPD. It may be so significant as to affect the adequacy of reserves.**

18. Appendix B9: What support is there for the assumption that 25% of claimants are not receiving social security? Does $439.79 match the average benefit actually being received by claimants for accident year 2007?
    **This was based on a prior analysis. It has not been updated recently. We will need to look at the averages from 2007 in order to compare.**

19. Do we have any way of verifying that year of injury equals year of death (p. 80)? What effect would it have if year of death were one year later than year of injury?
    **Year of injury does not equal year of death. Our methodology looks at payment patterns for all but the first accident year, where there is little data available. As can be seen, the annual payments for death benefits increase through the first 3 – 4 years, and periodically throughout the development triangles.**

    **It is used to predict the payments from 0.5 to 1.5 years of development, and then the development factors from Appendix C.3 are used. We use the latest 5 accident years indexed payments (appendix C. 4) average times the composite factor. It is using a consistent measure from those prior accident years.**

20. What are the survivor benefits available to dependents of fatals? Do we have any need of using remarriage tables, and so on?
    **The mortality table contemplates remarriage, etc.**

    **Comment: The 2002 mortality study should be examined and the Committee should understand the assumptions in that study as well as the reserve study.**

21. Why are we smoothing for the 2nd through the 25th year of development- what is the advantage of using smoothed factors (p. 81)? Same question applies to other places where we have used smoothed factors.
    **Some of the averages are greater than 1.0 so we are removing the year to year volatility.**

    **Comment: Actuarial judgment. We would get different results if we did not use smoothing.**

22. Appendix C5: Where do we derive the payroll figure? If the payroll is not derived from WC sources, is there a potential source of error since there is some uncovered payroll indicated in many studies?
**Provided by the BWC.**

**Comment: We should provide the statistics from which we get the payroll data.**

23. The Lump Sum Settlement amount seems to result in a deficient reserve. (p. 90) What changes should we make in the methodology?
**We have selected the most recent (highest) development factor in many cases. An alternative is to do a regression and select factors that are higher than in the past. We have not provided an offset to other benefit types to account for the settlements. Our thought is that the other benefits may be too high because the reduction in payments is somewhat lagging the LSS benefit.**

**Comment: This is a possible area of redundancy. The committee needs an explanation of how the Lump Sum Settlements are calculated.**

24. Where is the tail factor determined for injury years prior to 1973 (p.91)?
**We use the mortality factor assumption for payments after 1973 or 30.5 years of development.**

25. Do we pay the SAWW to permanent partial claimants despite the actual wage? What about the morale hazard? (p.92)
**Yes**

26. How do we go about grinding Supreme Court decisions into the estimates? (p. 92)
**The TP change occurred in 1988, and is now in the experience.**

27. When did the new TP benefit go into effect- what years have mixed experience? (p. 93)
**1988.**

28. When did the Lump Sum settlement program go into effect (p.93)?
**There has always been a LSS program. The amount of settlements has increased in the past 3 years. However, there was also a significant amount of increased activity during the 1996/1997 time frame, as can be seen in the increase development factors for that time period.**

29. When did the transfer to BWC of Living Maintenance occur? (p.94)

**HP 222**

30. Why does the persistency method better reflect the relationship between TT and LM (p.94)?
**Because it is a partial replacement or offset to TT, the overall pattern would be similar.**

31. Can the reduction in PTD as a result of receiving LSA payments be affected by the change in interest rates? For example, in 2005 and 2006 the interest rate was 5.25% and that figure was used to calculate the present value of the PTD benefit. In 2007 the interest rate is 5% that would yield a different present value than the 5.25%? Does this have any effect on the reduction in PTD payments? (p. 94)

**It could have an affect. We continue to investigate.**

32. Why don't we reduce the reserve for Additional Awards by the amounts recoverable from the company when we set up the reserve? (p. 95)
**Would this be an offsetting item on the balance sheet?**

**VSSR**

33. Page xxiii: What are the following adjustments: unbilled premium receivable; retrospective premium receivable? Why are these amounts used to adjust the reserves rather than carried as separate amounts? - **The amounts are reflected on the balance sheet as full reserve items. However, the BWC carries a preliminary receivable/offset the amounts shown in our summary. If our reserve is higher or lower than this amount, the receivable will need to be adjusted.**

**34.** The method for determining unallocated loss adjustment expense seems unsophisticated. It is to use 50% of the paid ratio. The report suggests a time study on the loss adjustment process. Will BWC conduct such a study? - **Question should be answered by BWC.**

35. Why do the various charts go back to only 1995? The actual calculations go back to before 1977 for the complete development period. - **All data is not available for older time periods. Cumulative figures by type are not available prior to 1994. Everything available beginning 1994. LSA not available 1993, looks like Medical not available beginning 1991.**

**36.** Exhibit 4, page 6: This exhibit provides good summary exhibits. However, the medical percentage of benefits is as high as it has ever been. Is there a way to control the medical percentage? Is there any information from the exhibits that will help us figure out how to control the medical inflation rate? **According to NCCI, closed claim medical severity over a recent 6 year period has**

**increased 73%, (approximately 9.5% per year). Thy have identified the cost drivers as the following:**

a. **Change in diagnosis mix 15%**
b. **Increase due to number of treatements-38%**
c. **Price and other factors-20%**

**BWC could conduct analyses and studies similar to this.**

37. Exhibit 4, page 10: Why is the average weekly wage the same for PA and PEC? – **We have not been provided this information separately. We are using a statewide average wage. If available, it could be incorporated.**

38. Page 3: What is the theoretical mortality rate? **For each accident year, we calculate a theoretical mortality at the current evaluation. We assume that the average age of a claimant is 42 year at age of injury. For an accident year 30 years old, we add 30 the age of 42 to estimate the average age of a claimant to be 72. For that accident year, we would use the expected mortality of a 72 year old for the calculation.**

39. Page 80: what is the source of the average death benefit-statutory or experience? **Based on statutory benefits.**

40. Page 89: How do the Lump Sum Settlements work? Who determined the amount and what does it relieve the Bureau of paying? How is a claim treated in terms of being an open or a closed claim once a lump sum settlement is made? **BWC determines LSS amounts. Relieves future benefits for claim type settlement, often PTD awards. We do not use open or closed claims; we are only provided reported claims.**

41. Page 434: What is the ratio of loss adjustment expense reserves to loss reserves? How does this compare to industry figures? The ratio of paid to paid is 14%. Why is the reserve calculated based on 7%? **The 14% ratio represents payments for current year claims as well as older claims. We have made an assumption that 50% prior are open claims. We have requested that a study be performed to validate the assumption.** If we are assuming the usual actuarial assumption that 50% of ultimate loss adjustment expense is paid upon the claim being opened and 50% upon it being closed, is there any support for that assumption?

42. Page 434: What is the "assessment income"? **Assessment income for the Administrative Cost Fund represents assessments earned from charges to employers from assessments specifically for the administrative operations of BWC and IC. (Barb Ingram)**

43. Page 442: Should the loss be considered incurred and the reserve requirement triggered when the loss occurs or when the insolvency occurs? The current liability is offset by a future receivable. **The self-insured employers are assessed on essentially on a pay-as-you go. We heave estimated the liability based on future bankruptcies.**

**44.** Pages 445 to 446: Why are the selected loss development factors so erratic and not monotonically decreasing to 1.00? Is it because the bankruptcies can occur late in the development period? **Yes The biggest bankruptcies are typically from firms with older permanent type claims. Therefore, as can be seen in the historical averages, the development factors can be greater than one.** From an accounting standpoint, should we consider the loss to have been incurred only after insolvency has occurred and a claim occurred? **We have shown the liability based on an estimation of future insolvencies. And offsetting receivable is also shown on the balance sheet.**

September 5, 2008

# Actuarial Audit of the Workers' Compensation State Insurance Fund and Related Funds Administered by the Ohio Bureau of Workers' Compensation as of June 30, 2008

## Ohio Bureau of Workers' Compensation

OLIVER WYMAN

MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN

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Permanent Partial ..... E
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Percent Permanent Partial ..... D
Permanent Partial ..... E
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## Introduction

The enclosed report provides an independent actuarial audit by the firm of Oliver Wyman Actuarial Consulting, Inc. of the unpaid loss and LAE of the State Insurance Fund (SIF) and related funds administered by the Ohio Bureau of Workers' Compensation (BWC). The unpaid loss and LAE is an estimate of the future payments for Ohio workers covered by the Funds for injuries sustained on or before June 30, 2008. These future payments have been discounted to their present value as of June 30, 2008 at an assumed annual interest rate of 5.00%.

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## Caveats

Unpaid loss and LAE estimates are projections of many future contingent events, and the present value of the actual payments may vary significantly from our projections due to factors such as the following:

- unanticipated changes in wage and benefit levels;
- legislative changes;
- changes in claims consciousness;
- changes in claims settlement practices, cost containment programs and fraud investigation efforts;
- unexpected judicial interpretations of statutes;
- changes in medical inflation rates;
- changes in utilization of medical services.

We have relied on the accuracy of the data provided to us. Although we have performed a number of tests to verify the reasonableness of the data, if the data are not complete or are not accurate, revisions to our estimates may be required.

The estimates in this report were developed in accordance with the principles of the Casualty Actuarial Society and the applicable standards of the Actuarial Standards Board. Jeffery J. Scott, Principal, and Jeffery W. Scholl, Principal, are Fellows of the Casualty Actuarial Society and members of the American Academy of Actuaries and meet the Academy's qualification standards to issue this report.

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## Organization of Report

In addition to the Introduction and Caveats, our report is provided in two sections: (1) an Executive Summary which discusses our primary assumptions, conclusions, and interpretations of the results of our analysis; and (2) an Appendix which gives the detail for our calculations and an explanation of our methodology. The Appendix contains various sections by type of employer and by type of benefit, and separate sections are also included for the related Funds.

The Executive Summary is divided into the following sections:

- A discussion of our conclusions
- A section describing the methodology used in our calculations
- A section describing the significant changes in our assumptions and methodology
- A cost trend analysis which provides summaries of trends in costs by benefit type and historical relationships of loss costs to payrolls and covered employees
- A discussion of inflation assumptions for future medical payments
- A discussion of Permanent Total Disability claim frequency

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# Executive Summary

## Conclusions

The unpaid liability for compensation and compensation adjustment expenses as of June 30, 2008 indicated by our analysis is $403 million lower than the unpaid liability for all Funds included in the BWC's preliminary Financial Statements as of June 30, 2008. The indicated June 30, 2008 SIF Fund Balance as a result of our adjustments to the unpaid liability estimate is a surplus of $2.63 billion. The indicated total surplus including the related Funds after adjustments for unbilled and retrospective premiums receivable is $2.89 billion. The total adjustments and Fund Balances resulting from our analysis are summarized by Fund in Exhibit 1.

Indicated SIF unpaid loss and LAE as of June 30, 2008 is higher than the June 30, 2007 unpaid loss and LAE by approximately $0.26 billion, or 1.7%. The change for all Funds from 2007 to 2008 is an increase of $0.16 billion, or 0.9%. These changes are shown by Fund in Exhibit 2, Page 1.

The changes in SIF unpaid loss and LAE between June 30, 2007 and June 30, 2008 can be separated into three components:

- An "expected" addition to unpaid loss and LAE which is the result of the addition of unpaid loss and LAE for another year of accidents (July 1, 2007 through June 30, 2008.) This amount is estimated to be $1.46 billion.

- A decrease in unpaid loss and LAE for accidents occurring prior to July 1, 2007. The expected change in unpaid loss and LAE for these prior accident years is a decrease of $881 million.

- An unexpected decrease in unpaid loss and LAE due to changes in the base of payments and factors used to establish the unpaid loss and LAE for prior accident years in this year's report compared to last year's report. These changes, which result in a decrease of unpaid loss and LAE of approximately $264 million, amount to a 1.8% decrease in unpaid loss and LAE.

The three components of SIF unpaid loss and LAE changes are summarized in Exhibit 2, Page 2. The "expected" change in unpaid loss and LAE amounts to an increase of 3.9%. This is offset by the "unexpected" decrease in the amount of -1.8%. This reduces the toal change in unpaid loss and LAE to an increase of 2.1%. We discuss these changes further below.

One major "ingredient" in the expected change in unpaid loss and LAE is the accumulation of interest, which results because we are now a year closer to all future payments on prior years' claims. Due to the accumulation of interest on prior years' unpaid loss and LAE, the Fund's fiscal/calendar year incurred losses (fiscal/calendar year payments plus change in unpaid loss and LAE) are expected to be approximately $695 million (Exhibit 2, Page 2 Column (A) Line 2 + Column (A) Line 5) higher than the expected discounted fiscal/accident year 2007/08 losses. The difference between the 2007/08 fiscal/calendar year and fiscal/accident year incurred losses is offset by the investment income accumulated on the unpaid from prior accident years.

Factors affecting unpaid loss and LAE and incurred losses for the most recent accident year are payroll increases and a negative "excess" trend in medical costs. Payroll changes result in increases in compensation benefits of approximately the same percentage as the increase in payrolls; this component of costs had been increasing approximately 3.4% per year in recent years for private employers and 1.6% for public employers – taxing districts. In addition, there is a negative "excess" trend in medical costs, resulting in medical losses recently growing at an annual rate approximately 5.6% lower than payrolls for PA. As a result of a decrease in the frequency of lost time claims, PA compensation losses have also experienced reductions averaging approximately -6.1% per year (as a percentage of payroll) in recent years; PEC has experienced annual decreases in compensation losses of approximately -1.7% (as a percentage of payroll). We expect total incurred losses will increase at a rate slightly higher than the payroll trend in the near future as a result of the future excess trend in medical costs and a leveling of the favorable decline in the frequency of claims.

The "unexpected" decrease in total unpaid loss and LAE is primarily attributable to continuing favorable improvements in medical payments and loss development during the last 12 months. The effects of these changes are summarized by type of benefit in Exhibit 3, Page 1. The "retrospective" calculations in column (3) provide the unpaid loss and LAE that we now estimate should have been carried as of June 30, 2007. The retrospective unpaid loss and LAE use the developments during the latest fiscal year on claims occurring prior to July 1, 2007 and our current estimates of indicated unpaid loss

and LAE for these prior claims to re-state the required unpaid loss and LAE as of June 30, 2007.

The major dollar changes in the retrospective unpaid loss and LAE compared to the June 30, 2007 actuarial audit occur in the unpaid loss for medical and lump sum settlement (LSS). The decrease in medical benefits accounts for $701 million. LSS accounted for an increase of $513 million.

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# Summary of Analysis

## Overview of Methodology

Our methodology for projecting unpaid loss relies on trends and patterns in historical loss payments to predict future payments. For the major benefit types we have relied primarily on the historical relationships (persistency) of payments by age of development since these relationships have proven to be statistically consistent indicators of future payments. "Persistency" refers to the ratio of payments for a particular age of development to payments for the prior age of development. For instance, if temporary total (TT) payments for accident year 2005 were $100 million in 2007 and $90 million in 2008, we would calculate a persistency factor of 0.90 for the 2007 accident year for calendar year 2008. Another measurement of persistency could be determined by comparing payments per claim during 2007. For example, if medical payments per claim averaged $100 per claim in the calendar year for claims that were four years old and $90 per claim during the same calendar year for claims that were five years old, we could calculate a persistency factor of 0.90 for the fourth vs. fifth year of development based on these relationships within this calendar year. In order to use the second measurement of persistency to project unpaid medical loss, it is necessary to include explicit consideration of the expected future trend in the average cost per claim.

We have used persistency factors to project the future payments (unpaid loss) for temporary total disability (TT), living maintenance (LM), and death benefits since this methodology has produced the most statistically consistent historical relationships of payments for most years of development for these benefits. The weekly compensation benefits for TT, LM, and death benefits are "fixed" for each claimant at the date of injury or death, and the payments have tended to continue for relatively long periods of time. It is logical to expect the payments for these benefits and the related medical payments to exhibit particular patterns by benefit type which reflect the reporting pattern and the rate at which these claims are eventually closed due to beneficiaries returning to work,

transferring to other compensation types, or in the case of death benefits, remarriage or death of the beneficiary.

For medical payments, we have computed persistency factors by type of provider for lost time claims as well as for medical only claims for all provider types combined. Explicit considerations of the effects of inflation on medical costs (as measured by the annual increase in average payment per lost time claim) have also been included in our projections. The measurement of the increase in average payment per claim includes both the inflationary increase in costs as well as the increase in "utilization" of medical services. Based on the long term trend in the medical costs per claim, we have selected an annual trend of 9% for our projections of future medical payments after June 30, 2008 for all provider types. Our trend assumption is based on long term national workers' compensation trends. These trends are higher than the most recent trends observed in the Ohio BWC data.

In the persistency method, we use a smoothing technique for the middle (for example 6 - 29) development years. The smoothing develops a constant persistency during this time period. It is equal to the overall decay using each of the period's average persistency. This allows for incorporation of the overall average of all persistency factors during these periods as well as to provide a stable decline from period to period.

For permanent total disability (PTD) and "Other Compensation" (Percent Permanent Partial (%PP), Permanent Partial (PP), Temporary Partial (TP), Wage Loss (WL), Living Maintenance/Wage Loss (LM/WL), Lump Sum Settlements (LSS), Lump Sum Advancements (LSA) and Additional Awards (AA)), our projections use historical relationships of "weeks of benefits" by development year. These are calculated using payments, numbers of ultimate lost time claims (ultimate number of PTD claims for PTD and LSA), and the average benefit level for each accident year. For the benefit types in which changes were observed, more weight was placed on the calendar years deemed to be most representative of expected future experience. We have also investigated the use of persistency factors for these benefits; however, due to the limited duration for the other compensation types and the long period of emergence for PTD benefits, the "weeks of benefits" method is the more appropriate method for projecting these unpaid losses.

An additional clarification is required regarding the terminology used for persistency factors calculated using the fiscal year data. In the Appendix, we have continued the use of the terminology "calendar year" persistencies to describe the persistencies calculated using the relationships between development years within a fiscal year to distinguish these calculations from the traditional calculations of year-to-year development by accident year.

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# Significant Changes in Assumptions/Methodology-Interest Rate and Medical Inflation Utilization Assumptions

There were no significant changes in the assumptions/methodology effective with this audit that warrant specific mention. However, we continue to use this section to document our assumption regarding the interest rate used to calculate discounted unpaid loss and LAE and to document our assumptions for medical inflation and utilization trends.

## Interest Rate Assumption

The unpaid loss and LAE have been calculated using an interest rate assumption of 5.00%.

| Audit June 30, XXXX | Interest Rate |
|---|---|
| Prior to 1997 | 7.00% |
| 1997 | 6.75% |
| 1998 | 6.50% |
| 1999 | 6.25% |
| 2000 and 2001 | 6.00% |
| 2002 | 5.80% |
| 2003 and 2004 | 5.50% |
| 2005 and 2006 | 5.25% |
| 2007 and 2008 | 5.00% |

We have based our interest rate assumption on the BWC's updated selection, which is based on considerations including its position paper "Reserve for Compensation Discount Rate - Selection of Rate" updated in July, 2008. The methodology was developed by BWC during 1992 with input from Oliver Wyman Actuarial Consulting, Inc.

The Investment Income section (Appendix T) contains background information and calculations of the financial impact of differing interest rate assumptions.

## Assumptions for Medical Inflation and Utilization Trends

The trend assumption varies by provider type is as follows:

| Provided Type | Annual Trends |
|---|---|
| Hospital | 9.0% |
| Physicians | 9.0% |
| Pharmacies | 9.0% |
| Chiropractors | 9.0% |
| Rehabilitation | 9.0% |
| Health Other | 9.0% |
| Medical Only | 9.0% |

This is similar to the long term selections made in the June 30, 2006 and June 30, 2007 actuarial audits. However, in the last two evaluations, we used a slightly higher trend in the first year of development.

Prior actuarial audits as of June 30, 2002, June 30, 2003, June 30, 2004 and June 30, 2005 used an assumption of 8% that increased to 9% after the first year for all provider types.

Prior actuarial audits as of June 30, 1999, June 30, 2000 and June 30, 2001 used an assumption of 5% that increased to 9% by 1% annual increments.

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# Cost Trend Analysis

## Introduction

Exhibit 4 presents historical data and our estimates of historical (discounted) losses and pure premium rates (i.e. discounted losses per $100 of payroll) for Private Employers (PA) and Public Employer Taxing Districts (PEC). These charts and graphs represent the premium rate (per $100 of payroll) that should have been collected for each accident period to provide for all claims occurring in each accident year. These figures do not include a provision for safety and hygiene, or administrative assessments.

## Conclusions

The discounted values of medical costs for injuries occurring during 2008 are projected to be $0.79 and $0.96 per $100 of payroll for PA and PEC respectively. These medical costs now account for approximately 54.4% of the total benefits for PA and 64.9% for PEC compared to approximately 46.8% for PA and 50.7% for PEC for injuries occurring during 1996. As these figures demonstrate, the trend in medical costs over the thirteen-year period has been higher than the trend in compensation benefits over the same period. From 2004 to 2007, medical costs decreased approximately 5.6% for PA and increased 2.5% for PEC faster than payrolls on an annual basis compared to a decrease in compensation benefits of approximately 6.1% for PA and a decrease of 1.7% for PEC. Total benefits (per $100 of payroll) have decreased at an annual rate of 5.8% for PA and increased at 0.9% for PEC over the period 2004-2007.

The average discounted medical claim costs per lost time claim for injuries occurring in 2008 are projected to be $31,891 for PA and $38,587 for PEC. From 2004 to 2007, PA medical costs per lost time claim have increased approximately 4.6% per year while compensation average claim costs have increased by approximately 3.9% annually. Total

average claim costs have increased at a rate of approximately 4.3% for PA. Average PEC medical costs have increased annually by approximately 6.4% and compensation claim costs have increased by 2.0%. Total PEC average claim costs have increased annually at a rate of approximately 4.7%.

Whereas the PA frequency has exhibited an annual decrease of approximately 4.8% over the past 10 years, the PEC frequency has decreased only 0.9% a year over the past 10 years.

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## Discussion of Medical Inflation Assumptions

Historical trends and patterns in the SIF's medical and compensation costs have been documented in the cost trend section of our report. For medical payments, our methodology for projecting unpaid loss uses projections of future medical inflation applied to the latest fiscal year of medical payments as a base. Shown below is the historical annual countrywide NCCI average medical cost per lost-time claim inflation rates since 1981. As can be seen, workers' compensation medical costs experienced high rates of inflation, with an average inflation rate of approximately 9% for the entire 27 year period since 1981. The annual changes include both changes in medical prices (cost of a particular service) as well as the effects of utilization (use of different or additional medical services -- e.g. MRI's replacing X-rays).

### Annual Changes in Medical Severity

| Year | NCCI Accident Year | Medical CPI Calendar Year | BWC PA Medical |
|---|---|---|---|
| 1981 | 17% | 10.8% | |
| 1982 | 18% | 11.6% | |
| 1983 | 12% | 8.7% | |
| 1984 | 8% | 6.2% | |
| 1985 | 13% | 6.2% | |
| 1986 | 7% | 7.5% | |

| Year | NCCI Accident Year | Medical CPI Calendar Year | BWC PA Medical |
|---|---|---|---|
| 1987 | 10% | 6.6% | |
| 1988 | 12% | 6.5% | |
| 1989 | 11% | 7.7% | |
| 1990 | 7% | 9.0% | |
| 1991 | 7% | 8.7% | |
| 1992 | 1% | 7.4% | |
| 1993 | -2% | 5.9% | |
| 1994 | 5% | 4.8% | |
| 1995 | 5% | 4.5% | |
| 1996 | 7% | 3.5% | |
| 1997 | 10% | 2.8% | 17% |
| 1998 | 8% | 3.2% | 17% |
| 1999 | 11% | 3.5% | 5% |
| 2000 | 7% | 4.1% | 12% |
| 2001 | 14% | 4.6% | 13% |
| 2002 | 8% | 4.7% | 11% |
| 2003 | 7% | 4.0% | 6% |
| 2004 | 6% | 4.4% | 10% |
| 2005 | 9% | 4.2% | 8% |
| 2006 | 9% | 4.0% | 6% |
| 2007p* | 6% | 4.4% | -1% |
| Average (1981-2006) | 9% | 6.0% | 10% |

sources: NCCI's "State of the Line" from the 2008 Annual Issues Symposium and Bureau of Labor and Statistics
*2007 changes are preliminary.

During the 1980's, Ohio workers' compensation medical costs experienced increases similar to those in the table above. Comparing the increases in workers' compensation costs to changes in the medical costs as measured by the CPI component for medical inflation indicates the "utilization" component of the trend had added approximately 4% per year to workers' compensation costs during the 1980's. Although compensation costs experienced lower increases than the CPI in the early 90's, since 1996, workers' compensation costs have shown significantly higher increases than the CPI change.

Another measurement of trends in cost per claim is provided in Exhibit 4 of the Executive Summary. Discounted average medical claim costs have increased 9.6% per year for PA for accident years 1996 through 2007; the indicated trend for the most recent period of 2004 through 2007 is 4.6%.

Medical costs per claim over the latest several years indicate inflation rates of 5% to 11%, as measured by the NCCI statistics. Workers' compensation medical payments are paid out over an extremely long period of time and a 9.0% long-term inflation assumption, while somewhat higher than recent history, is not unrealistic when looking at a longer time horizon. Although last year's medical payments were lower than expected, we will use inflation plus utilization rates as follow by provider type:

| Provided Type | Annual Trends |
|---|---|
| Hospital | 9.0% |
| Physicians | 9.0% |
| Pharmacies | 9.0% |
| Chiropractors | 9.0% |
| Rehabilitation | 9.0% |
| Health Other | 9.0% |
| Medical Only | 9.0% |

The estimated unpaid medical liability is sensitive to the selection of the inflation assumption. For example, a one percentage point reduction (i.e. 8%) in the medical inflation rate would reduce the liability by $0.72 billion, or 3.7%.

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## Discussion of Permanent Total Disability (PTD) Claim Frequency

There has been a noticeable decline in the number of newly awarded PTD claims since the June, 1997 actuarial audit.

Although the projected ultimate frequency of PTD claims represents a significant decrease from the projections in prior audits, the projected SIF frequency of PTD claims is still higher than the frequency of PTD claims experienced in other surrounding states. We have shown the statistics for Ohio on an ultimate basis as well as at a 5th report for comparison to NCCI.

### Claim Frequencies per 100,000 Workers

| | 2007 NCCI Annual Statistical Bulletin (Developed to 5th Report) | | | 2007 NCCI Annual Statistical Bulletin (Developed to 5th Report) | | |
|---|---|---|---|---|---|---|
| State | Policy Year | PTD | Lost Time Claim (LTC) | Policy Year | PTD | Lost Time Claim (LTC) |
| Illinois | 4/03-3/04 | 5 | 1,255 | 4/02-3/03 | 7 | 1,282 |
| Indiana | 7/03-6/04 | 1 | 945 | 7/02-6/03 | 1 | 979 |
| Kentucky | 5/03-4/04 | 12 | 1,071 | 5/02-4/03 | 11 | 1,123 |
| Michigan | 4/03-3/04 | 5 | 1,049 | 4/02-3/03 | 6 | 1,065 |
| CW | | 7 | 1,161 | | 7 | 1,196 |

| Private Employers (PA) | Ultimate PTD | Ultimate LTC | 5th Report PTD | 5th Report LTC |
|---|---|---|---|---|
| Ohio 99 | 38 | 1,549 | 6 | 1,409 |
| Ohio 00 | 42 | 1,544 | 9 | 1,390 |
| Ohio 01 | 39 | 1,375 | 8 | 1,204 |
| Ohio 02 | 40 | 1,372 | 8 | 1,201 |
| Ohio 03 | 39 | 1,305 | 7 | 1,144 |
| Ohio 04 | 40 | 1,228 | 8 | 1,076 |
| Ohio 05 | 39 | 1,117 | 5 | 975 |
| Ohio 06 | 40 | 1,005 | 8 | 861 |

| PEC | Ultimate PTD | Ultimate LTC | 5th Report PTD | 5th Report LTC |
|---|---|---|---|---|
| Ohio 99 | 33 | 1,237 | 6 | 1,087 |
| Ohio 00 | 33 | 1,241 | 6 | 1,087 |
| Ohio 01 | 22 | 1,080 | 4 | 922 |
| Ohio 02 | 28 | 1,104 | 3 | 955 |
| Ohio 03 | 30 | 1,055 | 4 | 903 |
| Ohio 04 | 30 | 1,035 | 3 | 892 |
| Ohio 05 | 32 | 1,022 | 4 | 889 |
| Ohio 06 | 31 | 1,017 | 0 | 828 |

Note: For NCCI, some frequencies are based on small numbers of claims and may not be comparable to other states. (e.g. Michigan NCCI statistics represent total incapacity frequency. Also based on fewer than 25 cases.)
NCCI frequencies may not be fully developed and may not be comparable to Ohio projections.

# Ohio Bureau Of Workers' Compensation

## Comparison of Indicated Discounted Unpaid Loss and LAE and Fund Balances at 06/30/08 To Preliminary Discounted Unpaid Loss and LAE and Fund Balances at 06/30/08 By Fund

**(Dollars in Millions)**

| | (1) Indicated 06/30/08 Unpaid Total | (2) Preliminary 06/30/08 Unpaid Total | (3) Difference (1) - (2) | (4) Preliminary 06/30/08 Fund Balance | (5) Indicated 06/30/08 Fund Balance (4)-(3) |
|---|---|---|---|---|---|
| **State Insurance Fund (SIF)** | $15,656 | $15,912 | ($256) | $1,939 | $2,195 |
| **Disabled Workers' Relief Fund (DWRF)** | 1,895 | 2,026 | (131) | 843 | 974 |
| **Coal-Workers Pneumoconiosis Fund (CWPF)** | 63 | 62 | 1 | 180 | 179 |
| **Public Work-Relief Employees' Compensation Fund (PWREF)** | 4 | 4 | (1) | 19 | 19 |
| **Marine Industry Fund (MIF)** | 3 | 2 | 1 | 15 | 13 |
| **Intentional Tort Fund (IT)** | 0 | 0 | 0 | 0 | 0 |
| **Occupational Safety Loan Fund (OSLF)** | 0 | 0 | 0 | 0 | 0 |
| **Self-Insuring Employers Guaranty Fund (SIEGF)** | 719 | 723 | (4) | 9 | 13 |
| **Administrative Cost Fund (ACF)-- Loss Adjustment Expense Reserve (LAE)** | 1,096 | 1,109 | (13) | (781) | (768) |
| **Total all Funds** | **19,435** | **19,838** | **(403)** | **2,223** | **2,626** |
| **Adjustment for Unbilled Premiums Receivable (SI+PES)-- Loss + LAE** | **(3,622)** | **(3,356)** | **(266)** | | **2,892** |
| **Adjustment to Asset for Retrospective Premiums Receivable (PA + PEC)** | **284** | **282** | **2** | | **2,894** |

**Notes:**

- **All figures are shown rounded to nearest million and may not add to totals for this reason.**
- **Total unpaid includes estimates for compensation and compensation adjustment expense.**
- **SIF includes unpaid HPP expense.**
- **Col (2) is from the June 30, 2008 BWC Preliminary Financial Statement.**
- **06/30/08 unpaid loss and LAE are discounted at 5.00% annual inte**
- **Unapid DWRF amounts are offset by premium receivable.**
- **Intentional Tort Fund has been declared unconstitutional.**

# Ohio Bureau of Workers' Compensation

## Summary of Indicated Discounted and Undiscounted Unpaid Loss and LAE at 06/30/08
## By Fund
## (Dollars in Millions)

| Category | (1) 06/30/08 Undiscounted Upaid Total | (2) 06/30/08 Discounted Unpaid Total | (3) Discount 06/30/08 (1)-(2) |
|---|---|---|---|
| State Insurance Fund (SIF) | 28,848 | 15,656 | 13,192 |
| Disabled Workers' Relief Fund (DWRF) | 3,828 | 1,895 | 1,933 |
| Coal-Workers Pneumoconiosis Fund (CWPF) | 98 | 63 | 36 |
| Public Work-Relief Employees' Compensation Fund (PWREF) | 7 | 4 | 3 |
| Marine Industry Fund (MIF) | 6 | 3 | 2 |
| Intentional Tort Fund (IT) | 0 | 0 | 0 |
| Self-Insuring Employers Guaranty Fund (SIEGF) | 1,625 | 719 | 907 |
| Administrative Cost Fund (ACF) -- Loss Adjustment Expense Reserve (LAE) | 2,019 | 1,096 | 923 |
| **Total All Funds** | 36,431 | 19,435 | 16,996 |

**Notes:**

- All figures are shown rounded to nearest million and may not add to totals for this reason.
- Total unpaid includes estimates for compensation and compensation adjustment expense.
- Col (2): From Exhibit 1, Page 1, Col (1).
- Unapid DWRF amounts are offset by premium receivable.
- Intentional Tort Fund has been declared unconstitutional.

# Ohio Bureau Of Workers' Compensation

## Comparison of Indicated Discounted Unpaid Loss and LAE at 06/30/08
## To Indicated Discounted Unpaid Loss and LAE at 06/30/07
## By Fund
### (Dollars in Millions)

| Category | (1) 06/30/08 Unpaid Total | (2) 06/30/07 Unpaid Total | (3) Difference 06/30/08 vs 06/30/07 (1) - (2) | (4) % Change 06/30/08 vs 06/30/07 (3)/(2)*100 |
|---|---|---|---|---|
| **State Insurance Fund (SIF)** | $15,656 | $15,393 | $263 | 1.7% |
| **Disabled Workers' Relief Fund (DWRF)** | 1,895 | 1,999 | (104) | -5.2% |
| **Coal-Workers Pneumoconiosis Fund (CWPF)** | 63 | 62 | 1 | 1.1% |
| **Public Work-Relief Employees' Compensation Fund (PWREF)** | 4 | 4 | (0) | -6.9% |
| **Marine Industry Fund (MIF)** | 3 | 2 | 1 | 61.9% |
| **Intentional Tort Fund (IT)** | 0 | 0 | 0 | N/A |
| **Self-Insuring Employers Guaranty Fund (SIEGF)** | 719 | 735 | (16) | -2.2% |
| **Administrative Cost Fund (ACF)-- Loss Adjustment Expense Reserve (LAE)** | 1,096 | 1,075 | 20 | 1.9% |
| **Total all Funds** | **19,435** | **19,271** | **165** | **0.9%** |

**Notes:**

- **All figures are shown rounded to nearest million and may not add to totals for this reason.**
- **SIF includes HPP.**
- **Total unpaid includes estimates for compensation and compensation adjustment expense.**
- **06/30/08 unpaid loss and LAE are discounted at 5.00% annual interest rate. 06/30/07 unpaid loss and LAE are discounted at 5.00%.**
- **Unapid DWRF amounts are offset by premium receivable.**
- **Intentional Tort Fund has been declared unconstitutional.**

# Ohio Bureau Of Workers' Compensation

## Summary of 2008 SIF Discounted Unpaid Loss and LAE Changes -- Excluding HPP Expense

**(Dollars in Millions)**

| Item | (A) Fiscal Years Prior to 7/07 | (B) Fiscal Year 07/08 | (C) Totals | (D) Percent Change |
|---|---|---|---|---|
| 1. Unpaid Loss and LAE @ 06/30/07 | $14,672 | | | |
| 2. Expected Payments in Fiscal Year 07/08 | 1,575 | | | |
| 3. Expected Payments discounted to 06/30/07 | 1,537 | | | |
| 4. Expected unpaid loss and LAE @ 06/30/08 | 13,792 | $1,458 | $15,250 | |
| 5. Expected change in unpaid loss and LAE | (881) | 1,458 | 577 | 3.9% |
| 6. Unexpected change in unpaid loss and LAE | (264) | | (264) | -1.8% |
| 7. Actual unpaid loss and LAE @ 06/30/08 | 13,528 | 1,458 | 14,986 | 2.1% |

**Notes by line:**

| | |
|---|---|
| All | Unpaid loss and LAE @ 06/30/08 are discounted at 5.00% annual interest rate. |
| | All figures are shown rounded to nearest million and may not add to totals for this reason. |
| 1,2 | From Appendix R.1. |
| 3. | ((2)/(1.0500^0.5) |
| 4(A) | {(1)-(3)}*(1.0500) |
| 4(B) | 5(B) |
| 4(C) | 4(A)+4(B) |
| 5(A) | (4)-(1) |
| 5(B) | 7(C)-7(A) |
| 6(A) | 7(A)-4(A), also equals App. R.1, Col(7)*1.0500 |
| 7(A) | From App. R.1, Col(1) |

# Ohio Bureau Of Workers' Compensation
# State Insurance Fund

## Comparison of Indicated Discounted Unpaid Loss at 06/30/08
## To Indicated Discounted Reserves at 06/30/07
## By Benefit Type and Employer Type
**(Dollars in Millions)**

| Category | (1) 06/30/08 Indicated Unpaid Loss Total | (2) 06/30/07 Indicated Unpaid Loss Total | (3) 06/30/07 Retrospective Unpaid Loss Total | (4) Difference 06/30/08 vs 06/30/07 (1) - (2) | (5) Difference Retrospective vs Unpaid Loss (3) - (2) | (6) % Change 06/30/08 vs 06/30/07 (4)/(2)*100 | (7) % Change Retrospective vs Unpaid Loss (5)/(2)*100 |
|---|---|---|---|---|---|---|---|
| **I. SIF by Benefit Type** | | | | | | | |
| **Medical** | $6,742 | $7,017 | $6,315 | ($274) | ($701) | -3.9% | -10.0% |
| **Temporary Total** | 767 | 762 | 782 | 5 | 20 | 0.7% | 2.6% |
| **Permanent Total Disability** | 3,311 | 3,218 | 3,224 | 94 | 6 | 2.9% | 0.2% |
| **Death** | 1,160 | 1,113 | 1,130 | 47 | 16 | 4.2% | 1.5% |
| **% Permanent Partial** | 305 | 309 | 303 | (4) | (5) | -1.2% | -1.7% |
| **Permanent Partial** | 81 | 85 | 81 | (4) | (4) | -4.3% | -4.3% |
| **WL+TP+LMWL+CO** | 147 | 153 | 146 | (6) | (6) | -3.7% | -4.2% |
| **Lump Sum Settlements** | 2,052 | 1,566 | 2,078 | 486 | 513 | 31.1% | 32.7% |
| **Living Maintenance** | 101 | 96 | 101 | 4 | 5 | 4.4% | 5.2% |
| **Lump Sum Advancements** | 144 | 141 | 142 | 4 | 2 | 2.7% | 1.2% |
| **Additional Awards** | 27 | 28 | 27 | (1) | (1) | -4.8% | -4.1% |
| **Self Insured** | 148 | 186 | 202 | (38) | 16 | -20.6% | 8.8% |
| **Subtotal SIF unpaid Loss excl. HPP** | **14,986** | **14,672** | **14,533** | **313** | **(140)** | **2.1%** | **-1.0%** |
| **HPP** | 670 | 721 | 721 | (50) | 0 | -7.0% | 0.0% |
| **Total SIF Unpaid Loss** | **15,656** | **15,393** | **15,253** | **263** | **(140)** | **1.7%** | **-0.9%** |
| **II. SIF by Employer Type** | | | | | | | |
| **A. Private (PA)** | 11,918 | 11,321 | 11,617 | 598 | 296 | 5.3% | 2.6% |
| **B. i. Taxing Districts (PEC)** | 2,205 | 2,412 | 2,059 | (207) | (353) | -8.6% | -14.6% |
| **B. ii. State Agencies (PES)** | 715 | 754 | 655 | (39) | (99) | -5.1% | -13.1% |
| **C. Self Insured** | 148 | 186 | 202 | (38) | 16 | -20.6% | 8.8% |
| **D. HPP** | 670 | 721 | 721 | (50) | 0 | -7.0% | 0.0% |
| **Total SIF Unpaid Loss** | **15,656** | **15,393** | **15,253** | **263** | **(140)** | **1.7%** | **-0.9%** |

**Notes:**

- **All figures are shown rounded to nearest million and may not add to totals for this reason.**
- **'Indicated Unpaid Loss' are those indicated by actuarial audits as of 06/30/08 and 06/30/07.**
- **'Retrospective Unpaid Loss' as of 06/30/07 represent the re-stated unpaid loss required as of 06/30/07, using developments as of 06/30/08.**
- **06/30/08 unpaid loss and LAE are discounted at 5.00% annual interest rate. 06/30/07 unpaid loss and LAE are discounted at 5.00%.**

# Ohio Bureau Of Workers' Compensation

## Summary Of Indicated Discounted Unpaid Loss
## Unpaid Loss and LAE Evaluation As Of June 30, 2008
## SIF By Employer Type by Benefit Type
**(Dollars in Millions)**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 06/30/08 | 06/30/08 | 06/30/08 | 06/30/08 | 06/30/07 | 06/30/07 | 06/30/07 | 06/30/07 | 06/30/07 | 06/30/07 |
| | Unpaid | Unpaid | Unpaid | Unpaid | Unpaid | Unpaid | Unpaid | Retro | Retro | Retro |
| **Category** | **PA** | **PEC** | **PES** | **Total** | **PA** | **PE** | **Total** | **PA** | **PE** | **Total** |
| **Medical** | $5,126 | $1,174 | $442 | $6,742 | $5,088 | 1,928 | $7,017 | $4,868 | $1,447 | $6,315 |
| **Temporary Total** | 598 | 123 | 46 | 767 | 587 | 175 | 762 | 618 | 164 | 782 |
| **Permanent Total Disability** | 2,772 | 425 | 113 | 3,311 | 2,696 | 521 | 3,218 | 2,699 | 525 | 3,224 |
| **Death** | 968 | 165 | 26 | 1,160 | 938 | 175 | 1,113 | 945 | 184 | 1,130 |
| **% Permanent Partial** | 229 | 58 | 18 | 305 | 235 | 74 | 309 | 230 | 74 | 303 |
| **Permanent Partial** | 71 | 9 | 2 | 81 | 74 | 11 | 85 | 72 | 10 | 81 |
| **WL+TP+LMWL+CO** | 109 | 28 | 10 | 147 | 119 | 34 | 153 | 109 | 37 | 146 |
| **Lump Sum Settlements** | 1,812 | 193 | 47 | 2,052 | 1,359 | 206 | 1,566 | 1,842 | 237 | 2,078 |
| **Living Maintenance** | 83 | 13 | 4 | 101 | 78 | 19 | 96 | 86 | 15 | 101 |
| **Lump Sum Advancements** | 124 | 14 | 6 | 144 | 122 | 19 | 141 | 123 | 19 | 142 |
| **Additional Awards** | 25 | 2 | 0 | 27 | 26 | 3 | 28 | 25 | 2 | 27 |
| **Self Insured** | | | | 148 | | | 186 | | | 202 |
| **HPP** | | | | 670 | | | 721 | | | 721 |
| **Total SIF Unpaid** | **11,918** | **2,205** | **715** | **15,656** | **11,321** | **3,166** | **15,393** | **11,617** | **2,714** | **15,253** |

| | | |
|---|---|---|
| **Disabled Workers' Relief Fund (DWRF)** | **1,895** | **1,999** |
| **Coal-Workers Pneumoconiosis Fund (CWPF)** | **63** | **62** |
| **Public Work-Relief Employees' Comp. Fund (PWREF)** | **4** | **4** |
| **Marine Industry Fund (MIF)** | **3** | **2** |
| **Intentional Tort Fund (IT)** | **0** | **0** |
| **Self-Insuring Employers Guaranty Fund (SIEGF)** | **719** | **735** |
| **Administrative Cost Fund (ACF)--** | **1,096** | **1,075** |
| **Loss Adjustment Expense Reserve (LAE)** | | |
| **Total Unpaid Loss and LAE** | **19,435** | **19,271** |

**Notes:**

- **All figures are shown rounded to nearest million and may not add to totals for this reason.**
- **06/30/08 unpaid loss and LAE are discounted at 5.00% annual interest rate. 06/30/07 unpaid loss and LAE are discounted at 5.00%.**
- **(4) = (1) + (2) + (3)**

# Ohio Bureau of Workers' Compensation
## Private Employers (PA)
## Premiums, Payroll, and Rate Level Statistics

| Accident Year | (1) Actual Premium ($MILL) | (2) Premium @7/1/08 Rate Level ($MILL) | (3) Payroll ($MILL) | (4) Average Weekly Wage ($) | (5) No. of Lost-Time Claims | (6) Rate Level Index @7/1 | (7) Average Rate @7/1/08 (/$100) | (8) Estimated No. of Employees (Yrs) | (9) Average Published Rate @7/1 | (10) Actual Average Collected Rate |
|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | 1,539 | 1,217 | 63,664 | 526.87 | 39,715 | 124.79 | 1.91 | 2,323,738 | 2.63 | 2.42 |
| **1997** | 1,503 | 1,302 | 68,077 | 551.30 | 37,076 | 106.07 | 1.91 | 2,374,702 | 2.17 | 2.21 |
| **1998** | 1,441 | 1,401 | 71,447 | 577.29 | 36,486 | 99.70 | 1.96 | 2,380,053 | 2.11 | 2.02 |
| **1999** | 1,502 | 1,529 | 75,245 | 596.41 | 37,591 | 96.71 | 2.03 | 2,426,205 | 2.03 | 2.00 |
| **2000** | 1,445 | 1,532 | 79,122 | 618.35 | 37,990 | 91.88 | 1.94 | 2,460,717 | 1.93 | 1.83 |
| **2001** | 1,361 | 1,519 | 80,397 | 631.45 | 33,662 | 87.28 | 1.89 | 2,448,472 | 1.81 | 1.69 |
| **2002** | 1,350 | 1,547 | 81,621 | 652.48 | 33,010 | 87.28 | 1.90 | 2,405,633 | 1.80 | 1.65 |
| **2003** | 1,352 | 1,482 | 82,433 | 670.77 | 30,846 | 95.14 | 1.80 | 2,363,334 | 1.94 | 1.64 |
| **2004** | 1,431 | 1,489 | 84,633 | 694.68 | 28,775 | 97.04 | 1.76 | 2,342,895 | 1.98 | 1.69 |
| **2005** | 1,442 | 1,454 | 86,912 | 710.72 | 26,278 | 101.31 | 1.67 | 2,351,687 | 1.76 | 1.66 |
| **2006** | 1,487 | 1,440 | 90,693 | 735.05 | 23,835 | 105.26 | 1.59 | 2,372,742 | 1.85 | 1.64 |
| **2007** | 1,586 | 1,507 | 93,245 | 761.22 | 23,664 | 105.26 | 1.62 | 2,355,676 | 1.85 | 1.70 |
| **2008** | 796 | 757 | 48,021 | 784.05 | 11,832 | 100.00 | 1.58 | 1,177,838 | 1.76 | 1.66 |
| **Annual % Chg 96-07:** | -0.1% | 1.2% | 3.2% | 3.2% | -4.8% | -0.6% | -1.9% | -0.1% | -2.3% | -3.1% |
| **Annual % Chg 04-07:** | 3.4% | 0.3% | 3.4% | 3.1% | -6.6% | 2.9% | -3.0% | 0.3% | -1.5% | 0.1% |

**Notes:**

1. **1996 and subsequent are net of PDP and other premium discounts; accident year 2008 is for the first six months of the year.**
2. **Columns (1), (2) and (7) are adjusted for retrospective rating, using experience rated premium for all employers.**
3. **Columns (6) and (9) are from Exhibits prepared by OBWC Actuarial Dept.**
4. **COL(2)=COL(1)/[COL(6)Year(n)+COL(6)Year(n-1)]/2*COL(6) Year 2008.**
5. **COL(7)=COL(2)/COL(3)*100**
6. **COL(8)= {COL(3)/[COL(4)*52]}*1,000,000.**
7. **COL(10)=COL(1)/COL(3)*100.**

# Ohio Bureau of Workers' Compensation

## Discounted Ultimate Losses

## Private Employers (PA)

**(Dollars in thousands)**

| Accident Year | (1) Medical | (2) TT | (3) PTD | (4) Death | (5) % PP | (6) TP+WL & LM/WL + CO | (7) Perm. Partial | (8) Lump Sum Settlements | (9) Living Mainten'ce | (10) Lump Sum Advance'ts | (11) Additional Awards | (12) Sub/Tot Other than Medical | (13) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $427,137 | $174,439 | $76,672 | $37,850 | $44,204 | $17,252 | $20,368 | $93,411 | $14,039 | $5,580 | $2,002 | $485,816 | $912,953 |
| **1997** | 466,086 | 166,263 | 84,326 | 31,925 | 42,111 | 16,920 | 18,806 | 98,191 | 18,579 | 6,095 | 1,028 | 484,244 | 950,331 |
| **1998** | 535,634 | 179,704 | 97,890 | 36,871 | 43,717 | 16,409 | 20,981 | 110,517 | 23,197 | 8,276 | 2,287 | 539,848 | 1,075,482 |
| **1999** | 579,232 | 204,053 | 100,646 | 40,794 | 48,782 | 20,280 | 20,091 | 129,084 | 25,945 | 8,813 | 2,403 | 600,890 | 1,180,123 |
| **2000** | 658,021 | 222,794 | 118,380 | 38,527 | 53,594 | 23,631 | 22,913 | 150,175 | 32,474 | 10,989 | 2,919 | 676,396 | 1,334,417 |
| **2001** | 659,199 | 219,370 | 112,370 | 40,660 | 52,216 | 24,286 | 19,445 | 152,973 | 31,751 | 10,184 | 2,442 | 665,696 | 1,324,895 |
| **2002** | 719,304 | 228,268 | 114,870 | 50,887 | 52,594 | 22,685 | 21,356 | 172,160 | 26,435 | 10,292 | 2,089 | 701,635 | 1,420,938 |
| **2003** | 713,682 | 215,174 | 113,406 | 50,230 | 52,141 | 20,640 | 18,894 | 170,920 | 23,518 | 10,845 | 2,083 | 677,851 | 1,391,534 |
| **2004** | 729,532 | 195,376 | 118,823 | 49,730 | 50,115 | 19,492 | 20,569 | 172,624 | 21,995 | 11,644 | 2,204 | 662,573 | 1,392,105 |
| **2005** | 722,483 | 184,228 | 118,270 | 52,929 | 47,804 | 18,740 | 20,188 | 163,818 | 22,090 | 11,853 | 1,877 | 641,798 | 1,364,281 |
| **2006** | 695,242 | 167,721 | 127,038 | 38,900 | 45,849 | 17,361 | 18,669 | 155,818 | 21,750 | 14,429 | 2,510 | 610,046 | 1,305,288 |
| **2007** | 682,502 | 162,973 | 132,099 | 35,589 | 48,761 | 18,082 | 18,100 | 159,577 | 19,355 | 13,567 | 2,155 | 610,258 | 1,292,759 |
| **2008** | 377,327 | 82,027 | 68,667 | 24,641 | 24,419 | 9,329 | 9,665 | 82,073 | 7,135 | 7,135 | 1,110 | 316,199 | 693,527 |
| **Total** | 7,965,382 | 2,402,390 | 1,383,456 | 529,533 | 606,305 | 245,106 | 250,044 | 1,811,344 | 288,262 | 129,703 | 27,107 | 7,673,251 | 15,638,633 |
| **Annual % Chg 96-07:** | 4.4% | -0.3% | 4.2% | 2.0% | 0.9% | 0.4% | -0.7% | 5.3% | 0.9% | 7.8% | 2.1% | 2.2% | 3.3% |
| **Annual % Chg 04-07:** | -2.4% | -6.2% | 4.0% | -12.3% | -1.2% | -3.0% | -4.5% | -2.8% | -3.9% | 6.8% | 2.3% | -2.9% | -2.6% |

**Notes:**

1. **COL (12) = Sum of Columns (2) through (11).**
2. **COL(13) = COL(1)+COL(12).**
3. **Annual Discount Rate is 5% .**
4. **All figures are rounded to the nearest thousand and may not add to totals for this reason.**

# Ohio Bureau of Workers' Compensation

## Discounted Pure Premium

## Private Employers (PA)

**(per $100 of Payroll)**

| Accident Year | (1) Medical | (2) TT | (3) PTD | (4) Death | (5) % PP | (6) TP+WL & LM/WL + CO | (7) Perm. Partial | (8) Lump Sum Settlements | (9) Living Mainten'ce | (10) Lump Sum Advance'ts | (11) Additional Awards | (12) Sub/Tot Other than Medical | (13) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $0.67 | $0.27 | $0.12 | $0.06 | $0.07 | $0.03 | $0.03 | $0.15 | $0.02 | $0.01 | $0.00 | $0.76 | $1.43 |
| **1997** | 0.68 | 0.24 | 0.12 | 0.05 | 0.06 | 0.02 | 0.03 | 0.14 | 0.03 | 0.01 | 0.00 | 0.71 | 1.40 |
| **1998** | 0.75 | 0.25 | 0.14 | 0.05 | 0.06 | 0.02 | 0.03 | 0.15 | 0.03 | 0.01 | 0.00 | 0.76 | 1.51 |
| **1999** | 0.77 | 0.27 | 0.13 | 0.05 | 0.06 | 0.03 | 0.03 | 0.17 | 0.03 | 0.01 | 0.00 | 0.80 | 1.57 |
| **2000** | 0.83 | 0.28 | 0.15 | 0.05 | 0.07 | 0.03 | 0.03 | 0.19 | 0.04 | 0.01 | 0.00 | 0.85 | 1.69 |
| **2001** | 0.82 | 0.27 | 0.14 | 0.05 | 0.06 | 0.03 | 0.02 | 0.19 | 0.04 | 0.01 | 0.00 | 0.83 | 1.65 |
| **2002** | 0.88 | 0.28 | 0.14 | 0.06 | 0.06 | 0.03 | 0.03 | 0.21 | 0.03 | 0.01 | 0.00 | 0.86 | 1.74 |
| **2003** | 0.87 | 0.26 | 0.14 | 0.06 | 0.06 | 0.03 | 0.02 | 0.21 | 0.03 | 0.01 | 0.00 | 0.82 | 1.69 |
| **2004** | 0.86 | 0.23 | 0.14 | 0.06 | 0.06 | 0.02 | 0.02 | 0.20 | 0.03 | 0.01 | 0.00 | 0.78 | 1.64 |
| **2005** | 0.83 | 0.21 | 0.14 | 0.06 | 0.06 | 0.02 | 0.02 | 0.19 | 0.03 | 0.01 | 0.00 | 0.74 | 1.57 |
| **2006** | 0.77 | 0.18 | 0.14 | 0.04 | 0.05 | 0.02 | 0.02 | 0.17 | 0.02 | 0.02 | 0.00 | 0.67 | 1.44 |
| **2007** | 0.73 | 0.17 | 0.14 | 0.04 | 0.05 | 0.02 | 0.02 | 0.17 | 0.02 | 0.01 | 0.00 | 0.65 | 1.39 |
| **2008** | 0.79 | 0.17 | 0.14 | 0.05 | 0.05 | 0.02 | 0.02 | 0.17 | 0.01 | 0.01 | 0.00 | 0.66 | 1.44 |
| **Annual % Chg 96-07:** | 1.2% | -3.3% | 1.0% | -1.1% | -2.2% | -2.7% | -3.7% | 2.1% | -2.2% | 4.5% | -1.0% | -0.9% | 0.2% |
| **Annual % Chg 04-07:** | -5.6% | -9.3% | 0.6% | -15.2% | -4.5% | -6.2% | -7.6% | -6.0% | -7.1% | 3.3% | -1.1% | -6.1% | -5.8% |

**Notes:**

1. **COL (12) = Sum of Columns (2) through (11).**
2. **COL(13) = COL(1)+COL(12).**
3. **Annual Discount Rate is 5% .**
4. **Payroll figures are from Exhibit 4, Page 1.**

# Ohio Bureau of Workers' Compensation

## Discounted Average Claim Cost per Ultimate Lost Time Claim Count

## Private Employers (PA)

| Accident Year | (1) Medical | (2) TT | (3) PTD | (4) Death | (5) % PP | (6) TP+WL & LM/WL + CO | (7) Perm. Partial | (8) Lump Sum Settlements | (9) Living Mainten'ce | (10) Lump Sum Advance'ts | (11) Additional Awards | (12) Sub/Tot Other than Medical | (13) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $10,755 | $4,392 | $1,931 | $953 | $1,113 | $434 | $513 | $2,352 | $353 | $141 | $50 | $12,233 | $22,988 |
| **1997** | 12,571 | 4,484 | 2,274 | 861 | 1,136 | 456 | 507 | 2,648 | 501 | 164 | 28 | 13,061 | 25,632 |
| **1998** | 14,681 | 4,925 | 2,683 | 1,011 | 1,198 | 450 | 575 | 3,029 | 636 | 227 | 63 | 14,796 | 29,477 |
| **1999** | 15,409 | 5,428 | 2,677 | 1,085 | 1,298 | 539 | 534 | 3,434 | 690 | 234 | 64 | 15,985 | 31,394 |
| **2000** | 17,321 | 5,865 | 3,116 | 1,014 | 1,411 | 622 | 603 | 3,953 | 855 | 289 | 77 | 17,805 | 35,126 |
| **2001** | 19,583 | 6,517 | 3,338 | 1,208 | 1,551 | 721 | 578 | 4,544 | 943 | 303 | 73 | 19,776 | 39,359 |
| **2002** | 21,790 | 6,915 | 3,480 | 1,542 | 1,593 | 687 | 647 | 5,215 | 801 | 312 | 63 | 21,255 | 43,046 |
| **2003** | 23,137 | 6,976 | 3,676 | 1,628 | 1,690 | 669 | 613 | 5,541 | 762 | 352 | 68 | 21,975 | 45,112 |
| **2004** | 25,353 | 6,790 | 4,129 | 1,728 | 1,742 | 677 | 715 | 5,999 | 764 | 405 | 77 | 23,026 | 48,379 |
| **2005** | 27,494 | 7,011 | 4,501 | 2,014 | 1,819 | 713 | 768 | 6,234 | 841 | 451 | 71 | 24,424 | 51,918 |
| **2006** | 29,169 | 7,037 | 5,330 | 1,632 | 1,924 | 728 | 783 | 6,537 | 913 | 605 | 105 | 25,594 | 54,763 |
| **2007** | 28,842 | 6,887 | 5,582 | 1,504 | 2,061 | 764 | 765 | 6,744 | 818 | 573 | 91 | 25,789 | 54,630 |
| **2008** | 31,891 | 6,933 | 5,804 | 2,083 | 2,064 | 788 | 817 | 6,937 | 603 | 603 | 94 | 26,724 | 58,615 |
| **Annual % Chg 96-07:** | 9.6% | 4.7% | 9.4% | 7.1% | 5.9% | 5.4% | 4.3% | 10.6% | 6.0% | 13.2% | 7.2% | 7.4% | 8.5% |
| **Annual % Chg 04-07:** | 4.6% | 0.5% | 11.3% | -6.1% | 5.8% | 3.9% | 2.2% | 4.1% | 2.9% | 14.3% | 9.5% | 3.9% | 4.3% |

**Notes:**

1. **COL (12) = Sum of Columns (2) through (11).**
2. **COL(13) = COL(1)+COL(12).**
3. **Annual Discount Rate is 5% .**
4. **Number of Ultimate Lost Time Claim Counts are from Exhibit 4, Page 1.**

# Ohio Bureau of Workers' Compensation

## Undiscounted Average Claim Cost per Ultimate Lost Time Claim Count

## Private Employers (PA)

| Accident Year | (1) Medical | (2) TT | (3) PTD | (4) Death | (5) % PP | (6) TP+WL & LM/WL + CO | (7) Perm. Partial | (8) Lump Sum Settlements | (9) Living Mainten'ce | (10) Lump Sum Advance'ts | (11) Additional Awards | (12) Sub/Tot Other than Medical | (13) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $15,567 | $4,905 | $4,675 | $2,370 | $1,358 | $537 | $588 | $4,052 | $409 | $238 | $79 | $19,211 | $34,778 |
| **1997** | 19,038 | 5,039 | 5,476 | 2,151 | 1,388 | 573 | 589 | 4,525 | 575 | 277 | 53 | 20,646 | 39,683 |
| **1998** | 23,100 | 5,532 | 6,462 | 2,525 | 1,466 | 564 | 658 | 5,093 | 712 | 371 | 96 | 23,479 | 46,579 |
| **1999** | 23,670 | 6,158 | 6,518 | 2,708 | 1,583 | 681 | 617 | 5,689 | 776 | 381 | 100 | 25,211 | 48,881 |
| **2000** | 27,435 | 6,641 | 7,512 | 2,553 | 1,717 | 778 | 703 | 6,418 | 961 | 460 | 116 | 27,859 | 55,294 |
| **2001** | 30,299 | 7,371 | 8,071 | 3,019 | 1,880 | 890 | 677 | 7,180 | 1,061 | 481 | 110 | 30,740 | 61,038 |
| **2002** | 34,535 | 7,839 | 8,450 | 3,835 | 1,926 | 852 | 753 | 8,051 | 929 | 504 | 101 | 33,239 | 67,775 |
| **2003** | 36,990 | 7,859 | 8,892 | 4,114 | 2,037 | 833 | 714 | 8,464 | 915 | 553 | 106 | 34,487 | 71,477 |
| **2004** | 42,563 | 7,660 | 10,017 | 4,329 | 2,096 | 849 | 824 | 9,046 | 918 | 632 | 117 | 36,487 | 79,050 |
| **2005** | 46,208 | 7,944 | 10,932 | 5,110 | 2,183 | 890 | 879 | 9,355 | 1,006 | 700 | 112 | 39,112 | 85,320 |
| **2006** | 48,559 | 7,982 | 12,924 | 4,120 | 2,304 | 912 | 900 | 9,767 | 1,091 | 901 | 149 | 41,049 | 89,608 |
| **2007** | 49,717 | 7,810 | 13,530 | 3,792 | 2,455 | 954 | 885 | 10,088 | 975 | 881 | 136 | 41,504 | 91,221 |
| **2008** | 54,387 | 7,804 | 14,067 | 5,246 | 2,469 | 984 | 935 | 10,381 | 718 | 920 | 140 | 43,664 | 98,051 |
| Annual % Chg 96-07: | 11.1% | 4.8% | 9.4% | 7.2% | 5.7% | 5.4% | 4.3% | 8.9% | 6.6% | 12.1% | 6.1% | 7.5% | 9.3% |
| Annual % Chg 04-07: | 5.3% | 0.6% | 11.3% | -5.9% | 5.4% | 3.8% | 2.4% | 3.8% | 2.6% | 13.3% | 7.6% | 4.4% | 4.9% |

**Notes:**

1. **COL (12) = Sum of Columns (2) through (11).**
2. **COL(13) = COL(1)+COL(12).**
3. **Number of Ultimate Lost Time Claim Counts are from Exhibit 4, Page 1.**

# Ohio Bureau of Workers' Compensation
## Private Employers (PA)
## Other Statistics

| Accident Year | (1) Discounted Ratio of Compensat'n to Total Losses | (2) Discounted Ratio of Medical to Total Losses | (3) Discounted No. of Claims/ Employee | (4) Discounted Loss Cost/ Payroll ($100) |
|---|---|---|---|---|
| **1996** | 53.2% | 46.8% | 0.0171 | $1.43 |
| **1997** | 51.0% | 49.0% | 0.0156 | 1.40 |
| **1998** | 50.2% | 49.8% | 0.0153 | 1.51 |
| **1999** | 50.9% | 49.1% | 0.0155 | 1.57 |
| **2000** | 50.7% | 49.3% | 0.0154 | 1.69 |
| **2001** | 50.2% | 49.8% | 0.0137 | 1.65 |
| **2002** | 49.4% | 50.6% | 0.0137 | 1.74 |
| **2003** | 48.7% | 51.3% | 0.0131 | 1.69 |
| **2004** | 47.6% | 52.4% | 0.0123 | 1.64 |
| **2005** | 47.0% | 53.0% | 0.0112 | 1.57 |
| **2006** | 46.7% | 53.3% | 0.0100 | 1.44 |
| **2007** | 47.2% | 52.8% | 0.0100 | 1.39 |
| **2008** | 45.6% | 54.4% | 0.0100 | 1.44 |

| Accident Year | (5) Undiscounted Ratio of Compensat'n to Total Losses | (6) Undiscounted Ratio of Medical to Total Losses | (7) Undiscounted No. of Claims/ Employee | (8) Undiscounted Loss Cost/ Payroll ($100) |
|---|---|---|---|---|
| **1996** | 55.2% | 44.8% | 0.0171 | $2.17 |
| **1997** | 52.0% | 48.0% | 0.0156 | 2.16 |
| **1998** | 50.4% | 49.6% | 0.0153 | 2.38 |
| **1999** | 51.6% | 48.4% | 0.0155 | 2.44 |
| **2000** | 50.4% | 49.6% | 0.0154 | 2.65 |
| **2001** | 50.4% | 49.6% | 0.0137 | 2.56 |
| **2002** | 49.0% | 51.0% | 0.0137 | 2.74 |
| **2003** | 48.2% | 51.8% | 0.0131 | 2.67 |
| **2004** | 46.2% | 53.8% | 0.0123 | 2.69 |
| **2005** | 45.8% | 54.2% | 0.0112 | 2.58 |
| **2006** | 45.8% | 54.2% | 0.0100 | 2.36 |
| **2007** | 45.5% | 54.5% | 0.0100 | 2.32 |
| **2008** | 44.5% | 55.5% | 0.0100 | 2.42 |

# Ohio Bureau of Workers' Compensation

## Discounted Ultimate Losses

## Private Employers (PA)

(Dollars in thousands)

Ohio Bureau of Workers' Compensation

Audit as of June 30, 2008

Oliver Wyman Actuarial Consulting, Inc.

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**6/30/08**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance's | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $117,861 | $97,080 | $68,628 | $24,552 | $28,609 | $19,681 | $70,726 | $427,137 | $174,439 | $76,672 | $37,850 | $44,204 | $17,252 | $20,368 | $93,411 | $14,039 | $5,580 | $2,002 | $485,816 | $912,953 |
| **1997** | 126,203 | 97,537 | 79,461 | 20,152 | 34,521 | 32,864 | 75,348 | 466,086 | 166,263 | 84,326 | 31,925 | 42,111 | 16,920 | 18,806 | 98,191 | 18,579 | 6,095 | 1,028 | 484,244 | 950,331 |
| **1998** | 146,096 | 105,759 | 92,997 | 20,447 | 41,994 | 43,869 | 84,472 | 535,634 | 179,704 | 97,890 | 36,871 | 43,717 | 16,409 | 20,981 | 110,517 | 23,197 | 8,276 | 2,287 | 539,848 | 1,075,482 |
| **1999** | 158,633 | 118,383 | 110,705 | 24,446 | 47,109 | 27,144 | 92,813 | 579,232 | 204,053 | 100,646 | 40,794 | 48,782 | 20,280 | 20,091 | 129,084 | 25,945 | 8,813 | 2,403 | 600,890 | 1,180,123 |
| **2000** | 178,411 | 128,803 | 116,813 | 27,944 | 57,524 | 46,438 | 102,088 | 658,021 | 222,794 | 118,380 | 38,527 | 53,594 | 23,631 | 22,913 | 150,175 | 32,474 | 10,989 | 2,919 | 676,396 | 1,334,417 |
| **2001** | 180,614 | 126,478 | 121,033 | 29,119 | 60,484 | 33,710 | 107,762 | 659,199 | 219,370 | 112,370 | 40,660 | 52,216 | 24,286 | 19,445 | 152,973 | 31,751 | 10,184 | 2,442 | 665,696 | 1,324,895 |
| **2002** | 208,248 | 132,198 | 122,123 | 28,971 | 60,887 | 49,224 | 117,652 | 719,304 | 228,268 | 114,870 | 50,887 | 52,594 | 22,685 | 21,356 | 172,160 | 26,435 | 10,292 | 2,089 | 701,635 | 1,420,938 |
| **2003** | 206,730 | 128,289 | 116,730 | 30,407 | 59,839 | 52,757 | 118,930 | 713,682 | 215,174 | 113,406 | 50,230 | 52,141 | 20,640 | 18,894 | 170,920 | 23,518 | 10,845 | 2,083 | 677,851 | 1,391,534 |
| **2004** | 208,534 | 126,747 | 111,922 | 30,018 | 59,601 | 77,377 | 115,333 | 729,532 | 195,376 | 118,823 | 49,730 | 50,115 | 19,492 | 20,569 | 172,624 | 21,995 | 11,644 | 2,204 | 662,573 | 1,392,105 |
| **2005** | 214,426 | 122,588 | 108,127 | 29,095 | 56,991 | 74,458 | 116,798 | 722,483 | 184,228 | 118,270 | 52,929 | 47,804 | 18,740 | 20,188 | 163,818 | 22,090 | 11,853 | 1,877 | 641,798 | 1,364,281 |
| **2006** | 214,210 | 119,234 | 109,456 | 25,333 | 56,581 | 62,975 | 107,453 | 695,242 | 167,721 | 127,038 | 38,900 | 45,849 | 17,361 | 18,669 | 155,818 | 21,750 | 14,429 | 2,510 | 610,046 | 1,305,288 |
| **2007** | 91,584 | 61,124 | 57,390 | 12,955 | 28,900 | 37,989 | 51,309 | 341,251 | 81,486 | 66,049 | 17,795 | 24,381 | 9,041 | 9,050 | 79,789 | 9,677 | 6,783 | 1,078 | 305,129 | 646,380 |
| **Total** | 2,051,550 | 1,364,221 | 1,215,384 | 303,440 | 593,040 | 558,486 | 1,160,683 | 7,246,804 | 2,238,877 | 1,248,740 | 487,098 | 557,506 | 226,736 | 231,330 | 1,649,482 | 271,450 | 115,785 | 24,920 | 7,051,922 | 14,298,727 |

**6/30/07**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance's | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $118,738 | $97,611 | $68,107 | $24,700 | $28,390 | $25,871 | $70,729 | $434,145 | $174,050 | $78,531 | $38,327 | $44,307 | $17,508 | $20,360 | $81,413 | $13,960 | $5,732 | $2,034 | $476,222 | $910,368 |
| **1997** | 124,065 | 97,930 | 77,298 | 20,121 | 33,949 | 44,012 | 75,361 | 472,735 | 166,390 | 86,219 | 32,356 | 42,265 | 17,190 | 18,723 | 83,349 | 18,495 | 6,021 | 1,091 | 472,099 | 944,834 |
| **1998** | 141,694 | 105,652 | 93,250 | 20,605 | 42,381 | 57,649 | 84,472 | 545,703 | 180,226 | 97,842 | 38,086 | 43,746 | 16,880 | 21,183 | 92,490 | 23,224 | 7,862 | 2,333 | 523,872 | 1,069,575 |
| **1999** | 157,268 | 118,310 | 108,279 | 24,175 | 48,367 | 42,440 | 92,977 | 591,815 | 202,359 | 101,582 | 41,317 | 48,883 | 20,691 | 20,460 | 105,169 | 26,513 | 8,448 | 2,446 | 577,867 | 1,169,682 |
| **2000** | 181,065 | 128,799 | 115,167 | 28,198 | 57,926 | 53,025 | 102,095 | 666,275 | 221,011 | 120,769 | 36,307 | 53,414 | 24,248 | 22,974 | 120,156 | 32,323 | 10,771 | 2,681 | 644,655 | 1,310,930 |
| **2001** | 183,040 | 128,386 | 117,015 | 29,390 | 61,484 | 50,315 | 107,833 | 677,463 | 219,076 | 114,655 | 41,706 | 52,275 | 24,759 | 19,743 | 122,362 | 31,509 | 9,989 | 2,369 | 638,444 | 1,315,908 |
| **2002** | 212,597 | 135,070 | 115,679 | 29,151 | 63,715 | 74,210 | 117,532 | 747,955 | 225,588 | 117,336 | 53,479 | 52,643 | 23,235 | 21,645 | 133,596 | 27,344 | 9,724 | 2,066 | 666,656 | 1,414,610 |
| **2003** | 201,413 | 128,751 | 109,544 | 31,742 | 57,588 | 99,490 | 119,083 | 747,612 | 212,057 | 114,618 | 48,749 | 51,749 | 21,060 | 19,069 | 134,797 | 22,563 | 10,258 | 2,188 | 637,106 | 1,384,719 |
| **2004** | 201,865 | 127,906 | 108,671 | 29,925 | 57,228 | 96,609 | 115,630 | 737,834 | 191,845 | 122,173 | 49,092 | 50,204 | 19,772 | 20,487 | 136,724 | 20,938 | 11,137 | 2,321 | 624,692 | 1,362,527 |
| **2005** | 195,949 | 124,130 | 102,948 | 29,545 | 55,571 | 78,709 | 116,164 | 703,017 | 175,811 | 124,053 | 47,031 | 47,804 | 18,862 | 20,248 | 127,922 | 19,910 | 11,141 | 2,025 | 594,807 | 1,297,824 |
| **2006** | 195,096 | 123,495 | 108,421 | 28,430 | 56,876 | 86,251 | 107,701 | 706,271 | 163,884 | 132,601 | 37,711 | 49,107 | 19,572 | 18,954 | 132,845 | 17,667 | 12,823 | 2,102 | 587,267 | 1,293,537 |
| **2007** | 109,837 | 65,933 | 63,804 | 15,303 | 31,583 | 63,031 | 57,118 | 406,609 | 84,730 | 70,140 | 26,890 | 25,319 | 10,163 | 10,256 | 67,906 | 8,352 | 6,368 | 1,083 | 311,208 | 717,817 |
| **Total** | 2,022,626 | 1,381,973 | 1,188,184 | 311,285 | 595,058 | 771,612 | 1,166,696 | 7,437,434 | 2,217,028 | 1,280,519 | 491,051 | 561,714 | 233,939 | 234,104 | 1,338,728 | 262,799 | 110,274 | 24,739 | 6,754,896 | 14,192,330 |

**Difference**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance's | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | ($877) | ($530) | $520 | ($149) | $220 | ($6,190) | ($3) | ($7,009) | $388 | ($1,859) | ($476) | ($103) | ($255) | $7 | $11,998 | $78 | ($151) | ($32) | $9,594 | $2,586 |
| **1997** | 2,139 | (394) | 2,164 | 32 | 572 | (11,148) | (13) | (6,649) | (127) | (1,893) | (431) | (154) | (270) | 83 | 14,843 | 84 | 74 | (63) | 12,146 | 5,497 |
| **1998** | 4,402 | 107 | (253) | (158) | (387) | (13,780) | (0) | (10,069) | (522) | 48 | (1,215) | (29) | (471) | (203) | 18,027 | (27) | 414 | (46) | 15,976 | 5,907 |
| **1999** | 1,365 | 73 | 2,425 | 271 | (1,257) | (15,296) | (165) | (12,583) | 1,695 | (936) | (523) | (101) | (411) | (369) | 23,914 | (568) | 365 | (44) | 23,024 | 10,441 |
| **2000** | (2,654) | 5 | 1,646 | (254) | (402) | (6,587) | (7) | (8,254) | 1,782 | (2,390) | 2,219 | 180 | (617) | (61) | 30,020 | 150 | 218 | 238 | 31,740 | 23,486 |
| **2001** | (2,426) | (1,908) | 4,017 | (271) | (1,000) | (16,605) | (71) | (18,264) | 294 | (2,285) | (1,047) | (60) | (473) | (298) | 30,611 | 241 | 196 | 73 | 27,252 | 8,988 |
| **2002** | (4,349) | (2,872) | 6,444 | (179) | (2,829) | (24,986) | 120 | (28,651) | 2,680 | (2,466) | (2,592) | (49) | (550) | (289) | 38,565 | (909) | 568 | 23 | 34,979 | 6,328 |
| **2003** | 5,317 | (462) | 7,185 | (1,335) | 2,252 | (46,733) | (154) | (33,930) | 3,117 | (1,212) | 1,481 | 393 | (420) | (175) | 36,124 | 955 | 587 | (105) | 40,745 | 6,815 |
| **2004** | 6,669 | (1,159) | 3,251 | 94 | 2,373 | (19,232) | (298) | (8,302) | 3,531 | (3,350) | 638 | (89) | (279) | 82 | 35,900 | 1,058 | 508 | (118) | 37,881 | 29,578 |
| **2005** | 18,477 | (1,542) | 5,179 | (450) | 1,419 | (4,251) | 634 | 19,466 | 8,417 | (5,783) | 5,898 | 1 | (122) | (60) | 35,896 | 2,180 | 711 | (148) | 46,991 | 66,457 |
| **2006** | 19,115 | (4,261) | 1,035 | (3,098) | (295) | (23,276) | (248) | (11,028) | 3,837 | (5,563) | 1,189 | (3,258) | (2,211) | (286) | 22,973 | 4,083 | 1,606 | 408 | 22,779 | 11,751 |
| **2007** | (18,253) | (4,809) | (6,414) | (2,347) | (2,683) | (25,042) | (5,809) | (65,358) | (3,244) | (4,091) | (9,095) | (938) | (1,122) | (1,206) | 11,883 | 1,325 | 415 | (5) | (6,079) | (71,437) |
| **Total** | 28,924 | (17,752) | 27,199 | (7,845) | (2,018) | (213,127) | (6,013) | (190,630) | 21,848 | (31,779) | (3,954) | (4,208) | (7,203) | (2,774) | 310,753 | 8,651 | 5,511 | 181 | 297,027 | 106,397 |
| | 1.4% | -1.3% | 2.3% | -2.5% | -0.3% | -27.6% | -0.5% | -2.6% | 1.0% | -2.5% | -0.8% | -0.7% | -3.1% | -1.2% | 23.2% | 3.3% | 5.0% | 0.7% | 4.4% | 0.7% |

XXX

EXHIBIT 4
PAGE 7

# Ohio Bureau of Workers' Compensation

## Undiscounted Ultimate Losses

## Private Employers (PA)

(Dollars in thousands)

**6/30/08**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance'ts | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | $145,524 | $123,091 | $163,754 | $29,691 | $34,784 | $49,304 | $72,094 | $618,243 | $194,793 | $185,674 | $94,138 | $53,915 | $21,344 | $23,343 | $160,926 | $16,246 | $9,453 | $3,142 | $762,974 | $1,381,217 |
| 1997 | 158,646 | 126,443 | 190,766 | 25,532 | 41,409 | 86,001 | 77,036 | 705,834 | 186,841 | 203,037 | 79,761 | 51,446 | 21,245 | 21,836 | 167,761 | 21,317 | 10,261 | 1,948 | 765,452 | 1,471,286 |
| 1998 | 184,338 | 137,314 | 220,573 | 26,098 | 49,989 | 138,823 | 85,699 | 842,833 | 201,846 | 235,772 | 92,133 | 53,472 | 20,571 | 24,025 | 185,828 | 25,983 | 13,521 | 3,490 | 856,642 | 1,699,475 |
| 1999 | 200,215 | 154,875 | 263,247 | 31,392 | 56,114 | 89,744 | 94,186 | 889,773 | 231,479 | 245,008 | 101,789 | 59,518 | 25,584 | 23,212 | 213,865 | 29,178 | 14,326 | 3,742 | 947,700 | 1,837,472 |
| 2000 | 221,839 | 167,189 | 280,191 | 35,249 | 67,360 | 167,067 | 103,339 | 1,042,235 | 252,282 | 285,395 | 96,984 | 65,244 | 29,553 | 26,715 | 243,805 | 36,491 | 17,487 | 4,414 | 1,058,371 | 2,100,607 |
| 2001 | 224,108 | 165,962 | 293,651 | 37,114 | 70,112 | 120,279 | 108,680 | 1,019,906 | 248,110 | 271,698 | 101,619 | 63,272 | 29,968 | 22,774 | 241,693 | 35,716 | 16,187 | 3,710 | 1,034,748 | 2,054,654 |
| 2002 | 261,980 | 175,372 | 297,262 | 36,368 | 72,841 | 177,789 | 118,406 | 1,140,018 | 258,751 | 278,935 | 126,603 | 63,572 | 28,118 | 24,869 | 265,769 | 30,668 | 16,621 | 3,329 | 1,097,235 | 2,237,253 |
| 2003 | 260,470 | 171,590 | 285,626 | 39,035 | 74,544 | 190,421 | 119,312 | 1,140,998 | 242,404 | 274,290 | 126,905 | 62,828 | 25,705 | 22,036 | 261,080 | 28,222 | 17,060 | 3,260 | 1,063,791 | 2,204,790 |
| 2004 | 264,000 | 170,970 | 274,774 | 39,665 | 74,150 | 285,561 | 115,634 | 1,224,755 | 220,408 | 288,240 | 124,567 | 60,299 | 24,419 | 23,711 | 260,307 | 26,407 | 18,181 | 3,369 | 1,049,910 | 2,274,665 |
| 2005 | 276,514 | 166,217 | 268,440 | 38,580 | 70,207 | 276,840 | 117,436 | 1,214,234 | 208,756 | 287,277 | 134,275 | 57,378 | 23,388 | 23,094 | 245,834 | 26,446 | 18,392 | 2,950 | 1,027,789 | 2,242,023 |
| 2006 | 278,031 | 163,096 | 272,312 | 33,871 | 70,020 | 231,908 | 108,175 | 1,157,414 | 190,244 | 308,041 | 98,210 | 54,918 | 21,727 | 21,442 | 232,797 | 26,008 | 21,467 | 3,561 | 978,415 | 2,135,829 |
| 2007 | 116,774 | 84,020 | 142,680 | 17,486 | 35,793 | 139,893 | 51,597 | 588,244 | 92,409 | 160,083 | 44,861 | 29,045 | 11,291 | 10,466 | 119,359 | 11,531 | 10,421 | 1,607 | 491,073 | 1,079,316 |
| Total | 2,592,439 | 1,806,139 | 2,953,278 | 390,081 | 717,323 | 1,953,630 | 1,171,595 | 11,584,485 | 2,528,322 | 3,023,451 | 1,221,847 | 674,907 | 282,914 | 267,523 | 2,599,026 | 314,211 | 183,379 | 38,522 | 11,134,101 | 22,718,586 |

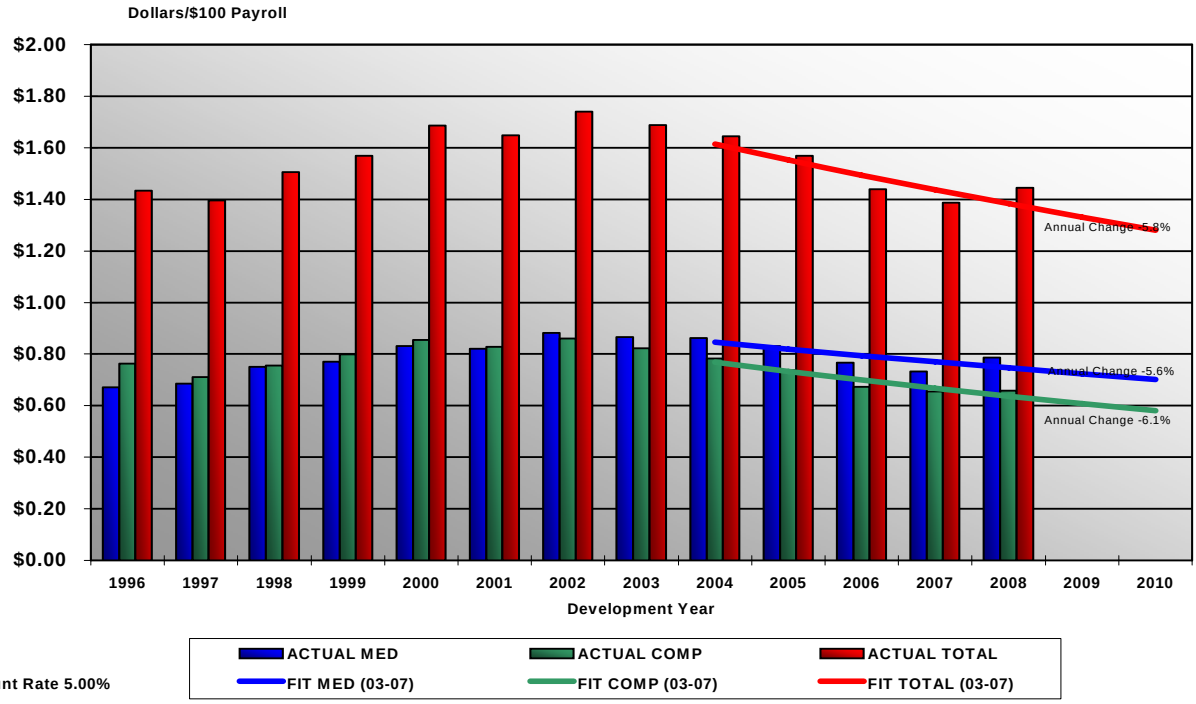
**6/30/07**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance'ts | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | $148,406 | $124,818 | $161,748 | $30,123 | $34,475 | $72,961 | $72,099 | $644,630 | $193,952 | $188,057 | $92,594 | $54,120 | $21,819 | $23,267 | $140,695 | $16,087 | $10,140 | $3,267 | $743,999 | $1,388,629 |
| 1997 | 154,385 | 127,842 | 183,374 | 25,533 | 40,375 | 128,296 | 77,060 | 736,866 | 187,014 | 205,269 | 78,485 | 51,725 | 21,735 | 21,655 | 142,884 | 21,156 | 10,609 | 2,121 | 742,653 | 1,479,518 |
| 1998 | 175,338 | 137,554 | 220,864 | 26,523 | 51,118 | 188,961 | 85,699 | 886,056 | 202,713 | 232,451 | 92,937 | 53,546 | 21,370 | 24,368 | 155,885 | 26,036 | 13,354 | 3,639 | 826,298 | 1,712,354 |
| 1999 | 198,455 | 155,284 | 255,110 | 30,904 | 59,053 | 147,732 | 94,451 | 940,989 | 228,446 | 243,753 | 99,950 | 59,692 | 26,288 | 23,799 | 174,964 | 30,192 | 14,293 | 3,892 | 905,268 | 1,846,256 |
| 2000 | 228,702 | 167,768 | 274,397 | 35,839 | 68,582 | 187,077 | 103,350 | 1,065,716 | 249,221 | 287,551 | 86,851 | 65,006 | 30,554 | 26,862 | 195,977 | 36,245 | 17,802 | 4,170 | 1,000,237 | 2,065,953 |
| 2001 | 230,361 | 170,404 | 280,949 | 37,710 | 72,459 | 181,822 | 108,783 | 1,082,489 | 247,504 | 273,501 | 101,223 | 63,322 | 30,750 | 23,232 | 193,317 | 35,338 | 16,494 | 3,681 | 988,362 | 2,070,851 |
| 2002 | 272,132 | 181,538 | 277,910 | 36,752 | 78,547 | 270,325 | 118,239 | 1,235,443 | 254,573 | 280,756 | 129,684 | 63,542 | 28,978 | 25,292 | 206,485 | 32,089 | 16,466 | 3,353 | 1,041,216 | 2,276,659 |
| 2003 | 252,755 | 173,064 | 264,644 | 41,418 | 71,752 | 366,846 | 119,511 | 1,289,991 | 237,728 | 273,432 | 118,433 | 62,232 | 26,380 | 22,306 | 205,460 | 26,842 | 16,838 | 3,435 | 993,085 | 2,283,076 |
| 2004 | 254,461 | 173,521 | 264,597 | 39,535 | 71,377 | 353,744 | 116,002 | 1,273,236 | 215,218 | 291,841 | 118,594 | 60,235 | 24,897 | 23,669 | 205,268 | 24,948 | 18,158 | 3,549 | 986,378 | 2,259,614 |
| 2005 | 248,806 | 169,063 | 253,206 | 39,290 | 68,942 | 288,886 | 116,655 | 1,184,848 | 197,401 | 296,219 | 114,474 | 57,146 | 23,649 | 23,190 | 191,368 | 23,581 | 18,247 | 3,150 | 948,424 | 2,133,272 |
| 2006 | 251,955 | 169,662 | 267,385 | 38,332 | 71,097 | 316,487 | 108,453 | 1,223,372 | 184,707 | 316,518 | 91,870 | 58,811 | 24,568 | 22,003 | 198,767 | 20,950 | 20,423 | 3,272 | 941,890 | 2,165,263 |
| 2007 | 139,315 | 89,330 | 157,041 | 20,490 | 39,227 | 230,624 | 56,910 | 732,937 | 94,790 | 167,443 | 65,462 | 30,348 | 12,733 | 11,777 | 101,852 | 9,901 | 10,387 | 1,686 | 506,379 | 1,239,316 |
| Total | 2,555,071 | 1,839,847 | 2,861,226 | 402,450 | 727,005 | 2,733,761 | 1,177,211 | 12,296,572 | 2,493,267 | 3,056,791 | 1,190,556 | 679,726 | 293,720 | 271,419 | 2,112,922 | 303,364 | 183,211 | 39,213 | 10,624,189 | 22,920,761 |

**Difference**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance'ts | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | ($2,882) | ($1,726) | $2,007 | ($432) | $308 | ($23,656) | ($6) | ($26,387) | $841 | ($2,383) | $1,544 | ($205) | ($475) | $76 | $20,231 | $159 | ($687) | ($125) | $18,975 | ($7,412) |
| 1997 | 4,260 | (1,399) | 7,392 | (1) | 1,033 | (42,295) | (23) | (31,032) | (173) | (2,231) | 1,277 | (279) | (490) | 181 | 24,877 | 161 | (348) | (174) | 22,800 | (8,232) |
| 1998 | 9,000 | (240) | (290) | (425) | (1,129) | (50,138) | (0) | (43,223) | (867) | 3,321 | (804) | (74) | (798) | (342) | 29,943 | (53) | 167 | (149) | 30,344 | (12,879) |
| 1999 | 1,760 | (410) | 8,137 | 488 | (2,939) | (57,989) | (265) | (51,216) | 3,032 | 1,255 | 1,839 | (175) | (703) | (587) | 38,901 | (1,014) | 33 | (150) | 42,431 | (8,785) |
| 2000 | (6,862) | (579) | 5,794 | (590) | (1,221) | (20,010) | (11) | (23,480) | 3,061 | (2,156) | 10,133 | 238 | (1,001) | (147) | 47,829 | 247 | (314) | 244 | 58,134 | 34,654 |
| 2001 | (6,253) | (4,442) | 12,702 | (596) | (2,347) | (61,543) | (103) | (62,583) | 605 | (1,802) | 396 | (50) | (782) | (458) | 48,376 | 378 | (306) | 29 | 46,386 | (16,197) |
| 2002 | (10,153) | (6,165) | 19,352 | (384) | (5,706) | (92,537) | 167 | (95,425) | 4,178 | (1,821) | (3,081) | 30 | (860) | (422) | 59,285 | (1,421) | 155 | (24) | 56,019 | (39,406) |
| 2003 | 7,715 | (1,474) | 20,982 | (2,384) | 2,792 | (176,425) | (199) | (148,993) | 4,676 | 858 | 8,473 | 597 | (675) | (270) | 55,620 | 1,380 | 222 | (174) | 70,706 | (78,287) |
| 2004 | 9,539 | (2,550) | 10,177 | 130 | 2,772 | (68,182) | (367) | (48,481) | 5,190 | (3,601) | 5,974 | 64 | (479) | 42 | 55,039 | 1,459 | 23 | (180) | 63,533 | 15,051 |
| 2005 | 27,708 | (2,847) | 15,234 | (710) | 1,265 | (12,046) | 781 | 29,386 | 11,355 | (8,943) | 19,801 | 231 | (261) | (96) | 54,466 | 2,865 | 146 | (200) | 79,365 | 108,750 |
| 2006 | 26,075 | (6,565) | 4,927 | (4,461) | (1,077) | (84,579) | (278) | (65,958) | 5,537 | (8,478) | 6,341 | (3,893) | (2,841) | (561) | 34,031 | 5,057 | 1,044 | 289 | 36,525 | (29,433) |
| 2007 | (22,541) | (5,309) | (14,361) | (3,004) | (3,434) | (90,731) | (5,313) | (144,693) | (2,381) | (7,360) | (20,601) | (1,304) | (1,442) | (1,311) | 17,507 | 1,630 | 34 | (78) | (15,306) | (160,000) |
| Total | 37,368 | (33,708) | 92,052 | (12,369) | (9,682) | (780,131) | (5,617) | (712,087) | 35,054 | (33,340) | 31,291 | (4,819) | (10,806) | (3,896) | 486,104 | 10,847 | 168 | (691) | 509,911 | (202,175) |
| | 1.5% | -1.8% | 3.2% | -3.1% | -1.3% | -28.5% | -0.5% | -5.8% | 1.4% | -1.1% | 2.6% | -0.7% | -3.7% | -1.4% | 23.0% | 3.6% | 0.1% | -1.8% | 4.8% | -0.9% |

# DISCOUNTED PURE PREMIUM BY TYPE OF BENEFIT (PA)




Discount Rate 5.00%

# Ohio Bureau of Workers' Compensation
## Public Employers-Taxing Districts (PEC)
## Premiums, Payroll, and Rate Level Statistics

| Accident Year | (1) Actual Premium ($MILL) | (2) Premium @7/1/08 Rate Level ($MILL) | (3) Payroll ($MILL) | (4) Average Weekly Wage ($) | (5) No. of Lost-Time Claims | (6) Rate Level Index @7/1 | (7) Average Rate @7/1/08 (/$100) | (8) Estimated No. of Employees (Yrs) | (9) Average Published Rate @7/1 | (10) Actual Average Collected Rate |
|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | 236 | 229 | 12,949 | 526.87 | 5,407 | 98.84 | 1.77 | 472,642 | 1.95 | 1.82 |
| **1997** | 232 | 240 | 13,597 | 551.30 | 5,299 | 93.90 | 1.77 | 474,290 | 1.80 | 1.70 |
| **1998** | 224 | 252 | 14,465 | 577.29 | 5,381 | 84.51 | 1.74 | 481,871 | 1.64 | 1.55 |
| **1999** | 212 | 264 | 15,089 | 596.41 | 6,019 | 76.06 | 1.75 | 486,529 | 1.47 | 1.40 |
| **2000** | 213 | 280 | 15,809 | 618.35 | 6,101 | 76.06 | 1.77 | 491,663 | 1.47 | 1.35 |
| **2001** | 235 | 303 | 16,717 | 631.45 | 5,499 | 78.87 | 1.81 | 509,113 | 1.53 | 1.40 |
| **2002** | 255 | 314 | 17,601 | 652.48 | 5,728 | 83.92 | 1.78 | 518,763 | 1.62 | 1.45 |
| **2003** | 296 | 333 | 18,004 | 670.77 | 5,447 | 94.08 | 1.85 | 516,179 | 1.81 | 1.65 |
| **2004** | 315 | 332 | 18,524 | 694.68 | 5,307 | 95.96 | 1.79 | 512,796 | 1.84 | 1.70 |
| **2005** | 327 | 338 | 18,569 | 710.72 | 5,136 | 97.88 | 1.82 | 502,435 | 1.89 | 1.76 |
| **2006** | 332 | 341 | 18,924 | 735.05 | 5,033 | 96.90 | 1.80 | 495,093 | 1.87 | 1.76 |
| **2007** | 367 | 372 | 19,418 | 761.22 | 4,987 | 100.00 | 1.92 | 490,563 | 1.84 | 1.89 |
| **2008** | 189 | 189 | 10,000 | 784.05 | 2,493 | 100.00 | 1.89 | 245,282 | 1.85 | 1.89 |
| **Annual % Chg 96-07:** | 4.9% | 4.4% | 3.8% | 3.2% | -0.9% | 1.2% | 0.6% | 0.5% | 0.9% | 1.1% |
| **Annual % Chg 04-07:** | 4.8% | 3.7% | 1.6% | 3.1% | -2.0% | 1.1% | 2.0% | -1.5% | -0.1% | 3.2% |

**Notes:**

1. **1996 and subsequent are net of PDP and other premium discounts; accident year 2008 is for the first six months of the year.**
2. **Columns (1), (2) and (7) are adjusted for retrospective rating, using experience rated premium for all employers.**
3. **Columns (6) and (9) are from Exhibits prepared by OBWC Actuarial Dept.**
4. **COL(2)=COL(1)/[COL(6)Year(n)+COL(6)Year(n-1)]/2*COL(6) Year 2008.**
5. **COL(7)=COL(2)/COL(3)*100**
6. **COL(8)= {COL(3)/[COL(4)*52]}*1,000,000.**
7. **COL(10)=COL(1)/COL(3)*100.**

# Ohio Bureau of Workers' Compensation

## Discounted Ultimate Losses

## Public Employers-Taxing Districts (PEC)

**(Dollars in thousands)**

| Accident Year | (1) Medical | (2) TT | (3) PTD | (4) Death | (5) % PP | (6) TP+WL & LM/WL + CO | (7) Perm. Partial | (8) Lump Sum Settlements | (9) Living Mainten'ce | (10) Lump Sum Advance'ts | (11) Additional Awards | (12) Sub/Tot Other than Medical | (13) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $56,939 | $18,304 | $9,653 | $2,349 | $9,392 | $3,381 | $690 | $9,923 | $1,295 | $409 | $39 | $55,435 | $112,375 |
| **1997** | 67,618 | 18,235 | 12,208 | 5,248 | 8,957 | 2,650 | 908 | 9,445 | 1,852 | 534 | 40 | 60,078 | 127,696 |
| **1998** | 77,257 | 21,792 | 12,560 | 4,098 | 9,770 | 2,634 | 1,282 | 12,308 | 2,224 | 702 | 57 | 67,428 | 144,685 |
| **1999** | 102,330 | 23,031 | 18,402 | 6,032 | 11,392 | 3,017 | 1,831 | 13,159 | 2,573 | 1,000 | 50 | 80,486 | 182,816 |
| **2000** | 113,086 | 27,705 | 18,633 | 5,895 | 12,440 | 3,458 | 2,045 | 15,548 | 3,271 | 1,073 | 96 | 90,163 | 203,249 |
| **2001** | 105,248 | 23,318 | 13,117 | 5,598 | 12,204 | 4,235 | 1,371 | 15,593 | 2,804 | 793 | 49 | 79,082 | 184,329 |
| **2002** | 137,314 | 31,191 | 17,137 | 4,091 | 14,031 | 3,766 | 1,591 | 16,692 | 2,847 | 907 | 55 | 92,307 | 229,622 |
| **2003** | 140,677 | 33,454 | 18,722 | 3,135 | 13,493 | 3,853 | 1,334 | 16,634 | 2,770 | 1,550 | 55 | 95,001 | 235,678 |
| **2004** | 146,906 | 28,660 | 19,190 | 9,784 | 14,254 | 3,954 | 1,183 | 17,367 | 2,672 | 1,273 | 56 | 98,393 | 245,299 |
| **2005** | 155,277 | 27,269 | 20,827 | 5,548 | 14,228 | 3,797 | 1,525 | 17,028 | 2,726 | 1,560 | 55 | 94,562 | 249,839 |
| **2006** | 147,064 | 22,506 | 19,986 | 8,008 | 14,474 | 3,774 | 1,311 | 17,352 | 1,833 | 1,419 | 56 | 90,719 | 237,783 |
| **2007** | 171,444 | 25,437 | 20,556 | 10,770 | 15,552 | 3,925 | 1,553 | 17,778 | 2,253 | 1,561 | 57 | 99,442 | 270,886 |
| **2008** | 96,212 | 14,131 | 10,589 | 3,640 | 7,770 | 2,039 | 757 | 9,147 | 3,105 | 804 | 29 | 52,011 | 148,222 |
| **Total** | 1,517,373 | 315,033 | 211,580 | 74,197 | 157,958 | 44,483 | 17,381 | 187,973 | 32,225 | 13,584 | 694 | 1,055,107 | 2,572,480 |
| **Annual % Chg 96-07:** | 9.8% | 3.2% | 6.0% | 8.3% | 5.0% | 3.2% | 3.6% | 5.7% | 2.5% | 11.7% | 2.0% | 5.0% | 7.7% |
| **Annual % Chg 04-07:** | 4.2% | -5.3% | 1.7% | 6.8% | 2.8% | -0.3% | 6.9% | 0.9% | -8.7% | 5.3% | 1.0% | -0.1% | 2.5% |

**Notes:**

1. **COL (12) = Sum of Columns (2) through (11).**
2. **COL(13) = COL(1)+COL(12).**
3. **Annual Discount Rate is 5% .**
4. **All figures are rounded to the nearest thousand and may not add to totals for this reason.**

# Ohio Bureau of Workers' Compensation

## Discounted Pure Premium

## Public Employers-Taxing Districts (PEC)

**(per $100 of Payroll)**

| Accident Year | (1) Medical | (2) TT | (3) PTD | (4) Death | (5) % PP | (6) TP+WL & LM/WL + CO | (7) Perm. Partial | (8) Lump Sum Settlements | (9) Living Mainten'ce | (10) Lump Sum Advance'ts | (11) Additional Awards | (12) Sub/Tot Other than Medical | (13) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $0.44 | $0.14 | $0.07 | $0.02 | $0.07 | $0.03 | $0.01 | $0.08 | $0.01 | $0.00 | $0.00 | $0.43 | $0.87 |
| **1997** | 0.50 | 0.13 | 0.09 | 0.04 | 0.07 | 0.02 | 0.01 | 0.07 | 0.01 | 0.00 | 0.00 | 0.44 | 0.94 |
| **1998** | 0.53 | 0.15 | 0.09 | 0.03 | 0.07 | 0.02 | 0.01 | 0.09 | 0.02 | 0.00 | 0.00 | 0.47 | 1.00 |
| **1999** | 0.68 | 0.15 | 0.12 | 0.04 | 0.08 | 0.02 | 0.01 | 0.09 | 0.02 | 0.01 | 0.00 | 0.53 | 1.21 |
| **2000** | 0.72 | 0.18 | 0.12 | 0.04 | 0.08 | 0.02 | 0.01 | 0.10 | 0.02 | 0.01 | 0.00 | 0.57 | 1.29 |
| **2001** | 0.63 | 0.14 | 0.08 | 0.03 | 0.07 | 0.03 | 0.01 | 0.09 | 0.02 | 0.00 | 0.00 | 0.47 | 1.10 |
| **2002** | 0.78 | 0.18 | 0.10 | 0.02 | 0.08 | 0.02 | 0.01 | 0.09 | 0.02 | 0.01 | 0.00 | 0.52 | 1.30 |
| **2003** | 0.78 | 0.19 | 0.10 | 0.02 | 0.07 | 0.02 | 0.01 | 0.09 | 0.02 | 0.01 | 0.00 | 0.53 | 1.31 |
| **2004** | 0.79 | 0.15 | 0.10 | 0.05 | 0.08 | 0.02 | 0.01 | 0.09 | 0.01 | 0.01 | 0.00 | 0.53 | 1.32 |
| **2005** | 0.84 | 0.15 | 0.11 | 0.03 | 0.08 | 0.02 | 0.01 | 0.09 | 0.01 | 0.01 | 0.00 | 0.51 | 1.35 |
| **2006** | 0.78 | 0.12 | 0.11 | 0.04 | 0.08 | 0.02 | 0.01 | 0.09 | 0.01 | 0.01 | 0.00 | 0.48 | 1.26 |
| **2007** | 0.88 | 0.13 | 0.11 | 0.06 | 0.08 | 0.02 | 0.01 | 0.09 | 0.01 | 0.01 | 0.00 | 0.51 | 1.40 |
| **2008** | 0.96 | 0.14 | 0.11 | 0.04 | 0.08 | 0.02 | 0.01 | 0.09 | 0.03 | 0.01 | 0.00 | 0.52 | 1.48 |
| **Annual % Chg 96-07:** | 5.8% | -0.6% | 2.2% | 4.4% | 1.2% | -0.6% | -0.2% | 1.8% | -1.2% | 7.6% | -1.7% | 1.1% | 3.8% |
| **Annual % Chg 04-07:** | 2.5% | -6.9% | 0.0% | 5.1% | 1.2% | -1.9% | 5.2% | -0.7% | -10.1% | 3.7% | -0.6% | -1.7% | 0.9% |

**Notes:**

1. **COL (12) = Sum of Columns (2) through (11).**
2. **COL(13) = COL(1)+COL(12).**
3. **Annual Discount Rate is 5% .**
4. **Payroll figures are from Exhibit 4, Page 8.**

# Ohio Bureau of Workers' Compensation

## Discounted Average Claim Cost per Ultimate Lost Time Claim Count

## Public Employers-Taxing Districts (PEC)

| Accident Year | (1) Medical | (2) TT | (3) PTD | (4) Death | (5) % PP | (6) TP+WL & LM/WL + CO | (7) Perm. Partial | (8) Lump Sum Settlements | (9) Living Mainten'ce | (10) Lump Sum Advance'ts | (11) Additional Awards | (12) Sub/Tot Other than Medical | (13) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $10,530 | $3,385 | $1,785 | $434 | $1,737 | $625 | $128 | $1,835 | $239 | $76 | $7 | $10,252 | $20,782 |
| **1997** | 12,761 | 3,442 | 2,304 | 990 | 1,690 | 500 | 171 | 1,783 | 350 | 101 | 8 | 11,338 | 24,100 |
| **1998** | 14,359 | 4,050 | 2,334 | 762 | 1,816 | 490 | 238 | 2,287 | 413 | 130 | 11 | 12,532 | 26,890 |
| **1999** | 17,000 | 3,826 | 3,057 | 1,002 | 1,893 | 501 | 304 | 2,186 | 427 | 166 | 8 | 13,371 | 30,372 |
| **2000** | 18,535 | 4,541 | 3,054 | 966 | 2,039 | 567 | 335 | 2,548 | 536 | 176 | 16 | 14,778 | 33,313 |
| **2001** | 19,140 | 4,240 | 2,385 | 1,018 | 2,219 | 770 | 249 | 2,836 | 510 | 144 | 9 | 14,381 | 33,521 |
| **2002** | 23,972 | 5,445 | 2,992 | 714 | 2,449 | 657 | 278 | 2,914 | 497 | 158 | 10 | 16,114 | 40,086 |
| **2003** | 25,824 | 6,141 | 3,437 | 576 | 2,477 | 707 | 245 | 3,054 | 508 | 284 | 10 | 17,440 | 43,264 |
| **2004** | 27,682 | 5,400 | 3,616 | 1,844 | 2,686 | 745 | 223 | 3,272 | 504 | 240 | 10 | 18,540 | 46,222 |
| **2005** | 30,233 | 5,309 | 4,055 | 1,080 | 2,770 | 739 | 297 | 3,315 | 531 | 304 | 11 | 18,412 | 48,644 |
| **2006** | 29,221 | 4,472 | 3,971 | 1,591 | 2,876 | 750 | 260 | 3,448 | 364 | 282 | 11 | 18,025 | 47,246 |
| **2007** | 34,380 | 5,101 | 4,122 | 2,160 | 3,119 | 787 | 311 | 3,565 | 452 | 313 | 11 | 19,941 | 54,321 |
| **2008** | 38,587 | 5,667 | 4,247 | 1,460 | 3,116 | 818 | 304 | 3,669 | 1,245 | 323 | 12 | 20,859 | 59,446 |
| Annual % Chg 96-07: | 10.8% | 4.2% | 7.0% | 9.3% | 6.0% | 4.1% | 4.6% | 6.7% | 3.5% | 12.7% | 3.0% | 5.9% | 8.7% |
| Annual % Chg 04-07: | 6.4% | -3.4% | 3.8% | 9.0% | 5.0% | 1.8% | 9.1% | 3.0% | -6.8% | 7.5% | 3.1% | 2.0% | 4.7% |

**Notes:**

1. **COL (12) = Sum of Columns (2) through (11).**
2. **COL(13) = COL(1)+COL(12).**
3. **Annual Discount Rate is 5% .**
4. **Number of Ultimate Lost Time Claim Counts are from Exhibit 4, Page 8.**

# Ohio Bureau of Workers' Compensation

## Undiscounted Average Claim Cost per Ultimate Lost Time Claim Count

## Public Employers-Taxing Districts (PEC)

| Accident Year | (1) Medical | (2) TT | (3) PTD | (4) Death | (5) % PP | (6) TP+WL & LM/WL + CO | (7) Perm. Partial | (8) Lump Sum Settlements | (9) Living Mainten'ce | (10) Lump Sum Advance'ts | (11) Additional Awards | (12) Sub/Tot Other than Medical | (13) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1996** | $17,296 | $4,038 | $4,384 | $1,019 | $2,060 | $846 | $175 | $3,224 | $304 | $138 | $33 | $16,220 | $33,517 |
| **1997** | 22,042 | 4,115 | 5,491 | 2,512 | 2,020 | 676 | 226 | 3,192 | 420 | 180 | 34 | 18,866 | 40,908 |
| **1998** | 25,366 | 4,953 | 5,703 | 2,091 | 2,163 | 664 | 309 | 3,912 | 475 | 225 | 39 | 20,532 | 45,898 |
| **1999** | 34,759 | 4,610 | 7,125 | 2,770 | 2,261 | 686 | 374 | 3,798 | 490 | 273 | 37 | 22,424 | 57,183 |
| **2000** | 35,238 | 5,539 | 7,247 | 2,486 | 2,423 | 774 | 418 | 4,288 | 609 | 294 | 47 | 24,124 | 59,362 |
| **2001** | 34,055 | 5,153 | 5,710 | 2,623 | 2,640 | 1,024 | 319 | 4,670 | 575 | 239 | 39 | 22,993 | 57,048 |
| **2002** | 46,924 | 6,813 | 7,183 | 1,878 | 2,890 | 885 | 362 | 4,805 | 618 | 275 | 41 | 25,750 | 72,673 |
| **2003** | 50,091 | 7,605 | 8,238 | 1,543 | 2,920 | 949 | 323 | 5,000 | 646 | 426 | 43 | 27,692 | 77,783 |
| **2004** | 54,656 | 6,638 | 8,683 | 5,154 | 3,151 | 997 | 299 | 5,306 | 636 | 389 | 44 | 31,298 | 85,954 |
| **2005** | 60,752 | 6,486 | 9,658 | 2,891 | 3,246 | 993 | 382 | 5,388 | 667 | 471 | 45 | 30,227 | 90,979 |
| **2006** | 59,746 | 5,483 | 9,521 | 4,256 | 3,371 | 1,013 | 347 | 5,591 | 463 | 447 | 47 | 30,540 | 90,287 |
| **2007** | 70,336 | 6,272 | 9,873 | 5,797 | 3,632 | 1,061 | 401 | 5,785 | 577 | 485 | 48 | 33,932 | 104,268 |
| **2008** | 78,590 | 6,912 | 10,167 | 3,901 | 3,645 | 1,099 | 396 | 5,955 | 1,591 | 500 | 50 | 34,215 | 112,804 |
| **Annual % Chg 96-07:** | 12.7% | 4.4% | 6.9% | 10.1% | 5.8% | 4.0% | 4.5% | 5.7% | 4.2% | 11.1% | 3.2% | 6.3% | 10.1% |
| **Annual % Chg 04-07:** | 7.7% | -3.3% | 3.8% | 7.7% | 4.8% | 2.1% | 8.1% | 3.0% | -6.4% | 6.3% | 3.1% | 2.6% | 5.9% |

**Notes:**

1. **COL (12) = Sum of Columns (2) through (11).**
2. **COL(13) = COL(1)+COL(12).**
3. **Number of Ultimate Lost Time Claim Counts are from Exhibit 4, Page 8.**

# Ohio Bureau of Workers' Compensation
## Public Employers-Taxing Districts (PEC)
## Other Statistics

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Discounted | | | |
| Accident Year | Ratio of Compensat'n to Total Losses | Ratio of Medical to Total Losses | No. of Claims/ Employee | Loss Cost/ Payroll ($100) |
| **1996** | 49.3% | 50.7% | 0.0114 | $0.87 |
| **1997** | 47.0% | 53.0% | 0.0112 | 0.94 |
| **1998** | 46.6% | 53.4% | 0.0112 | 1.00 |
| **1999** | 44.0% | 56.0% | 0.0124 | 1.21 |
| **2000** | 44.4% | 55.6% | 0.0124 | 1.29 |
| **2001** | 42.9% | 57.1% | 0.0108 | 1.10 |
| **2002** | 40.2% | 59.8% | 0.0110 | 1.30 |
| **2003** | 40.3% | 59.7% | 0.0106 | 1.31 |
| **2004** | 40.1% | 59.9% | 0.0103 | 1.32 |
| **2005** | 37.8% | 62.2% | 0.0102 | 1.35 |
| **2006** | 38.2% | 61.8% | 0.0102 | 1.26 |
| **2007** | 36.7% | 63.3% | 0.0102 | 1.40 |
| **2008** | 35.1% | 64.9% | 0.0102 | 1.48 |

| | (5) | (6) | (7) | (8) |
|---|---|---|---|---|
| | Undiscounted | | | |
| Accident Year | Ratio of Compensat'n to Total Losses | Ratio of Medical to Total Losses | No. of Claims/ Employee | Loss Cost/ Payroll ($100) |
| **1996** | 48.4% | 51.6% | 0.0114 | $1.40 |
| **1997** | 46.1% | 53.9% | 0.0112 | 1.59 |
| **1998** | 44.7% | 55.3% | 0.0112 | 1.71 |
| **1999** | 39.2% | 60.8% | 0.0124 | 2.28 |
| **2000** | 40.6% | 59.4% | 0.0124 | 2.29 |
| **2001** | 40.3% | 59.7% | 0.0108 | 1.88 |
| **2002** | 35.4% | 64.6% | 0.0110 | 2.37 |
| **2003** | 35.6% | 64.4% | 0.0106 | 2.35 |
| **2004** | 36.4% | 63.6% | 0.0103 | 2.46 |
| **2005** | 33.2% | 66.8% | 0.0102 | 2.52 |
| **2006** | 33.8% | 66.2% | 0.0102 | 2.40 |
| **2007** | 32.5% | 67.5% | 0.0102 | 2.68 |
| **2008** | 30.3% | 69.7% | 0.0102 | 2.81 |

# Ohio Bureau of Workers' Compensation

## Discounted Ultimate Losses

## Public Employers-Taxing Districts (PEC)

(Dollars in thousands)

**6/30/08**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance's | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | $15,258 | $12,952 | $8,051 | $4,162 | $4,649 | $1,563 | $10,305 | $56,939 | $18,304 | $9,653 | $2,349 | $9,392 | $3,381 | $690 | $9,923 | $1,295 | $409 | $39 | $55,435 | $112,375 |
| 1997 | 19,437 | 14,613 | 10,609 | 3,591 | 6,312 | 2,701 | 10,355 | 67,618 | 18,235 | 12,208 | 5,248 | 8,957 | 2,650 | 908 | 9,445 | 1,852 | 534 | 40 | 60,078 | 127,696 |
| 1998 | 22,584 | 16,542 | 13,947 | 3,645 | 6,534 | 1,898 | 12,107 | 77,257 | 21,792 | 12,560 | 4,098 | 9,770 | 2,634 | 1,282 | 12,308 | 2,224 | 702 | 57 | 67,428 | 144,685 |
| 1999 | 27,862 | 18,671 | 17,879 | 4,694 | 7,913 | 11,655 | 13,656 | 102,330 | 23,031 | 18,402 | 6,032 | 11,392 | 3,017 | 1,831 | 13,159 | 2,573 | 1,000 | 50 | 80,486 | 182,816 |
| 2000 | 33,955 | 20,547 | 20,988 | 5,538 | 10,457 | 6,109 | 15,491 | 113,086 | 27,705 | 18,633 | 5,895 | 12,440 | 3,458 | 2,045 | 15,548 | 3,271 | 1,073 | 96 | 90,163 | 203,249 |
| 2001 | 32,097 | 18,921 | 18,120 | 5,050 | 11,202 | 1,997 | 17,862 | 105,248 | 23,318 | 13,117 | 5,598 | 12,204 | 4,235 | 1,371 | 15,593 | 2,804 | 793 | 49 | 79,082 | 184,329 |
| 2002 | 41,619 | 23,117 | 22,054 | 6,185 | 15,937 | 7,961 | 20,441 | 137,314 | 31,191 | 17,137 | 4,091 | 14,031 | 3,766 | 1,591 | 16,692 | 2,847 | 907 | 55 | 92,307 | 229,622 |
| 2003 | 43,504 | 23,760 | 22,163 | 6,767 | 15,456 | 7,904 | 21,124 | 140,677 | 33,454 | 18,722 | 3,135 | 13,493 | 3,853 | 1,334 | 16,634 | 2,770 | 1,550 | 55 | 95,001 | 235,678 |
| 2004 | 49,157 | 24,044 | 22,668 | 6,775 | 16,642 | 6,320 | 21,300 | 146,906 | 28,660 | 19,190 | 9,784 | 14,254 | 3,954 | 1,183 | 17,367 | 2,672 | 1,273 | 56 | 98,393 | 245,299 |
| 2005 | 52,921 | 23,931 | 23,838 | 7,274 | 17,073 | 8,182 | 22,059 | 155,277 | 27,269 | 20,827 | 5,548 | 14,228 | 3,797 | 1,525 | 17,028 | 2,726 | 1,560 | 55 | 94,562 | 249,839 |
| 2006 | 48,574 | 22,888 | 24,693 | 7,609 | 15,571 | 7,431 | 20,297 | 147,064 | 22,506 | 19,986 | 8,008 | 14,474 | 3,774 | 1,311 | 17,352 | 1,833 | 1,419 | 56 | 90,719 | 237,783 |
| 2007 | 28,480 | 14,026 | 13,368 | 4,084 | 10,068 | 4,742 | 10,955 | 85,722 | 12,719 | 10,278 | 5,385 | 7,776 | 1,963 | 776 | 8,889 | 1,126 | 781 | 29 | 49,721 | 135,443 |
| Total | 415,448 | 234,012 | 218,378 | 65,374 | 137,814 | 68,463 | 195,950 | 1,335,439 | 288,183 | 190,713 | 65,172 | 142,412 | 40,482 | 15,848 | 169,937 | 27,994 | 11,999 | 636 | 953,376 | 2,288,815 |

**6/30/07**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance's | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | $18,418 | $14,662 | $8,135 | $4,348 | $5,143 | $1,389 | $10,300 | $62,395 | $18,529 | $10,119 | $2,354 | $9,430 | $3,297 | $697 | $9,115 | $1,274 | $436 | $40 | $55,291 | $117,686 |
| 1997 | 23,074 | 17,945 | 12,315 | 3,823 | 7,470 | 2,522 | 10,365 | 77,514 | 18,488 | 12,463 | 5,306 | 8,971 | 2,581 | 956 | 8,773 | 1,908 | 545 | 41 | 60,032 | 137,546 |
| 1998 | 23,909 | 19,110 | 14,507 | 3,660 | 10,068 | 1,577 | 12,047 | 84,878 | 21,862 | 12,599 | 3,724 | 9,819 | 2,575 | 1,345 | 10,794 | 2,346 | 681 | 58 | 65,804 | 150,683 |
| 1999 | 32,866 | 23,538 | 18,155 | 4,896 | 12,133 | 8,899 | 13,651 | 114,139 | 23,355 | 17,859 | 5,617 | 11,427 | 2,949 | 1,979 | 11,873 | 2,526 | 973 | 51 | 78,610 | 192,749 |
| 2000 | 37,017 | 26,515 | 21,715 | 5,647 | 17,266 | 7,343 | 15,532 | 131,034 | 27,493 | 18,068 | 5,631 | 12,488 | 3,347 | 2,128 | 13,659 | 3,405 | 969 | 93 | 87,278 | 218,312 |
| 2001 | 39,718 | 26,161 | 18,881 | 5,702 | 18,635 | 2,911 | 17,849 | 129,857 | 22,527 | 14,448 | 5,865 | 12,188 | 3,904 | 1,546 | 13,548 | 3,118 | 795 | 51 | 77,989 | 207,846 |
| 2002 | 52,656 | 34,318 | 22,515 | 7,462 | 29,254 | 7,285 | 20,330 | 173,820 | 30,725 | 16,836 | 4,190 | 14,032 | 3,634 | 1,638 | 14,285 | 2,759 | 777 | 56 | 88,931 | 262,751 |
| 2003 | 55,795 | 34,669 | 23,117 | 7,592 | 31,544 | 8,973 | 21,037 | 182,727 | 33,559 | 20,104 | 3,168 | 13,569 | 3,588 | 1,483 | 14,276 | 2,820 | 1,418 | 57 | 94,043 | 276,770 |
| 2004 | 54,789 | 34,733 | 23,931 | 7,776 | 30,657 | 4,185 | 21,393 | 177,465 | 28,341 | 20,656 | 4,711 | 14,410 | 3,704 | 1,385 | 14,829 | 2,648 | 1,038 | 58 | 91,781 | 269,246 |
| 2005 | 57,162 | 34,826 | 26,017 | 8,267 | 31,337 | 5,109 | 21,928 | 184,647 | 27,296 | 21,442 | 6,394 | 14,255 | 3,650 | 1,610 | 14,424 | 2,517 | 1,183 | 57 | 92,829 | 277,476 |
| 2006 | 54,884 | 34,842 | 22,806 | 8,835 | 34,191 | 6,373 | 20,364 | 182,294 | 24,424 | 21,564 | 10,004 | 14,118 | 3,651 | 1,513 | 14,625 | 1,792 | 1,203 | 57 | 92,952 | 275,246 |
| 2007 | 34,070 | 21,140 | 20,487 | 4,954 | 19,818 | 4,141 | 11,539 | 116,149 | 13,544 | 11,146 | 3,033 | 7,298 | 1,877 | 798 | 7,476 | 3,183 | 619 | 30 | 49,004 | 165,153 |
| Total | 484,359 | 322,461 | 232,580 | 72,963 | 247,517 | 60,706 | 196,334 | 1,616,920 | 290,143 | 197,305 | 59,996 | 142,004 | 38,756 | 17,079 | 147,679 | 30,296 | 10,636 | 650 | 934,544 | 2,551,463 |

**Difference**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance's | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | ($3,160) | ($1,710) | ($84) | ($186) | ($494) | $174 | $5 | ($5,455) | ($224) | ($466) | ($6) | ($37) | $84 | ($7) | $807 | $21 | ($27) | ($1) | $144 | ($5,311) |
| 1997 | (3,637) | (3,331) | (1,706) | (233) | (1,158) | 179 | (10) | (9,896) | (252) | (255) | (58) | (15) | 69 | (48) | 672 | (56) | (10) | (1) | 46 | (9,849) |
| 1998 | (1,325) | (2,568) | (560) | (15) | (3,534) | 321 | 60 | (7,621) | (70) | (39) | 373 | (49) | 59 | (63) | 1,514 | (122) | 21 | (1) | 1,623 | (5,998) |
| 1999 | (5,004) | (4,868) | (276) | (202) | (4,220) | 2,756 | 5 | (11,809) | (324) | 543 | 416 | (35) | 68 | (149) | 1,286 | 47 | 27 | (1) | 1,877 | (9,932) |
| 2000 | (3,061) | (5,968) | (727) | (109) | (6,808) | (1,233) | (41) | (17,948) | 212 | 565 | 264 | (48) | 111 | (82) | 1,889 | (133) | 104 | 3 | 2,885 | (15,063) |
| 2001 | (7,621) | (7,240) | (761) | (653) | (7,433) | (914) | 13 | (24,610) | 791 | (1,331) | (266) | 16 | 331 | (175) | 2,044 | (314) | (2) | (1) | 1,092 | (23,517) |
| 2002 | (11,037) | (11,201) | (460) | (1,277) | (13,317) | 676 | 112 | (36,505) | 466 | 301 | (99) | (1) | 132 | (47) | 2,407 | 88 | 130 | (2) | 3,376 | (33,129) |
| 2003 | (12,292) | (10,909) | (954) | (825) | (16,088) | (1,068) | 87 | (42,050) | (105) | (1,383) | (33) | (76) | 266 | (149) | 2,358 | (50) | 132 | (2) | 958 | (41,093) |
| 2004 | (5,632) | (10,690) | (1,264) | (1,001) | (14,015) | 2,136 | (93) | (30,559) | 319 | (1,466) | 5,074 | (155) | 250 | (202) | 2,537 | 24 | 235 | (3) | 6,612 | (23,947) |
| 2005 | (4,241) | (10,896) | (2,179) | (993) | (14,264) | 3,072 | 131 | (29,370) | (27) | (615) | (847) | (27) | 146 | (85) | 2,604 | 209 | 377 | (2) | 1,733 | (27,636) |
| 2006 | (6,310) | (11,954) | 1,887 | (1,225) | (18,620) | 1,058 | (67) | (35,230) | (1,918) | (1,578) | (1,996) | 356 | 123 | (202) | 2,727 | 41 | 216 | (2) | (2,233) | (37,463) |
| 2007 | (5,590) | (7,114) | (7,119) | (871) | (9,750) | 601 | (584) | (30,427) | (826) | (868) | 2,353 | 478 | 85 | (21) | 1,413 | (2,057) | 161 | (1) | 717 | (29,710) |
| Total | (68,911) | (88,449) | (14,202) | (7,588) | (109,703) | 7,757 | (384) | (281,480) | (1,960) | (6,592) | 5,175 | 407 | 1,726 | (1,231) | 22,258 | (2,302) | 1,363 | (13) | 18,832 | (262,649) |
| | -14.2% | -27.4% | -6.1% | -10.4% | -44.3% | 12.8% | -0.2% | -17.4% | -0.7% | -3.3% | 8.6% | 0.3% | 4.5% | -7.2% | 15.1% | -7.6% | 12.8% | -2.1% | 2.0% | -10.3% |

# Ohio Bureau of Workers' Compensation

## Undiscounted Ultimate Losses

## Public Employers-Taxing Districts (PEC)

(Dollars in thousands)

Oliver Wyman Actuarial Consulting, Inc

Audit as of June 30, 2008

Ohio Bureau of Workers' Compensation

**6/30/08**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance'ts | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | $24,822 | $17,718 | $22,663 | $5,363 | $8,522 | $3,832 | $10,609 | $93,528 | $21,835 | $23,705 | $5,509 | $11,138 | $4,576 | $949 | $17,431 | $1,642 | $748 | $177 | $87,709 | $181,23 |
| 1997 | 33,038 | 20,777 | 29,638 | 4,965 | 11,652 | 6,073 | 10,651 | 116,793 | 21,801 | 29,095 | 13,311 | 10,703 | 3,581 | 1,199 | 16,915 | 2,226 | 954 | 181 | 99,967 | 216,76 |
| 1998 | 40,056 | 23,802 | 40,003 | 5,160 | 10,622 | 4,432 | 12,406 | 136,481 | 26,647 | 30,687 | 11,249 | 11,639 | 3,570 | 1,660 | 21,047 | 2,558 | 1,208 | 209 | 110,475 | 246,95 |
| 1999 | 51,610 | 26,766 | 52,813 | 6,939 | 13,240 | 43,901 | 13,954 | 209,223 | 27,746 | 42,885 | 16,672 | 13,610 | 4,130 | 2,254 | 22,862 | 2,949 | 1,645 | 222 | 134,976 | 344,19 |
| 2000 | 62,483 | 29,023 | 61,737 | 8,091 | 17,314 | 20,627 | 15,723 | 214,997 | 33,792 | 44,215 | 15,168 | 14,786 | 4,720 | 2,547 | 26,159 | 3,716 | 1,793 | 286 | 147,183 | 362,18 |
| 2001 | 55,913 | 26,558 | 53,548 | 7,135 | 19,332 | 6,685 | 18,091 | 187,261 | 28,337 | 31,400 | 14,423 | 14,519 | 5,632 | 1,756 | 25,677 | 3,161 | 1,314 | 217 | 126,437 | 313,69 |
| 2002 | 78,682 | 33,381 | 65,842 | 8,803 | 32,537 | 28,870 | 20,676 | 268,790 | 39,028 | 41,149 | 10,757 | 16,554 | 5,068 | 2,071 | 27,523 | 3,539 | 1,573 | 236 | 147,499 | 416,28 |
| 2003 | 81,525 | 34,723 | 65,636 | 10,086 | 30,981 | 28,627 | 21,289 | 272,867 | 41,430 | 44,875 | 8,405 | 15,907 | 5,170 | 1,757 | 27,234 | 3,517 | 2,322 | 233 | 150,850 | 423,71 |
| 2004 | 98,067 | 35,675 | 67,785 | 10,338 | 34,000 | 22,756 | 21,437 | 290,060 | 35,226 | 46,081 | 27,353 | 16,723 | 5,290 | 1,589 | 28,157 | 3,377 | 2,064 | 235 | 166,096 | 456,15 |
| 2005 | 107,146 | 35,631 | 71,260 | 11,128 | 35,143 | 29,483 | 22,232 | 312,023 | 33,313 | 49,605 | 14,847 | 16,672 | 5,101 | 1,960 | 27,672 | 3,425 | 2,421 | 232 | 155,249 | 467,27 |
| 2006 | 100,741 | 34,590 | 74,226 | 11,781 | 32,001 | 26,852 | 20,502 | 300,693 | 27,597 | 47,919 | 21,422 | 16,967 | 5,097 | 1,744 | 28,141 | 2,333 | 2,250 | 236 | 153,705 | 454,39 |
| 2007 | 58,150 | 21,367 | 40,103 | 6,324 | 21,263 | 17,114 | 11,055 | 175,376 | 15,639 | 24,618 | 14,454 | 9,057 | 2,645 | 1,001 | 14,424 | 1,439 | 1,210 | 121 | 84,607 | 259,98 |
| **Total** | 792,233 | 340,012 | 645,253 | 96,112 | 266,605 | 239,252 | 198,625 | 2,578,093 | 352,393 | 456,234 | 173,569 | 168,275 | 54,580 | 20,488 | 283,244 | 33,883 | 19,502 | 2,584 | 1,564,752 | 4,142,844 |

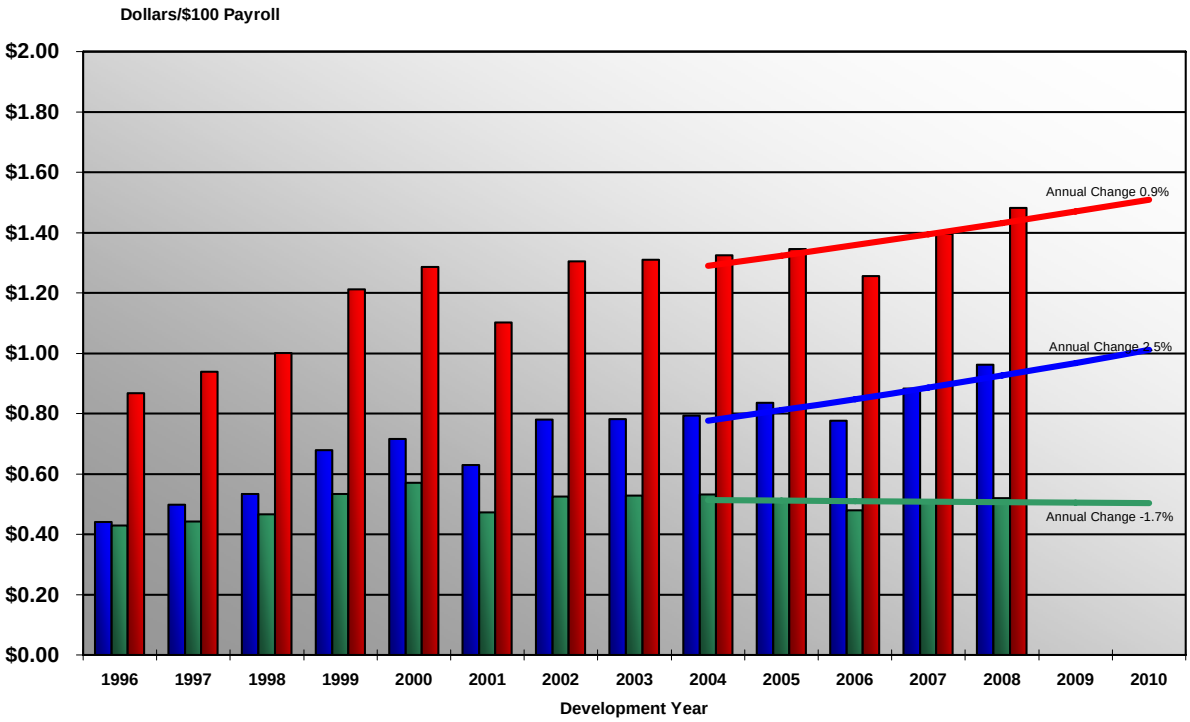
**6/30/07**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance'ts | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | $35,824 | $23,915 | $22,756 | $5,950 | $10,515 | $3,055 | $10,601 | $112,616 | $22,365 | $24,299 | $5,339 | $11,204 | $4,420 | $971 | $16,448 | $1,599 | $855 | $178 | $87,678 | $200,29 |
| 1997 | 45,604 | 32,222 | 35,600 | 5,689 | 16,160 | 5,275 | 10,670 | 151,219 | 22,374 | 29,112 | 13,017 | 10,730 | 3,453 | 1,290 | 16,184 | 2,348 | 1,040 | 182 | 99,732 | 250,95 |
| 1998 | 45,146 | 33,271 | 41,716 | 5,318 | 23,366 | 3,089 | 12,307 | 164,212 | 26,861 | 29,984 | 9,545 | 11,719 | 3,457 | 1,775 | 19,043 | 2,808 | 1,244 | 210 | 106,647 | 270,85 |
| 1999 | 68,808 | 43,126 | 53,479 | 7,652 | 28,429 | 32,497 | 13,949 | 247,940 | 28,459 | 40,775 | 14,656 | 13,670 | 3,999 | 2,497 | 21,293 | 2,863 | 1,685 | 224 | 130,121 | 378,06 |
| 2000 | 73,895 | 48,544 | 63,980 | 8,622 | 41,491 | 25,527 | 15,790 | 277,849 | 33,529 | 41,934 | 13,769 | 14,863 | 4,524 | 2,696 | 23,789 | 3,970 | 1,726 | 283 | 141,082 | 418,93 |
| 2001 | 80,913 | 49,174 | 55,985 | 8,901 | 45,754 | 10,315 | 18,078 | 269,119 | 27,063 | 33,853 | 14,711 | 14,507 | 5,140 | 2,026 | 23,066 | 3,727 | 1,415 | 219 | 125,728 | 394,84 |
| 2002 | 114,842 | 67,551 | 67,340 | 12,010 | 80,235 | 26,369 | 20,529 | 388,877 | 38,483 | 39,392 | 10,655 | 16,569 | 4,839 | 2,178 | 24,491 | 3,410 | 1,472 | 239 | 141,729 | 530,60 |
| 2003 | 121,215 | 68,393 | 68,826 | 12,364 | 87,551 | 33,022 | 21,182 | 412,553 | 41,895 | 46,975 | 8,192 | 16,014 | 4,776 | 1,991 | 24,265 | 3,612 | 2,278 | 236 | 150,235 | 562,78 |
| 2004 | 120,231 | 69,166 | 72,043 | 13,011 | 84,275 | 14,843 | 21,566 | 395,135 | 35,074 | 48,378 | 12,129 | 16,929 | 4,925 | 1,887 | 25,078 | 3,363 | 1,906 | 241 | 149,909 | 545,04 |
| 2005 | 126,727 | 69,565 | 78,397 | 13,829 | 86,516 | 18,080 | 22,084 | 415,198 | 33,674 | 49,946 | 16,628 | 16,714 | 4,842 | 2,120 | 24,424 | 3,161 | 2,081 | 236 | 153,826 | 569,02 |
| 2006 | 125,820 | 70,507 | 68,912 | 14,998 | 95,596 | 22,951 | 20,589 | 419,373 | 30,428 | 50,353 | 25,966 | 16,592 | 4,851 | 2,027 | 24,707 | 2,276 | 2,111 | 238 | 159,549 | 578,92 |
| 2007 | 76,541 | 42,129 | 61,819 | 8,289 | 54,794 | 14,832 | 11,525 | 269,928 | 16,733 | 26,015 | 7,845 | 8,579 | 2,497 | 1,062 | 12,668 | 4,042 | 1,088 | 123 | 80,652 | 350,58 |
| **Total** | 1,035,566 | 617,564 | 690,852 | 116,633 | 654,682 | 209,855 | 198,869 | 3,524,020 | 356,938 | 461,017 | 152,452 | 168,091 | 51,723 | 22,519 | 255,455 | 37,181 | 18,901 | 2,609 | 1,526,887 | 5,050,90 |

**Difference**

| Accident Year | (1) Hospital | (2) Physician | (3) Pharmacy | (4) Chiropractor | (5) Rehabilitation | (6) Health Other | (7) Med Only | (8) Total Medical | (9) TT | (10) PTD | (11) Death | (12) % PP | (13) TP+WL & LM/WL + CO | (14) Perm. Partial | (15) Lump Sum Settlements | (16) Living Mainten'ce | (17) Lump Sum Advance'ts | (18) Additional Awards | (19) Sub/Tot Other than Medical | (20) Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | ($11,002) | ($6,198) | ($93) | ($587) | ($1,993) | $776 | $9 | ($19,088) | ($530) | ($594) | $169 | ($66) | $156 | ($22) | $983 | $43 | ($106) | ($1) | $31 | ($19,056) |
| 1997 | (12,566) | (11,446) | (5,962) | (724) | (4,508) | 798 | (19) | (34,426) | (573) | (17) | 294 | (27) | 128 | (91) | 731 | (122) | (86) | (1) | 235 | (34,191) |
| 1998 | (5,089) | (9,469) | (1,714) | (158) | (12,744) | 1,343 | 100 | (27,731) | (214) | 704 | 1,704 | (81) | 113 | (115) | 2,004 | (250) | (36) | (1) | 3,828 | (23,903) |
| 1999 | (17,197) | (16,360) | (666) | (713) | (15,190) | 11,404 | 5 | (38,717) | (713) | 2,110 | 2,016 | (60) | 131 | (243) | 1,569 | 87 | (40) | (2) | 4,855 | (33,862) |
| 2000 | (11,413) | (19,522) | (2,243) | (531) | (24,177) | (4,900) | (67) | (62,852) | 263 | 2,281 | 1,399 | (77) | 196 | (148) | 2,371 | (254) | 67 | 3 | 6,101 | (56,751) |
| 2001 | (25,000) | (22,616) | (2,437) | (1,766) | (26,422) | (3,629) | 13 | (81,858) | 1,274 | (2,453) | (288) | 12 | 491 | (270) | 2,612 | (566) | (101) | (2) | 708 | (81,149) |
| 2002 | (36,160) | (34,170) | (1,499) | (3,208) | (47,699) | 2,500 | 147 | (120,088) | 545 | 1,756 | 102 | (15) | 229 | (107) | 3,033 | 129 | 101 | (3) | 5,770 | (114,317) |
| 2003 | (39,689) | (33,670) | (3,190) | (2,278) | (56,571) | (4,395) | 107 | (139,686) | (465) | (2,101) | 213 | (107) | 394 | (234) | 2,969 | (95) | 44 | (4) | 615 | (139,071) |
| 2004 | (22,164) | (33,490) | (4,257) | (2,672) | (50,275) | 7,914 | (129) | (105,075) | 152 | (2,297) | 15,224 | (206) | 366 | (298) | 3,079 | 15 | 158 | (7) | 16,187 | (88,888) |
| 2005 | (19,582) | (33,934) | (7,137) | (2,702) | (51,373) | 11,403 | 148 | (103,175) | (361) | (341) | (1,781) | (42) | 259 | (159) | 3,248 | 264 | 339 | (4) | 1,423 | (101,753) |
| 2006 | (25,079) | (35,917) | 5,314 | (3,216) | (63,595) | 3,900 | (87) | (118,680) | (2,831) | (2,434) | (4,544) | 376 | 246 | (283) | 3,434 | 56 | 139 | (3) | (5,844) | (124,523) |
| 2007 | (18,391) | (20,761) | (21,716) | (1,966) | (33,531) | 2,282 | (470) | (94,552) | (1,094) | (1,397) | 6,609 | 477 | 148 | (61) | 1,756 | (2,604) | 122 | (2) | 3,955 | (90,598) |
| **Total** | (243,333) | (277,552) | (45,599) | (20,521) | (388,077) | 29,397 | (244) | (945,927) | (4,546) | (4,783) | 21,117 | 184 | 2,857 | (2,031) | 27,790 | (3,298) | 601 | (26) | 37,865 | (908,063) |
| | -23.5% | -44.9% | -6.6% | -17.6% | -59.3% | 14.0% | -0.1% | -26.8% | -1.3% | -1.0% | 13.9% | 0.1% | 5.5% | -9.0% | 10.9% | -8.9% | 3.2% | -1.0% | 2.5% | -18.0% |

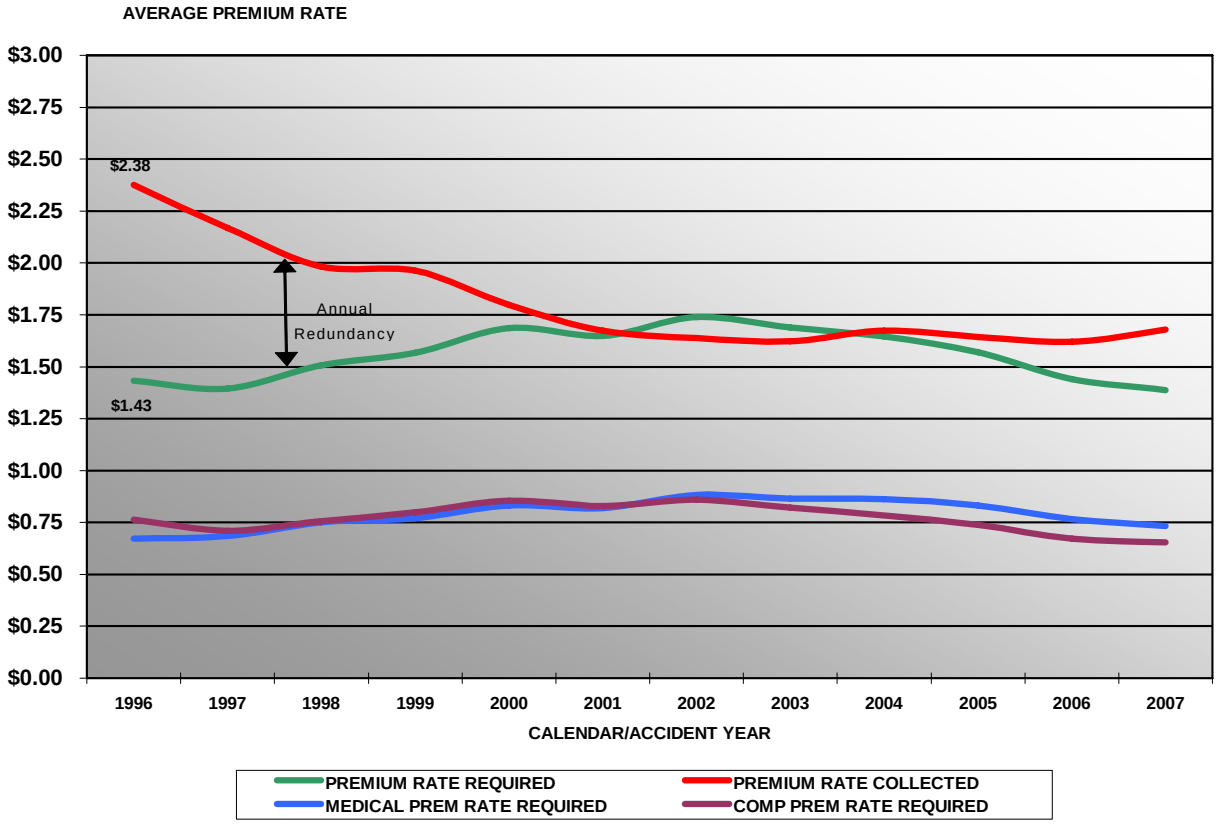
# DISCOUNTED PURE PREMIUM BY TYPE OF BENEFIT (PEC)




Discount Rate 5.00%

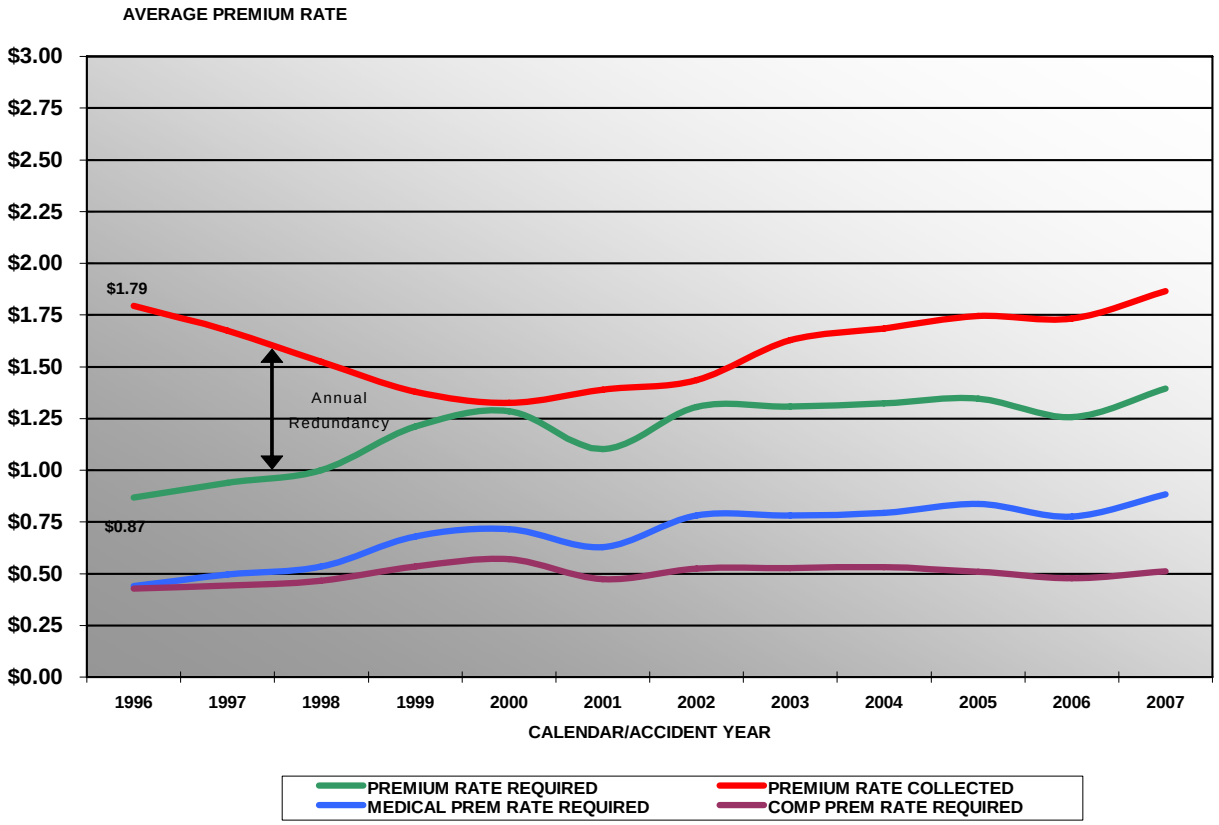
ACTUAL MED | ACTUAL COMP | ACTUAL TOTAL | FIT MED (03-07) | FIT COMP (03-07) | FIT TOTAL (03-07)

# COLLECTED AND REQUIRED PREMIUM RATE
# PRIVATE EMPLOYERS




This graph compares the premium rate collected (after subtracting S+H and PPSF) during each of the last 13 Calendar Years to the projected premium rate required to pay benefits by the premium.

# COLLECTED AND REQUIRED PREMIUM RATE
# PUBLIC EMPLOYERS – TAXING DISTRICTS




This graph compares the premium rate collected (after subtracting S+H and PPSF) during each of the last 13 Calendar Years to the projected premium rate required to pay benefits by the premium.

**BWC Board of Directors**
Actuarial Committee
# CAO Report
John Pedrick, Chief Actuarial Officer
September 25, 2008

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We have several notable successes for September. First, on September 8, 2008 we released the new MIRA II web screens and claim reserves. While there are more tasks to complete, this is a major milestone in replacing the former MIRA I system. Many BWC staff members worked long hours and overcame some last minute hurdles to meet this deadline. Second, we made progress on the implementation of caps on changes in experience modification beginning July 1, 2009, and are laying the groundwork to implement new products such as deductibles at the same time. Third, we submitted requests for several actuarial positions to the Office of Budget and Management for approval, and expect to post these opportunities very soon.

More details can be found below.

## Comprehensive Plan Implementation

Three teams have been formed to implement the plan approved by the Board during its June, 2008 meeting. Tasks and timelines for the various efforts and deliverables follow. Larry King is coordinating the overall project.

### 1. Communications/Group Structure and Governance Team

| Jeremy Jackson and David Hollingsworth, Consultant | | |
|---|---|---|
| **Task/Function** | **Timeline** | **Status** |
| Stakeholder Communications | 8/1/2008 start | Ongoing |
| Rules/ Outreach | 8/1/2008 start | Ongoing |
| Media | 8/1/2008 start | Ongoing |
| Targeted Employer Communications | 8/1/2008 start | Ongoing |

- In early September, BWC formed workgroups which were available to any sponsoring associations or TPAs that wished to participate. Two workgroups are focused on product development and group rules and responsibilities. A third workgroup is also working with PEC employers to explore challenges unique to that segment of our book of business. Approximately 30 organizations are actively participating and providing input on an ongoing basis.
- We are reviewing data elements to enable the analysis requested by Art Cohen on behalf of the Coalition on Aug. 1;

### 2. Capping/Split Plan Team

| Terry Potts and Paul Flowers | | |
|---|---|---|
| **Task/Function** | **Timeline** | **Status** |
| Identify parameters and structure for capping strategy | Jul – Dec, 2008 | Ongoing |
| System development | Sep 2008 to Dec 2009 | |
| Capping strategy for PA employers effective | July 1, 2009 | |
| Capping strategy for PEC employers effective | January 1, 2010 | |
| Split Plan development | Jan 2009 to Jun 2010 | |
| Split Plan implementation | July 1, 2011 | |

There are two capping methods we are developing:

- The first is an overall experience modifier (EM) cap of 100%, which will limit changes in EMs from one year to the next.
- The second cap applies to increases an employer could receive due to the changes in credibility tables and the eventual change to a split experience rating plan, by isolating and capping the impact of changes in our experience rating methodology. Originally, we proposed this as a limit on premium increases due to the methodology change. However, the TPA and group sponsor community suggested an approach that is easier to administer with the same impact. As a result, we will limit EM increases at a level that is equivalent to the original premium cap proposal. Details will be finalized soon.

### 3. New Products/Deloitte Integration Team

| Joy Bush and Jamey Fauque, Centric Consulting | | |
|---|---|---|
| **Task/Function** | **Timeline** | **Status** |
| Develop Project Plan | Aug 11-15 | Completed |
| Develop Deductible Plan | Aug – Dec, 2008 | In progress |
| Develop Dividend/Retro/Sharing Plans | Aug – Dec, 2008 | In progress |
| Review Current Programs | Aug – Dec, 2008 | In progress |
| Board Meeting to Review Final Proposals | Dec 17 | In progress |

We've made progress towards implementing as many as three new programs beginning July 1, 2009. We've been actively getting input from sponsors and TPAs on how these programs could work while trying to identify the market that might exist for each.

## House Bill 100 §512.50 Actuarial Study

| Task/Function | Timeline | Status |
|---|---|---|
| Project Begins | Feb 19, 2008 | Completed |
| Initial Meeting with Deloitte | Feb 27, 2008 | Completed |
| Deloitte introduced to Actuarial Committee | Feb 28, 2008 | Completed |
| Deloitte training presentation to Actuarial Committee | May 28, 2008 | Completed |
| Deloitte presents first grouping report to Actuarial Committee | June 25, 2008 | Completed |
| Deloitte presents second grouping report to Actuarial Committee | August 28, 2008 | On Schedule |
| Deloitte presents third grouping report to Actuarial Committee | October 30, 2008 | In Progress |
| Deloitte presents final report to Actuarial Committee/Board | Dec 17, 2008 | In Progress |
| Project ends | Dec 31, 2008 | |

## MIRA II

We are now live with MIRA II. Data and customers are able to access this information via the web. The tutorial is scheduled for release by September 19th and will be available to internal and external customers.

| Task/Function | Timeline | Status |
|---|---|---|
| Historical Data Extraction | January – August 2007 | Completed |
| Customer Workgroups | | ---------- |
| • Employer-Web Services Focus Group | November 2007 | Complete |
| • Claim Expert Workgroup | November – December 2007 | Complete |
| • MIRA II-TPA Update Meeting | December 11, 2007 | Complete |
| MIRA II Injury Mapping Logic-Finalized and Approved | January 2008 | Complete |
| MIRA II-Development of Reserve Models (FIC) | February – May 2008 | Complete |

| | | |
|---|---|---|
| Data Interface Testing | March – May 2008 | Complete |
| MIRA II- Web Services Enhancement | February – July 2008 | Completed |
| Testing/Review of Initial MIRA II Reserves | May – June 2008 | Complete |
| Training/Education on MIRA II System | July – November 2008 | On schedule |
| MIRA II Reprediction (Adjustment) System | | |
| Design, Develop, Test, Implement | May 2008 – January 2009 | |
| Implement MIRA II | July – September 2008 | On schedule |

## Public Employer Taxing District Rates

| Task/Function | Timeline | Status |
|---|---|---|
| Public Employer Taxing District Rates | July 2008 - December 2008 | In progress |
| Summary Payroll | August 25, 2008 through September 12, 2008 | In progress |
| Summary Losses | August 25, 2008 through September 19, 2008 | In progress |
| Group Application Deadline | August 29, 2008 | Completed |
| Rate Calculations | September 19, 2008 though November 14, 2008 | |
| Rate indication to Actuarial Committee | September 24, 2008 | |
| Rate indication consent from WCB | September 25, 2008 | |
| Final Rates to WCB | November 20, 2008 | |
| Mailing of Employer Rate Letters | December 30, 2008 | |

## Actuarial Division Staffing

Staff Requests were completed for the following positions: Director of Actuarial Analysis and Manager of Ratemaking. After the positions are approved by OBM the positions can be posted.

We have completed 6 interviews for an open underwriter position, made the selection and the effective date for the new staff to begin has been set for September 29, 2008. We are in the process of posting another underwriter position that became vacant the week of September 8, 2008. We currently have one underwriter position that has been on disability since May 15, 2009.

## Actuarial Consultant Contract

The Actuarial Consultant Contract expires December 31, 2009. The Actuarial staff will begin reviewing and updating the Request for Proposal and bring to the committee a proposed schedule for the RFP process. The RFP process will change this year due to the requirements of House Bill 562, which will go into effect in the near future that will significantly affect BWC's procurement processes by requiring DAS involvement in some of the BWC's purchases.

## Follow up items from prior Actuarial Committee meeting

**Deloitte Report**:
The benefit level comparison as reported by Deloitte will be updated in their next presentation based upon the additional claim policy information provided. The original report assumed that temporary total (TT) benefits remained at 72% of the full weekly wage (FWW) for the duration of TT benefits. The Ohio Revised Code 4123.61 requires that the first 12 weeks be paid at 72% of FWW and then it is reduced to 66 2/3% of average weekly wage for any benefits beyond the initial 12 weeks.

**Lump Sum Settlement:**
In response to a question at the last actuarial committee, an analysis of the 107,821 claims settled in calendar years 2003 through 2008 indicated that 11% of the settlements did not have attorney representation.

# Monopolistic State Fund Statutory Reserve Requirements

| State | Reserve Levels | Discount Rate |
|---|---|---|
| Washington State Department of Labor and Industries | No Statutory requirements | Pensions at 6.5% and the non-pension liabilities at 2.5% |
| North Dakota | 65-04-02. Reserves - Surplus. The organization shall maintain adequate financial reserves to ensure the solvency of the fund and the payment of future benefit obligations, based upon actuarially sound principles. The discount rate used in evaluating the financial reserves may not exceed six percent. The level of financial reserves plus surplus must be at least one hundred twenty percent but may not exceed one hundred forty percent of the actuarially established discounted reserve. The independent annual financial audit of the organization must report the organization's financial reserves. | The WSI Board of Directors decreased the investment assumption from 6% to 5% to coincide with their conservative management approach and WSI's conservative risk investment portfolio. This change resulted in a $55.1 million increase to liabilities and was reported separately as a special item on the statement of revenues, expenses and changes in fund net assets for the year ended June 30, 2006. |
| Wyoming Workers' Safety and Compensation | 27-14-201 (e)(i)<br>The fund shall be one fund but shall include provision for all expenses allowed by this act, loss adjustment expenses and unpaid losses including:<br>A. Case reserves<br>B. Future development on known claims<br>C. Reopened claims reserve<br>D. Claims incurred but not reported<br>E. Claims incurred and reported but not yet recorded<br>F. An actuarially reasonable contingency margin to reflect the uncertainty inherent in estimates of unpaid losses and loss adjustment expenses. | 27-14-201 (e)(i)<br>(v) For purposes of calculating reserves, future liabilities shall be discounted to present value using a discount factor selected by the division. The discount factor selected by the division and the reason for its selection shall be included in the annual report to the joint labor, health and social services interim committee or its successor.<br><br>(vi) The collection through premiums of any deficiency in reserves and supluses that exceeds five percent of the fund balance shall be averaged over a ten year period. |
| Ohio Bureau of Workers' Compensation | No statutory requirements. | 5% discount rate for all benefit types<br>Set by BWC and reviewed annually |
| California – State Compensation Insurance Fund | <u>Risk-Based Capital</u> California law imposes risk-based capital (RBC) requirements on admitted California insurance companies, including State Fund. These RBC requirements set forth a calculation to determine the required levels of policyholders' surplus, and provide certain consequences for failure to meet these requirements. State Fund operates in conformity with the California law imposed for RBC. As of December 31, 2007 policyholders' surplus exceeded the minimum RBC requirements. | Does not discount reserves. |

OLIVER WYMAN

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September 23, 2008

Mr. John Pedrick, FCAS, MAAA
Chief Actuarial Officer
Ohio Bureau of Workers' Compensation
30 West Spring Street
Columbus, Ohio 43266-0581

Subject:
Alternative Reserving Methods

Dear Mr. Pedrick:

The accompanying exhibits show additional unpaid liability analyses using three alternative methods on a discounted basis for private employers. We have looked at calculating the liability using payments, MIRA reserves, and the hindsight average reserve per lost time claim. The unpaid claims estimates calculated from these methods, as well as a comparison to our discounted unpaid liabilities developed in the SIF audit, are shown in exhibit 1. Due to limited data availability, we have shown the analyses for private employers for accident years 1992 through 2008. The total unpaid liability in the audit represented by this segment is $9.4 billion, or 63% of the medical and indemnity reserves for the SIF. We will be working on adding additional years and the public employers to our analyses.

Exhibits 2 – 4 contain our three different reserving methods; exhibit 2 shows the paid loss development analysis, exhibit 3 shows the MIRA incurred loss development analysis, and exhibit 4 shows the hindsight average reserve analysis. We have separately calculated the unpaid claims estimate for medical, other indemnity compensation (excluding PTD and Death), PTD and Death, and total indemnity compensation.

Exhibit 5 shows the results of the curve fitting used for the tail factor calculation in the paid and incurred loss development methods.

## Conclusions

One item to note is an increase in the level of paid and incurred loss for indemnity. As can be seen in exhibits 2.2 to 2.4 and 3.2 to 3.4, there is an increase in development factors in the most recent diagonal. This is due somewhat to the increase in lump sum settlement payments. However, there seems to be more of an increase in the incurred factors, which implies an increase in the reserves. If this is a one-time strengthening of reserves in the latest calendar period, a reserve calculated using the incurred method may lead to an overstatement of the liability. In these methods, we have selected development factors based on the all year average, which makes the assumption that the development will return to the historical average.

The results of the analysis, as well as a comparison to the audit liabilities, are shown in the Summary exhibit. The paid loss development method calculates an unpaid liability that is 4% less than the audit unpaid liability. The incurred method using MIRA reserves results in unpaid amounts that are lower by 1% and the average reserve method produces unpaid amounts that are lower by 2%.

We have assumed the same discount factor, by accident year, as used in our June 30, 2008 audit to discount the reserves used in the alternative methods.

A feature of these methods, particularly the paid and incurred methods, is that they are highly dependent upon the selection of the tail factor. We have show the derivation of the tail factors using the inverse power curve in Exhibit 5. We have also shown a bondy factor approach to calculate the tail. For the most part we have relied on the tail factor selection produced by the inverse power curve.

For the hindsight average reserve method, we have used trends based on the average cost per claim trend as shown in the Audit report in Exhibit 4 page 4.

If we can provide further information, please let us know.

Sincerely,

Jeffery J. Scott, FCAS, MAAA

Jeffery W. Scholl, FCAS, MAAA

JJS/JWS/mpg

# Ohio Bureau of Workers' Compensation

## Private Employers (PA) @ 6/30/08

**(Dollars in thousands)**

## Difference/Comparison of Methods (Discounted)

| | Medical | | Indemnity Excluding PTD & Death | | PTD & Death | | Indemnity on a Combined Basis | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Audit Reserves (92-08)** | $4,220,485 | N/A | $2,714,768 | 100% | $2,476,721 | 100% | $5,191,489 | 100% | $9,411,974 | 100% |
| **Method Differences:** | | | | | | | | | | |
| **1. Paid Method** | 79,743 | 1.9% | 73,955 | 2.7% | 199,198 | 8.0% | (47,706) | -0.9% | 352,896 | 3.7% |
| **2. Incurred Method** | 172,381 | 4.1% | (270,500) | -10.0% | 234,052 | 9.5% | 495,547 | 9.5% | 135,934 | 1.4% |
| **3. Average Reserve** | 315,809 | 7.5% | (121,997) | -4.5% | 29,804 | 1.2% | 438,270 | 8.4% | 223,616 | 2.4% |
| **Average Difference** | $189,311 | 4.5% | ($106,181) | -3.9% | $154,352 | 6.2% | $295,370 | 5.7% | $237,482 | 2.5% |

**Notes**

1. A positive difference implies the audit reserve is greater than the method of comparison.
2. A negative difference implies the audit reserve is less than the method of comparison.

# Ohio Bureau of Workers' Compensation

## Private Employers (PA) @ 6/30/08

(Dollars in thousands)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Audit Reserves (Discounted) | | | | | MIRA Reserves | | | | | Total Payments | | | | |
| Accident Year | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Total | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Total | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Total |
| **1992** | 114,388 | 49,575 | 103,459 | 153,034 | 267,422 | 144,755 | 13,502 | 89,623 | 103,125 | 247,880 | 507,774 | 481,984 | 106,442 | 588,426 | 1,096,200 |
| **1993** | 92,923 | 52,740 | 102,416 | 155,157 | 248,080 | 126,068 | 12,742 | 81,611 | 94,352 | 220,421 | 465,910 | 456,901 | 87,579 | 544,480 | 1,010,390 |
| **1994** | 118,073 | 57,481 | 105,874 | 163,355 | 281,429 | 145,824 | 15,287 | 86,808 | 102,095 | 247,919 | 444,507 | 446,233 | 80,166 | 526,399 | 970,906 |
| **1995** | 125,763 | 63,345 | 104,906 | 168,251 | 294,014 | 144,337 | 15,739 | 80,776 | 96,515 | 240,852 | 425,272 | 412,948 | 66,758 | 479,705 | 904,977 |
| **1996** | 115,578 | 67,323 | 119,727 | 187,050 | 302,628 | 146,625 | 23,057 | 83,497 | 106,554 | 253,179 | 403,759 | 381,632 | 63,476 | 445,108 | 848,867 |
| **1997** | 149,297 | 75,308 | 124,410 | 199,718 | 349,015 | 165,481 | 26,810 | 85,255 | 112,065 | 277,546 | 418,944 | 371,635 | 56,260 | 427,895 | 846,839 |
| **1998** | 192,097 | 90,287 | 146,344 | 236,630 | 428,728 | 206,041 | 22,827 | 99,697 | 122,525 | 328,566 | 457,069 | 397,559 | 56,004 | 453,563 | 910,631 |
| **1999** | 209,586 | 115,120 | 157,089 | 272,209 | 481,795 | 225,499 | 26,249 | 96,335 | 122,584 | 348,083 | 480,943 | 436,810 | 48,033 | 484,843 | 965,786 |
| **2000** | 254,073 | 144,746 | 175,218 | 319,964 | 574,037 | 250,153 | 36,057 | 98,343 | 134,401 | 384,554 | 518,633 | 471,729 | 43,962 | 515,691 | 1,034,323 |
| **2001** | 257,721 | 158,492 | 170,805 | 329,297 | 587,018 | 249,930 | 48,338 | 87,041 | 135,378 | 385,308 | 500,239 | 441,785 | 34,409 | 476,194 | 976,434 |
| **2002** | 307,067 | 194,321 | 183,403 | 377,724 | 684,791 | 282,489 | 67,722 | 86,206 | 153,928 | 436,417 | 508,545 | 426,627 | 29,612 | 456,239 | 964,783 |
| **2003** | 326,828 | 221,578 | 180,063 | 401,641 | 728,468 | 285,903 | 83,846 | 72,052 | 155,898 | 441,801 | 467,737 | 363,439 | 21,526 | 384,965 | 852,701 |
| **2004** | 370,160 | 249,643 | 183,571 | 433,215 | 803,374 | 292,743 | 119,692 | 61,864 | 181,556 | 474,300 | 428,350 | 301,400 | 15,037 | 316,437 | 744,786 |
| **2005** | 391,723 | 278,544 | 183,825 | 462,369 | 854,092 | 291,978 | 156,231 | 45,057 | 201,288 | 493,265 | 381,799 | 233,832 | 9,002 | 242,833 | 624,632 |
| **2006** | 411,558 | 312,316 | 174,446 | 486,762 | 898,321 | 303,197 | 185,522 | 29,254 | 214,776 | 517,973 | 314,758 | 157,299 | 3,908 | 161,208 | 475,966 |
| **2007** | 463,421 | 375,433 | 170,215 | 545,648 | 1,009,069 | 662,446 | 305,607 | 25,890 | 331,496 | 993,942 | 228,505 | 75,838 | 1,572 | 77,410 | 305,915 |
| **2008** | 320,230 | 208,515 | 90,951 | 299,465 | 619,695 | 449,953 | 422,953 | 6,421 | 429,374 | 879,327 | 47,422 | 8,896 | 107 | 9,003 | 56,425 |
| **Total** | 4,220,485 | 2,714,768 | 2,476,721 | 5,191,489 | 9,411,974 | 4,373,422 | 1,582,180 | 1,215,730 | 2,797,910 | 7,171,332 | 7,000,164 | 5,866,545 | 723,853 | 6,590,398 | 13,590,562 |

## Comparison of Alternate Methodologies to Audit Methodology (Discounted Basis)

## Private Employers (PA) @ 6/30/08

(Dollars in thousands)

| | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Audit Reserves Minus Paid LDF Method | | | | | Audit Reserves Minus MIRA LDF Method | | | | | Audit Reserves Minus Average Reserve Method | | | | |
| Accident Year | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Total | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Total | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Total |
| **1992** | (69,594) | (10,517) | 19,010 | (76,847) | (61,101) | (70,051) | (12,388) | 21,532 | (4,175) | (60,906) | (18,842) | (2,083) | (10,865) | (3,210) | (31,790) |
| **1993** | (84,289) | (12,933) | 12,174 | (83,852) | (85,048) | (74,096) | (16,980) | 22,193 | (11,052) | (68,883) | (35,539) | (4,231) | (15,448) | (11,169) | (55,217) |
| **1994** | (47,803) | (11,829) | 10,702 | (74,298) | (48,930) | (49,679) | (18,668) | 18,528 | (9,723) | (49,818) | 2,747 | (5,569) | (13,217) | (7,829) | (16,040) |
| **1995** | (41,076) | (6,977) | 12,447 | (62,041) | (35,606) | (40,331) | (14,705) | 17,683 | (3,705) | (37,353) | 1,785 | (4,344) | (12,227) | (7,370) | (14,786) |
| **1996** | (54,041) | (3,816) | 18,491 | (41,231) | (39,366) | (53,214) | (17,532) | 25,498 | 3,215 | (45,248) | (16,429) | (3,805) | 685 | 9,787 | (19,549) |
| **1997** | (30,924) | (1,617) | 17,470 | (31,703) | (15,071) | (31,485) | (20,543) | 23,618 | 5,287 | (28,409) | 16,668 | (1,897) | (5,701) | 15,860 | 9,069 |
| **1998** | (7,986) | (2,713) | 18,473 | (21,983) | 7,773 | (21,321) | (17,705) | 16,051 | 12,909 | (22,975) | 46,214 | 381 | (2,042) | 36,826 | 44,553 |
| **1999** | (22,107) | (2,119) | 21,899 | (34,803) | (2,328) | (36,259) | (19,289) | 19,216 | 13,748 | (36,331) | 24,566 | 3,997 | (4,485) | 32,150 | 24,078 |
| **2000** | (83) | (3,130) | 18,012 | (32,087) | 14,798 | (11,691) | (23,970) | 15,407 | 21,520 | (20,254) | 50,673 | 8,453 | 17,393 | 51,184 | 76,518 |
| **2001** | (13,246) | (5,026) | 13,112 | (36,833) | (5,160) | (17,171) | (29,094) | 8,078 | 13,041 | (38,187) | 34,784 | 9,630 | 1,038 | 51,103 | 45,452 |
| **2002** | 12,069 | 1,477 | 3,114 | (17,923) | 16,660 | 13,591 | (32,560) | (3,118) | 19,888 | (22,087) | 53,482 | 11,136 | 19,064 | 61,970 | 83,682 |
| **2003** | 26,681 | 13,602 | (4,611) | 7,747 | 35,672 | 37,644 | (25,040) | (10,792) | 33,396 | 1,812 | 42,986 | 4,479 | 10,619 | 51,228 | 58,083 |
| **2004** | 72,768 | 22,237 | (5,565) | 45,872 | 89,440 | 90,651 | (30,010) | (15,475) | 50,569 | 45,166 | 62,750 | (6,179) | 12,790 | 58,241 | 69,362 |
| **2005** | 79,767 | 21,010 | 3,440 | 69,386 | 104,217 | 111,991 | (27,898) | 2,410 | 71,501 | 86,503 | 48,516 | (16,348) | 16,865 | 56,304 | 49,032 |
| **2006** | 80,520 | 19,019 | 18,512 | 81,021 | 118,052 | 114,616 | (19,770) | 35,160 | 87,722 | 130,006 | 25,446 | (27,670) | 12,384 | 40,054 | 10,160 |
| **2007** | 98,837 | 31,845 | 12,273 | 148,299 | 142,955 | 128,455 | 31,262 | 20,872 | 112,131 | 180,589 | (10,631) | (49,354) | 137 | 17,527 | (59,848) |
| **2008** | 80,251 | 25,443 | 10,245 | 113,569 | 115,939 | 80,728 | 24,390 | 17,191 | 79,276 | 122,309 | (13,368) | (38,591) | 2,814 | (14,387) | (49,145) |
| **Total** | 79,743 | 73,955 | 199,198 | (47,706) | 352,896 | 172,381 | (270,500) | 234,052 | 495,547 | 135,934 | 315,809 | (121,997) | 29,804 | 438,270 | 223,616 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA) @ 6/30/08

(Dollars in thousands)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Paid LDF | | | | Ultimate Loss Paid LDF Method | | | | MIRA LDF | | | | Ultimate Loss MIRA LDF Method | | | | Ultimate Loss MIRA Average Reserve Method | | | |
| Accident Year | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity | Medical | Indem Ex. PTD + DTH | PTD + DTH | Total Indemnity |
| **1992** | 1.627 | 1.186 | 2.294 | 1.654 | 826,080 | 571,632 | 244,205 | 973,147 | 1.267 | 1.159 | 1.225 | 1.231 | 826,870 | 574,423 | 240,091 | 851,527 | 738,274 | 559,050 | 291,051 | 849,911 |
| **1993** | 1.661 | 1.217 | 2.701 | 1.739 | 774,048 | 555,940 | 236,552 | 946,916 | 1.278 | 1.197 | 1.300 | 1.290 | 756,324 | 562,044 | 220,012 | 824,338 | 689,281 | 542,817 | 281,719 | 824,535 |
| **1994** | 1.697 | 1.235 | 2.964 | 1.787 | 754,434 | 551,046 | 237,623 | 940,917 | 1.284 | 1.216 | 1.346 | 1.318 | 757,938 | 561,387 | 224,676 | 828,285 | 659,986 | 541,579 | 283,402 | 824,982 |
| **1995** | 1.737 | 1.255 | 3.292 | 1.840 | 738,792 | 518,127 | 219,750 | 882,884 | 1.295 | 1.236 | 1.431 | 1.355 | 737,392 | 529,685 | 211,086 | 780,753 | 658,248 | 514,188 | 272,982 | 787,169 |
| **1996** | 1.780 | 1.278 | 3.701 | 1.900 | 718,529 | 487,761 | 234,921 | 845,850 | 1.303 | 1.256 | 1.518 | 1.392 | 716,995 | 508,223 | 223,055 | 767,826 | 648,730 | 487,745 | 268,545 | 756,290 |
| **1997** | 1.827 | 1.305 | 4.213 | 1.968 | 765,257 | 485,118 | 237,049 | 841,998 | 1.311 | 1.288 | 1.602 | 1.437 | 766,334 | 513,039 | 226,654 | 775,809 | 673,805 | 485,531 | 271,359 | 756,890 |
| **1998** | 1.879 | 1.340 | 4.891 | 2.049 | 858,871 | 532,852 | 273,912 | 929,503 | 1.336 | 1.319 | 1.786 | 1.502 | 885,650 | 554,661 | 278,038 | 865,290 | 750,027 | 528,350 | 292,924 | 821,274 |
| **1999** | 1.940 | 1.384 | 5.791 | 2.146 | 932,896 | 604,434 | 278,155 | 1,040,623 | 1.360 | 1.358 | 1.958 | 1.568 | 960,501 | 628,982 | 282,721 | 952,732 | 841,854 | 595,688 | 323,729 | 919,418 |
| **2000** | 2.010 | 1.441 | 7.056 | 2.267 | 1,042,407 | 679,619 | 310,214 | 1,169,156 | 1.387 | 1.396 | 2.211 | 1.645 | 1,066,328 | 708,916 | 314,626 | 1,069,654 | 937,807 | 663,336 | 351,255 | 1,014,591 |
| **2001** | 2.092 | 1.512 | 8.769 | 2.412 | 1,046,615 | 668,078 | 301,740 | 1,148,500 | 1.406 | 1.431 | 2.555 | 1.728 | 1,054,529 | 701,386 | 310,274 | 1,056,920 | 949,767 | 647,795 | 339,233 | 987,028 |
| **2002** | 2.193 | 1.617 | 11.332 | 2.611 | 1,115,198 | 689,683 | 335,562 | 1,191,426 | 1.406 | 1.489 | 2.989 | 1.837 | 1,112,067 | 736,113 | 346,138 | 1,121,165 | 1,030,033 | 676,507 | 366,461 | 1,042,968 |
| **2003** | 2.322 | 1.773 | 15.500 | 2.899 | 1,086,037 | 644,232 | 333,649 | 1,116,060 | 1.411 | 1.557 | 3.677 | 1.975 | 1,063,453 | 696,403 | 344,096 | 1,068,452 | 1,052,448 | 656,549 | 378,805 | 1,035,354 |
| **2004** | 2.494 | 2.015 | 22.296 | 3.331 | 1,068,193 | 607,200 | 335,262 | 1,054,058 | 1.428 | 1.609 | 4.578 | 2.099 | 1,029,717 | 677,458 | 352,041 | 1,045,114 | 1,089,746 | 645,412 | 385,093 | 1,030,504 |
| **2005** | 2.736 | 2.472 | 35.020 | 4.065 | 1,044,724 | 578,147 | 315,238 | 987,023 | 1.449 | 1.650 | 5.864 | 2.213 | 976,246 | 643,536 | 316,987 | 983,018 | 1,111,135 | 628,094 | 383,703 | 1,011,797 |
| **2006** | 3.153 | 3.477 | 67.982 | 5.651 | 992,551 | 546,901 | 265,699 | 910,912 | 1.493 | 1.746 | 7.169 | 2.390 | 922,740 | 598,426 | 237,750 | 898,531 | 1,105,313 | 608,920 | 377,688 | 986,609 |
| **2007** | 4.264 | 6.991 | 167.595 | 10.425 | 974,304 | 530,150 | 263,455 | 806,969 | 1.026 | 1.392 | 9.074 | 2.136 | 913,717 | 530,921 | 249,196 | 873,376 | 1,198,234 | 637,516 | 409,558 | 1,047,074 |
| **2008** | 20.839 | 57.115 | 2560.799 | 75.552 | 988,248 | 508,092 | 273,820 | 680,186 | 1.983 | 1.183 | 38.338 | 1.830 | 986,470 | 510,914 | 250,273 | 802,338 | 668,387 | 339,794 | 221,442 | 567,988 |
| **Total** | | | | | 15,727,183 | 9,759,012 | 4,696,808 | 16,466,129 | | | | | 15,533,271 | 10,236,516 | 4,627,716 | 15,565,128 | 14,803,076 | 9,758,874 | 5,498,948 | 15,264,384 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## Medical

### Cumulative Paid Losses from Audits as of 6/30

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 | 17.5 | 18.5 | 19.5 | 20.5 | 21.5 | 22.5 | 23.5 | 24.5 | 25.5 | 26.5 | 27.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1981 | | | | | | | | | | | | | | | | | | 221,292 | 225,249 | 228,999 | 232,920 | 236,818 | 241,355 | 245,606 | 249,590 | 252,931 | 256,402 | 259,543 |
| 1982 | | | | | | | | | | | | | | | | | 221,375 | 226,029 | 229,901 | 233,714 | 237,900 | 242,203 | 246,463 | 250,705 | 254,600 | 257,711 | 261,415 | |
| 1983 | | | | | | | | | | | | | | | | 238,719 | 243,619 | 248,443 | 253,207 | 258,117 | 263,204 | 267,553 | 272,282 | 276,160 | 279,267 | 282,715 | | |
| 1984 | | | | | | | | | | | | | | | 285,926 | 291,540 | 296,794 | 302,539 | 308,687 | 314,625 | 320,701 | 326,388 | 331,466 | 335,465 | 339,873 | | | |
| 1985 | | | | | | | | | | | | | | 338,812 | 347,266 | 355,353 | 364,219 | 373,348 | 382,100 | 390,589 | 399,602 | 406,471 | 413,325 | 420,212 | | | | |
| 1986 | | | | | | | | | | | | | 339,750 | 348,218 | 356,892 | 365,282 | 373,694 | 382,319 | 390,619 | 399,148 | 406,904 | 412,904 | 419,739 | | | | | |
| 1987 | | | | | | | | | | | | 366,627 | 376,724 | 385,222 | 394,477 | 403,754 | 412,902 | 421,501 | 430,071 | 436,519 | 442,784 | 450,054 | | | | | | |
| 1988 | | | | | | | | | | | 411,894 | 422,931 | 433,473 | 444,473 | 456,088 | 467,451 | 478,726 | 489,598 | 498,748 | 506,503 | 514,475 | | | | | | | |
| 1989 | | | | | | | | | | 437,847 | 450,942 | 461,665 | 473,723 | 485,135 | 497,074 | 507,773 | 518,439 | 528,002 | 536,535 | 545,057 | | | | | | | | |
| 1990 | | | | | | | | | 442,961 | 455,894 | 467,661 | 481,229 | 494,870 | 508,125 | 520,223 | 532,004 | 543,072 | 552,341 | 561,060 | | | | | | | | | |
| 1991 | | | | | | | | 410,075 | 422,207 | 433,403 | 446,043 | 458,773 | 471,254 | 482,906 | 494,119 | 503,609 | 511,833 | 520,254 | | | | | | | | | | |
| 1992 | | | | | | | 391,075 | 403,822 | 414,707 | 427,957 | 440,824 | 452,962 | 465,176 | 477,016 | 488,155 | 497,512 | 507,774 | | | | | | | | | | | |
| 1993 | | | | | | 347,734 | 362,028 | 374,738 | 387,616 | 402,401 | 415,305 | 427,949 | 438,990 | 448,824 | 457,445 | 465,910 | | | | | | | | | | | | |
| 1994 | | | | | 300,793 | 321,254 | 338,019 | 354,008 | 371,071 | 386,408 | 401,004 | 414,724 | 425,461 | 435,207 | 444,507 | | | | | | | | | | | | | |
| 1995 | | | | 269,839 | 292,664 | 311,435 | 329,547 | 346,841 | 362,815 | 378,222 | 393,059 | 404,387 | 415,017 | 425,272 | | | | | | | | | | | | | | |
| 1996 | | | 226,262 | 259,699 | 282,957 | 303,518 | 322,846 | 340,933 | 356,343 | 370,847 | 383,269 | 393,827 | 403,759 | | | | | | | | | | | | | | | |
| 1997 | | 165,504 | 236,630 | 269,802 | 296,607 | 321,552 | 343,082 | 362,012 | 380,019 | 394,391 | 406,559 | 418,944 | | | | | | | | | | | | | | | | |
| 1998 | 25,734 | 191,346 | 258,336 | 299,337 | 332,719 | 360,531 | 384,996 | 408,150 | 426,983 | 441,895 | 457,069 | | | | | | | | | | | | | | | | | |
| 1999 | 33,657 | 200,897 | 276,576 | 327,113 | 365,190 | 395,169 | 422,907 | 444,265 | 462,979 | 480,943 | | | | | | | | | | | | | | | | | | |
| 2000 | 37,835 | 225,863 | 320,810 | 376,623 | 416,438 | 450,206 | 476,488 | 498,123 | 518,633 | | | | | | | | | | | | | | | | | | | |
| 2001 | 40,643 | 245,403 | 336,563 | 386,476 | 424,454 | 453,868 | 477,996 | 500,239 | | | | | | | | | | | | | | | | | | | | |
| 2002 | 46,404 | 268,643 | 358,098 | 413,471 | 451,453 | 481,357 | 508,545 | | | | | | | | | | | | | | | | | | | | | |
| 2003 | 57,104 | 268,915 | 354,840 | 403,903 | 437,604 | 467,737 | | | | | | | | | | | | | | | | | | | | | | |
| 2004 | 55,333 | 267,200 | 346,796 | 392,242 | 428,350 | | | | | | | | | | | | | | | | | | | | | | | |
| 2005 | 53,803 | 259,505 | 332,423 | 381,799 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2006 | 47,949 | 234,605 | 314,758 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2007 | 46,804 | 228,505 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2008 | 47,422 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

### Cumulative Paid Loss Development Factors

| Accident Year | 0.5-1.5 | 1.5-2.5 | 2.5-3.5 | 3.5-4.5 | 4.5-5.5 | 5.5-6.5 | 6.5-7.5 | 7.5-8.5 | 8.5-9.5 | 9.5-10.5 | 10.5-11.5 | 11.5-12.5 | 12.5-13.5 | 13.5-14.5 | 14.5-15.5 | 15.5-16.5 | 16.5-17.5 | 17.5-18.5 | 18.5-19.5 | 19.5-20.5 | 20.5-21.5 | 21.5-22.5 | 22.5-23.5 | 23.5-24.5 | 24.5-25.5 | 25.5-26.5 | 26.5-27.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1981 | | | | | | | | | | | | | | | | | | 1.018 | 1.017 | 1.017 | 1.017 | 1.019 | 1.018 | 1.016 | 1.013 | 1.014 | 1.012 | |
| 1982 | | | | | | | | | | | | | | | | | 1.021 | 1.017 | 1.017 | 1.018 | 1.018 | 1.018 | 1.017 | 1.016 | 1.012 | 1.014 | | |
| 1983 | | | | | | | | | | | | | | | | 1.021 | 1.020 | 1.019 | 1.019 | 1.020 | 1.017 | 1.018 | 1.014 | 1.011 | 1.012 | | | |
| 1984 | | | | | | | | | | | | | | | 1.020 | 1.018 | 1.019 | 1.020 | 1.019 | 1.019 | 1.018 | 1.016 | 1.012 | 1.013 | | | | |
| 1985 | | | | | | | | | | | | | | 1.025 | 1.023 | 1.025 | 1.025 | 1.023 | 1.022 | 1.023 | 1.017 | 1.017 | 1.017 | | | | | |
| 1986 | | | | | | | | | | | | | 1.025 | 1.025 | 1.024 | 1.023 | 1.023 | 1.022 | 1.022 | 1.019 | 1.015 | 1.017 | | | | | | |
| 1987 | | | | | | | | | | | | 1.028 | 1.023 | 1.024 | 1.024 | 1.023 | 1.021 | 1.020 | 1.015 | 1.014 | 1.016 | | | | | | | |
| 1988 | | | | | | | | | | | 1.027 | 1.025 | 1.025 | 1.026 | 1.025 | 1.024 | 1.023 | 1.019 | 1.016 | 1.016 | | | | | | | | |
| 1989 | | | | | | | | | | 1.030 | 1.024 | 1.026 | 1.024 | 1.025 | 1.022 | 1.021 | 1.018 | 1.016 | 1.016 | | | | | | | | | |
| 1990 | | | | | | | | | 1.029 | 1.026 | 1.029 | 1.028 | 1.027 | 1.024 | 1.023 | 1.021 | 1.017 | 1.016 | | | | | | | | | | |
| 1991 | | | | | | | | 1.030 | 1.027 | 1.029 | 1.029 | 1.027 | 1.025 | 1.023 | 1.019 | 1.016 | 1.016 | | | | | | | | | | | |
| 1992 | | | | | | | 1.033 | 1.027 | 1.032 | 1.030 | 1.028 | 1.027 | 1.025 | 1.023 | 1.019 | 1.021 | | | | | | | | | | | | |
| 1993 | | | | | | 1.041 | 1.035 | 1.034 | 1.038 | 1.032 | 1.030 | 1.026 | 1.022 | 1.019 | 1.019 | | | | | | | | | | | | | |
| 1994 | | | | | 1.068 | 1.052 | 1.047 | 1.048 | 1.041 | 1.038 | 1.034 | 1.026 | 1.023 | 1.021 | | | | | | | | | | | | | | |
| 1995 | | | | 1.085 | 1.064 | 1.058 | 1.052 | 1.046 | 1.042 | 1.039 | 1.029 | 1.026 | 1.025 | | | | | | | | | | | | | | | |
| 1996 | | | 1.148 | 1.090 | 1.073 | 1.064 | 1.056 | 1.045 | 1.041 | 1.033 | 1.028 | 1.025 | | | | | | | | | | | | | | | | |
| 1997 | | 1.430 | 1.140 | 1.099 | 1.084 | 1.067 | 1.055 | 1.050 | 1.038 | 1.031 | 1.030 | | | | | | | | | | | | | | | | | |
| 1998 | 7.436 | 1.350 | 1.159 | 1.112 | 1.084 | 1.068 | 1.060 | 1.046 | 1.035 | 1.034 | | | | | | | | | | | | | | | | | | |
| 1999 | 5.969 | 1.377 | 1.183 | 1.116 | 1.082 | 1.070 | 1.051 | 1.042 | 1.039 | | | | | | | | | | | | | | | | | | | |
| 2000 | 5.970 | 1.420 | 1.174 | 1.106 | 1.081 | 1.058 | 1.045 | 1.041 | | | | | | | | | | | | | | | | | | | | |
| 2001 | 6.038 | 1.371 | 1.148 | 1.098 | 1.069 | 1.053 | 1.047 | | | | | | | | | | | | | | | | | | | | | |
| 2002 | 5.789 | 1.333 | 1.155 | 1.092 | 1.066 | 1.056 | | | | | | | | | | | | | | | | | | | | | | |
| 2003 | 4.709 | 1.320 | 1.138 | 1.083 | 1.069 | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 | 4.829 | 1.298 | 1.131 | 1.092 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2005 | 4.823 | 1.281 | 1.149 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2006 | 4.893 | 1.342 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2007 | 4.882 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2008 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | Tail For Payments |
| Average | 5.534 | 1.352 | 1.152 | 1.097 | 1.074 | 1.059 | 1.048 | 1.041 | 1.036 | 1.032 | 1.029 | 1.026 | 1.024 | 1.024 | 1.022 | 1.021 | 1.020 | 1.019 | 1.018 | 1.018 | 1.017 | 1.017 | 1.016 | 1.014 | 1.013 | 1.014 | 1.012 | After Year: |
| Ex Hi-Lo | 5.399 | 1.351 | 1.151 | 1.097 | 1.074 | 1.060 | 1.049 | 1.042 | 1.037 | 1.032 | 1.029 | 1.026 | 1.024 | 1.024 | 1.022 | 1.021 | 1.020 | 1.019 | 1.018 | 1.018 | 1.017 | 1.017 | 1.016 | 1.014 | 1.012 | ---- | ---- | 27.500 |
| Selected | 4.887 | 1.352 | 1.152 | 1.097 | 1.074 | 1.059 | 1.048 | 1.041 | 1.036 | 1.032 | 1.029 | 1.026 | 1.024 | 1.024 | 1.022 | 1.021 | 1.020 | 1.019 | 1.018 | 1.018 | 1.017 | 1.019 | 1.016 | 1.014 | 1.013 | 1.014 | 1.012 | Selected |
| Bondy Factor | | 0.190 | 0.470 | 0.654 | 0.769 | 0.800 | 0.822 | 0.854 | 0.886 | 0.894 | 0.891 | 0.921 | 0.924 | 0.966 | 0.917 | 0.982 | 0.962 | 0.936 | 0.947 | 1.016 | 0.916 | 1.109 | 0.862 | 0.876 | 0.902 | 1.109 | 0.873 | 0.961 |
| Bondy Tail | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1.355 |
| Inverse Power Function Tail | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1.361 |
| Cumulative | 20.839 | 4.264 | 3.153 | 2.736 | 2.494 | 2.322 | 2.193 | 2.092 | 2.010 | 1.940 | 1.879 | 1.827 | 1.780 | 1.737 | 1.697 | 1.661 | 1.627 | 1.594 | 1.565 | 1.537 | 1.509 | 1.484 | 1.457 | 1.434 | 1.414 | 1.397 | 1.377 | 1.361 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## Indemnity Excluding PTD and Death

### Cumulative Paid Losses from Audits as of 6/30

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 | 17.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 438,534 | 458,075 | 472,536 | 484,327 | 494,599 | 503,008 | 510,865 | 516,299 | 521,105 | 526,282 | 533,014 |
| **1992** | | | | | | | 379,495 | 401,675 | 413,846 | 428,940 | 439,379 | 448,735 | 455,867 | 462,691 | 468,307 | 474,379 | 481,984 | |
| **1993** | | | | | | 331,171 | 359,945 | 379,686 | 394,577 | 408,210 | 418,966 | 427,066 | 433,644 | 439,664 | 446,889 | 456,901 | | |
| **1994** | | | | | 292,226 | 327,581 | 353,040 | 372,139 | 387,954 | 399,978 | 410,051 | 418,152 | 426,747 | 435,352 | 446,233 | | | |
| **1995** | | | | 228,739 | 272,631 | 304,097 | 327,530 | 345,091 | 359,181 | 371,323 | 381,784 | 392,461 | 401,480 | 412,948 | | | | |
| **1996** | | | 155,248 | 208,483 | 248,843 | 278,427 | 299,983 | 318,256 | 332,392 | 344,653 | 356,932 | 368,302 | 381,632 | | | | | |
| **1997** | | 87,285 | 146,566 | 198,694 | 236,316 | 266,248 | 290,530 | 310,180 | 325,343 | 340,369 | 355,298 | 371,635 | | | | | | |
| **1998** | 14,226 | 95,619 | 160,868 | 216,033 | 258,980 | 292,501 | 318,359 | 340,702 | 359,467 | 378,343 | 397,559 | | | | | | | |
| **1999** | 14,833 | 98,548 | 171,174 | 234,807 | 283,981 | 323,204 | 355,753 | 382,696 | 409,206 | 436,810 | | | | | | | | |
| **2000** | 15,766 | 106,455 | 191,444 | 261,908 | 316,009 | 360,950 | 397,262 | 436,226 | 471,729 | | | | | | | | | |
| **2001** | 14,668 | 104,703 | 189,557 | 258,795 | 313,852 | 357,984 | 402,855 | 441,785 | | | | | | | | | | |
| **2002** | 13,512 | 102,810 | 186,817 | 261,296 | 320,781 | 374,340 | 426,627 | | | | | | | | | | | |
| **2003** | 14,606 | 97,241 | 183,467 | 254,589 | 311,714 | 363,439 | | | | | | | | | | | | |
| **2004** | 12,918 | 90,596 | 172,541 | 245,075 | 301,400 | | | | | | | | | | | | | |
| **2005** | 11,592 | 83,954 | 165,774 | 233,832 | | | | | | | | | | | | | | |
| **2006** | 9,737 | 76,857 | 157,299 | | | | | | | | | | | | | | | |
| **2007** | 9,282 | 75,838 | | | | | | | | | | | | | | | | |
| **2008** | 8,896 | | | | | | | | | | | | | | | | | |

### Cumulative Paid Loss Development Factors

| Accident Year | 0.5-1.5 | 1.5-2.5 | 2.5-3.5 | 3.5-4.5 | 4.5-5.5 | 5.5-6.5 | 6.5-7.5 | 7.5-8.5 | 8.5-9.5 | 9.5-10.5 | 10.5-11.5 | 11.5-12.5 | 12.5-13.5 | 13.5-14.5 | 14.5-15.5 | 15.5-16.5 | 16.5-17.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 1.045 | 1.032 | 1.025 | 1.021 | 1.017 | 1.016 | 1.011 | 1.009 | 1.010 | 1.013 | |
| **1992** | | | | | | | 1.058 | 1.030 | 1.036 | 1.024 | 1.021 | 1.016 | 1.015 | 1.012 | 1.013 | 1.016 | | |
| **1993** | | | | | | 1.087 | 1.055 | 1.039 | 1.035 | 1.026 | 1.019 | 1.015 | 1.014 | 1.016 | 1.022 | | | |
| **1994** | | | | | 1.121 | 1.078 | 1.054 | 1.042 | 1.031 | 1.025 | 1.020 | 1.021 | 1.020 | 1.025 | | | | |
| **1995** | | | | 1.192 | 1.115 | 1.077 | 1.054 | 1.041 | 1.034 | 1.028 | 1.028 | 1.023 | 1.029 | | | | | |
| **1996** | | | 1.343 | 1.194 | 1.119 | 1.077 | 1.061 | 1.044 | 1.037 | 1.036 | 1.032 | 1.036 | | | | | | |
| **1997** | | 1.679 | 1.356 | 1.189 | 1.127 | 1.091 | 1.068 | 1.049 | 1.046 | 1.044 | 1.046 | | | | | | | |
| **1998** | 6.721 | 1.682 | 1.343 | 1.199 | 1.129 | 1.088 | 1.070 | 1.055 | 1.053 | 1.051 | | | | | | | | |
| **1999** | 6.644 | 1.737 | 1.372 | 1.209 | 1.138 | 1.101 | 1.076 | 1.069 | 1.067 | | | | | | | | | |
| **2000** | 6.752 | 1.798 | 1.368 | 1.207 | 1.142 | 1.101 | 1.098 | 1.081 | | | | | | | | | | |
| **2001** | 7.138 | 1.810 | 1.365 | 1.213 | 1.141 | 1.125 | 1.097 | | | | | | | | | | | |
| **2002** | 7.609 | 1.817 | 1.399 | 1.228 | 1.167 | 1.140 | | | | | | | | | | | | |
| **2003** | 6.658 | 1.887 | 1.388 | 1.224 | 1.166 | | | | | | | | | | | | | |
| **2004** | 7.013 | 1.905 | 1.420 | 1.230 | | | | | | | | | | | | | | |
| **2005** | 7.243 | 1.975 | 1.411 | | | | | | | | | | | | | | | |
| **2006** | 7.893 | 2.047 | | | | | | | | | | | | | | | | |
| **2007** | 8.170 | | | | | | | | | | | | | | | | | |
| **2008** | | | | | | | | | | | | | | | | | | Tail For Payments After Year: |
| **Average** | 7.184 | 1.834 | 1.376 | 1.208 | 1.137 | 1.097 | 1.069 | 1.050 | 1.041 | 1.032 | 1.027 | 1.021 | 1.019 | 1.016 | 1.015 | 1.013 | 1.013 | |
| **Ex Hi-Lo** | 7.128 | 1.826 | 1.375 | 1.208 | 1.135 | 1.094 | 1.067 | 1.048 | 1.039 | 1.031 | 1.024 | 1.019 | 1.017 | 1.014 | 1.013 | ---- | ---- | 17.500 |
| **Selected** | 8.170 | 2.011 | 1.406 | 1.227 | 1.137 | 1.097 | 1.069 | 1.050 | 1.041 | 1.032 | 1.027 | 1.021 | 1.019 | 1.016 | 1.015 | 1.013 | 1.013 | Selected |
| **Bondy Factor** | | 0.333 | 0.488 | 0.601 | 0.625 | 0.720 | 0.724 | 0.726 | 0.832 | 0.791 | 0.828 | 0.799 | 0.875 | 0.862 | 0.928 | 0.873 | 0.985 | 0.929 |
| **Bondy Tail** | | | | | | | | | | | | | | | | | | 1.180 |
| **Inverse Power Function Tail** | | | | | | | | | | | | | | | | | | 1.186 |
| **Cumulative** | 57.115 | 6.991 | 3.477 | 2.472 | 2.015 | 1.773 | 1.617 | 1.512 | 1.441 | 1.384 | 1.340 | 1.305 | 1.278 | 1.255 | 1.235 | 1.217 | 1.201 | 1.186 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## PTD and Death

### Cumulative Paid Losses from Audits as of 6/30

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 | 17.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 33,426 | 40,733 | 49,290 | 58,399 | 67,457 | 76,780 | 86,504 | 96,288 | 105,671 | 115,071 | 124,456 |
| **1992** | | | | | | | 23,432 | 30,436 | 36,610 | 46,087 | 54,232 | 62,750 | 71,467 | 80,432 | 89,255 | 97,826 | 106,442 | |
| **1993** | | | | | | 15,089 | 21,017 | 27,204 | 33,997 | 40,841 | 48,306 | 56,225 | 64,212 | 71,852 | 79,705 | 87,579 | | |
| **1994** | | | | | 10,872 | 15,564 | 21,202 | 27,290 | 33,869 | 40,907 | 48,535 | 56,580 | 64,412 | 72,221 | 80,166 | | | |
| **1995** | | | | 5,625 | 9,456 | 13,623 | 18,566 | 23,942 | 30,059 | 37,007 | 44,348 | 51,913 | 59,119 | 66,758 | | | | |
| **1996** | | | 4,022 | 7,334 | 11,380 | 16,210 | 21,790 | 27,641 | 34,274 | 41,417 | 48,503 | 55,951 | 63,476 | | | | | |
| **1997** | | 1,489 | 3,347 | 6,470 | 10,418 | 15,084 | 20,483 | 26,512 | 33,463 | 41,029 | 48,516 | 56,260 | | | | | | |
| **1998** | 162 | 1,567 | 3,843 | 7,743 | 11,985 | 17,124 | 24,041 | 31,298 | 38,960 | 47,093 | 56,004 | | | | | | | |
| **1999** | 101 | 1,490 | 4,037 | 7,985 | 12,244 | 17,620 | 24,409 | 31,589 | 39,555 | 48,033 | | | | | | | | |
| **2000** | 119 | 1,515 | 3,958 | 8,025 | 13,123 | 19,393 | 26,779 | 34,877 | 43,962 | | | | | | | | | |
| **2001** | 74 | 1,580 | 4,204 | 8,578 | 13,618 | 19,758 | 26,650 | 34,409 | | | | | | | | | | |
| **2002** | 201 | 2,266 | 5,263 | 10,376 | 15,770 | 22,115 | 29,612 | | | | | | | | | | | |
| **2003** | 162 | 1,938 | 4,962 | 9,744 | 14,935 | 21,526 | | | | | | | | | | | | |
| **2004** | 216 | 2,417 | 5,632 | 9,974 | 15,037 | | | | | | | | | | | | | |
| **2005** | 142 | 2,038 | 4,766 | 9,002 | | | | | | | | | | | | | | |
| **2006** | 101 | 1,616 | 3,908 | | | | | | | | | | | | | | | |
| **2007** | 102 | 1,572 | | | | | | | | | | | | | | | | |
| **2008** | 107 | | | | | | | | | | | | | | | | | |

### Cumulative Paid Development Factors

| Accident Year | 0.5-1.5 | 1.5-2.5 | 2.5-3.5 | 3.5-4.5 | 4.5-5.5 | 5.5-6.5 | 6.5-7.5 | 7.5-8.5 | 8.5-9.5 | 9.5-10.5 | 10.5-11.5 | 11.5-12.5 | 12.5-13.5 | 13.5-14.5 | 14.5-15.5 | 15.5-16.5 | 16.5-17.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 1.219 | 1.210 | 1.185 | 1.155 | 1.138 | 1.127 | 1.113 | 1.097 | 1.089 | 1.082 | |
| **1992** | | | | | | | 1.299 | 1.203 | 1.259 | 1.177 | 1.157 | 1.139 | 1.125 | 1.110 | 1.096 | 1.088 | | |
| **1993** | | | | | | 1.393 | 1.294 | 1.250 | 1.201 | 1.183 | 1.164 | 1.142 | 1.119 | 1.109 | 1.099 | | | |
| **1994** | | | | | 1.432 | 1.362 | 1.287 | 1.241 | 1.208 | 1.186 | 1.166 | 1.138 | 1.121 | 1.110 | | | | |
| **1995** | | | | 1.681 | 1.441 | 1.363 | 1.290 | 1.255 | 1.231 | 1.198 | 1.171 | 1.139 | 1.129 | | | | | |
| **1996** | | | 1.823 | 1.552 | 1.424 | 1.344 | 1.269 | 1.240 | 1.208 | 1.171 | 1.154 | 1.135 | | | | | | |
| **1997** | | 2.248 | 1.933 | 1.610 | 1.448 | 1.358 | 1.294 | 1.262 | 1.226 | 1.183 | 1.160 | | | | | | | |
| **1998** | 9.656 | 2.451 | 2.015 | 1.548 | 1.429 | 1.404 | 1.302 | 1.245 | 1.209 | 1.189 | | | | | | | | |
| **1999** | 14.794 | 2.709 | 1.978 | 1.533 | 1.439 | 1.385 | 1.294 | 1.252 | 1.214 | | | | | | | | | |
| **2000** | 12.777 | 2.613 | 2.027 | 1.635 | 1.478 | 1.381 | 1.302 | 1.260 | | | | | | | | | | |
| **2001** | 21.273 | 2.661 | 2.040 | 1.588 | 1.451 | 1.349 | 1.291 | | | | | | | | | | | |
| **2002** | 11.291 | 2.323 | 1.972 | 1.520 | 1.402 | 1.339 | | | | | | | | | | | | |
| **2003** | 11.984 | 2.561 | 1.964 | 1.533 | 1.441 | | | | | | | | | | | | | |
| **2004** | 11.194 | 2.330 | 1.771 | 1.508 | | | | | | | | | | | | | | |
| **2005** | 14.403 | 2.338 | 1.889 | | | | | | | | | | | | | | | |
| **2006** | 15.966 | 2.418 | | | | | | | | | | | | | | | | |
| **2007** | 15.470 | | | | | | | | | | | | | | | | | |
| **2008** | | | | | | | | | | | | | | | | | | Tail For Payments After Year: |
| **Average** | 13.881 | 2.465 | 1.941 | 1.571 | 1.438 | 1.368 | 1.292 | 1.243 | 1.219 | 1.184 | 1.161 | 1.138 | 1.124 | 1.111 | 1.097 | 1.089 | 1.082 | 17.500 |
| **Ex Hi-Lo** | 13.485 | 2.462 | 1.950 | 1.565 | 1.438 | 1.367 | 1.294 | 1.245 | 1.215 | 1.184 | 1.160 | 1.139 | 1.124 | 1.110 | 1.097 | ---- | ---- | Selected |
| **Selected** | 15.280 | 2.465 | 1.941 | 1.571 | 1.438 | 1.368 | 1.292 | 1.243 | 1.219 | 1.184 | 1.161 | 1.138 | 1.124 | 1.111 | 1.097 | 1.089 | 1.082 | 0.918 |
| **Bondy Factor** | | 0.331 | 0.735 | 0.681 | 0.805 | 0.861 | 0.819 | 0.848 | 0.910 | 0.855 | 0.883 | 0.870 | 0.903 | 0.895 | 0.887 | 0.912 | 0.924 | 2.416 |
| **Bondy Tail** | | | | | | | | | | | | | | | | | | 2.294 |
| **Inverse Power Function Tail** | | | | | | | | | | | | | | | | | | 2.294 |
| **Cumulative** | 2560.799 | 167.595 | 67.982 | 35.020 | 22.296 | 15.500 | 11.332 | 8.769 | 7.056 | 5.791 | 4.891 | 4.213 | 3.701 | 3.292 | 2.964 | 2.701 | 2.481 | |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## Total Indemnity

### Cumulative Paid Losses from Audits as of 6/30

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 | 17.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 471,960 | 498,808 | 521,826 | 542,726 | 562,056 | 579,788 | 597,369 | 612,587 | 626,775 | 641,353 | 657,470 |
| **1992** | | | | | | | 402,927 | 432,111 | 450,456 | 475,027 | 493,611 | 511,485 | 527,334 | 543,123 | 557,563 | 572,205 | 588,426 | |
| **1993** | | | | | | 346,260 | 380,963 | 406,891 | 428,574 | 449,051 | 467,272 | 483,290 | 497,856 | 511,516 | 526,594 | 544,480 | | |
| **1994** | | | | | 303,098 | 343,144 | 374,241 | 399,429 | 421,823 | 440,885 | 458,586 | 474,732 | 491,158 | 507,574 | 526,399 | | | |
| **1995** | | | | 234,364 | 282,087 | 317,720 | 346,096 | 369,033 | 389,240 | 408,330 | 426,132 | 444,374 | 460,599 | 479,705 | | | | |
| **1996** | | | 159,271 | 215,817 | 260,223 | 294,636 | 321,772 | 345,897 | 366,666 | 386,070 | 405,434 | 424,252 | 445,108 | | | | | |
| **1997** | | 88,773 | 149,913 | 205,164 | 246,734 | 281,331 | 311,013 | 336,692 | 358,806 | 381,397 | 403,814 | 427,895 | | | | | | |
| **1998** | 14,389 | 97,186 | 164,710 | 223,776 | 270,965 | 309,625 | 342,400 | 371,999 | 398,427 | 425,436 | 453,563 | | | | | | | |
| **1999** | 14,934 | 100,038 | 175,211 | 242,792 | 296,225 | 340,824 | 380,162 | 414,284 | 448,761 | 484,843 | | | | | | | | |
| **2000** | 15,884 | 107,970 | 195,402 | 269,933 | 329,132 | 380,343 | 424,040 | 471,103 | 515,691 | | | | | | | | | |
| **2001** | 14,742 | 106,283 | 193,761 | 267,373 | 327,470 | 377,741 | 429,504 | 476,194 | | | | | | | | | | |
| **2002** | 13,713 | 105,076 | 192,081 | 271,672 | 336,551 | 396,455 | 456,239 | | | | | | | | | | | |
| **2003** | 14,767 | 99,178 | 188,428 | 264,333 | 326,648 | 384,965 | | | | | | | | | | | | |
| **2004** | 13,134 | 93,013 | 178,173 | 255,049 | 316,437 | | | | | | | | | | | | | |
| **2005** | 11,733 | 85,992 | 170,539 | 242,833 | | | | | | | | | | | | | | |
| **2006** | 9,838 | 78,474 | 161,208 | | | | | | | | | | | | | | | |
| **2007** | 9,384 | 77,410 | | | | | | | | | | | | | | | | |
| **2008** | 9,003 | | | | | | | | | | | | | | | | | |

### Cumulative Paid Loss Development Factors

| Accident Year | 0.5-1.5 | 1.5-2.5 | 2.5-3.5 | 3.5-4.5 | 4.5-5.5 | 5.5-6.5 | 6.5-7.5 | 7.5-8.5 | 8.5-9.5 | 9.5-10.5 | 10.5-11.5 | 11.5-12.5 | 12.5-13.5 | 13.5-14.5 | 14.5-15.5 | 15.5-16.5 | 16.5-17.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 1.057 | 1.046 | 1.040 | 1.036 | 1.032 | 1.030 | 1.025 | 1.023 | 1.023 | 1.025 | |
| **1992** | | | | | | | 1.072 | 1.042 | 1.055 | 1.039 | 1.036 | 1.031 | 1.030 | 1.027 | 1.026 | 1.028 | | |
| **1993** | | | | | | 1.100 | 1.068 | 1.053 | 1.048 | 1.041 | 1.034 | 1.030 | 1.027 | 1.029 | 1.034 | | | |
| **1994** | | | | | 1.132 | 1.091 | 1.067 | 1.056 | 1.045 | 1.040 | 1.035 | 1.035 | 1.033 | 1.037 | | | | |
| **1995** | | | | 1.204 | 1.126 | 1.089 | 1.066 | 1.055 | 1.049 | 1.044 | 1.043 | 1.037 | 1.041 | | | | | |
| **1996** | | | 1.355 | 1.206 | 1.132 | 1.092 | 1.075 | 1.060 | 1.053 | 1.050 | 1.046 | 1.049 | | | | | | |
| **1997** | | 1.689 | 1.369 | 1.203 | 1.140 | 1.106 | 1.083 | 1.066 | 1.063 | 1.059 | 1.060 | | | | | | | |
| **1998** | 6.754 | 1.695 | 1.359 | 1.211 | 1.143 | 1.106 | 1.086 | 1.071 | 1.068 | 1.066 | | | | | | | | |
| **1999** | 6.699 | 1.751 | 1.386 | 1.220 | 1.151 | 1.115 | 1.090 | 1.083 | 1.080 | | | | | | | | | |
| **2000** | 6.797 | 1.810 | 1.381 | 1.219 | 1.156 | 1.115 | 1.111 | 1.095 | | | | | | | | | | |
| **2001** | 7.209 | 1.823 | 1.380 | 1.225 | 1.154 | 1.137 | 1.109 | | | | | | | | | | | |
| **2002** | 7.662 | 1.828 | 1.414 | 1.239 | 1.178 | 1.151 | | | | | | | | | | | | |
| **2003** | 6.716 | 1.900 | 1.403 | 1.236 | 1.179 | | | | | | | | | | | | | |
| **2004** | 7.082 | 1.916 | 1.431 | 1.241 | | | | | | | | | | | | | | |
| **2005** | 7.329 | 1.983 | 1.424 | | | | | | | | | | | | | | | |
| **2006** | 7.976 | 2.054 | | | | | | | | | | | | | | | | |
| **2007** | 8.249 | | | | | | | | | | | | | | | | | |
| **2008** | | | | | | | | | | | | | | | | | | Tail For Payments After Year: |
| **Average** | 7.247 | 1.845 | 1.390 | 1.220 | 1.149 | 1.110 | 1.083 | 1.064 | 1.056 | 1.047 | 1.041 | 1.035 | 1.033 | 1.030 | 1.028 | 1.026 | 1.025 | 17.500 |
| **Ex Hi-Lo** | 7.191 | 1.838 | 1.389 | 1.220 | 1.148 | 1.108 | 1.081 | 1.063 | 1.054 | 1.046 | 1.039 | 1.033 | 1.031 | 1.028 | 1.026 | ---- | ---- | Selected |
| **Selected** | 7.247 | 1.845 | 1.390 | 1.220 | 1.149 | 1.110 | 1.083 | 1.064 | 1.056 | 1.047 | 1.041 | 1.035 | 1.033 | 1.030 | 1.028 | 1.026 | 1.025 | 0.947 |
| **Bondy Factor** | | 0.309 | 0.538 | 0.604 | 0.698 | 0.753 | 0.761 | 0.778 | 0.886 | 0.844 | 0.879 | 0.859 | 0.918 | 0.913 | 0.938 | 0.929 | 0.974 | 1.561 |
| **Bondy Tail** | | | | | | | | | | | | | | | | | | 1.654 |
| **Inverse Power Function Tail** | | | | | | | | | | | | | | | | | | |
| **Cumulative** | 75.552 | 10.425 | 5.651 | 4.065 | 3.331 | 2.899 | 2.611 | 2.412 | 2.267 | 2.146 | 2.049 | 1.968 | 1.900 | 1.840 | 1.787 | 1.739 | 1.695 | 1.654 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## Medical

**Cumulative Incurred Losses (payments from Audits as of 6/30 plus MIRA reserves as of 6/30)**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1990** | | | | | | | | | 554,758 | 598,569 | 602,038 | N/A | 679,917 | 687,871 | 697,691 | 703,039 | 712,007 |
| **1991** | | | | | | | | 548,836 | 571,770 | 569,485 | 579,260 | 624,302 | 628,755 | 639,765 | 647,361 | 652,602 | 652,394 |
| **1992** | | | | | | | 572,899 | 587,534 | 565,215 | 577,484 | 605,726 | 616,683 | 626,717 | 631,169 | 643,411 | 644,608 | 652,529 |
| **1993** | | | | | | 563,876 | 572,444 | 549,159 | 538,504 | 563,255 | 576,288 | 586,372 | 591,899 | 592,371 | 590,735 | 591,979 | |
| **1994** | | | | | 551,647 | 554,910 | 534,597 | 539,800 | 553,797 | 564,994 | 577,370 | 587,116 | 592,191 | 591,134 | 590,330 | | |
| **1995** | | | | 546,760 | 539,579 | 519,115 | 516,117 | 534,640 | 537,789 | 553,754 | 565,876 | 569,196 | 568,194 | 569,609 | | | |
| **1996** | | | 557,042 | 540,702 | 512,400 | 506,785 | 534,271 | 529,073 | 539,702 | 543,574 | 551,989 | 550,583 | 550,384 | | | | |
| **1997** | | 803,676 | 595,306 | 541,405 | 538,427 | 566,801 | 563,650 | 568,366 | 581,862 | 585,794 | 586,547 | 584,425 | | | | | |
| **1998** | 417,042 | 930,931 | 612,764 | 597,721 | 627,392 | 627,930 | 638,732 | 639,568 | 663,408 | 658,907 | 663,110 | | | | | | |
| **1999** | 503,358 | 976,811 | 667,315 | 686,890 | 681,761 | 697,517 | 695,243 | 693,788 | 705,174 | 706,441 | | | | | | | |
| **2000** | 524,321 | 1,068,350 | 790,582 | 768,899 | 771,433 | 764,858 | 764,268 | 752,950 | 768,786 | | | | | | | | |
| **2001** | 531,276 | 1,109,259 | 775,845 | 774,206 | 751,634 | 754,317 | 759,808 | 750,169 | | | | | | | | | |
| **2002** | 555,876 | 1,174,961 | 814,566 | 780,834 | 785,006 | 794,697 | 791,033 | | | | | | | | | | |
| **2003** | 621,263 | 1,169,318 | 739,722 | 739,250 | 744,987 | 753,639 | | | | | | | | | | | |
| **2004** | 609,658 | 1,034,734 | 704,798 | 705,887 | 721,093 | | | | | | | | | | | | |
| **2005** | 547,121 | 993,006 | 653,788 | 673,777 | | | | | | | | | | | | | |
| **2006** | 502,049 | 907,248 | 617,955 | | | | | | | | | | | | | | |
| **2007** | 516,236 | 890,951 | | | | | | | | | | | | | | | |
| **2008** | 497,375 | | | | | | | | | | | | | | | | |

**Cumulative Incurred Loss Development Factors**

| Accident Year | 0.5-1.5 | 1.5-2.5 | 2.5-3.5 | 3.5-4.5 | 4.5-5.5 | 5.5-6.5 | 6.5-7.5 | 7.5-8.5 | 8.5-9.5 | 9.5-10.5 | 10.5-11.5 | 11.5-12.5 | 12.5-13.5 | 13.5-14.5 | 14.5-15.5 | 15.5-16.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1990** | | | | | | | | | 1.079 | 1.006 | | | 1.012 | 1.014 | 1.008 | 1.013 | |
| **1991** | | | | | | | | 1.042 | 0.996 | 1.017 | 1.078 | 1.007 | 1.018 | 1.012 | 1.008 | 1.000 | |
| **1992** | | | | | | | 1.026 | 0.962 | 1.022 | 1.049 | 1.018 | 1.016 | 1.007 | 1.019 | 1.002 | 1.012 | |
| **1993** | | | | | | 1.015 | 0.959 | 0.981 | 1.046 | 1.023 | 1.017 | 1.009 | 1.001 | 0.997 | 1.002 | | |
| **1994** | | | | | 1.006 | 0.963 | 1.010 | 1.026 | 1.020 | 1.022 | 1.017 | 1.009 | 0.998 | 0.999 | | | |
| **1995** | | | | 0.987 | 0.962 | 0.994 | 1.036 | 1.006 | 1.030 | 1.022 | 1.006 | 0.998 | 1.002 | | | | |
| **1996** | | | 0.971 | 0.948 | 0.989 | 1.054 | 0.990 | 1.020 | 1.007 | 1.015 | 0.997 | 1.000 | | | | | |
| **1997** | | 0.741 | 0.909 | 0.994 | 1.053 | 0.994 | 1.008 | 1.024 | 1.007 | 1.001 | 0.996 | | | | | | |
| **1998** | 2.232 | 0.658 | 0.975 | 1.050 | 1.001 | 1.017 | 1.001 | 1.037 | 0.993 | 1.006 | | | | | | | |
| **1999** | 1.941 | 0.683 | 1.029 | 0.993 | 1.023 | 0.997 | 0.998 | 1.016 | 1.002 | | | | | | | | |
| **2000** | 2.038 | 0.740 | 0.973 | 1.003 | 0.991 | 0.999 | 0.985 | 1.021 | | | | | | | | | |
| **2001** | 2.088 | 0.699 | 0.998 | 0.971 | 1.004 | 1.007 | 0.987 | | | | | | | | | | |
| **2002** | 2.114 | 0.693 | 0.959 | 1.005 | 1.012 | 0.995 | | | | | | | | | | | |
| **2003** | 1.882 | 0.633 | 0.999 | 1.008 | 1.012 | | | | | | | | | | | | |
| **2004** | 1.697 | 0.681 | 1.002 | 1.022 | | | | | | | | | | | | | |
| **2005** | 1.815 | 0.658 | 1.031 | | | | | | | | | | | | | | |
| **2006** | 1.807 | 0.681 | | | | | | | | | | | | | | | |
| **2007** | 1.726 | | | | | | | | | | | | | | | | |
| **2008** | | | | | | | | | | | | | | | | | Tail For Payments After Year: |
| **Average** | 1.934 | 0.687 | 0.985 | 0.998 | 1.005 | 1.004 | 1.000 | 1.013 | 1.020 | 1.018 | 1.019 | 1.007 | 1.006 | 1.008 | 1.005 | 1.008 | |
| **Ex Hi-Lo** | 1.926 | 0.687 | 0.988 | 0.998 | 1.005 | 1.002 | 0.997 | 1.019 | 1.013 | 1.018 | 1.009 | 1.006 | 1.002 | 0.999 | ---- | ---- | 16.500 |
| **Selected** | 1.934 | 0.687 | 1.031 | 1.015 | 1.012 | 1.004 | 1.000 | 1.013 | 1.020 | 1.018 | 1.019 | 1.007 | 1.006 | 1.008 | 1.005 | 1.008 | Selected |
| **Bondy Factor** | | -0.570 | -0.080 | 0.483 | 0.819 | 0.313 | 0.023 | 157.720 | 1.490 | 0.894 | 1.031 | 0.355 | 0.961 | 1.313 | 0.596 | 1.668 | 0.950 |
| **Bondy Tail** | | | | | | | | | | | | | | | | | 1.169 |
| **Inverse Power Function Tail** | | | | | | | | | | | | | | | | | 1.267 |
| **Cumulative** | 1.983 | 1.026 | 1.493 | 1.449 | 1.428 | 1.411 | 1.406 | 1.406 | 1.387 | 1.360 | 1.336 | 1.311 | 1.303 | 1.295 | 1.284 | 1.278 | 1.267 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## Indemnity Excluding PTD and Death

**Cumulative Incurred Losses (payments from Audits as of 6/30 plus MIRA reserves as of 6/30)**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 | 17.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 469,959 | 485,446 | 491,140 | 497,569 | 494,599 | 516,912 | 523,250 | 526,583 | 529,735 | 532,236 | 543,151 |
| **1992** | | | | | | | 412,725 | 434,036 | 433,655 | 442,587 | 457,195 | 465,707 | 469,740 | 472,570 | 477,264 | 481,927 | 495,486 | |
| **1993** | | | | | | 383,419 | 404,195 | 407,274 | 411,039 | 427,230 | 434,763 | 441,246 | 445,341 | 449,106 | 454,431 | 469,642 | | |
| **1994** | | | | | 364,920 | 381,563 | 388,689 | 398,688 | 410,319 | 418,301 | 426,057 | 433,655 | 440,778 | 445,905 | 461,520 | | | |
| **1995** | | | | 330,614 | 346,155 | 348,173 | 360,107 | 374,240 | 382,015 | 388,389 | 396,228 | 405,938 | 411,463 | 428,687 | | | | |
| **1996** | | | 291,819 | 313,821 | 314,008 | 320,081 | 337,729 | 349,824 | 352,998 | 360,264 | 371,563 | 382,257 | 404,689 | | | | | |
| **1997** | | 448,986 | 292,371 | 299,963 | 303,206 | 320,576 | 335,606 | 344,525 | 348,281 | 356,426 | 370,913 | 398,445 | | | | | | |
| **1998** | 281,429 | 584,692 | 311,060 | 325,073 | 346,205 | 356,234 | 363,275 | 373,496 | 383,333 | 396,041 | 420,386 | | | | | | | |
| **1999** | 324,982 | 427,945 | 331,586 | 374,538 | 384,516 | 389,418 | 401,762 | 418,864 | 434,674 | 463,059 | | | | | | | | |
| **2000** | 293,300 | 465,041 | 391,415 | 429,275 | 425,183 | 431,335 | 445,654 | 472,359 | 507,786 | | | | | | | | | |
| **2001** | 302,002 | 424,492 | 413,595 | 419,786 | 418,548 | 428,677 | 450,413 | 490,123 | | | | | | | | | | |
| **2002** | 255,284 | 515,087 | 417,292 | 419,720 | 428,731 | 444,767 | 494,348 | | | | | | | | | | | |
| **2003** | 561,992 | 480,261 | 399,369 | 409,271 | 411,405 | 447,285 | | | | | | | | | | | | |
| **2004** | 542,887 | 448,893 | 369,241 | 386,084 | 421,092 | | | | | | | | | | | | | |
| **2005** | 521,946 | 425,760 | 349,336 | 390,063 | | | | | | | | | | | | | | |
| **2006** | 476,339 | 374,745 | 342,821 | | | | | | | | | | | | | | | |
| **2007** | 455,437 | 381,445 | | | | | | | | | | | | | | | | |
| **2008** | 431,849 | | | | | | | | | | | | | | | | | |

**Cumulative Incurred Loss Development Factors**

| Accident Year | 0.5-1.5 | 1.5-2.5 | 2.5-3.5 | 3.5-4.5 | 4.5-5.5 | 5.5-6.5 | 6.5-7.5 | 7.5-8.5 | 8.5-9.5 | 9.5-10.5 | 10.5-11.5 | 11.5-12.5 | 12.5-13.5 | 13.5-14.5 | 14.5-15.5 | 15.5-16.5 | 16.5-17.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 1.033 | 1.012 | 1.013 | 0.994 | 1.045 | 1.012 | 1.006 | 1.006 | 1.005 | 1.021 | |
| **1992** | | | | | | | 1.052 | 0.999 | 1.021 | 1.033 | 1.019 | 1.009 | 1.006 | 1.010 | 1.010 | 1.028 | | |
| **1993** | | | | | | 1.054 | 1.008 | 1.009 | 1.039 | 1.018 | 1.015 | 1.009 | 1.008 | 1.012 | 1.033 | | | |
| **1994** | | | | | 1.046 | 1.019 | 1.026 | 1.029 | 1.019 | 1.019 | 1.018 | 1.016 | 1.012 | 1.035 | | | | |
| **1995** | | | | 1.047 | 1.006 | 1.034 | 1.039 | 1.021 | 1.017 | 1.020 | 1.025 | 1.014 | 1.042 | | | | | |
| **1996** | | | 1.075 | 1.001 | 1.019 | 1.055 | 1.036 | 1.009 | 1.021 | 1.031 | 1.029 | 1.059 | | | | | | |
| **1997** | | 0.651 | 1.026 | 1.011 | 1.057 | 1.047 | 1.027 | 1.011 | 1.023 | 1.041 | 1.074 | | | | | | | |
| **1998** | 2.078 | 0.532 | 1.045 | 1.065 | 1.029 | 1.020 | 1.028 | 1.026 | 1.033 | 1.061 | | | | | | | | |
| **1999** | 1.317 | 0.775 | 1.130 | 1.027 | 1.013 | 1.032 | 1.043 | 1.038 | 1.065 | | | | | | | | | |
| **2000** | 1.586 | 0.842 | 1.097 | 0.990 | 1.014 | 1.033 | 1.060 | 1.075 | | | | | | | | | | |
| **2001** | 1.406 | 0.974 | 1.015 | 0.997 | 1.024 | 1.051 | 1.088 | | | | | | | | | | | |
| **2002** | 2.018 | 0.810 | 1.006 | 1.021 | 1.037 | 1.111 | | | | | | | | | | | | |
| **2003** | 0.855 | 0.832 | 1.025 | 1.005 | 1.087 | | | | | | | | | | | | | |
| **2004** | 0.827 | 0.823 | 1.046 | 1.091 | | | | | | | | | | | | | | |
| **2005** | 0.816 | 0.821 | 1.117 | | | | | | | | | | | | | | | |
| **2006** | 0.787 | 0.915 | | | | | | | | | | | | | | | | |
| **2007** | 0.838 | | | | | | | | | | | | | | | | | |
| **2008** | | | | | | | | | | | | | | | | | | Tail For Payments After Year: |
| **Average** | 1.252 | 0.797 | 1.058 | 1.025 | 1.033 | 1.046 | 1.041 | 1.025 | 1.028 | 1.029 | 1.025 | 1.025 | 1.016 | 1.016 | 1.016 | 1.016 | 1.021 | |
| **4 Yr Wtd Avg** | 0.817 | 0.845 | 1.046 | 1.027 | 1.040 | 1.058 | 1.056 | 1.040 | 1.037 | 1.039 | 1.035 | 1.024 | 1.016 | 1.015 | ---- | ---- | ---- | 17.500 |
| **Ex Hi-Lo** | 1.208 | 0.808 | 1.056 | 1.022 | 1.030 | 1.041 | 1.039 | 1.022 | 1.025 | 1.027 | 1.021 | 1.021 | 1.011 | 1.011 | 1.010 | ---- | ---- | |
| **Selected** | 0.850 | 0.797 | 1.058 | 1.025 | 1.033 | 1.046 | 1.041 | 1.025 | 1.028 | 1.029 | 1.025 | 1.025 | 1.016 | 1.016 | 1.016 | 1.016 | 1.016 | Selected |
| **Bondy Factor** | | 1.393 | -0.249 | 0.446 | 1.302 | 1.361 | 0.891 | 0.622 | 1.109 | 1.060 | 0.840 | 1.024 | 0.650 | 0.965 | 1.039 | 1.001 | 0.950 | 0.900 |
| **Bondy Tail** | | | | | | | | | | | | | | | | | | 1.150 |
| **Inverse Power Function Tail** | | | | | | | | | | | | | | | | | | 1.159 |
| **Cumulative** | 1.183 | 1.392 | 1.746 | 1.650 | 1.609 | 1.557 | 1.489 | 1.431 | 1.396 | 1.358 | 1.319 | 1.288 | 1.256 | 1.236 | 1.216 | 1.197 | 1.177 | 1.159 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## PTD and Death

**Cumulative Incurred Losses (payments from Audits as of 6/30 plus MIRA reserves as of 6/30)**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 | 17.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 99,125 | 120,726 | 137,090 | 148,079 | 173,684 | 169,187 | 181,722 | 198,093 | 202,484 | 208,799 | 220,865 |
| **1992** | | | | | | | 78,321 | 99,647 | 112,020 | 125,631 | 131,447 | 147,402 | 158,257 | 172,304 | 180,949 | 185,107 | 196,065 | |
| **1993** | | | | | | 61,639 | 77,761 | 87,769 | 98,282 | 105,492 | 118,755 | 134,819 | 150,372 | 153,254 | 159,749 | 169,190 | | |
| **1994** | | | | | 52,879 | 64,707 | 76,692 | 87,818 | 97,702 | 112,823 | 128,032 | 144,108 | 150,319 | 155,960 | 166,974 | | | |
| **1995** | | | | 33,776 | 45,599 | 55,600 | 66,000 | 78,400 | 91,272 | 106,250 | 121,093 | 129,834 | 136,089 | 147,534 | | | | |
| **1996** | | | 41,005 | 43,069 | 53,435 | 63,163 | 75,789 | 88,152 | 103,766 | 124,745 | 128,006 | 136,390 | 146,973 | | | | | |
| **1997** | | 86,607 | 38,661 | 38,974 | 48,326 | 61,936 | 74,616 | 90,761 | 111,762 | 118,344 | 127,289 | 141,515 | | | | | | |
| **1998** | 92,773 | 80,899 | 45,024 | 45,615 | 58,262 | 71,482 | 90,720 | 110,108 | 125,937 | 135,995 | 155,701 | | | | | | | |
| **1999** | 86,445 | 52,387 | 46,176 | 53,140 | 58,492 | 78,326 | 105,525 | 113,198 | 123,325 | 144,368 | | | | | | | | |
| **2000** | 84,065 | 54,978 | 54,920 | 45,307 | 64,780 | 86,823 | 109,856 | 121,130 | 142,306 | | | | | | | | | |
| **2001** | 79,635 | 61,501 | 34,075 | 54,651 | 77,857 | 88,748 | 101,563 | 121,450 | | | | | | | | | | |
| **2002** | 81,806 | 28,928 | 41,357 | 66,214 | 80,040 | 93,471 | 115,818 | | | | | | | | | | | |
| **2003** | 9,068 | 27,445 | 45,084 | 58,974 | 70,413 | 93,578 | | | | | | | | | | | | |
| **2004** | 11,059 | 39,608 | 45,912 | 57,253 | 76,901 | | | | | | | | | | | | | |
| **2005** | 6,179 | 32,283 | 38,096 | 54,058 | | | | | | | | | | | | | | |
| **2006** | 6,057 | 24,539 | 33,163 | | | | | | | | | | | | | | | |
| **2007** | 6,030 | 27,461 | | | | | | | | | | | | | | | | |
| **2008** | 6,528 | | | | | | | | | | | | | | | | | |

**Cumulative Incurred Loss Development Factors**

| Accident Year | 0.5-1.5 | 1.5-2.5 | 2.5-3.5 | 3.5-4.5 | 4.5-5.5 | 5.5-6.5 | 6.5-7.5 | 7.5-8.5 | 8.5-9.5 | 9.5-10.5 | 10.5-11.5 | 11.5-12.5 | 12.5-13.5 | 13.5-14.5 | 14.5-15.5 | 15.5-16.6 | 16.5-17.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 1.218 | 1.136 | 1.080 | 1.173 | 0.974 | 1.074 | 1.090 | 1.022 | 1.031 | 1.058 | |
| **1992** | | | | | | | 1.272 | 1.124 | 1.122 | 1.046 | 1.121 | 1.074 | 1.089 | 1.050 | 1.023 | 1.059 | | |
| **1993** | | | | | | 1.262 | 1.129 | 1.120 | 1.073 | 1.126 | 1.135 | 1.115 | 1.019 | 1.042 | 1.059 | | | |
| **1994** | | | | | 1.224 | 1.185 | 1.145 | 1.113 | 1.155 | 1.135 | 1.126 | 1.043 | 1.038 | 1.071 | | | | |
| **1995** | | | | 1.350 | 1.219 | 1.187 | 1.188 | 1.164 | 1.164 | 1.140 | 1.072 | 1.048 | 1.084 | | | | | |
| **1996** | | | 1.050 | 1.241 | 1.182 | 1.200 | 1.163 | 1.177 | 1.202 | 1.026 | 1.065 | 1.078 | | | | | | |
| **1997** | | 0.446 | 1.008 | 1.240 | 1.282 | 1.205 | 1.216 | 1.231 | 1.059 | 1.076 | 1.112 | | | | | | | |
| **1998** | 0.872 | 0.557 | 1.013 | 1.277 | 1.227 | 1.269 | 1.214 | 1.144 | 1.080 | 1.145 | | | | | | | | |
| **1999** | 0.606 | 0.881 | 1.151 | 1.101 | 1.339 | 1.347 | 1.073 | 1.089 | 1.171 | | | | | | | | | |
| **2000** | 0.654 | 0.999 | 0.825 | 1.430 | 1.340 | 1.265 | 1.103 | 1.175 | | | | | | | | | | |
| **2001** | 0.772 | 0.554 | 1.604 | 1.425 | 1.140 | 1.144 | 1.196 | | | | | | | | | | | |
| **2002** | 0.354 | 1.430 | 1.601 | 1.209 | 1.168 | 1.239 | | | | | | | | | | | | |
| **2003** | 3.026 | 1.643 | 1.308 | 1.194 | 1.329 | | | | | | | | | | | | | |
| **2004** | 3.582 | 1.159 | 1.247 | 1.343 | | | | | | | | | | | | | | |
| **2005** | 5.225 | 1.180 | 1.419 | | | | | | | | | | | | | | | |
| **2006** | 4.052 | 1.351 | | | | | | | | | | | | | | | | |
| **2007** | 4.554 | | | | | | | | | | | | | | | | | |
| **2008** | | | | | | | | | | | | | | | | | | Tail For Payments After Year: |
| **Average** | 2.370 | 1.020 | 1.223 | 1.281 | 1.245 | 1.230 | 1.170 | 1.156 | 1.129 | 1.097 | 1.115 | 1.055 | 1.061 | 1.063 | 1.035 | 1.045 | 1.058 | |
| **4 Yr Wtd Avg** | 4.225 | 1.310 | 1.388 | 1.287 | 1.237 | 1.246 | 1.143 | 1.157 | 1.126 | 1.096 | 1.094 | 1.071 | 1.057 | 1.064 | ---- | ---- | ---- | 17.500 |
| **Ex Hi-Lo** | 2.265 | 1.014 | 1.225 | 1.285 | 1.246 | 1.226 | 1.169 | 1.154 | 1.129 | 1.100 | 1.113 | 1.061 | 1.065 | 1.060 | 1.023 | ---- | ---- | |
| **Selected** | 4.225 | 1.266 | 1.223 | 1.281 | 1.245 | 1.230 | 1.170 | 1.156 | 1.129 | 1.097 | 1.115 | 1.055 | 1.061 | 1.063 | 1.035 | 1.031 | 1.030 | Selected |
| **Bondy Factor** | | 0.164 | 0.853 | 1.232 | 0.885 | 0.946 | 0.757 | 0.922 | 0.839 | 0.761 | 1.179 | 0.495 | 1.095 | 1.041 | 0.556 | 0.894 | 0.968 | 0.900 |
| **Bondy Tail** | | | | | | | | | | | | | | | | | | 1.305 |
| **Inverse Power Function Tail** | | | | | | | | | | | | | | | | | | 1.225 |
| **Cumulative** | 38.338 | 9.074 | 7.169 | 5.864 | 4.578 | 3.677 | 2.989 | 2.555 | 2.211 | 1.958 | 1.786 | 1.602 | 1.518 | 1.431 | 1.346 | 1.300 | 1.261 | 1.225 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## Total Indemnity

**Cumulative Incurred Losses (payments from Audits as of 6/30 plus MIRA reserves as of 6/30)**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 | 17.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 569,084 | 606,172 | 628,230 | 645,648 | 668,283 | 686,100 | 704,972 | 724,676 | 732,219 | 741,035 | 764,016 |
| **1992** | | | | | | | 491,046 | 533,683 | 545,675 | 568,218 | 588,643 | 613,109 | 627,997 | 644,873 | 658,213 | 667,034 | 691,551 | |
| **1993** | | | | | | 445,058 | 481,955 | 495,043 | 509,321 | 532,721 | 553,518 | 576,065 | 595,713 | 602,360 | 614,180 | 638,832 | | |
| **1994** | | | | | 417,799 | 446,271 | 465,381 | 486,505 | 508,021 | 531,123 | 554,088 | 577,763 | 591,098 | 601,866 | 628,494 | | | |
| **1995** | | | | 364,390 | 391,754 | 403,773 | 426,107 | 452,640 | 473,287 | 494,640 | 517,320 | 535,772 | 547,552 | 576,220 | | | | |
| **1996** | | | 332,824 | 356,890 | 367,443 | 383,244 | 413,518 | 437,976 | 456,764 | 485,009 | 499,569 | 518,647 | 551,663 | | | | | |
| **1997** | | 535,593 | 331,032 | 338,937 | 351,532 | 382,512 | 410,222 | 435,286 | 460,043 | 474,769 | 498,202 | 539,960 | | | | | | |
| **1998** | 374,202 | 665,591 | 356,083 | 370,688 | 404,467 | 427,716 | 453,994 | 483,604 | 509,270 | 532,035 | 576,087 | | | | | | | |
| **1999** | 411,427 | 480,333 | 377,763 | 427,679 | 443,009 | 467,744 | 507,288 | 532,062 | 557,999 | 607,427 | | | | | | | | |
| **2000** | 377,365 | 520,019 | 446,335 | 474,582 | 489,964 | 518,158 | 555,510 | 593,489 | 650,091 | | | | | | | | | |
| **2001** | 381,637 | 485,993 | 447,670 | 474,438 | 496,405 | 517,426 | 551,976 | 611,572 | | | | | | | | | | |
| **2002** | 337,090 | 544,015 | 458,650 | 485,935 | 508,770 | 538,238 | 610,167 | | | | | | | | | | | |
| **2003** | 571,060 | 507,705 | 444,453 | 468,245 | 481,818 | 540,863 | | | | | | | | | | | | |
| **2004** | 553,946 | 488,501 | 415,154 | 443,337 | 497,993 | | | | | | | | | | | | | |
| **2005** | 528,125 | 458,043 | 387,432 | 444,121 | | | | | | | | | | | | | | |
| **2006** | 482,396 | 399,284 | 375,983 | | | | | | | | | | | | | | | |
| **2007** | 461,467 | 408,907 | | | | | | | | | | | | | | | | |
| **2008** | 438,377 | | | | | | | | | | | | | | | | | |

**Cumulative Incurred Loss Development Factors**

| Accident Year | 0.5-1.5 | 1.5-2.5 | 2.5-3.5 | 3.5-4.5 | 4.5-5.5 | 5.5-6.5 | 6.5-7.5 | 7.5-8.5 | 8.5-9.5 | 9.5-10.5 | 10.5-11.5 | 11.5-12.5 | 12.5-13.5 | 13.5-14.5 | 14.5-15.5 | 15.5-16.5 | 16.5-17.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1991** | | | | | | | | 1.065 | 1.036 | 1.028 | 1.035 | 1.027 | 1.028 | 1.028 | 1.010 | 1.012 | 1.031 | |
| **1992** | | | | | | | 1.087 | 1.022 | 1.041 | 1.036 | 1.042 | 1.024 | 1.027 | 1.021 | 1.013 | 1.037 | | |
| **1993** | | | | | | 1.083 | 1.027 | 1.029 | 1.046 | 1.039 | 1.041 | 1.034 | 1.011 | 1.020 | 1.040 | | | |
| **1994** | | | | | 1.068 | 1.043 | 1.045 | 1.044 | 1.045 | 1.043 | 1.043 | 1.023 | 1.018 | 1.044 | | | | |
| **1995** | | | | 1.075 | 1.031 | 1.055 | 1.062 | 1.046 | 1.045 | 1.046 | 1.036 | 1.022 | 1.052 | | | | | |
| **1996** | | | 1.072 | 1.030 | 1.043 | 1.079 | 1.059 | 1.043 | 1.062 | 1.030 | 1.038 | 1.064 | | | | | | |
| **1997** | | 0.618 | 1.024 | 1.037 | 1.088 | 1.072 | 1.061 | 1.057 | 1.032 | 1.049 | 1.084 | | | | | | | |
| **1998** | 1.779 | 0.535 | 1.041 | 1.091 | 1.057 | 1.061 | 1.065 | 1.053 | 1.045 | 1.083 | | | | | | | | |
| **1999** | 1.167 | 0.786 | 1.132 | 1.036 | 1.056 | 1.085 | 1.049 | 1.049 | 1.089 | | | | | | | | | |
| **2000** | 1.378 | 0.858 | 1.063 | 1.032 | 1.058 | 1.072 | 1.068 | 1.095 | | | | | | | | | | |
| **2001** | 1.273 | 0.921 | 1.060 | 1.046 | 1.042 | 1.067 | 1.108 | | | | | | | | | | | |
| **2002** | 1.614 | 0.843 | 1.059 | 1.047 | 1.058 | 1.134 | | | | | | | | | | | | |
| **2003** | 0.889 | 0.875 | 1.054 | 1.029 | 1.123 | | | | | | | | | | | | | |
| **2004** | 0.882 | 0.850 | 1.068 | 1.123 | | | | | | | | | | | | | | |
| **2005** | 0.867 | 0.846 | 1.146 | | | | | | | | | | | | | | | |
| **2006** | 0.828 | 0.942 | | | | | | | | | | | | | | | | |
| **2007** | 0.886 | | | | | | | | | | | | | | | | | |
| **2008** | | | | | | | | | | | | | | | | | | Tail For Payments After Year: |
| **Average** | 1.156 | 0.807 | 1.072 | 1.055 | 1.062 | 1.075 | 1.063 | 1.050 | 1.049 | 1.044 | 1.045 | 1.032 | 1.027 | 1.028 | 1.021 | 1.024 | 1.031 | |
| **4 Yr Wtd Avg** | 0.866 | 0.876 | 1.080 | 1.060 | 1.070 | 1.090 | 1.073 | 1.065 | 1.058 | 1.053 | 1.050 | 1.035 | 1.027 | 1.028 | ---- | ---- | ---- | 17.500 |
| **Ex Hi-Lo** | 1.120 | 0.825 | 1.069 | 1.049 | 1.059 | 1.072 | 1.062 | 1.048 | 1.046 | 1.041 | 1.040 | 1.027 | 1.024 | 1.024 | 1.013 | ---- | ---- | |
| **Selected** | 0.857 | 0.894 | 1.080 | 1.055 | 1.062 | 1.075 | 1.063 | 1.050 | 1.049 | 1.044 | 1.045 | 1.032 | 1.027 | 1.028 | 1.021 | 1.024 | 1.023 | Selected |
| **Bondy Factor** | | 0.727 | -0.683 | 0.694 | 1.136 | 1.197 | 0.847 | 0.801 | 0.975 | 0.904 | 1.025 | 0.716 | 0.845 | 1.033 | 0.760 | 1.143 | 0.943 | 0.900 |
| **Bondy Tail** | | | | | | | | | | | | | | | | | | 1.227 |
| **Inverse Power Function Tail** | | | | | | | | | | | | | | | | | | 1.231 |
| **Cumulative** | 1.830 | 2.136 | 2.390 | 2.213 | 2.099 | 1.975 | 1.837 | 1.728 | 1.645 | 1.568 | 1.502 | 1.437 | 1.392 | 1.355 | 1.318 | 1.290 | 1.260 | 1.231 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## Medical

**Average MIRA Reserve per Ultimate Lost Time Claim (MIRA reserves as of 6/30 divided by Ultimate Claim Counts from Audit as of June 30, 2008)**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1992** | | | | | | | 3,804 | 3,844 | 3,149 | 3,128 | 3,450 | 3,380 | 3,380 | 3,225 | 3,248 | 3,078 | 3,029 |
| **1993** | | | | | | 4,594 | 4,472 | 3,707 | 3,207 | 3,419 | 3,421 | 3,367 | 3,250 | 3,051 | 2,833 | 2,679 | |
| **1994** | | | | | 5,440 | 5,067 | 4,263 | 4,029 | 3,963 | 3,873 | 3,825 | 3,739 | 3,616 | 3,382 | 3,162 | | |
| **1995** | | | | 6,395 | 5,702 | 4,796 | 4,309 | 4,337 | 4,041 | 4,054 | 3,991 | 3,806 | 3,538 | 3,333 | | | |
| **1996** | | | 8,329 | 7,076 | 5,777 | 5,118 | 5,324 | 4,737 | 4,617 | 4,349 | 4,248 | 3,947 | 3,692 | | | | |
| **1997** | | 17,213 | 9,674 | 7,326 | 6,522 | 6,615 | 5,949 | 5,566 | 5,444 | 5,163 | 4,855 | 4,463 | | | | | |
| **1998** | 10,725 | 20,270 | 9,714 | 8,178 | 8,076 | 7,329 | 6,954 | 6,343 | 6,480 | 5,948 | 5,647 | | | | | | |
| **1999** | 12,495 | 20,641 | 10,395 | 9,571 | 8,422 | 8,043 | 7,245 | 6,638 | 6,443 | 5,999 | | | | | | | |
| **2000** | 12,806 | 22,177 | 12,366 | 10,326 | 9,344 | 8,283 | 7,575 | 6,708 | 6,585 | | | | | | | | |
| **2001** | 14,575 | 25,663 | 13,050 | 11,518 | 9,720 | 8,926 | 8,372 | 7,425 | | | | | | | | | |
| **2002** | 15,434 | 27,456 | 13,828 | 11,129 | 10,105 | 9,492 | 8,558 | | | | | | | | | | |
| **2003** | 18,289 | 29,190 | 12,478 | 10,872 | 9,965 | 9,269 | | | | | | | | | | | |
| **2004** | 19,264 | 26,674 | 12,441 | 10,900 | 10,174 | | | | | | | | | | | | |
| **2005** | 18,773 | 27,913 | 12,230 | 11,111 | | | | | | | | | | | | | |
| **2006** | 19,052 | 28,221 | 12,721 | | | | | | | | | | | | | | |
| **2007** | 19,838 | 27,994 | | | | | | | | | | | | | | | |
| **2008** | 19,014 | | | | | | | | | | | | | | | | |

**Projected Ultimate Losses Minus Cum. Paid per 6/30/08 Audit divided by Projected Ultimate L.T. Claims per 6/30/08 audit**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1992** | | | | | | | 6,582 | 6,315 | 6,088 | 5,810 | 5,541 | 5,287 | 5,032 | 4,784 | 4,551 | 4,355 | 4,141 |
| **1993** | | | | | | 5,945 | 5,642 | 5,372 | 5,098 | 4,784 | 4,509 | 4,241 | 4,006 | 3,797 | 3,614 | 3,434 | |
| **1994** | | | | | 7,901 | 7,457 | 7,094 | 6,747 | 6,377 | 6,044 | 5,728 | 5,430 | 5,197 | 4,986 | 4,784 | | |
| **1995** | | | | 9,048 | 8,520 | 8,087 | 7,669 | 7,269 | 6,900 | 6,545 | 6,202 | 5,940 | 5,695 | 5,458 | | | |
| **1996** | | | 9,870 | 9,028 | 8,442 | 7,925 | 7,438 | 6,983 | 6,595 | 6,229 | 5,917 | 5,651 | 5,401 | | | | |
| **1997** | | 14,574 | 12,655 | 11,761 | 11,038 | 10,365 | 9,784 | 9,274 | 8,788 | 8,400 | 8,072 | 7,738 | | | | | |
| **1998** | 21,690 | 17,856 | 16,020 | 14,896 | 13,981 | 13,219 | 12,548 | 11,914 | 11,398 | 10,989 | 10,573 | | | | | | |
| **1999** | 21,879 | 18,326 | 16,313 | 14,968 | 13,955 | 13,158 | 12,420 | 11,852 | 11,354 | 10,876 | | | | | | | |
| **2000** | 25,443 | 21,489 | 18,990 | 17,521 | 16,473 | 15,584 | 14,892 | 14,323 | 13,783 | | | | | | | | |
| **2001** | 27,884 | 23,008 | 20,300 | 18,818 | 17,689 | 16,816 | 16,099 | 15,438 | | | | | | | | | |
| **2002** | 31,724 | 26,397 | 23,687 | 22,010 | 20,859 | 19,953 | 19,130 | | | | | | | | | | |
| **2003** | 33,288 | 28,272 | 25,486 | 23,896 | 22,803 | 21,826 | | | | | | | | | | | |
| **2004** | 38,717 | 33,277 | 30,511 | 28,932 | 27,677 | | | | | | | | | | | | |
| **2005** | 42,113 | 36,332 | 33,557 | 31,678 | | | | | | | | | | | | | |
| **2006** | 44,536 | 38,716 | 35,353 | | | | | | | | | | | | | | |
| **2007** | 45,761 | 40,060 | | | | | | | | | | | | | | | |
| **2008** | 50,379 | | | | | | | | | | | | | | | | |
| **Annual Trend =** | 9.0% | | | | | | | | | | | | | | | | |
| **Trended Avg** | 52,482 | 40,980 | 33,168 | 27,755 | 22,985 | 18,956 | 15,798 | 13,354 | 11,034 | 9,601 | 8,029 | 6,874 | 6,168 | 5,380 | 4,673 | 4,747 | 4,823 |
| **Selected** | 52,482 | 40,980 | 33,168 | 27,755 | 22,985 | 18,956 | 15,798 | 13,354 | 11,034 | 9,601 | 8,029 | 6,874 | 6,168 | 5,380 | 4,673 | 4,747 | 4,823 |
| **Ult. L.T. Cl.** | 11,832 | 23,664 | 23,835 | 26,278 | 28,775 | 30,846 | 33,010 | 33,662 | 37,990 | 37,591 | 36,486 | 37,076 | 39,715 | 43,300 | 46,111 | 47,053 | 47,796 |
| **Hindsight Losses** | 620,965 | 969,730 | 790,555 | 729,336 | 661,396 | 584,711 | 521,489 | 449,528 | 419,175 | 360,911 | 292,958 | 254,861 | 244,971 | 232,976 | 215,479 | 223,371 | 230,500 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## Indemnity Excluding PTD and Death

**Average MIRA Reserve per Ultimate Lost Time Claim (MIRA reserves as of 6/30 divided by Ultimate Claim Counts from Audit as of June 30, 2008)**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1992** | | | | | | | 695 | 677 | 414 | 286 | 373 | 290 | 290 | 207 | 187 | 158 | 282 |
| **1993** | | | | | | 1,110 | 940 | 586 | 350 | 404 | 336 | 301 | 249 | 201 | 160 | 271 | |
| **1994** | | | | | 1,577 | 1,171 | 773 | 576 | 485 | 397 | 347 | 336 | 304 | 229 | 332 | | |
| **1995** | | | | 2,353 | 1,698 | 1,018 | 752 | 673 | 527 | 394 | 334 | 311 | 231 | 363 | | | |
| **1996** | | | 3,439 | 2,652 | 1,641 | 1,049 | 950 | 795 | 519 | 393 | 368 | 351 | 581 | | | | |
| **1997** | | 9,756 | 3,933 | 2,731 | 1,804 | 1,465 | 1,216 | 926 | 619 | 433 | 421 | 723 | | | | | |
| **1998** | 7,323 | 13,404 | 4,116 | 2,989 | 2,391 | 1,747 | 1,231 | 899 | 654 | 485 | 626 | | | | | | |
| **1999** | 8,251 | 8,763 | 4,267 | 3,717 | 2,674 | 1,761 | 1,224 | 962 | 678 | 698 | | | | | | | |
| **2000** | 7,305 | 9,439 | 5,264 | 4,406 | 2,874 | 1,853 | 1,274 | 951 | 949 | | | | | | | | |
| **2001** | 8,536 | 9,500 | 6,656 | 4,783 | 3,110 | 2,100 | 1,413 | 1,436 | | | | | | | | | |
| **2002** | 7,324 | 12,489 | 6,982 | 4,799 | 3,270 | 2,133 | 2,052 | | | | | | | | | | |
| **2003** | 17,746 | 12,417 | 6,999 | 5,015 | 3,232 | 2,718 | | | | | | | | | | | |
| **2004** | 18,418 | 12,452 | 6,836 | 4,900 | 4,160 | | | | | | | | | | | | |
| **2005** | 19,422 | 13,007 | 6,985 | 5,945 | | | | | | | | | | | | | |
| **2006** | 19,576 | 12,498 | 7,784 | | | | | | | | | | | | | | |
| **2007** | 18,854 | 12,915 | | | | | | | | | | | | | | | |
| **2008** | 17,873 | | | | | | | | | | | | | | | | |

Note reduction in MIRA reserve for PP claims for most recent 2 accident years.

**Projected Ultimate Losses Minus Cum. Paid per 6/30/08 Audit divided by Projected Ultimate L.T. Claims per 6/30/08 audit**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1992** | | | | | | | 3,692 | 3,228 | 2,973 | 2,657 | 2,439 | 2,243 | 2,094 | 1,951 | 1,834 | 1,706 | 1,547 |
| **1993** | | | | | | 4,362 | 3,751 | 3,331 | 3,015 | 2,725 | 2,497 | 2,324 | 2,185 | 2,057 | 1,903 | 1,690 | |
| **1994** | | | | | 5,225 | 4,458 | 3,906 | 3,492 | 3,149 | 2,888 | 2,670 | 2,494 | 2,308 | 2,121 | 1,885 | | |
| **1995** | | | | 6,442 | 5,429 | 4,702 | 4,161 | 3,755 | 3,430 | 3,149 | 2,908 | 2,661 | 2,453 | 2,188 | | | |
| **1996** | | | 8,229 | 6,889 | 5,872 | 5,128 | 4,585 | 4,125 | 3,769 | 3,460 | 3,151 | 2,865 | 2,529 | | | | |
| **1997** | | 10,666 | 9,067 | 7,661 | 6,646 | 5,839 | 5,184 | 4,654 | 4,245 | 3,840 | 3,437 | 2,997 | | | | | |
| **1998** | 13,716 | 11,875 | 10,087 | 8,575 | 7,398 | 6,479 | 5,771 | 5,158 | 4,644 | 4,127 | 3,600 | | | | | | |
| **1999** | 15,210 | 13,377 | 11,445 | 9,752 | 8,444 | 7,401 | 6,535 | 5,818 | 5,113 | 4,379 | | | | | | | |
| **2000** | 16,944 | 14,971 | 12,734 | 10,880 | 9,455 | 8,272 | 7,317 | 6,291 | 5,356 | | | | | | | | |
| **2001** | 18,769 | 16,530 | 14,009 | 11,952 | 10,316 | 9,005 | 7,672 | 6,516 | | | | | | | | | |
| **2002** | 20,135 | 17,840 | 15,295 | 13,038 | 11,236 | 9,614 | 8,030 | | | | | | | | | | |
| **2003** | 20,534 | 18,328 | 15,533 | 13,227 | 11,375 | 9,698 | | | | | | | | | | | |
| **2004** | 21,243 | 18,992 | 16,145 | 13,624 | 11,667 | | | | | | | | | | | | |
| **2005** | 22,188 | 19,875 | 16,762 | 14,172 | | | | | | | | | | | | | |
| **2006** | 23,188 | 20,780 | 17,406 | | | | | | | | | | | | | | |
| **2007** | 23,398 | 20,978 | | | | | | | | | | | | | | | |
| **2008** | 23,599 | | | | | | | | | | | | | | | | |
| **Annual Trend =** | 7.0% | | | | | | | | | | | | | | | | |
| **Trended Avg** | 27,967 | 23,736 | 18,948 | 15,004 | 11,955 | 9,502 | 7,570 | 6,120 | 5,044 | 4,227 | 3,585 | 3,072 | 2,672 | 2,338 | 2,068 | 1,826 | 1,612 |
| **Selected** | 27,967 | 23,736 | 18,948 | 15,004 | 11,955 | 9,502 | 7,570 | 6,120 | 5,044 | 4,227 | 3,585 | 3,072 | 2,672 | 2,338 | 2,068 | 1,826 | 1,612 |
| **Ult. L.T. Cl.** | 11,832 | 23,664 | 23,835 | 26,278 | 28,775 | 30,846 | 33,010 | 33,662 | 37,990 | 37,591 | 36,486 | 37,076 | 39,715 | 43,300 | 46,111 | 47,053 | 47,796 |
| **Hindsight Losses** | 330,898 | 561,678 | 451,621 | 394,263 | 344,012 | 293,110 | 249,881 | 206,010 | 191,608 | 158,879 | 130,791 | 113,896 | 106,113 | 101,240 | 95,347 | 85,916 | 77,066 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## PTD + Death

**Average MIRA Reserve per Ultimate Lost Time Claim (MIRA reserves as of 6/30 divided by Ultimate Claim Counts from Audit as of June 30, 2008)**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1992** | | | | | | | 1,148 | 1,593 | 1,578 | 1,664 | 1,615 | | 1,816 | 1,922 | 1,918 | 1,826 | 1,875 |
| **1993** | | | | | | 989 | 1,087 | 1,287 | 1,366 | 1,374 | 1,497 | 1,670 | 1,831 | 1,730 | 1,701 | 1,734 | |
| **1994** | | | | | 911 | 894 | 1,203 | 1,313 | 1,384 | 1,560 | 1,724 | 1,898 | 1,863 | 1,816 | 1,883 | | |
| **1995** | | | | 650 | 705 | 969 | 1,095 | 1,258 | 1,414 | 1,599 | 1,772 | 1,800 | 1,778 | 1,865 | | | |
| **1996** | | | 931 | 911 | 1,059 | 1,182 | 1,360 | 1,524 | 1,750 | 2,098 | 2,002 | 2,025 | 2,102 | | | | |
| **1997** | | 2,296 | 1,008 | 877 | 1,022 | 1,264 | 1,460 | 1,733 | 2,112 | 2,085 | 2,125 | 2,299 | | | | | |
| **1998** | 2,538 | 2,163 | 1,129 | 1,038 | 1,268 | 1,490 | 1,828 | 2,160 | 2,384 | 2,437 | 2,732 | | | | | | |
| **1999** | 2,260 | 1,354 | 1,121 | 1,201 | 1,230 | 1,615 | 2,158 | 2,171 | 2,228 | 2,563 | | | | | | | |
| **2000** | 2,210 | 1,407 | 1,341 | 981 | 1,360 | 1,775 | 2,187 | 2,270 | 2,589 | | | | | | | | |
| **2001** | 2,364 | 1,780 | 887 | 1,369 | 1,908 | 2,050 | 2,225 | 2,586 | | | | | | | | | |
| **2002** | 2,472 | 808 | 1,093 | 1,692 | 1,947 | 2,162 | 2,612 | | | | | | | | | | |
| **2003** | 289 | 827 | 1,301 | 1,596 | 1,799 | 2,336 | | | | | | | | | | | |
| **2004** | 377 | 1,292 | 1,400 | 1,643 | 2,150 | | | | | | | | | | | | |
| **2005** | 230 | 1,151 | 1,268 | 1,715 | | | | | | | | | | | | | |
| **2006** | 250 | 962 | 1,227 | | | | | | | | | | | | | | |
| **2007** | 251 | 1,094 | | | | | | | | | | | | | | | |
| **2008** | 271 | | | | | | | | | | | | | | | | |

**Projected Ultimate Losses Minus Cum. Paid per 6/30/08 Audit divided by Projected Ultimate L.T. Claims per 6/30/08 audit**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1992** | | | | | | | 5,413 | 5,266 | 5,137 | 4,939 | 4,768 | 4,590 | 4,408 | 4,220 | 4,035 | 3,856 | 3,676 |
| **1993** | | | | | | 5,294 | 5,168 | 5,036 | 4,892 | 4,746 | 4,588 | 4,420 | 4,250 | 4,087 | 3,921 | 3,753 | |
| **1994** | | | | | 5,479 | 5,377 | 5,255 | 5,123 | 4,980 | 4,827 | 4,662 | 4,487 | 4,318 | 4,148 | 3,976 | | |
| **1995** | | | | 5,653 | 5,565 | 5,469 | 5,355 | 5,230 | 5,089 | 4,929 | 4,759 | 4,584 | 4,418 | 4,242 | | | |
| **1996** | | | 6,944 | 6,861 | 6,759 | 6,637 | 6,497 | 6,350 | 6,183 | 6,003 | 5,824 | 5,637 | 5,447 | | | | |
| **1997** | | 7,587 | 7,537 | 7,453 | 7,347 | 7,221 | 7,075 | 6,913 | 6,725 | 6,521 | 6,319 | 6,110 | | | | | |
| **1998** | 8,983 | 8,944 | 8,882 | 8,775 | 8,659 | 8,518 | 8,328 | 8,129 | 7,919 | 7,696 | 7,452 | | | | | | |
| **1999** | 9,223 | 9,186 | 9,118 | 9,013 | 8,900 | 8,757 | 8,576 | 8,385 | 8,173 | 7,948 | | | | | | | |
| **2000** | 10,062 | 10,025 | 9,961 | 9,854 | 9,720 | 9,555 | 9,360 | 9,147 | 8,908 | | | | | | | | |
| **2001** | 11,088 | 11,043 | 10,965 | 10,835 | 10,686 | 10,503 | 10,299 | 10,068 | | | | | | | | | |
| **2002** | 12,279 | 12,217 | 12,126 | 11,971 | 11,808 | 11,615 | 11,388 | | | | | | | | | | |
| **2003** | 13,001 | 12,944 | 12,846 | 12,690 | 12,522 | 12,309 | | | | | | | | | | | |
| **2004** | 14,339 | 14,262 | 14,150 | 13,999 | 13,824 | | | | | | | | | | | | |
| **2005** | 16,037 | 15,965 | 15,861 | 15,700 | | | | | | | | | | | | | |
| **2006** | 17,040 | 16,976 | 16,880 | | | | | | | | | | | | | | |
| **2007** | 17,317 | 17,255 | | | | | | | | | | | | | | | |
| **2008** | 19,308 | | | | | | | | | | | | | | | | |
| **Annual Trend =** | 7.0% | | | | | | | | | | | | | | | | |
| **Trended Avg** | 18,707 | 17,241 | 15,682 | 14,259 | 12,860 | 11,583 | 10,204 | 9,056 | 8,089 | 7,334 | 6,493 | 5,802 | 5,164 | 4,763 | 4,408 | 4,126 | 3,862 |
| **Selected** | 18,707 | 17,241 | 15,682 | 14,259 | 12,860 | 11,583 | 10,204 | 9,056 | 8,089 | 7,334 | 6,493 | 5,802 | 5,164 | 4,763 | 4,408 | 4,126 | 3,862 |
| **Ult. L.T. Cl.** | 11,832 | 23,664 | 23,835 | 26,278 | 28,775 | 30,846 | 33,010 | 33,662 | 37,990 | 37,591 | 36,486 | 37,076 | 39,715 | 43,300 | 46,111 | 47,053 | 47,796 |
| **Hindsight Losses** | 221,335 | 407,986 | 373,780 | 374,701 | 370,056 | 357,280 | 336,849 | 304,824 | 307,293 | 275,696 | 236,920 | 215,099 | 205,069 | 206,224 | 203,236 | 194,140 | 184,609 |

# Ohio Bureau of Workers' Compensation

## Private Employers (PA)
## Total Indemnity

**Average MIRA Reserve per Ultimate Lost Time Claim (MIRA reserves as of 6/30 divided by Ultimate Claim Counts from Audit as of June 30, 2008)**

| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1992** | | | | | | | 1,844 | 2,270 | 1,992 | 1,950 | 1,988 | 2,106 | 2,106 | 2,129 | 2,106 | 1,984 | 2,158 |
| **1993** | | | | | | 2,100 | 2,027 | 1,873 | 1,716 | 1,778 | 1,833 | 1,972 | 2,080 | 1,931 | 1,861 | 2,005 | |
| **1994** | | | | | 2,487 | 2,065 | 1,977 | 1,888 | 1,869 | 1,957 | 2,071 | 2,234 | 2,167 | 2,045 | 2,214 | | |
| **1995** | | | | 3,003 | 2,403 | 1,987 | 1,848 | 1,931 | 1,941 | 1,993 | 2,106 | 2,111 | 2,008 | 2,229 | | | |
| **1996** | | | 4,370 | 3,563 | 2,700 | 2,231 | 2,310 | 2,319 | 2,269 | 2,491 | 2,370 | 2,377 | 2,683 | | | | |
| **1997** | | 12,052 | 4,941 | 3,608 | 2,827 | 2,729 | 2,676 | 2,659 | 2,731 | 2,518 | 2,546 | 3,023 | | | | | |
| **1998** | 9,862 | 15,568 | 5,245 | 4,027 | 3,659 | 3,237 | 3,059 | 3,059 | 3,038 | 2,922 | 3,358 | | | | | | |
| **1999** | 10,511 | 10,117 | 5,388 | 4,918 | 3,905 | 3,376 | 3,382 | 3,133 | 2,906 | 3,261 | | | | | | | |
| **2000** | 9,515 | 10,846 | 6,605 | 5,387 | 4,234 | 3,628 | 3,461 | 3,222 | 3,538 | | | | | | | | |
| **2001** | 10,899 | 11,280 | 7,543 | 6,151 | 5,019 | 4,150 | 3,638 | 4,022 | | | | | | | | | |
| **2002** | 9,796 | 13,297 | 8,075 | 6,491 | 5,217 | 4,295 | 4,663 | | | | | | | | | | |
| **2003** | 18,034 | 13,244 | 8,300 | 6,611 | 5,030 | 5,054 | | | | | | | | | | | |
| **2004** | 18,795 | 13,744 | 8,236 | 6,543 | 6,310 | | | | | | | | | | | | |
| **2005** | 19,651 | 14,158 | 8,254 | 7,660 | | | | | | | | | | | | | |
| **2006** | 19,826 | 13,460 | 9,011 | | | | | | | | | | | | | | |
| **2007** | 19,104 | 14,009 | | | | | | | | | | | | | | | |
| **2008** | 18,145 | | | | | | | | | | | | | | | | |

**Projected Ultimate Losses Minus Cum. Paid per 6/30/08 Audit divided by Projected Ultimate L.T. Claims per 6/30/08 audit**

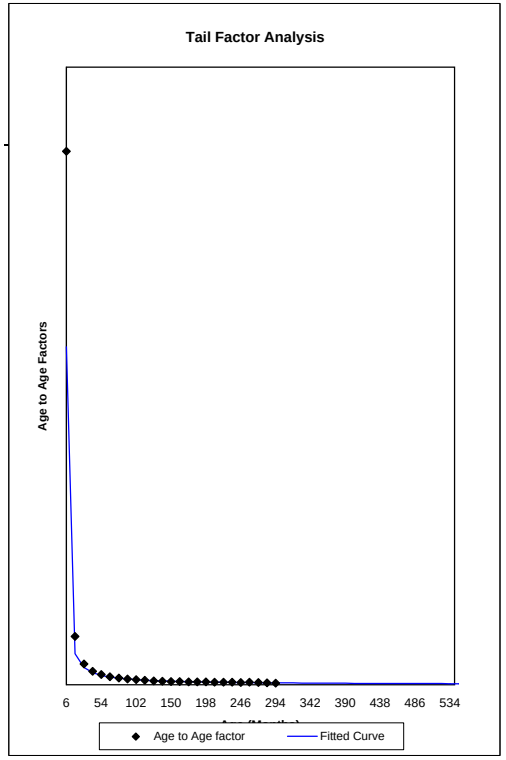
| Accident Year | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 | 16.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1992** | | | | | | | 9,104 | 8,494 | 8,110 | 7,596 | 7,207 | 6,833 | 6,501 | 6,171 | 5,869 | 5,563 | 5,223 |
| **1993** | | | | | | 9,656 | 8,919 | 8,368 | 7,907 | 7,472 | 7,084 | 6,744 | 6,434 | 6,144 | 5,824 | 5,444 | |
| **1994** | | | | | 10,704 | 9,835 | 9,161 | 8,615 | 8,129 | 7,716 | 7,332 | 6,982 | 6,625 | 6,269 | 5,861 | | |
| **1995** | | | | 12,096 | 10,994 | 10,171 | 9,515 | 8,986 | 8,519 | 8,078 | 7,667 | 7,246 | 6,871 | 6,430 | | | |
| **1996** | | | 15,173 | 13,750 | 12,631 | 11,765 | 11,082 | 10,474 | 9,951 | 9,463 | 8,975 | 8,501 | 7,976 | | | | |
| **1997** | | 18,253 | 16,604 | 15,114 | 13,993 | 13,060 | 12,259 | 11,567 | 10,970 | 10,361 | 9,756 | 9,107 | | | | | |
| **1998** | 23,089 | 20,820 | 18,969 | 17,350 | 16,057 | 14,997 | 14,099 | 13,288 | 12,563 | 11,823 | 11,052 | | | | | | |
| **1999** | 24,827 | 22,563 | 20,563 | 18,766 | 17,344 | 16,158 | 15,111 | 14,203 | 13,286 | 12,326 | | | | | | | |
| **2000** | 27,421 | 24,997 | 22,695 | 20,734 | 19,175 | 17,827 | 16,677 | 15,438 | 14,265 | | | | | | | | |
| **2001** | 30,293 | 27,573 | 24,974 | 22,788 | 21,002 | 19,509 | 17,971 | 16,584 | | | | | | | | | |
| **2002** | 32,824 | 30,056 | 27,421 | 25,009 | 23,044 | 21,229 | 19,418 | | | | | | | | | | |
| **2003** | 34,008 | 31,272 | 28,378 | 25,918 | 23,897 | 22,007 | | | | | | | | | | | |
| **2004** | 36,031 | 33,255 | 30,295 | 27,623 | 25,490 | | | | | | | | | | | | |
| **2005** | 38,666 | 35,840 | 32,623 | 29,871 | | | | | | | | | | | | | |
| **2006** | 40,636 | 37,757 | 34,286 | | | | | | | | | | | | | | |
| **2007** | 41,108 | 38,233 | | | | | | | | | | | | | | | |
| **2008** | 43,283 | | | | | | | | | | | | | | | | |
| **Annual Trend =** | 7.0% | | | | | | | | | | | | | | | | |
| **Trended Avg** | 47,244 | 40,977 | 34,629 | 29,263 | 24,816 | 21,085 | 17,774 | 15,176 | 13,132 | 11,561 | 10,078 | 8,874 | 7,835 | 7,101 | 6,475 | 5,952 | 5,471 |
| **Selected** | 47,244 | 40,977 | 34,629 | 29,263 | 24,816 | 21,085 | 17,774 | 15,176 | 13,132 | 11,561 | 10,078 | 8,874 | 7,835 | 7,101 | 6,475 | 5,952 | 5,471 |
| **Ult. L.T. Cl.** | 11,832 | 23,664 | 23,835 | 26,278 | 28,775 | 30,846 | 33,010 | 33,662 | 37,990 | 37,591 | 36,486 | 37,076 | 39,715 | 43,300 | 46,111 | 47,053 | 47,796 |
| **Hindsight Losses** | 558,985 | 969,664 | 825,401 | 768,964 | 714,068 | 650,390 | 586,730 | 510,834 | 498,900 | 434,574 | 367,712 | 328,996 | 311,181 | 307,464 | 298,583 | 280,056 | 261,485 |

**Ohio Bureau of Workers' Compensation**
**Medical**
**Estimation of Cumulative Paid Development Factors**
**Using the Method of Inverse Power Curve Fit**

| | | | | |
|---|---|---|---|---|
| C= | -5.0949961 | | R-Square | **0.9853** |
| B= | 8.9744E-01 | | | |
| A= | 2.2518E+00 | | F-Statistics | **1,404** |
| Cutoff Age= | **65** | Years | F- Degree | **21** |

$$Y = \frac{A}{(X+C)^{\wedge}B} + 1$$

| Months of Maturity X | Age-to-Age Factor Y | Excluded | X' ln(1/(X+C)) | Y' ln(Y-1) | Fitted Value X | Fitted Value Y | Indicated Age-to-Age | Indicated Age-to-Ult. |
|---|---|---|---|---|---|---|---|---|
| | **Data Group Selected** | | | | | | | |
| 6 | 4.887 | **y** | | | 6 | 3.463 | 4.887 | 20.839 |
| 18 | 1.352 | **y** | | | 18 | 1.227 | 1.352 | 4.264 |
| 30 | 1.152 | **y** | | | 30 | 1.126 | 1.152 | 3.153 |
| 42 | 1.097 | **y** | | | 42 | 1.088 | 1.097 | 2.736 |
| 54 | 1.074 | | -3.8899 | -2.6036 | 54 | 1.069 | 1.074 | 2.494 |
| 66 | 1.059 | | -4.1093 | -2.8333 | 66 | 1.056 | 1.059 | 2.322 |
| 78 | 1.048 | | -4.2892 | -3.0339 | 78 | 1.048 | 1.048 | 2.193 |
| 90 | 1.041 | | -4.4415 | -3.1953 | 90 | 1.042 | 1.041 | 2.092 |
| 102 | 1.036 | | -4.5737 | -3.3191 | 102 | 1.037 | 1.036 | 2.010 |
| 114 | 1.032 | | -4.6905 | -3.4336 | 114 | 1.033 | 1.032 | **1.940** |
| 126 | 1.029 | | -4.7950 | -3.5503 | 126 | 1.030 | 1.029 | 1.879 |
| 138 | 1.026 | | -4.8896 | -3.6333 | 138 | 1.028 | 1.026 | 1.827 |
| 150 | 1.024 | | -4.9761 | -3.7134 | 150 | 1.026 | 1.024 | 1.780 |
| 162 | 1.024 | | -5.0556 | -3.7483 | 162 | 1.024 | 1.024 | 1.737 |
| 174 | 1.022 | | -5.1293 | -3.8355 | 174 | 1.023 | 1.022 | 1.697 |
| 186 | 1.021 | | -5.1980 | -3.8534 | 186 | 1.021 | 1.021 | 1.661 |
| 198 | 1.020 | | -5.2622 | -3.8931 | 198 | 1.020 | 1.020 | 1.627 |
| 210 | 1.019 | | -5.3225 | -3.9600 | 210 | 1.019 | 1.019 | 1.594 |
| 222 | 1.018 | | -5.3795 | -4.0153 | 222 | 1.018 | 1.018 | 1.565 |
| 234 | 1.018 | | -5.4333 | -3.9992 | 234 | 1.017 | 1.018 | 1.537 |
| 246 | 1.017 | | -5.4844 | -4.0878 | 246 | 1.016 | 1.017 | 1.509 |
| 258 | 1.019 | | -5.5330 | -3.9830 | 258 | 1.016 | 1.019 | 1.484 |
| 270 | 1.016 | | -5.5794 | -4.1327 | 270 | 1.015 | 1.016 | 1.457 |
| 282 | 1.014 | | -5.6237 | -4.2661 | 282 | 1.014 | 1.014 | 1.434 |
| 294 | 1.013 | | -5.6661 | -4.3699 | 294 | 1.014 | 1.013 | 1.414 |
| 306 | 1.014 | | -5.7068 | -4.2653 | 306 | 1.013 | 1.014 | 1.397 |
| 318 | 1.012 | | -5.7459 | -4.4022 | 318 | 1.013 | 1.012 | 1.377 |
| | | | | | 330 | 1.013 | 1.013 | 1.361 |
| Average | | | -5.0772 | -3.7447 | 342 | 1.012 | 1.012 | 1.344 |
| | | | | | 354 | 1.012 | 1.012 | 1.328 |
| | | | | | 366 | 1.011 | 1.011 | 1.312 |
| | | | | | 378 | 1.011 | 1.011 | 1.297 |
| | | | | | 390 | 1.011 | 1.011 | 1.283 |
| | | | | | 402 | 1.010 | 1.010 | 1.269 |
| | | | | | 414 | 1.010 | 1.010 | 1.256 |
| | | | | | 426 | 1.010 | 1.010 | 1.244 |
| | | | | | 438 | 1.010 | 1.010 | 1.231 |
| | | | | | 450 | 1.009 | 1.009 | 1.220 |
| | | | | | 462 | 1.009 | 1.009 | 1.208 |
| | | | | | 474 | 1.009 | 1.009 | 1.197 |
| | | | | | 486 | 1.009 | 1.009 | 1.186 |
| | | | | | 498 | 1.009 | 1.009 | 1.176 |
| | | | | | 510 | 1.008 | 1.008 | 1.166 |
| | | | | | 522 | 1.008 | 1.008 | 1.156 |
| | | | | | 534 | 1.008 | 1.008 | 1.147 |
| | | | | | 546 | 1.008 | 1.008 | 1.137 |
| | | | | | 558 | 1.008 | 1.008 | 1.128 |
| | | | | | 570 | 1.008 | 1.008 | 1.120 |
| | | | | | 582 | 1.007 | 1.007 | 1.111 |
| | | | | | 594 | 1.007 | 1.007 | 1.103 |
| | | | | | 606 | 1.007 | 1.007 | 1.095 |

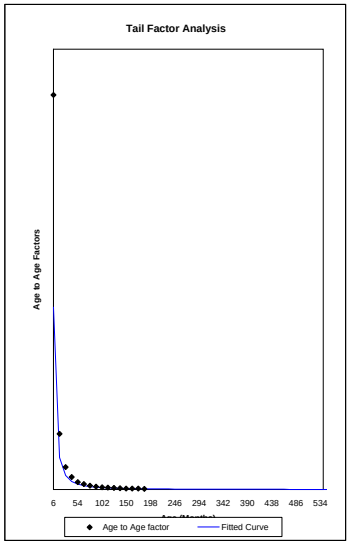


**Ohio Bureau of Workers' Compensation**
**Indemnity Excluding PTD and Death**
**Estimation of Cumulative Paid Development Factors**
**Using the Method of Inverse Power Curve Fit**

| | | | | |
|---|---|---|---|---|
| C= | 0.3499656 | | R-Square | **0.9937** |
| B= | 1.6382E+00 | | | |
| A= | 6.8479E+01 | | F-Statistics | **475** |
| Cutoff Age= | **65** | Years | F- Degree | **3** |

$$Y = \frac{A}{(X+C)^{\wedge}B} + 1$$

| Months of Maturity X | Age-to-Age Factor Y | Excluded | X' ln(1/(X+C)) | Y' ln(Y-1) | Fitted Value X | Fitted Value Y | Indicated Age-to-Age | Indicated Age-to-Ult. |
|---|---|---|---|---|---|---|---|---|
| | **Data Group Selected** | | | | | | | |
| 6 | 8.170 | y | | | 6 | 4.315 | 8.170 | 57.059 |
| 18 | 2.011 | y | | | 18 | 1.583 | 2.011 | 6.984 |
| 30 | 1.406 | y | | | 30 | 1.256 | 1.406 | 3.473 |
| 42 | 1.227 | y | | | 42 | 1.148 | 1.227 | 2.470 |
| 54 | 1.137 | y | | | 54 | 1.098 | 1.137 | 2.013 |
| 66 | 1.097 | y | | | 66 | 1.071 | 1.097 | 1.771 |
| 78 | 1.069 | y | | | 78 | 1.054 | 1.069 | 1.615 |
| 90 | 1.050 | y | | | 90 | 1.043 | 1.050 | 1.511 |
| 102 | 1.041 | y | | | 102 | 1.035 | 1.041 | 1.439 |
| 114 | 1.032 | y | | | 114 | 1.029 | 1.032 | **1.382** |
| 126 | 1.027 | y | | | 126 | 1.025 | 1.027 | 1.339 |
| 138 | 1.021 | | -4.9298 | -3.8473 | 138 | 1.021 | 1.021 | 1.304 |
| 150 | 1.019 | | -5.0130 | -3.9825 | 150 | 1.019 | 1.019 | 1.277 |
| 162 | 1.016 | | -5.0898 | -4.1320 | 162 | 1.016 | 1.016 | 1.253 |
| 174 | 1.015 | | -5.1611 | -4.2069 | 174 | 1.015 | 1.015 | 1.234 |
| 186 | 1.013 | | -5.2276 | -4.3441 | 186 | 1.013 | 1.013 | 1.216 |
| 198 | | | | | 198 | 1.012 | 1.012 | 1.200 |
| 210 | | | | | 210 | 1.011 | 1.011 | 1.186 |
| 222 | | | | | 222 | 1.010 | 1.010 | 1.173 |
| 234 | | | | | 234 | 1.009 | 1.009 | 1.162 |
| 246 | | | | | 246 | 1.008 | 1.008 | 1.152 |
| 258 | | | | | 258 | 1.008 | 1.008 | 1.142 |
| 270 | | | | | 270 | 1.007 | 1.007 | 1.134 |
| 282 | | | | | 282 | 1.007 | 1.007 | 1.126 |
| 294 | | | | | 294 | 1.006 | 1.006 | 1.118 |
| 306 | | | | | 306 | 1.006 | 1.006 | 1.111 |
| | | | | | 318 | 1.005 | 1.005 | 1.105 |
| | | | | | 330 | 1.005 | 1.005 | 1.099 |
| Average | | | -5.0842 | -4.1026 | 342 | 1.005 | 1.005 | 1.093 |
| | | | | | 354 | 1.005 | 1.005 | 1.088 |
| | | | | | 366 | 1.004 | 1.004 | 1.083 |
| | | | | | 378 | 1.004 | 1.004 | 1.079 |
| | | | | | 390 | 1.004 | 1.004 | 1.074 |
| | | | | | 402 | 1.004 | 1.004 | 1.070 |
| | | | | | 414 | 1.004 | 1.004 | 1.066 |
| | | | | | 426 | 1.003 | 1.003 | 1.062 |
| | | | | | 438 | 1.003 | 1.003 | 1.059 |
| | | | | | 450 | 1.003 | 1.003 | 1.055 |
| | | | | | 462 | 1.003 | 1.003 | 1.052 |
| | | | | | 474 | 1.003 | 1.003 | 1.049 |
| | | | | | 486 | 1.003 | 1.003 | 1.046 |
| | | | | | 498 | 1.003 | 1.003 | 1.043 |
| | | | | | 510 | 1.003 | 1.003 | 1.040 |
| | | | | | 522 | 1.002 | 1.002 | 1.038 |
| | | | | | 534 | 1.002 | 1.002 | 1.035 |
| | | | | | 546 | 1.002 | 1.002 | 1.033 |
| | | | | | 558 | 1.002 | 1.002 | 1.031 |
| | | | | | 570 | 1.002 | 1.002 | 1.028 |
| | | | | | 582 | 1.002 | 1.002 | 1.026 |
| | | | | | 594 | 1.002 | 1.002 | 1.024 |
| | | | | | 606 | 1.002 | 1.002 | 1.022 |
| | | | | | 618 | 1.002 | 1.002 | 1.020 |
| | | | | | 630 | 1.002 | 1.002 | 1.018 |
| | | | | | 642 | 1.002 | 1.002 | 1.017 |
| | | | | | 654 | 1.002 | 1.002 | 1.015 |
| | | | | | 666 | 1.002 | 1.002 | 1.013 |
| | | | | | 678 | 1.002 | 1.002 | 1.012 |
| | | | | | 690 | 1.002 | 1.002 | 1.010 |
| | | | | | 702 | 1.001 | 1.001 | 1.008 |
| | | | | | 714 | 1.001 | 1.001 | 1.007 |
| | | | | | 726 | 1.001 | 1.001 | 1.005 |
| | | | | | 738 | 1.001 | 1.001 | 1.004 |
| | | | | | 750 | 1.001 | 1.001 | 1.003 |
| | | | | | 762 | 1.001 | 1.001 | 1.001 |
| | | | | | 774 | 1.001 | 1.001 | 1.000 |
| | | | | | 786 | 1.001 | 1.001 | 1.000 |
| | | | | | 798 | 1.001 | 1.001 | 1.000 |
| | | | | | 810 | 1.001 | 1.001 | 1.000 |
| | | | | | 822 | 1.001 | 1.001 | 1.000 |
| | | | | | 834 | 1.001 | 1.001 | 1.000 |
| | | | | | 846 | 1.001 | 1.001 | 1.000 |
| | | | | | 858 | 1.001 | 1.001 | 1.000 |
| | | | | | 870 | 1.001 | 1.001 | 1.000 |
| | | | | | 882 | 1.001 | 1.001 | 1.000 |
| | | | | | 894 | 1.001 | 1.001 | 1.000 |
| | | | | | 906 | 1.001 | 1.001 | 1.000 |
| | | | | | 918 | 1.001 | 1.001 | 1.000 |
| | | | | | 930 | 1.001 | 1.001 | 1.000 |
| | | | | | 942 | 1.001 | 1.001 | 1.000 |
| | | | | | 954 | 1.001 | 1.001 | 1.000 |
| | | | | | | | | 1.000 |



**Ohio Bureau of Workers' Compensation**
**Death PTD**
**Estimation of Cumulative Paid Development Factors**
**Using the Method of Inverse Power Curve Fit**

| | | | | |
|---|---|---|---|---|
| C= | 213.2759351 | | R-Square | **0.9984** |
| B= | 3.7584E+00 | | | |
| A= | 5.2243E+08 | | F-Statistics | **4,273** |
| Cutoff Age= | **65** | Years | F- Degree | **7** |

$$Y = \frac{A}{(X+C)^{\wedge}B} + 1$$

| Months of Maturity X | Age-to-Age Factor Y | Excluded | X' ln(1/(X+C)) | Y' ln(Y-1) | Fitted Value X | Fitted Value Y | Indicated Age-to-Age | Indicated Age-to-Ult. |
|---|---|---|---|---|---|---|---|---|
| | **Data Group Selected** | | | | | | | |
| 6 | 15.280 | **y** | | | 6 | 1.831 | 15.280 | 2552.750 |
| 18 | 2.465 | **y** | | | 18 | 1.680 | 2.465 | 167.068 |
| 30 | 1.941 | **y** | | | 30 | 1.562 | 1.941 | 67.769 |
| 42 | 1.571 | **y** | | | 42 | 1.469 | 1.571 | 34.910 |
| 54 | 1.438 | **y** | | | 54 | 1.395 | 1.438 | 22.226 |
| 66 | 1.368 | **y** | | | 66 | 1.335 | 1.368 | 15.451 |
| 78 | 1.292 | **y** | | | 78 | 1.286 | 1.292 | 11.296 |
| 90 | 1.243 | | -5.7146 | -1.4158 | 90 | 1.246 | 1.243 | 8.742 |
| 102 | 1.219 | | -5.7534 | -1.5208 | 102 | 1.212 | 1.219 | 7.034 |
| 114 | 1.184 | | -5.7908 | -1.6928 | 114 | 1.184 | 1.184 | **5.773** |
| 126 | 1.161 | | -5.8268 | -1.8276 | 126 | 1.161 | 1.161 | 4.876 |
| 138 | 1.138 | | -5.8616 | -1.9770 | 138 | 1.141 | 1.138 | 4.200 |
| 150 | 1.124 | | -5.8952 | -2.0850 | 150 | 1.125 | 1.124 | 3.689 |
| 162 | 1.111 | | -5.9277 | -2.2025 | 162 | 1.110 | 1.111 | 3.281 |
| 174 | 1.097 | | -5.9591 | -2.3288 | 174 | 1.098 | 1.097 | 2.955 |
| 186 | 1.089 | | -5.9897 | -2.4246 | 186 | 1.087 | 1.089 | 2.693 |
| 198 | | | | | 198 | 1.078 | 1.078 | 2.474 |
| 210 | | | | | 210 | 1.070 | 1.070 | 2.294 |
| 222 | | | | | 222 | 1.063 | 1.063 | 2.144 |
| 234 | | | | | 234 | 1.057 | 1.057 | 2.017 |
| 246 | | | | | 246 | 1.052 | 1.052 | 1.908 |
| 258 | | | | | 258 | 1.047 | 1.047 | 1.814 |
| 282 | | | | | 282 | 1.039 | 1.039 | 1.662 |
| 294 | | | | | 294 | 1.036 | 1.036 | 1.600 |
| 306 | | | | | 306 | 1.033 | 1.033 | 1.545 |
| | | | | | 318 | 1.030 | 1.030 | 1.496 |
| | | | | | 330 | 1.027 | 1.027 | 1.453 |
| Average | | | -5.8577 | -1.9417 | 342 | 1.025 | 1.025 | 1.414 |
| | | | | | 354 | 1.023 | 1.023 | 1.379 |
| | | | | | 366 | 1.022 | 1.022 | 1.348 |
| | | | | | 378 | 1.020 | 1.020 | 1.319 |
| | | | | | 390 | 1.019 | 1.019 | 1.293 |
| | | | | | 402 | 1.017 | 1.017 | 1.270 |
| | | | | | 414 | 1.016 | 1.016 | 1.249 |
| | | | | | 426 | 1.015 | 1.015 | 1.229 |
| | | | | | 438 | 1.014 | 1.014 | 1.211 |
| | | | | | 450 | 1.013 | 1.013 | 1.194 |
| | | | | | 462 | 1.012 | 1.012 | 1.179 |
| | | | | | 474 | 1.011 | 1.011 | 1.165 |
| | | | | | 486 | 1.011 | 1.011 | 1.152 |
| | | | | | 498 | 1.010 | 1.010 | 1.140 |
| | | | | | 510 | 1.009 | 1.009 | 1.128 |
| | | | | | 522 | 1.009 | 1.009 | 1.118 |
| | | | | | 534 | 1.008 | 1.008 | 1.108 |
| | | | | | 546 | 1.008 | 1.008 | 1.099 |
| | | | | | 558 | 1.007 | 1.007 | 1.091 |
| | | | | | 570 | 1.007 | 1.007 | 1.083 |
| | | | | | 582 | 1.007 | 1.007 | 1.075 |
| | | | | | 594 | 1.006 | 1.006 | 1.068 |
| | | | | | 606 | 1.006 | 1.006 | 1.062 |
| | | | | | 618 | 1.006 | 1.006 | 1.055 |
| | | | | | 630 | 1.005 | 1.005 | 1.050 |
| | | | | | 642 | 1.005 | 1.005 | 1.044 |
| | | | | | 654 | 1.005 | 1.005 | 1.039 |
| | | | | | 666 | 1.004 | 1.004 | 1.034 |
| | | | | | 678 | 1.004 | 1.004 | 1.029 |
| | | | | | 690 | 1.004 | 1.004 | 1.025 |
| | | | | | 702 | 1.004 | 1.004 | 1.021 |
| | | | | | 714 | 1.004 | 1.004 | 1.017 |
| | | | | | 726 | 1.004 | 1.004 | 1.013 |
| | | | | | 738 | 1.003 | 1.003 | 1.010 |
| | | | | | 750 | 1.003 | 1.003 | 1.006 |
| | | | | | 762 | 1.003 | 1.003 | 1.003 |
| | | | | | 774 | 1.003 | 1.003 | 1.000 |
| | | | | | 786 | 1.003 | 1.003 | 1.000 |
| | | | | | 798 | 1.003 | 1.003 | 1.000 |
| | | | | | 810 | 1.003 | 1.003 | 1.000 |
| | | | | | 822 | 1.002 | 1.002 | 1.000 |
| | | | | | 834 | 1.002 | 1.002 | 1.000 |
| | | | | | 846 | 1.002 | 1.002 | 1.000 |
| | | | | | 858 | 1.002 | 1.002 | 1.000 |
| | | | | | 870 | 1.002 | 1.002 | 1.000 |
| | | | | | 882 | 1.002 | 1.002 | 1.000 |
| | | | | | 894 | 1.002 | 1.002 | 1.000 |
| | | | | | 906 | 1.002 | 1.002 | 1.000 |
| | | | | | 918 | 1.002 | 1.002 | 1.000 |
| | | | | | 930 | 1.002 | 1.002 | 1.000 |
| | | | | | 942 | 1.002 | 1.002 | 1.000 |
| | | | | | 954 | 1.002 | 1.002 | 1.000 |
| | | | | | | | | 1.000 |

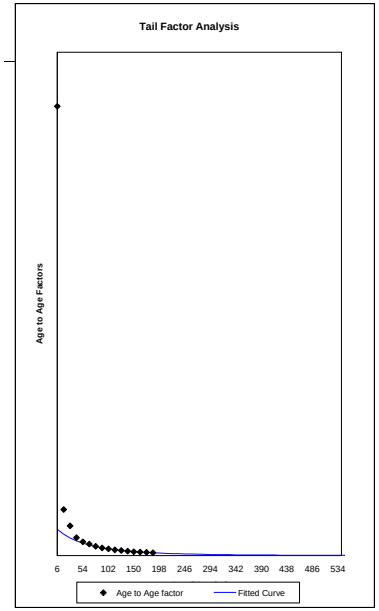


**Exhibit 5.4**

**Ohio Bureau of Workers' Compensation**
**Total Indemnity**
**Estimation of Cumulative Paid Development Factors**
**Using the Method of Inverse Power Curve Fit**

| | | | | |
|---|---|---|---|---|
| C= | -1.9632425 | | R-Square | **0.9988** |
| B= | 1.0535E+00 | | | |
| A= | 6.2729E+00 | | F-Statistics | **2,414** |
| Cutoff Age= | **65** | Years | F- Degree | **3** |

$$Y = \frac{A}{(X+C)^{\wedge}B} + 1$$

| Months of Maturity X | Age-to-Age Factor Y | Excluded | X' ln(1/(X+C)) | Y' ln(Y-1) | Fitted Value X | Fitted Value Y |
|---|---|---|---|---|---|---|
| | **Data Group Selected** | | | | | |
| 6 | 7.247 | y | | | 6 | 2.442 |
| 18 | 1.845 | y | | | 18 | 1.337 |
| 30 | 1.390 | y | | | 30 | 1.187 |
| 42 | 1.220 | y | | | 42 | 1.129 |
| 54 | 1.149 | y | | | 54 | 1.098 |
| 66 | 1.110 | y | | | 66 | 1.078 |
| 78 | 1.083 | y | | | 78 | 1.065 |
| 90 | 1.064 | y | | | 90 | 1.056 |
| 102 | 1.056 | y | | | 102 | 1.049 |
| 114 | 1.047 | y | | | 114 | 1.044 |
| 126 | 1.041 | y | | | 126 | 1.039 |
| 138 | 1.035 | | -4.9129 | -3.3385 | 138 | 1.035 |
| 150 | 1.033 | | -4.9975 | -3.4259 | 150 | 1.032 |
| 162 | 1.030 | | -5.0754 | -3.5181 | 162 | 1.030 |
| 174 | 1.028 | | -5.1477 | -3.5829 | 174 | 1.028 |
| 186 | 1.026 | | -5.2151 | -3.6573 | 186 | 1.026 |
| 198 | | | | | 198 | 1.024 |
| 210 | | | | | 210 | 1.023 |
| 222 | | | | | 222 | 1.021 |
| 234 | | | | | 234 | 1.020 |
| 246 | | | | | 246 | 1.019 |
| 258 | | | | | 258 | 1.018 |
| 270 | | | | | 270 | 1.017 |
| 282 | | | | | 282 | 1.017 |
| 294 | | | | | 294 | 1.016 |
| 306 | | | | | 306 | 1.015 |
| | | | | | 318 | 1.015 |
| | | | | | 330 | 1.014 |
| Average | | | -5.0697 | -3.5045 | 342 | 1.014 |
| | | | | | 354 | 1.013 |
| | | | | | 366 | 1.013 |
| | | | | | 378 | 1.012 |
| | | | | | 390 | 1.012 |
| | | | | | 402 | 1.011 |
| | | | | | 414 | 1.011 |
| | | | | | 426 | 1.011 |
| | | | | | 438 | 1.010 |
| | | | | | 450 | 1.010 |
| | | | | | 462 | 1.010 |
| | | | | | 474 | 1.010 |
| | | | | | 486 | 1.009 |
| | | | | | 498 | 1.009 |
| | | | | | 510 | 1.009 |
| | | | | | 522 | 1.009 |
| | | | | | 534 | 1.008 |
| | | | | | 546 | 1.008 |
| | | | | | 558 | 1.008 |
| | | | | | 570 | 1.008 |
| | | | | | 582 | 1.008 |
| | | | | | 594 | 1.008 |
| | | | | | 606 | 1.007 |
| | | | | | 618 | 1.007 |
| | | | | | 630 | 1.007 |
| | | | | | 642 | 1.007 |
| | | | | | 654 | 1.007 |
| | | | | | 666 | 1.007 |
| | | | | | 678 | 1.007 |
| | | | | | 690 | 1.006 |
| | | | | | 702 | 1.006 |
| | | | | | 714 | 1.006 |
| | | | | | 726 | 1.006 |
| | | | | | 738 | 1.006 |
| | | | | | 750 | 1.006 |
| | | | | | 762 | 1.006 |
| | | | | | 774 | 1.006 |
| | | | | | 786 | 1.006 |
| | | | | | 798 | 1.006 |
| | | | | | 810 | 1.005 |
| | | | | | 822 | 1.005 |
| | | | | | 834 | 1.005 |
| | | | | | 846 | 1.005 |
| | | | | | 858 | 1.005 |
| | | | | | 870 | 1.005 |
| | | | | | 882 | 1.005 |
| | | | | | 894 | 1.005 |
| | | | | | 906 | 1.005 |
| | | | | | 918 | 1.005 |
| | | | | | 930 | 1.005 |
| | | | | | 942 | 1.005 |
| | | | | | 954 | 1.005 |

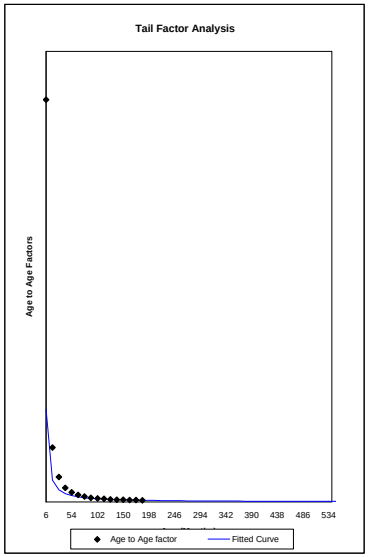


**Exhibit 5.5**

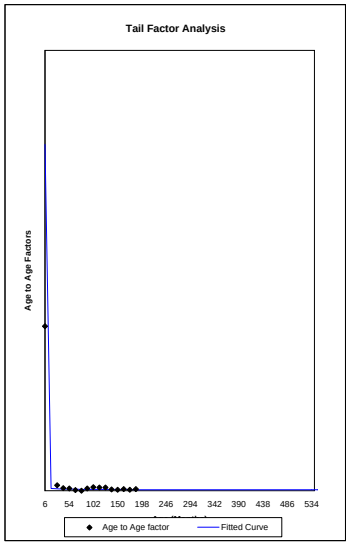
**Ohio Bureau of Workers' Compensation**
**Medical**
**Estimation of Cumulative Incurred Development Factors**
**Using the Method of Inverse Power Curve Fit**

| | | | | |
|---|---|---|---|---|
| C= | -5.9999999 | | R-Square | **0.0134** |
| B= | 2.6975E-01 | | | |
| A= | 2.5434E-02 | | F-Statistics | **0** |
| Cutoff Age= | **65** | Years | F- Degree | **12** |

$$Y = \frac{A}{(X+C)^{\wedge}B} + 1$$

#

| Months of Maturity X | Age-to-Age Factor Y | Excluded | X' ln(1/(X+C)) | Y' ln(Y-1) | Fitted Value X | Fitted Value Y | Indicated Age-to-Age | Indicated Age-to-Ult. |
|---|---|---|---|---|---|---|---|---|
| | **Data Group Selected** | | | | | | | |
| 6 | 1.934 | **y** | | | 6 | 2.967 | 1.934 | 1.983 |
| 18 | 0.687 | **y** | | | 18 | 1.013 | 0.687 | 1.026 |
| 30 | 1.031 | | -3.1781 | -3.4876 | 30 | 1.011 | 1.031 | 1.493 |
| 42 | 1.015 | | -3.5835 | -4.2232 | 42 | 1.010 | 1.015 | 1.449 |
| 54 | 1.012 | | -3.8712 | -4.4245 | 54 | 1.009 | 1.012 | 1.428 |
| 66 | 1.004 | | -4.0943 | -5.5905 | 66 | 1.008 | 1.004 | 1.411 |
| 78 | 1.000 | | -4.2767 | -9.3743 | 78 | 1.008 | 1.000 | 1.406 |
| 90 | 1.013 | | -4.4308 | -4.3068 | 90 | 1.008 | 1.013 | 1.406 |
| 102 | 1.020 | | -4.5643 | -3.9046 | 102 | 1.007 | 1.020 | 1.387 |
| 114 | 1.018 | | -4.6821 | -4.0177 | 114 | 1.007 | 1.018 | **1.360** |
| 126 | 1.019 | | -4.7875 | -3.9867 | 126 | 1.007 | 1.019 | 1.336 |
| 138 | 1.007 | | -4.8828 | -5.0270 | 138 | 1.007 | 1.007 | 1.311 |
| 150 | 1.006 | | -4.9698 | -5.0668 | 150 | 1.007 | 1.006 | 1.303 |
| 162 | 1.008 | | -5.0499 | -4.7934 | 162 | 1.007 | 1.008 | 1.295 |
| 174 | 1.005 | | -5.1240 | -5.3120 | 174 | 1.006 | 1.005 | 1.284 |
| 186 | 1.008 | | -5.1930 | -4.7986 | 186 | 1.006 | 1.008 | 1.278 |
| 198 | | | | | 198 | 1.006 | 1.006 | 1.267 |
| 210 | | | | | 210 | 1.006 | 1.006 | 1.259 |
| 222 | | | | | 222 | 1.006 | 1.006 | 1.252 |
| 234 | | | | | 234 | 1.006 | 1.006 | 1.244 |
| 246 | | | | | 246 | 1.006 | 1.006 | 1.237 |
| 258 | | | | | 258 | 1.006 | 1.006 | 1.230 |
| 270 | | | | | 270 | 1.006 | 1.006 | 1.223 |
| 282 | | | | | 282 | 1.006 | 1.006 | 1.216 |
| 294 | | | | | 294 | 1.006 | 1.006 | 1.209 |
| 306 | | | | | 306 | 1.005 | 1.005 | 1.203 |
| | | | | | 318 | 1.005 | 1.005 | 1.196 |
| | | | | | 330 | 1.005 | 1.005 | 1.190 |
| Average | | | -4.4777 | -4.8795 | 342 | 1.005 | 1.005 | 1.183 |
| | | | | | 354 | 1.005 | 1.005 | 1.177 |
| | | | | | 366 | 1.005 | 1.005 | 1.171 |
| | | | | | 378 | 1.005 | 1.005 | 1.165 |
| | | | | | 390 | 1.005 | 1.005 | 1.159 |
| | | | | | 402 | 1.005 | 1.005 | 1.153 |
| | | | | | 414 | 1.005 | 1.005 | 1.147 |
| | | | | | 426 | 1.005 | 1.005 | 1.142 |
| | | | | | 438 | 1.005 | 1.005 | 1.136 |
| | | | | | 450 | 1.005 | 1.005 | 1.130 |
| | | | | | 462 | 1.005 | 1.005 | 1.125 |
| | | | | | 474 | 1.005 | 1.005 | 1.119 |
| | | | | | 486 | 1.005 | 1.005 | 1.114 |
| | | | | | 498 | 1.005 | 1.005 | 1.109 |
| | | | | | 510 | 1.005 | 1.005 | 1.103 |
| | | | | | 522 | 1.005 | 1.005 | 1.098 |
| | | | | | 534 | 1.005 | 1.005 | 1.093 |
| | | | | | 546 | 1.005 | 1.005 | 1.088 |
| | | | | | 558 | 1.005 | 1.005 | 1.083 |
| | | | | | 570 | 1.005 | 1.005 | 1.078 |
| | | | | | 582 | 1.005 | 1.005 | 1.073 |
| | | | | | 594 | 1.005 | 1.005 | 1.068 |
| | | | | | 606 | 1.005 | 1.005 | 1.063 |
| | | | | | 618 | 1.005 | 1.005 | 1.058 |
| | | | | | 630 | 1.004 | 1.004 | 1.054 |
| | | | | | 642 | 1.004 | 1.004 | 1.049 |
| | | | | | 654 | 1.004 | 1.004 | 1.044 |
| | | | | | 666 | 1.004 | 1.004 | 1.040 |
| | | | | | 678 | 1.004 | 1.004 | 1.035 |
| | | | | | 690 | 1.004 | 1.004 | 1.031 |
| | | | | | 702 | 1.004 | 1.004 | 1.026 |
| | | | | | 714 | 1.004 | 1.004 | 1.022 |
| | | | | | 726 | 1.004 | 1.004 | 1.017 |
| | | | | | 738 | 1.004 | 1.004 | 1.013 |
| | | | | | 750 | 1.004 | 1.004 | 1.009 |
| | | | | | 762 | 1.004 | 1.004 | 1.004 |
| | | | | | 774 | 1.004 | 1.004 | 1.000 |
| | | | | | 786 | 1.004 | 1.004 | 1.000 |
| | | | | | 798 | 1.004 | 1.004 | 1.000 |
| | | | | | 810 | 1.004 | 1.004 | 1.000 |
| | | | | | 822 | 1.004 | 1.004 | 1.000 |
| | | | | | 834 | 1.004 | 1.004 | 1.000 |
| | | | | | 846 | 1.004 | 1.004 | 1.000 |
| | | | | | 858 | 1.004 | 1.004 | 1.000 |
| | | | | | 870 | 1.004 | 1.004 | 1.000 |
| | | | | | 882 | 1.004 | 1.004 | 1.000 |
| | | | | | 894 | 1.004 | 1.004 | 1.000 |
| | | | | | 906 | 1.004 | 1.004 | 1.000 |
| | | | | | 918 | 1.004 | 1.004 | 1.000 |
| | | | | | 930 | 1.004 | 1.004 | 1.000 |
| | | | | | 942 | 1.004 | 1.004 | 1.000 |
| | | | | | 954 | 1.004 | 1.004 | 1.000 |
| | | | | | | | | 1.000 |

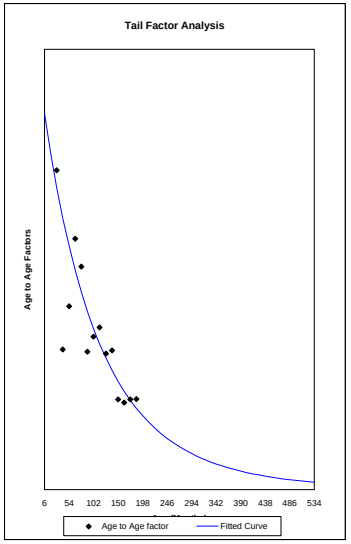


**Ohio Bureau of Workers' Compensation**
**Indemnity Excluding PTD and Death**
**Estimation of Cumulative Incurred Development Factors**
**Using the Method of Inverse Power Curve Fit**

| | | | | |
|---|---|---|---|---|
| C= | 1,000.0000000 | | R-Square | **0.6588** |
| B= | 9.3173E+00 | | | |
| A= | 6.4708E+26 | | F-Statistics | **8** |
| Cutoff Age= | **65** | Years | F- Degree | **4** |

$$Y = \frac{A}{(X+C)^{\wedge}B} + 1$$

| Months of Maturity X | Age-to-Age Factor Y | Excluded | X' ln(1/(X+C)) | Y' ln(Y-1) | Fitted Value X | Fitted Value Y | Indicated Age-to-Age | Indicated Age-to-Ult. |
|---|---|---|---|---|---|---|---|---|
| | **Data Group Selected** | | | | | | | |
| 6 | 0.850 | **y** | | | 6 | 1.068 | 0.850 | 1.181 |
| 18 | 0.797 | **y** | | | 18 | 1.061 | 0.797 | 1.389 |
| 30 | 1.058 | **y** | | | 30 | 1.055 | 1.058 | 1.742 |
| 42 | 1.025 | **y** | | | 42 | 1.049 | 1.025 | 1.646 |
| 54 | 1.033 | **y** | | | 54 | 1.044 | 1.033 | 1.605 |
| 66 | 1.046 | **y** | | | 66 | 1.040 | 1.046 | 1.554 |
| 78 | 1.041 | **y** | | | 78 | 1.036 | 1.041 | 1.486 |
| 90 | 1.025 | **y** | | | 90 | 1.032 | 1.025 | 1.428 |
| 102 | 1.028 | **y** | | | 102 | 1.029 | 1.028 | 1.393 |
| 114 | 1.029 | y | | | 114 | 1.026 | 1.029 | **1.355** |
| 126 | 1.025 | | -7.0264 | -3.7009 | 126 | 1.024 | 1.025 | 1.317 |
| 138 | 1.025 | | -7.0370 | -3.6771 | 138 | 1.022 | 1.025 | 1.285 |
| 150 | 1.016 | | -7.0475 | -4.1118 | 150 | 1.020 | 1.016 | 1.253 |
| 162 | 1.016 | | -7.0579 | -4.1481 | 162 | 1.018 | 1.016 | 1.233 |
| 174 | 1.016 | | -7.0682 | -4.1099 | 174 | 1.016 | 1.016 | 1.214 |
| 186 | 1.016 | | -7.0783 | -4.1087 | 186 | 1.015 | 1.016 | 1.194 |
| 198 | | | | | 198 | 1.013 | 1.013 | 1.175 |
| 210 | | | | | 210 | 1.012 | 1.012 | 1.159 |
| 222 | | | | | 222 | 1.011 | 1.011 | 1.145 |
| 234 | | | | | 234 | 1.010 | 1.010 | 1.133 |
| 246 | | | | | 246 | 1.009 | 1.009 | 1.121 |
| 258 | | | | | 258 | 1.009 | 1.009 | 1.111 |
| 270 | | | | | 270 | 1.008 | 1.008 | 1.101 |
| 282 | | | | | 282 | 1.007 | 1.007 | 1.093 |
| 294 | | | | | 294 | 1.007 | 1.007 | 1.085 |
| 306 | | | | | 306 | 1.006 | 1.006 | 1.078 |
| | | | | | 318 | 1.006 | 1.006 | 1.072 |
| | | | | | 330 | 1.005 | 1.005 | 1.066 |
| Average | | | -7.0526 | -3.9761 | 342 | 1.005 | 1.005 | 1.060 |
| | | | | | 354 | 1.004 | 1.004 | 1.056 |
| | | | | | 366 | 1.004 | 1.004 | 1.051 |
| | | | | | 378 | 1.004 | 1.004 | 1.047 |
| | | | | | 390 | 1.003 | 1.003 | 1.043 |
| | | | | | 402 | 1.003 | 1.003 | 1.040 |
| | | | | | 414 | 1.003 | 1.003 | 1.036 |
| | | | | | 426 | 1.003 | 1.003 | 1.033 |
| | | | | | 438 | 1.002 | 1.002 | 1.031 |
| | | | | | 450 | 1.002 | 1.002 | 1.028 |
| | | | | | 462 | 1.002 | 1.002 | 1.026 |
| | | | | | 474 | 1.002 | 1.002 | 1.024 |
| | | | | | 486 | 1.002 | 1.002 | 1.022 |
| | | | | | 498 | 1.002 | 1.002 | 1.020 |
| | | | | | 510 | 1.002 | 1.002 | 1.018 |
| | | | | | 522 | 1.001 | 1.001 | 1.017 |
| | | | | | 534 | 1.001 | 1.001 | 1.015 |
| | | | | | 546 | 1.001 | 1.001 | 1.014 |
| | | | | | 558 | 1.001 | 1.001 | 1.012 |
| | | | | | 570 | 1.001 | 1.001 | 1.011 |
| | | | | | 582 | 1.001 | 1.001 | 1.010 |
| | | | | | 594 | 1.001 | 1.001 | 1.009 |
| | | | | | 606 | 1.001 | 1.001 | 1.008 |
| | | | | | 618 | 1.001 | 1.001 | 1.007 |
| | | | | | 630 | 1.001 | 1.001 | 1.007 |
| | | | | | 642 | 1.001 | 1.001 | 1.006 |
| | | | | | 654 | 1.001 | 1.001 | 1.005 |
| | | | | | 666 | 1.001 | 1.001 | 1.004 |
| | | | | | 678 | 1.001 | 1.001 | 1.004 |
| | | | | | 690 | 1.001 | 1.001 | 1.003 |
| | | | | | 702 | 1.001 | 1.001 | 1.003 |
| | | | | | 714 | 1.000 | 1.000 | 1.002 |
| | | | | | 726 | 1.000 | 1.000 | 1.002 |
| | | | | | 738 | 1.000 | 1.000 | 1.001 |
| | | | | | 750 | 1.000 | 1.000 | 1.001 |
| | | | | | 762 | 1.000 | 1.000 | 1.000 |
| | | | | | 774 | 1.000 | 1.000 | 1.000 |
| | | | | | 786 | 1.000 | 1.000 | 1.000 |
| | | | | | 798 | 1.000 | 1.000 | 1.000 |
| | | | | | 810 | 1.000 | 1.000 | 1.000 |
| | | | | | 822 | 1.000 | 1.000 | 1.000 |
| | | | | | 834 | 1.000 | 1.000 | 1.000 |
| | | | | | 846 | 1.000 | 1.000 | 1.000 |
| | | | | | 858 | 1.000 | 1.000 | 1.000 |
| | | | | | 870 | 1.000 | 1.000 | 1.000 |
| | | | | | 882 | 1.000 | 1.000 | 1.000 |
| | | | | | 894 | 1.000 | 1.000 | 1.000 |
| | | | | | 906 | 1.000 | 1.000 | 1.000 |
| | | | | | 918 | 1.000 | 1.000 | 1.000 |
| | | | | | 930 | 1.000 | 1.000 | 1.000 |
| | | | | | 942 | 1.000 | 1.000 | 1.000 |
| | | | | | 954 | 1.000 | 1.000 | 1.000 |
| | | | | | | | | 1.000 |

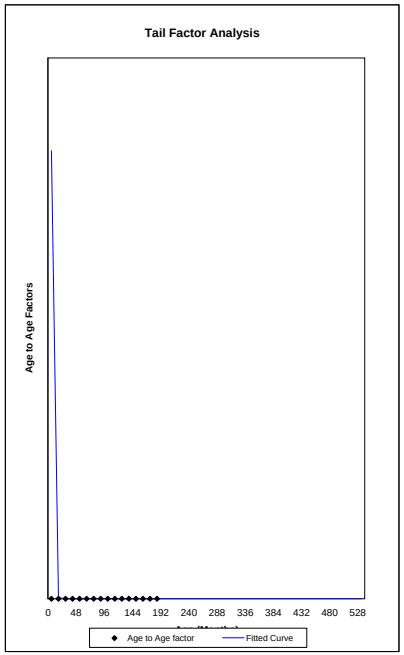


**Ohio Bureau of Workers' Compensation**
**Death PTD**
**Estimation of Cumulative Incurred Development Factors**
**Using the Method of Inverse Power Curve Fit**

| | | | | |
|---|---|---|---|---|
| C= | -4.5200461 | | R-Square | **0.8055** |
| B= | 2.8207E+00 | | | |
| A= | 7.5082E+04 | | F-Statistics | **17** |
| Cutoff Age= | **65** | Years | F- Degree | **4** |

$$Y = \frac{A}{(X+C)^{\wedge}B} + 1$$

| Months of Maturity X | Age-to-Age Factor Y | Excluded | X' ln(1/(X+C)) | Y' ln(Y-1) | Fitted Value X | Fitted Value Y | Indicated Age-to-Age | Indicated Age-to-Ult |
|---|---|---|---|---|---|---|---|---|
| | **Data Group Selected** | | | | | | | |
| 6 | 4.225 | **y** | | | 6 | 24850.164 | 4.225 | 38.214 |
| 18 | 1.266 | **y** | | | 18 | 49.866 | 1.266 | 9.045 |
| 30 | 1.223 | **y** | | | 30 | 9.111 | 1.223 | 7.146 |
| 42 | 1.281 | **y** | | | 42 | 3.731 | 1.281 | 5.845 |
| 54 | 1.245 | **y** | | | 54 | 2.247 | 1.245 | 4.563 |
| 66 | 1.230 | **y** | | | 66 | 1.676 | 1.230 | 3.665 |
| 78 | 1.170 | **y** | | | 78 | 1.409 | 1.170 | 2.979 |
| 90 | 1.156 | **y** | | | 90 | 1.267 | 1.156 | 2.546 |
| 102 | 1.129 | **y** | | | 102 | 1.184 | 1.129 | 2.204 |
| 114 | 1.097 | y | | | 114 | 1.133 | 1.097 | **1.952** |
| 126 | 1.115 | | -4.7997 | -2.1634 | 126 | 1.099 | 1.115 | 1.780 |
| 138 | 1.055 | | -4.8940 | -2.8944 | 138 | 1.076 | 1.055 | 1.596 |
| 150 | 1.061 | | -4.9800 | -2.8014 | 150 | 1.060 | 1.061 | 1.513 |
| 162 | 1.063 | | -5.0593 | -2.7596 | 162 | 1.048 | 1.063 | 1.426 |
| 174 | 1.035 | | -5.1327 | -3.3597 | 174 | 1.039 | 1.035 | 1.341 |
| 186 | 1.031 | | -5.2011 | -3.4738 | 186 | 1.032 | 1.031 | 1.296 |
| 198 | | | | | 198 | 1.027 | 1.027 | 1.257 |
| 210 | | | | | 210 | 1.022 | 1.022 | 1.225 |
| 222 | | | | | 222 | 1.019 | 1.019 | 1.198 |
| 234 | | | | | 234 | 1.016 | 1.016 | 1.175 |
| 246 | | | | | 246 | 1.014 | 1.014 | 1.156 |
| 258 | | | | | 258 | 1.012 | 1.012 | 1.140 |
| 270 | | | | | 270 | 1.011 | 1.011 | 1.126 |
| 282 | | | | | 282 | 1.010 | 1.010 | 1.114 |
| 294 | | | | | 294 | 1.009 | 1.009 | 1.103 |
| 306 | | | | | 306 | 1.008 | 1.008 | 1.094 |
| | | | | | 318 | 1.007 | 1.007 | 1.085 |
| | | | | | 330 | 1.006 | 1.006 | 1.078 |
| Average | | | -5.0112 | -2.9087 | 342 | 1.006 | 1.006 | 1.071 |
| | | | | | 354 | 1.005 | 1.005 | 1.066 |
| | | | | | 366 | 1.005 | 1.005 | 1.060 |
| | | | | | 378 | 1.004 | 1.004 | 1.055 |
| | | | | | 390 | 1.004 | 1.004 | 1.051 |
| | | | | | 402 | 1.003 | 1.003 | 1.047 |
| | | | | | 414 | 1.003 | 1.003 | 1.043 |
| | | | | | 426 | 1.003 | 1.003 | 1.040 |
| | | | | | 438 | 1.003 | 1.003 | 1.037 |
| | | | | | 450 | 1.003 | 1.003 | 1.034 |
| | | | | | 462 | 1.002 | 1.002 | 1.032 |
| | | | | | 474 | 1.002 | 1.002 | 1.029 |
| | | | | | 486 | 1.002 | 1.002 | 1.027 |
| | | | | | 498 | 1.002 | 1.002 | 1.025 |
| | | | | | 510 | 1.002 | 1.002 | 1.023 |
| | | | | | 522 | 1.002 | 1.002 | 1.021 |
| | | | | | 534 | 1.002 | 1.002 | 1.019 |
| | | | | | 546 | 1.001 | 1.001 | 1.018 |
| | | | | | 558 | 1.001 | 1.001 | 1.016 |
| | | | | | 570 | 1.001 | 1.001 | 1.015 |
| | | | | | 582 | 1.001 | 1.001 | 1.014 |
| | | | | | 594 | 1.001 | 1.001 | 1.012 |
| | | | | | 606 | 1.001 | 1.001 | 1.011 |
| | | | | | 618 | 1.001 | 1.001 | 1.010 |
| | | | | | 630 | 1.001 | 1.001 | 1.009 |
| | | | | | 642 | 1.001 | 1.001 | 1.008 |
| | | | | | 654 | 1.001 | 1.001 | 1.007 |
| | | | | | 666 | 1.001 | 1.001 | 1.006 |
| | | | | | 678 | 1.001 | 1.001 | 1.005 |
| | | | | | 690 | 1.001 | 1.001 | 1.005 |
| | | | | | 702 | 1.001 | 1.001 | 1.004 |
| | | | | | 714 | 1.001 | 1.001 | 1.003 |
| | | | | | 726 | 1.001 | 1.001 | 1.002 |
| | | | | | 738 | 1.001 | 1.001 | 1.002 |
| | | | | | 750 | 1.001 | 1.001 | 1.001 |
| | | | | | 762 | 1.001 | 1.001 | 1.001 |
| | | | | | 774 | 1.001 | 1.001 | 1.000 |
| | | | | | 786 | 1.001 | 1.001 | 1.000 |
| | | | | | 798 | 1.000 | 1.000 | 1.000 |
| | | | | | 810 | 1.000 | 1.000 | 1.000 |
| | | | | | 822 | 1.000 | 1.000 | 1.000 |
| | | | | | 834 | 1.000 | 1.000 | 1.000 |
| | | | | | 846 | 1.000 | 1.000 | 1.000 |
| | | | | | 858 | 1.000 | 1.000 | 1.000 |
| | | | | | 870 | 1.000 | 1.000 | 1.000 |
| | | | | | 882 | 1.000 | 1.000 | 1.000 |
| | | | | | 894 | 1.000 | 1.000 | 1.000 |
| | | | | | 906 | 1.000 | 1.000 | 1.000 |
| | | | | | 918 | 1.000 | 1.000 | 1.000 |
| | | | | | 930 | 1.000 | 1.000 | 1.000 |
| | | | | | 942 | 1.000 | 1.000 | 1.000 |
| | | | | | 954 | 1.000 | 1.000 | 1.000 |
| | | | | | | | | 1.000 |

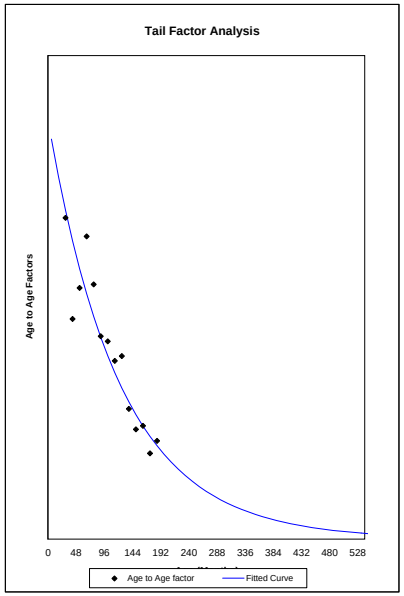


**Ohio Bureau of Workers' Compensation**
**Total Indemnity**
**Estimation of Cumulative Incurred Development Factors**
**Using the Method of Inverse Power Curve Fit**

| | | | | |
|---|---|---|---|---|
| C= | 9,000.0000000 | | R-Square | **0.8679** |
| B= | 7.3539E+01 | | | |
| A= | 6.4141E+289 | | F-Statistics | **72** |
| Cutoff Age= | **65** | Years | F- Degree | **11** |

$$Y = \frac{A}{(X+C)^{\wedge}B} + 1$$

| Months of Maturity X | Age-to-Age Factor Y | Excluded | X' ln(1/(X+C)) | Y' ln(Y-1) | Fitted Value X | Fitted Value Y | Indicated Age-to-Age | Indicated Age-to-Ult |
|---|---|---|---|---|---|---|---|---|
| | **Data Group Selected** | | | | | | | |
| 6 | 0.857 | **y** | | | 6 | 1.099 | 0.857 | 1.827 |
| 18 | 0.894 | **y** | | | 18 | 1.090 | 0.894 | 2.132 |
| 30 | 1.080 | **y** | | | 30 | 1.082 | 1.080 | 2.385 |
| 42 | 1.055 | | -9.1096 | -2.9063 | 42 | 1.074 | 1.055 | 2.209 |
| 54 | 1.062 | | -9.1110 | -2.7748 | 54 | 1.067 | 1.062 | 2.095 |
| 66 | 1.075 | | -9.1123 | -2.5890 | 66 | 1.061 | 1.075 | 1.972 |
| 78 | 1.063 | | -9.1136 | -2.7610 | 78 | 1.055 | 1.063 | 1.834 |
| 90 | 1.050 | | -9.1149 | -2.9892 | 90 | 1.050 | 1.050 | 1.725 |
| 102 | 1.049 | | -9.1162 | -3.0151 | 102 | 1.046 | 1.049 | 1.642 |
| 114 | 1.044 | | -9.1176 | -3.1180 | 114 | 1.041 | 1.044 | **1.565** |
| 126 | 1.045 | | -9.1189 | -3.0924 | 126 | 1.037 | 1.045 | 1.499 |
| 138 | 1.032 | | -9.1202 | -3.4328 | 138 | 1.034 | 1.032 | 1.434 |
| 150 | 1.027 | | -9.1215 | -3.6037 | 150 | 1.031 | 1.027 | 1.389 |
| 162 | 1.028 | | -9.1228 | -3.5711 | 162 | 1.028 | 1.028 | 1.352 |
| 174 | 1.021 | | -9.1241 | -3.8483 | 174 | 1.025 | 1.021 | 1.315 |
| 186 | 1.024 | | -9.1254 | -3.7133 | 186 | 1.023 | 1.024 | 1.288 |
| 198 | | | | | 198 | 1.021 | 1.021 | 1.257 |
| 210 | | | | | 210 | 1.019 | 1.019 | 1.231 |
| 222 | | | | | 222 | 1.017 | 1.017 | 1.208 |
| 234 | | | | | 234 | 1.016 | 1.016 | 1.188 |
| 246 | | | | | 246 | 1.014 | 1.014 | 1.169 |
| 258 | | | | | 258 | 1.013 | 1.013 | 1.153 |
| 270 | | | | | 270 | 1.012 | 1.012 | 1.138 |
| 282 | | | | | 282 | 1.011 | 1.011 | 1.124 |
| 294 | | | | | 294 | 1.010 | 1.010 | 1.112 |
| 306 | | | | | 306 | 1.009 | 1.009 | 1.102 |
| | | | | | 318 | 1.008 | 1.008 | 1.092 |
| | | | | | 330 | 1.007 | 1.007 | 1.083 |
| Average | | | -9.1176 | -3.1858 | 342 | 1.007 | 1.007 | 1.075 |
| | | | | | 354 | 1.006 | 1.006 | 1.068 |
| | | | | | 366 | 1.006 | 1.006 | 1.062 |
| | | | | | 378 | 1.005 | 1.005 | 1.056 |
| | | | | | 390 | 1.005 | 1.005 | 1.050 |
| | | | | | 402 | 1.004 | 1.004 | 1.046 |
| | | | | | 414 | 1.004 | 1.004 | 1.041 |
| | | | | | 426 | 1.003 | 1.003 | 1.037 |
| | | | | | 438 | 1.003 | 1.003 | 1.034 |
| | | | | | 450 | 1.003 | 1.003 | 1.030 |
| | | | | | 462 | 1.003 | 1.003 | 1.027 |
| | | | | | 474 | 1.002 | 1.002 | 1.025 |
| | | | | | 486 | 1.002 | 1.002 | 1.022 |
| | | | | | 498 | 1.002 | 1.002 | 1.020 |
| | | | | | 510 | 1.002 | 1.002 | 1.018 |
| | | | | | 522 | 1.002 | 1.002 | 1.016 |
| | | | | | 534 | 1.002 | 1.002 | 1.014 |
| | | | | | 546 | 1.001 | 1.001 | 1.013 |
| | | | | | 558 | 1.001 | 1.001 | 1.012 |
| | | | | | 570 | 1.001 | 1.001 | 1.010 |
| | | | | | 582 | 1.001 | 1.001 | 1.009 |
| | | | | | 594 | 1.001 | 1.001 | 1.008 |
| | | | | | 606 | 1.001 | 1.001 | 1.007 |
| | | | | | 618 | 1.001 | 1.001 | 1.006 |
| | | | | | 630 | 1.001 | 1.001 | 1.006 |
| | | | | | 642 | 1.001 | 1.001 | 1.005 |
| | | | | | 654 | 1.001 | 1.001 | 1.004 |
| | | | | | 666 | 1.001 | 1.001 | 1.004 |
| | | | | | 678 | 1.000 | 1.000 | 1.003 |
| | | | | | 690 | 1.000 | 1.000 | 1.002 |
| | | | | | 702 | 1.000 | 1.000 | 1.002 |
| | | | | | 714 | 1.000 | 1.000 | 1.002 |
| | | | | | 726 | 1.000 | 1.000 | 1.001 |
| | | | | | 738 | 1.000 | 1.000 | 1.001 |
| | | | | | 750 | 1.000 | 1.000 | 1.001 |
| | | | | | 762 | 1.000 | 1.000 | 1.000 |
| | | | | | 774 | 1.000 | 1.000 | 1.000 |
| | | | | | 786 | 1.000 | 1.000 | 1.000 |
| | | | | | 798 | 1.000 | 1.000 | 1.000 |
| | | | | | 810 | 1.000 | 1.000 | 1.000 |
| | | | | | 822 | 1.000 | 1.000 | 1.000 |
| | | | | | 834 | 1.000 | 1.000 | 1.000 |
| | | | | | 846 | 1.000 | 1.000 | 1.000 |
| | | | | | 858 | 1.000 | 1.000 | 1.000 |
| | | | | | 870 | 1.000 | 1.000 | 1.000 |
| | | | | | 882 | 1.000 | 1.000 | 1.000 |
| | | | | | 894 | 1.000 | 1.000 | 1.000 |
| | | | | | 906 | 1.000 | 1.000 | 1.000 |
| | | | | | 918 | 1.000 | 1.000 | 1.000 |
| | | | | | 930 | 1.000 | 1.000 | 1.000 |
| | | | | | 942 | 1.000 | 1.000 | 1.000 |
| | | | | | 954 | 1.000 | 1.000 | 1.000 |
| | | | | | 966 | 1.000 | 1.000 | 1.000 |



# 12 - Month Actuarial Committee Calendar

| Date | September | Notes |
|---|---|---|
| 9/25/08 | Actuarial Committee<br>1. Public Employer Taxing Districts rate change<br>2. Adjudicating policy - 2nd reading<br>3. Reserve Audit - full<br>4. PES Rate estimates for biennium | |
| **Date** | **October** | |
| 10/30/08 | Education Session<br>1. HB 100 Comprehensive Study update - Deloitte's report on priority grouping 3 - State Agency Rates, Retrospective Rating and Safety | |
| 10/30/08 | Actuarial Committee<br>1. Projected reserves as of 6/30/2009<br>2. Quarterly Reserve as of September 2008<br>3. NCCI/BWC State of the line report comparisons<br>4. Committee Charter<br>5. PEC rates - 2nd reading | |
| **Date** | **November** | |
| 11/20/08 | Education Session | |
| 11/20/08 | Actuarial Committee<br>1. Public Employer Taxing Districts rates | |
| **Date** | **December** | |
| 12/18/08 | Education Session<br>1. HB 100 Comprehensive Study update - Deloitte's report on priority grouping 4 - Other Rate calculations, general rating rules and procedures and actuarial section organization | |
| 12/18/08 | Actuarial Committee<br>1. Report on performance based discount options<br>2. Report on group continuity, homogeneity and group formation | |
| **Date** | **January** | |
| 1/22/09 | | |

# 12 - Month Actuarial Committee Calendar

| Date | February |
|---|---|
| 2/19/09 | 1. Quarterly reserve update as of 12/31/08 |

| Date | March |
|---|---|
| 3/19/09 | 1. PES Rate indication<br>2. Employer "How to Buy" guide<br>3. PA rate indication - 1st reading |

| Date | April |
|---|---|
| 4/29/09 | 1. Review of Performance based discount options<br>2. PES rate approval<br>3. Ancillary fund rates and SI assessments - 1st reading<br>4. PA rate indication approval |

| Date | May |
|---|---|
| 5/28/09 | 1. Quarterly reserve update as of 3/31/09<br>2. Continued review of Performance based discount programs<br>3. Ancillary fund rates and SI assessment rate approval |

| Date | June |
|---|---|
| 6/18/09 | 1. Recommend Performance based discount options<br>2. Group Sponsor requirements<br>3. PA rate recommendations |

| Date | July |
|---|---|
| 7/30/09 | 1. Reserve Audit update as of 6-3-08 (assuming change in procedure) |

# 12 - Month Actuarial Committee Calendar

| Date | August | Notes |
|---|---|---|
| 8/27/09 | Actuarial Committee<br>1. Reserve Audit update | |
| **Date** | **September** | |
| 9/24/09 | Actuarial Committee<br>1. Public Employer Taxing Districts rate change | |
| **Date** | **October** | |
| 10/29/08 | Actuarial Committee<br>1. Quarterly Reserve change as of August 2009<br>2. Committee Charter | |
| **Date** | **November** | |
| 11/19/08 | Actuarial Committee<br>1. Public Employer Taxing Districts rates | |
| **Date** | **December** | |
| 12/16/09 | Actuarial Committee | |

Ohio | Bureau of Workers' Compensation
30 W. Spring St.
Columbus, OH 43215-2256

Governor **Ted Strickland**
Administrator **Marsha P. Ryan**
ohiobwc.com
1-800-OHIOBWC

To: Marsha Ryan, Administrator
From: John Pedrick, FCAS, MAAA, Chief Actuarial Officer
Date: September 16, 2008
Subject: Public Employer Taxing District Rate Recommendation - 2009

I have reviewed the calculations and results in the attached "Rate Indications for Public Employer – Taxing Districts" (PECs) submitted by our actuarial consultant, Oliver Wyman (OW), and recommend the BWC implement an overall rate change of -5.0% for the policy year beginning January 1, 2009 and ending December 31, 2009.

While OW has presented the results of six different scenarios, I base this recommendation on two of them that produce a range of reasonable changes from +1.4% to -14.0%. The first is the result of a conservative cost trend assumption and an interest rate of 4.0%. The second incorporates a central trend assumption ("baseline") with an interest rate of 5.0%. This range of changes, as well as my recommendation, balances the need to be responsive to the underlying cost trends, to reflect investment returns that can be expected over the long term, and to avoid unnecessary swings in rates from year to year. It is narrower than the range suggested by OW (+1.4% to -19.7%).

A decrease of 5% is equal to the central ("baseline") indicated change using an interest rate of 4%. As such, it is likely to match premium with costs and to not have a significant impact on the size of our Net Asset.

The overall rate change will be spread to the rate classes used by PECs based on the experience in the classes, so some policyholders will see an increase in premium while others will see a decrease. The average of these changes will be -5.0%, based on the most recent payroll figures. Further details by classes will follow as we run this overall change through our rating system.

**Discussion:**

BWC is charged with setting rates that are the minimum necessary to meet the costs of providing workers' compensation insurance. Actuarial ratemaking principles are consistent with this mandate:

> *"A rate is reasonable and not excessive, inadequate, or unfairly discriminatory if it is an actuarially sound estimate of the expected value of all future costs associated with an individual risk transfer.[1]"*

Oliver Wyman's actuarial calculations use compensation and compensation expense per $100 of payroll, known as pure premium, for policy years 2001 through 2007 to estimate the costs we will incur for policy year 2009. The estimates result from projections of cost trends to policy year 2009, and assumptions regarding the investment income that can be expected throughout the ensuing decades as payments are made for claims incurred during policy year 2009. The calculations are based on reasonable and appropriate actuarial methods and produce actuarially sound estimates of future costs.

In this report, OW has analyzed six scenarios, or sets of assumptions. Three scenarios used an interest rate of 5.0%, while the other three used an interest rate of 4.0%. Compensation and Compensation Adjustment Expenses were discounted to policy year 2009, using these interest rates. The scenarios used by OW are summarized in the following table. The scenarios I believe are most appropriate are in boldface.

| Indicated Changes to PEC Rates | | |
|---|---|---|
| Scenario | 5% Interest Rate | 4% Interest Rate |
| Optimistic (Low) | -19.7% | -11.4% |
| Baseline (Central) | **-14.0%** | **-5.0%** |
| Conservative (High) | -8.2% | **+1.4%** |

[1] Statement of Principles Regarding Property and Casualty Insurance Ratemaking, Casualty Actuarial Society.

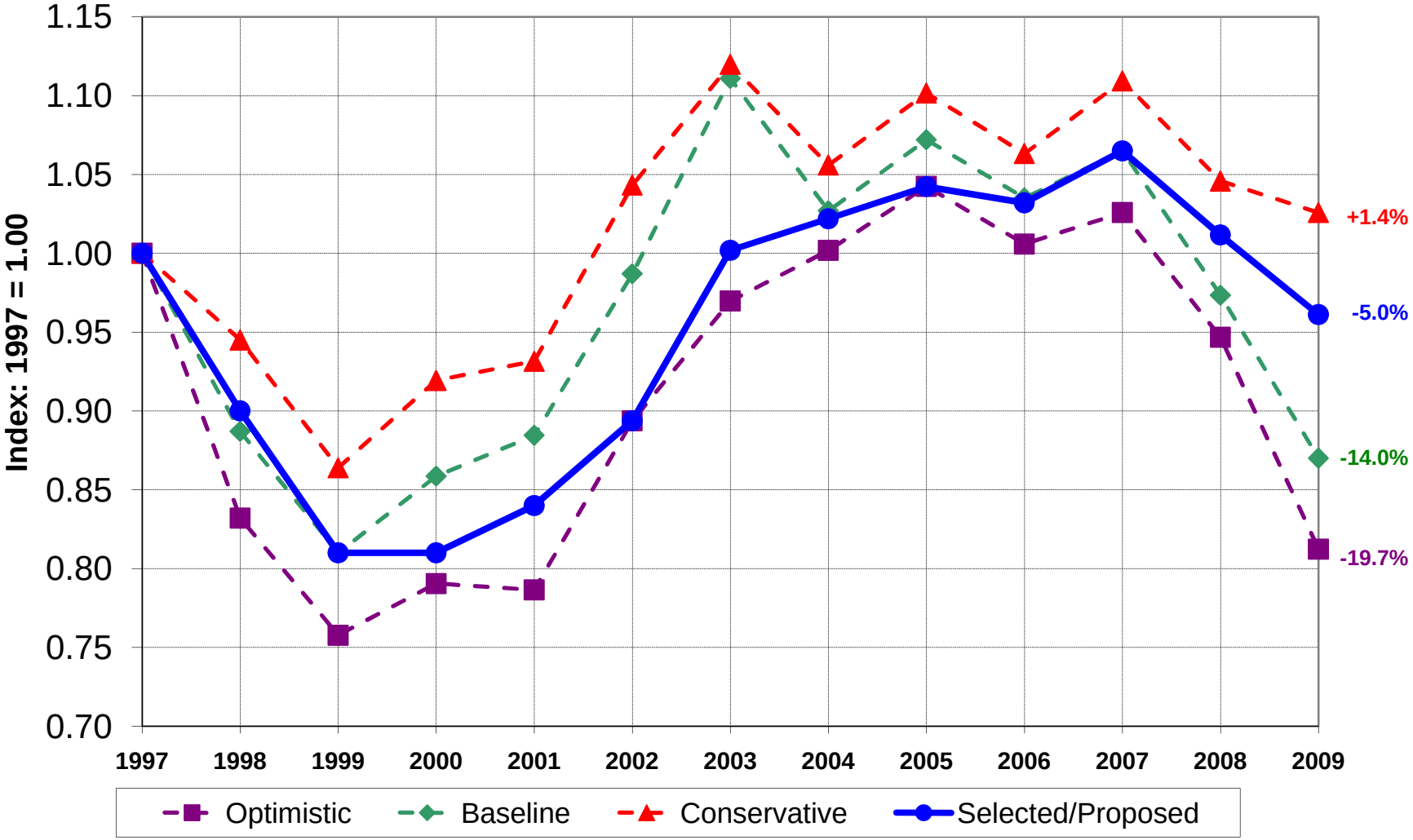
These six scenarios demonstrate the significant role played by the underlying interest rate, as demonstrated in the two baseline cases. A drop of 1% in interest rate increases the indication by 9%. Since we are setting rates for policy year 2009, premium will be due in 2010, and claims will be paid over several decades, a conservative decision today will help to avoid the possibility of underestimating long-term costs which would put downward pressure on Net Assets.

I have also considered the past rate changes implemented for PECs, shown below. In light of the 3.2% increase for 2007, followed by a no change in 2008, an overall decrease of 5.0% will avoid swings in rates from one year to the next.

| Policy Year | Change |
|---|---|
| 1998 | -10.0% |
| 1999 | -10.0% |
| 2000 | 0.0% |
| 2001 | 3.7% |
| 2002 | 6.4% |
| 2003 | 12.1% |
| 2004 | 2.0% |
| 2005 | 2.0% |
| 2006 | -1.0% |
| 2007 | 3.2% |
| 2008 | 0.0% |
| **2009** | **-5.0%** |

The attached Exhibit 1 shows ten years of indicated and selected changes. This chart shows how the proposed 5% decrease is in line with the indicated changes while also softening the peaks and valleys of costs cycles. That is, this change strikes a balance between the need to keep rates as low as possible while also maintaining stability from year to year.

# PEC Rate Change History with 2009 Projections



## Average Quarterly Employment
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Ohio | Adams | Allen | Ashland | Ashtabula | Athens | Auglaize | Belmont | Brown | Butler |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **5,262,531** | **6,611** | **54,476** | **18,479** | **32,569** | **19,822** | **19,651** | **24,191** | **8,054** | **145,448** |
| **Private Sector** | **4,579,818** | **5,000** | **47,936** | **15,585** | **27,410** | **12,735** | **17,344** | **20,121** | **5,623** | **125,659** |
| Agriculture, forestry, fishing and hunting | 13,007 | 37 | 110 | 117 | 50 | 27 | 45 | (c) | (c) | 41 |
| Mining | 11,078 | (c) | 87 | 44 | 100 | (c) | (c) | 1,179 | (c) | 230 |
| Utilities | 21,009 | (c) | 166 | (c) | 254 | (c) | (c) | 102 | (c) | 312 |
| Construction | 231,815 | 243 | 2,249 | 794 | 1,031 | 446 | 1,046 | 1,302 | 448 | 9,764 |
| Manufacturing | 786,692 | 786 | 9,415 | 3,913 | 8,276 | 489 | 6,685 | 1,321 | 798 | 19,598 |
| Wholesale trade | 238,382 | 179 | 2,314 | 619 | 751 | 365 | 692 | 604 | 186 | 12,456 |
| Retail trade | 621,404 | 1,218 | 7,408 | 2,045 | 4,417 | 3,050 | 2,269 | 4,725 | 995 | 15,581 |
| Transportation and warehousing | 179,339 | 46 | 1,545 | 532 | 594 | 134 | 314 | 515 | 136 | 7,003 |
| Information | 88,414 | 39 | 857 | 267 | 435 | 352 | 250 | 508 | 47 | 1,077 |
| Finance and insurance | 231,314 | 210 | 1,211 | 312 | 627 | 478 | 365 | 853 | 251 | 8,877 |
| Real estate and rental and leasing | 67,715 | 65 | 381 | 132 | 238 | 263 | 220 | 291 | 72 | 1,568 |
| Professional and technical services | 241,817 | 75 | 996 | 801 | 455 | 409 | 243 | 400 | 120 | 3,809 |
| Management of companies and enterprises | 102,384 | (c) | 348 | (c) | 199 | (c) | (c) | (c) | (c) | 778 |
| Administrative and waste services | 319,234 | 24 | 2,858 | 418 | 834 | 278 | 533 | 597 | 187 | 10,484 |
| Educational services | 89,023 | (c) | 1,012 | (c) | 241 | 26 | 116 | 210 | 115 | 1,139 |
| Health care and social assistance | 682,100 | 729 | 9,964 | 2,316 | 5,133 | 3,129 | 2,111 | 3,873 | 1,137 | 15,890 |
| Arts, entertainment, and recreation | 59,105 | 29 | 429 | 155 | 217 | 104 | 240 | 124 | 53 | 854 |
| Accommodation and food services | 431,373 | 545 | 4,666 | 1,524 | 2,651 | 2,430 | 1,257 | 2,616 | 820 | 12,475 |
| Other services, except public administration | 164,614 | 82 | 1,922 | 699 | 906 | 483 | 839 | 719 | 190 | 3,724 |
| **State & Local Government** | **682,712** | **1,612** | **6,540** | **2,893** | **5,159** | **7,087** | **2,308** | **4,070** | **2,430** | **19,789** |
| State Government | 133,462 | 50 | 1,369 | 471 | 303 | (c) | 115 | 800 | 263 | (c) |
| Local Government | 549,250 | 1,562 | 5,171 | 2,422 | 4,856 | (c) | 2,193 | 3,270 | 2,167 | (c) |
| **Federal Government (d)** | **76,708** | **78** | **421** | **112** | **231** | **271** | **121** | **191** | **97** | **586** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.1-BN

## Average Quarterly Employment
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Carroll | Champaign | Clark | Clermont | Clinton | Columbiana | Coshocton | Crawford | Cuyahoga | Darke |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **6,177** | **11,106** | **50,846** | **57,415** | **26,656** | **31,364** | **12,019** | **14,946** | **738,602** | **17,871** |
| **Private Sector** | **5,077** | **9,043** | **44,000** | **49,705** | **23,316** | **26,822** | **10,441** | **12,981** | **655,665** | **15,623** |
| Agriculture, forestry, fishing and hunting | 19 | 161 | 453 | (c) | 10 | 134 | 89 | 151 | 355 | 591 |
| Mining | (c) | (c) | (c) | (c) | (c) | 223 | 142 | (c) | 343 | (c) |
| Utilities | (c) | (c) | 127 | 567 | (c) | 117 | 398 | (c) | 1,595 | (c) |
| Construction | 240 | 280 | 1,557 | 3,566 | 357 | 1,210 | 293 | 436 | 24,798 | 992 |
| Manufacturing | 1,505 | 3,422 | 7,828 | 6,972 | 4,614 | 6,231 | 3,430 | 4,938 | 84,308 | 4,273 |
| Wholesale trade | 185 | 273 | 1,906 | 2,333 | 750 | 1,159 | 191 | 615 | 40,919 | 773 |
| Retail trade | 838 | 1,271 | 6,626 | 10,348 | 1,735 | 4,200 | 1,216 | 1,295 | 70,720 | 2,037 |
| Transportation and warehousing | 236 | 154 | 2,340 | 1,246 | 10,735 | 1,032 | 365 | 181 | 22,268 | 937 |
| Information | 43 | 94 | 362 | 1,243 | 256 | 154 | 94 | 94 | 15,573 | 147 |
| Finance and insurance | 72 | 238 | 2,501 | 3,572 | 626 | 866 | 281 | 627 | 52,646 | 648 |
| Real estate and rental and leasing | 57 | 110 | 510 | 825 | 169 | 239 | 67 | 102 | 13,109 | 147 |
| Professional and technical services | 92 | 184 | 729 | 2,350 | 177 | 690 | 159 | 439 | 46,422 | 471 |
| Management of companies and enterprises | (c) | (c) | (c) | 328 | 154 | 115 | 29 | (c) | 15,705 | (c) |
| Administrative and waste services | 93 | 315 | 1,612 | 2,365 | 708 | 1,396 | 724 | 217 | 48,479 | 663 |
| Educational services | 9 | (c) | 821 | 417 | (c) | 201 | 39 | (c) | 20,082 | 47 |
| Health care and social assistance | 742 | 906 | 8,559 | 5,050 | 984 | 5,038 | 1,833 | 2,077 | 111,604 | 1,958 |
| Arts, entertainment, and recreation | 87 | 100 | 434 | 690 | 74 | 211 | 130 | 80 | 9,440 | 165 |
| Accommodation and food services | 543 | 927 | 4,626 | 5,931 | 1,220 | 2,531 | 655 | 1,078 | 54,710 | 1,071 |
| Other services, except public administration | 214 | 328 | 2,091 | 1,855 | 424 | 1,076 | 306 | 448 | 22,589 | 655 |
| **State & Local Government** | **1,100** | **2,062** | **6,846** | **7,710** | **3,340** | **4,542** | **1,577** | **1,966** | **82,937** | **2,248** |
| State Government | 33 | 63 | 240 | 648 | 134 | 349 | 50 | 104 | 5,032 | 44 |
| Local Government | 1,067 | 1,999 | 6,606 | 7,062 | 3,206 | 4,193 | 1,527 | 1,862 | 77,905 | 2,204 |
| **Federal Government (d)** | **50** | **81** | **593** | **311** | **176** | **566** | **98** | **85** | **16,042** | **116** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.1-BN

## Average Quarterly Employment
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Defiance | Delaware | Erie | Fairfield | Fayette | Franklin | Fulton | Gallia | Geauga | Greene |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **16,690** | **65,983** | **37,334** | **39,954** | **11,634** | **678,758** | **20,986** | **12,363** | **34,977** | **57,053** |
| **Private Sector** | **14,731** | **58,257** | **31,946** | **31,878** | **10,028** | **580,000** | **18,259** | **10,362** | **30,951** | **47,708** |
| Agriculture, forestry, fishing and hunting | 31 | 221 | 219 | 44 | 19 | 321 | 209 | 45 | 287 | 68 |
| Mining | (c) | 103 | (c) | 10 | (c) | 207 | (c) | 65 | (c) | (c) |
| Utilities | (c) | 131 | (c) | 184 | (c) | 2,597 | (c) | 791 | (c) | (c) |
| Construction | 483 | 3,100 | 1,111 | 2,410 | 373 | 27,035 | 952 | 959 | 2,545 | 1,919 |
| Manufacturing | 4,869 | 5,713 | 6,728 | 5,467 | 2,316 | 42,226 | 8,778 | 635 | 9,939 | 3,824 |
| Wholesale trade | 561 | 2,093 | 1,510 | 827 | 545 | 29,704 | 730 | 219 | 2,017 | 1,359 |
| Retail trade | 2,512 | 11,135 | 5,241 | 6,421 | 2,595 | 76,741 | 1,641 | 1,529 | 4,103 | 10,133 |
| Transportation and warehousing | 353 | 1,293 | 790 | 407 | (c) | 38,077 | 296 | 233 | 509 | 647 |
| Information | 305 | 1,136 | 408 | 335 | 61 | 16,123 | 130 | 99 | 169 | 1,490 |
| Finance and insurance | 677 | 4,524 | 619 | 946 | 400 | 48,017 | 455 | 401 | 722 | 1,868 |
| Real estate and rental and leasing | 83 | 814 | 268 | 486 | 90 | 12,618 | 132 | 80 | 229 | 516 |
| Professional and technical services | 222 | 8,775 | 673 | 1,143 | 139 | 42,513 | 223 | 86 | 1,137 | 6,797 |
| Management of companies and enterprises | 97 | 621 | 45 | 119 | (c) | 17,610 | 104 | (c) | 249 | 226 |
| Administrative and waste services | 348 | 2,125 | 1,047 | 2,812 | 180 | 54,043 | 733 | 312 | 1,670 | 3,341 |
| Educational services | 252 | 1,301 | (c) | 316 | (c) | 10,683 | (c) | (c) | 539 | 1,779 |
| Health care and social assistance | 1,931 | 4,185 | 4,906 | 3,759 | 951 | 74,804 | 1,951 | 3,083 | 2,638 | 5,249 |
| Arts, entertainment, and recreation | 109 | 1,686 | 1,959 | 446 | 40 | 6,772 | 326 | 40 | 468 | 630 |
| Accommodation and food services | 1,317 | 7,474 | 5,093 | 4,347 | 1,064 | 58,191 | 1,058 | 908 | 2,559 | 6,604 |
| Other services, except public administration | 559 | 1,827 | 867 | 1,399 | 244 | 21,720 | 440 | 337 | 1,097 | 1,132 |
| **State & Local Government** | **1,960** | **7,726** | **5,388** | **8,076** | **1,606** | **98,758** | **2,727** | **2,001** | **4,026** | **9,346** |
| State Government | 107 | 1,239 | 1,112 | 772 | 50 | 48,086 | 154 | (c) | 237 | 3,014 |
| Local Government | 1,853 | 6,487 | 4,276 | 7,304 | 1,556 | 50,672 | 2,573 | (c) | 3,789 | 6,332 |
| **Federal Government (d)** | **108** | **255** | **191** | **254** | **59** | **11,692** | **89** | **91** | **126** | **11,936** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.1-BN

## Average Quarterly Employment
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Guernsey | Hamilton | Hancock | Hardin | Harrison | Henry | Highland | Hocking | Holmes | Huron |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **14,756** | **518,164** | **42,431** | **8,427** | **3,685** | **12,042** | **11,783** | **7,146** | **17,180** | **23,840** |
| **Private Sector** | **12,262** | **472,059** | **38,727** | **6,831** | **2,884** | **10,017** | **9,153** | **5,217** | **15,466** | **21,105** |
| Agriculture, forestry, fishing and hunting | (c) | 160 | (c) | 83 | 30 | 180 | 22 | 32 | 171 | 552 |
| Mining | 110 | 222 | (c) | (c) | 294 | (c) | 69 | 212 | 139 | (c) |
| Utilities | 44 | 1,401 | 108 | 54 | 14 | (c) | 74 | (c) | (c) | (c) |
| Construction | 460 | 24,594 | 1,119 | 133 | 132 | 637 | 363 | 335 | 1,861 | 1,855 |
| Manufacturing | 3,026 | 57,341 | 11,409 | 2,290 | 674 | 3,998 | 2,644 | 1,095 | 6,181 | 7,788 |
| Wholesale trade | 350 | 26,829 | 1,060 | 247 | 140 | 329 | 254 | 79 | 682 | 671 |
| Retail trade | 1,919 | 52,563 | 6,217 | 943 | 363 | 1,102 | 1,623 | 949 | 1,922 | 2,170 |
| Transportation and warehousing | 426 | 12,699 | 1,686 | 130 | 97 | 728 | 194 | 108 | 568 | 939 |
| Information | 124 | 9,792 | 421 | 93 | 19 | 110 | 373 | 40 | 89 | 303 |
| Finance and insurance | 274 | 23,233 | 717 | 214 | 56 | 286 | 458 | 188 | 345 | 488 |
| Real estate and rental and leasing | 130 | 7,654 | 485 | 65 | (c) | 73 | 81 | 131 | 40 | 146 |
| Professional and technical services | 269 | 37,312 | 1,200 | 101 | 47 | 111 | 125 | 84 | 258 | 458 |
| Management of companies and enterprises | (c) | 26,521 | 533 | (c) | (c) | (c) | (c) | (c) | 39 | 50 |
| Administrative and waste services | 608 | 39,815 | 2,429 | 82 | 42 | 130 | 301 | 171 | 659 | 684 |
| Educational services | 52 | 10,843 | 945 | (c) | (c) | 54 | (c) | 29 | (c) | (c) |
| Health care and social assistance | 2,427 | 77,406 | 4,054 | 663 | 572 | 1,209 | 1,190 | 543 | 1,004 | 2,166 |
| Arts, entertainment, and recreation | 58 | 7,092 | 196 | 87 | 42 | (c) | 94 | 74 | 75 | 113 |
| Accommodation and food services | 1,519 | 38,904 | 3,612 | 764 | 206 | 563 | 934 | 907 | 1,187 | 1,700 |
| Other services, except public administration | 347 | 17,678 | 1,082 | 264 | 68 | 449 | 283 | 233 | 200 | 715 |
| **State & Local Government** | **2,494** | **46,105** | **3,704** | **1,595** | **801** | **2,025** | **2,630** | **1,929** | **1,713** | **2,735** |
| State Government | 724 | (c) | 210 | 37 | 30 | 27 | 100 | 366 | 36 | 94 |
| Local Government | 1,770 | (c) | 3,494 | 1,558 | 771 | 1,998 | 2,530 | 1,563 | 1,677 | 2,641 |
| **Federal Government (d)** | **112** | **9,742** | **177** | **83** | **69** | **120** | **115** | **51** | **72** | **134** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.1-BN

## Average Quarterly Employment
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Jackson | Jefferson | Knox | Lake | Lawrence | Licking | Logan | Lorain | Lucas | Madison |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **11,863** | **25,145** | **19,345** | **100,832** | **12,618** | **55,195** | **20,055** | **99,468** | **223,062** | **14,073** |
| **Private Sector** | **10,287** | **21,526** | **16,377** | **88,733** | **9,540** | **47,231** | **17,611** | **84,351** | **196,383** | **10,957** |
| Agriculture, forestry, fishing and hunting | 97 | (c) | 60 | 801 | (c) | 381 | 75 | 717 | 339 | 91 |
| Mining | 195 | 122 | 139 | 207 | (c) | 111 | (c) | (c) | 62 | (c) |
| Utilities | (c) | 937 | 45 | 1,578 | 110 | 195 | 38 | (c) | 679 | (c) |
| Construction | 407 | 1,224 | 819 | 4,648 | 587 | 3,666 | 654 | 5,456 | 10,344 | 469 |
| Manufacturing | 4,112 | 2,806 | 4,618 | 21,540 | 657 | 7,761 | 6,031 | 19,808 | 25,132 | 3,125 |
| Wholesale trade | 186 | 646 | 371 | 4,570 | 199 | 1,194 | 375 | 2,873 | 9,163 | 426 |
| Retail trade | 1,605 | 3,497 | 2,231 | 14,887 | 2,304 | 8,910 | 1,905 | 14,132 | 26,513 | 1,863 |
| Transportation and warehousing | 117 | 399 | 165 | 985 | 769 | 1,723 | 1,376 | 1,864 | 9,473 | 1,042 |
| Information | 90 | 586 | 311 | 871 | 92 | 534 | 105 | 1,307 | 3,096 | 61 |
| Finance and insurance | 360 | 474 | 408 | 2,157 | 338 | 2,210 | 327 | 2,010 | 6,669 | 165 |
| Real estate and rental and leasing | 79 | 356 | 180 | 1,171 | 73 | 634 | 210 | 944 | 2,664 | 112 |
| Professional and technical services | 157 | 519 | 284 | 3,517 | 263 | 1,577 | 737 | 2,321 | 9,571 | 519 |
| Management of companies and enterprises | (c) | (c) | 85 | 1,031 | 51 | 1,340 | (c) | 546 | 4,370 | 14 |
| Administrative and waste services | 299 | 1,843 | 459 | 4,970 | 425 | 2,751 | 1,904 | 4,801 | 14,901 | 637 |
| Educational services | 33 | 554 | 1,205 | 1,602 | 47 | 1,188 | 43 | 2,302 | 3,975 | 64 |
| Health care and social assistance | 1,151 | 4,531 | 2,624 | 10,547 | 2,217 | 5,807 | 1,891 | 12,385 | 38,563 | 1,123 |
| Arts, entertainment, and recreation | 42 | 217 | 128 | 1,138 | 39 | 691 | 146 | 1,154 | 3,117 | 49 |
| Accommodation and food services | 1,064 | 1,974 | 1,624 | 8,979 | 1,029 | 5,023 | 1,178 | 8,107 | 19,147 | 1,019 |
| Other services, except public administration | 232 | 804 | 619 | 3,534 | 331 | 1,535 | 573 | 3,218 | 8,605 | 173 |
| **State & Local Government** | **1,577** | **3,619** | **2,968** | **12,099** | **3,078** | **7,965** | **2,444** | **15,117** | **26,679** | **3,116** |
| State Government | 181 | 97 | (c) | 146 | 350 | 1,106 | 75 | 1,250 | 7,821 | 1,383 |
| Local Government | 1,396 | 3,522 | (c) | 11,953 | 2,728 | 6,859 | 2,369 | 13,867 | 18,858 | 1,733 |
| **Federal Government (d)** | **75** | **233** | **113** | **445** | **140** | **508** | **148** | **1,172** | **1,975** | **84** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.1-BN

## Average Quarterly Employment
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Mahoning | Marion | Medina | Meigs | Mercer | Miami | Monroe | Montgomery | Morgan | Morrow |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **103,144** | **27,842** | **59,713** | **3,700** | **16,931** | **41,405** | **3,196** | **266,614** | **2,402** | **5,680** |
| **Private Sector** | **89,867** | **22,008** | **52,322** | **2,653** | **14,358** | **36,338** | **2,386** | **237,319** | **1,694** | **4,012** |
| Agriculture, forestry, fishing and hunting | 173 | 95 | 155 | 71 | 380 | 87 | 11 | 218 | (c) | 43 |
| Mining | 241 | (c) | (c) | 113 | (c) | 51 | 56 | (c) | (c) | 36 |
| Utilities | 395 | (c) | (c) | 22 | (c) | (c) | 26 | (c) | (c) | (c) |
| Construction | 5,680 | 866 | 3,590 | 296 | 894 | 1,982 | 172 | 10,162 | 120 | 404 |
| Manufacturing | 10,307 | 6,949 | 9,999 | 109 | 4,927 | 10,120 | 556 | 38,615 | 342 | 1,217 |
| Wholesale trade | 4,488 | 645 | 2,919 | 69 | 661 | 1,965 | 42 | 9,476 | 72 | 91 |
| Retail trade | 15,166 | 3,031 | 8,350 | 639 | 2,017 | 5,005 | 360 | 27,563 | 338 | 698 |
| Transportation and warehousing | 3,745 | 626 | 3,025 | 23 | 1,032 | 1,631 | 112 | 7,988 | (c) | 39 |
| Information | 2,105 | (c) | 568 | (c) | 178 | 318 | (c) | 8,606 | 36 | 58 |
| Finance and insurance | 3,124 | 528 | 1,232 | 159 | 589 | 900 | 407 | 11,659 | 105 | 88 |
| Real estate and rental and leasing | 1,180 | 374 | 821 | 12 | 143 | 382 | 8 | 3,618 | 3 | 42 |
| Professional and technical services | 3,131 | 574 | 2,170 | 72 | 249 | 797 | 41 | 13,244 | 52 | 71 |
| Management of companies and enterprises | 860 | 184 | 2,628 | (c) | 19 | (c) | (c) | 4,925 | (c) | (c) |
| Administrative and waste services | 7,070 | 1,219 | 2,924 | 127 | 251 | 2,849 | 163 | 16,740 | 20 | 83 |
| Educational services | 1,344 | 115 | 361 | (c) | 69 | 195 | 37 | 6,697 | (c) | (c) |
| Health care and social assistance | 16,808 | 3,087 | 6,008 | 459 | 947 | 4,316 | 149 | 42,901 | 348 | 592 |
| Arts, entertainment, and recreation | 833 | 119 | 878 | (c) | 176 | 270 | 18 | 2,374 | 5 | 44 |
| Accommodation and food services | 9,537 | 1,897 | 5,061 | 385 | 1,157 | 3,438 | 105 | 22,723 | 158 | 392 |
| Other services, except public administration | 3,679 | 726 | 1,544 | 65 | 651 | 1,235 | 102 | 8,880 | 47 | 62 |
| **State & Local Government** | **13,276** | **5,833** | **7,391** | **1,048** | **2,573** | **5,068** | **811** | **29,295** | **708** | **1,668** |
| State Government | 3,372 | 1,459 | 157 | 42 | 141 | 124 | 35 | 1,878 | 56 | 75 |
| Local Government | 9,904 | 4,374 | 7,234 | 1,006 | 2,432 | 4,944 | 776 | 27,417 | 652 | 1,593 |
| **Federal Government (d)** | **1,344** | **148** | **351** | **70** | **103** | **205** | **55** | **4,808** | **36** | **54** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.1-BN

## Average Quarterly Employment
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Muskingum | Noble | Ottawa | Paulding | Perry | Pickaway | Pike | Portage | Preble | Putnam |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **34,805** | **3,204** | **13,614** | **5,056** | **6,333** | **14,276** | **9,564** | **53,227** | **11,135** | **11,151** |
| **Private Sector** | **29,881** | **2,149** | **11,393** | **3,885** | **4,396** | **10,035** | **7,830** | **41,051** | **9,330** | **9,269** |
| Agriculture, forestry, fishing and hunting | 26 | 12 | 117 | 302 | 20 | 110 | 57 | 153 | 106 | 124 |
| Mining | 357 | 135 | 143 | (c) | 268 | (c) | (c) | 365 | (c) | (c) |
| Utilities | 201 | 12 | (c) | (c) | 28 | 59 | (c) | 21 | (c) | (c) |
| Construction | 1,144 | 106 | 554 | 181 | 614 | 834 | 616 | 2,436 | 431 | 1,045 |
| Manufacturing | 4,932 | 492 | 2,410 | 1,462 | 990 | 2,280 | 3,103 | 12,018 | 3,335 | 3,052 |
| Wholesale trade | 1,134 | 82 | 295 | 146 | 71 | 445 | 93 | 2,754 | 407 | 245 |
| Retail trade | 5,880 | 363 | 1,779 | 452 | 647 | 1,537 | 1,028 | 5,730 | 1,333 | 1,204 |
| Transportation and warehousing | 1,367 | 62 | 371 | 106 | 65 | 140 | 132 | 945 | 179 | 377 |
| Information | 412 | 15 | 85 | 18 | 36 | 73 | 48 | 411 | 42 | 89 |
| Finance and insurance | 860 | 75 | 378 | 97 | 194 | 321 | 178 | 776 | 220 | 330 |
| Real estate and rental and leasing | 291 | (c) | 151 | 33 | 36 | 118 | 60 | 548 | 86 | 42 |
| Professional and technical services | 498 | 30 | 180 | 130 | 100 | 305 | 171 | 1,422 | 142 | 127 |
| Management of companies and enterprises | 110 | (c) | (c) | (c) | (c) | 84 | (c) | 791 | (c) | (c) |
| Administrative and waste services | 1,207 | (c) | 159 | 54 | 59 | 598 | 352 | 1,476 | 531 | 277 |
| Educational services | 613 | (c) | (c) | (c) | (c) | (c) | (c) | 617 | 9 | (c) |
| Health care and social assistance | 6,287 | 565 | 1,434 | 441 | 646 | 1,691 | 1,046 | 3,486 | 1,222 | 894 |
| Arts, entertainment, and recreation | 273 | (c) | 501 | 14 | 38 | 204 | 39 | 774 | 57 | 55 |
| Accommodation and food services | 3,075 | 120 | 1,534 | 269 | 367 | 915 | 623 | 4,665 | 845 | 824 |
| Other services, except public administration | 1,214 | 59 | 389 | 114 | 163 | 302 | 147 | 1,662 | 312 | 429 |
| **State & Local Government** | **4,924** | **1,055** | **2,221** | **1,171** | **1,937** | **4,241** | **1,734** | **12,176** | **1,805** | **1,882** |
| State Government | 427 | (c) | 194 | 29 | 43 | 1,503 | 73 | (c) | 81 | 53 |
| Local Government | 4,497 | (c) | 2,027 | 1,142 | 1,894 | 2,738 | 1,661 | (c) | 1,724 | 1,829 |
| **Federal Government (d)** | **292** | **29** | **178** | **52** | **75** | **87** | **72** | **293** | **97** | **80** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.1-BN

## Average Quarterly Employment
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Richland | Ross | Sandusky | Scioto | Seneca | Shelby | Stark | Summit | Trumbull | Tuscarawas |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **56,853** | **25,691** | **26,063** | **23,333** | **21,532** | **31,375** | **161,743** | **272,398** | **82,630** | **36,543** |
| **Private Sector** | **48,682** | **20,662** | **22,754** | **18,131** | **18,562** | **28,628** | **142,793** | **243,127** | **72,601** | **31,909** |
| Agriculture, forestry, fishing and hunting | 147 | 57 | 172 | 63 | 116 | 69 | 175 | 172 | 40 | 234 |
| Mining | (c) | 24 | (c) | 6 | 124 | (c) | 322 | 85 | 38 | 482 |
| Utilities | (c) | 181 | (c) | 130 | 115 | (c) | 625 | 1,292 | 189 | 68 |
| Construction | 2,062 | 895 | 931 | 994 | 1,134 | 1,501 | 7,986 | 12,078 | 2,853 | 1,596 |
| Manufacturing | 12,963 | 4,444 | 8,929 | 2,043 | 5,475 | 14,424 | 28,732 | 35,007 | 18,996 | 8,294 |
| Wholesale trade | 1,912 | 633 | 619 | 346 | 585 | 1,811 | 6,209 | 14,371 | 2,392 | 1,310 |
| Retail trade | 7,759 | 3,817 | 2,874 | 2,929 | 2,148 | 2,354 | 21,216 | 33,775 | 11,753 | 4,597 |
| Transportation and warehousing | 1,246 | 488 | 327 | 459 | 457 | 884 | 3,018 | 8,779 | 2,516 | 959 |
| Information | 1,049 | 384 | 176 | 261 | 177 | 235 | 2,096 | 3,936 | 915 | 495 |
| Finance and insurance | 1,223 | 592 | 555 | 552 | 672 | 363 | 6,145 | 9,370 | 1,853 | 796 |
| Real estate and rental and leasing | 449 | 175 | 376 | 230 | (c) | 226 | 1,591 | 2,907 | 1,126 | 312 |
| Professional and technical services | 1,005 | 354 | 347 | 426 | 403 | 291 | 4,634 | 12,553 | 1,697 | 1,114 |
| Management of companies and enterprises | 64 | 204 | 146 | 43 | (c) | (c) | 826 | 13,510 | 698 | 150 |
| Administrative and waste services | 3,552 | 1,235 | 1,137 | 352 | 768 | 2,080 | 8,572 | 20,213 | 4,414 | 1,602 |
| Educational services | 447 | 129 | (c) | 202 | 1,025 | 167 | 2,998 | 3,469 | 589 | 188 |
| Health care and social assistance | 7,466 | 3,910 | 2,960 | 6,331 | 2,660 | 1,943 | 25,721 | 38,264 | 12,523 | 4,599 |
| Arts, entertainment, and recreation | 531 | 136 | 266 | 77 | 171 | 80 | 1,763 | 3,462 | 758 | 269 |
| Accommodation and food services | 4,798 | 2,421 | 1,832 | 2,255 | 1,461 | 1,445 | 14,113 | 21,421 | 6,962 | 3,453 |
| Other services, except public administration | 1,836 | 580 | 834 | 433 | 721 | 668 | 6,052 | 8,463 | 2,289 | 1,390 |
| **State & Local Government** | **8,170** | **5,030** | **3,309** | **5,202** | **2,970** | **2,747** | **18,950** | **29,270** | **10,029** | **4,634** |
| State Government | 1,626 | 1,711 | 214 | 1,725 | 497 | 304 | 1,398 | 4,875 | 921 | 474 |
| Local Government | 6,544 | 3,319 | 3,095 | 3,477 | 2,473 | 2,443 | 17,552 | 24,395 | 9,108 | 4,160 |
| **Federal Government (d)** | **613** | **1,362** | **118** | **184** | **142** | **93** | **1,120** | **2,014** | **479** | **223** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
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Columbus 43266 06/05/07 RS 203.1-BN

## Average Quarterly Employment
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Union | Van Wert | Vinton | Warren | Washington | Wayne | Williams | Wood | Wyandot | Out of state (e) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **26,172** | **11,611** | **2,322** | **73,775** | **24,645** | **47,160** | **16,687** | **59,511** | **9,350** | **47,000** |
| **Private Sector** | **22,694** | **10,038** | **1,515** | **64,663** | **21,406** | **40,386** | **14,502** | **48,698** | **8,002** | **46,964** |
| Agriculture, forestry, fishing and hunting | 359 | 70 | 40 | 137 | 128 | 396 | 123 | 252 | 139 | 19 |
| Mining | (c) | (c) | 25 | 25 | 420 | 390 | 26 | 45 | 158 | 42 |
| Utilities | 86 | (c) | (c) | 52 | 433 | (c) | (c) | 223 | (c) | 51 |
| Construction | 852 | 288 | 89 | 2,797 | 1,484 | 2,576 | 479 | 3,093 | 597 | 3,699 |
| Manufacturing | 9,795 | 3,771 | 569 | 13,129 | 4,033 | 13,288 | 6,891 | 13,502 | 3,166 | 695 |
| Wholesale trade | 1,148 | 241 | 45 | 3,401 | 789 | 1,711 | 682 | 3,021 | 356 | 13,220 |
| Retail trade | 1,667 | 1,346 | 204 | 9,646 | 3,081 | 5,347 | 1,487 | 6,497 | 926 | 3,201 |
| Transportation and warehousing | 992 | 338 | 74 | 570 | 730 | 1,244 | 349 | 2,903 | 132 | 1,505 |
| Information | 95 | 56 | (c) | 1,325 | 126 | 384 | 135 | 613 | 49 | 1,337 |
| Finance and insurance | 498 | 602 | 73 | 4,046 | 747 | 1,239 | 322 | 853 | 224 | 3,107 |
| Real estate and rental and leasing | 151 | 55 | 6 | 716 | 301 | 339 | 83 | 876 | 29 | 542 |
| Professional and technical services | 1,908 | 208 | 26 | 3,272 | 791 | 954 | 163 | 1,331 | 77 | 6,600 |
| Management of companies and enterprises | (c) | (c) | (c) | 1,825 | 96 | 475 | (c) | 273 | (c) | 448 |
| Administrative and waste services | 2,486 | 219 | (c) | 5,438 | 1,032 | 1,497 | 370 | 1,922 | 341 | 8,515 |
| Educational services | 30 | 39 | (c) | 585 | (c) | (c) | 103 | 552 | (c) | 372 |
| Health care and social assistance | 785 | 1,602 | 220 | 5,214 | 3,933 | 4,113 | 1,643 | 4,687 | 562 | 1,074 |
| Arts, entertainment, and recreation | 145 | 88 | (c) | 2,805 | (c) | 305 | 113 | 427 | 47 | 210 |
| Accommodation and food services | 1,141 | 645 | 73 | 7,362 | 2,046 | 3,253 | 871 | 5,849 | 703 | 843 |
| Other services, except public administration | 506 | 425 | 26 | 2,318 | 691 | 1,345 | 560 | 1,779 | 319 | 1,483 |
| **State & Local Government** | **3,478** | **1,573** | **807** | **9,111** | **3,239** | **6,773** | **2,185** | **10,813** | **1,349** | **36** |
| State Government | (c) | 75 | 74 | 1,388 | 317 | 989 | 135 | (c) | 47 | (c) |
| Local Government | (c) | 1,498 | 733 | 7,723 | 2,922 | 5,784 | 2,050 | (c) | 1,302 | (c) |
| **Federal Government (d)** | **76** | **71** | **25** | **293** | **227** | **221** | **84** | **244** | **96** | **1** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; government employees stationed outside Ohio.

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Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.1-BN

Ohio | Bureau of Workers' Compensation
30 W. Spring St.
Columbus, OH 43215-2256

Governor **Ted Strickland**
Administrator **Marsha P. Ryan**
ohiobwc.com
1-800-OHIOBWC

To: Marsha Ryan, Administrator, Tracy Valentino, Chief of Fiscal and Planning
From: John Pedrick, Chief Actuarial Officer
Date: September 16, 2008
Subject: Recommended Liability for Unpaid Loss and Loss Adjustment Expense as of June 30, 2008

The Actuarial Reserve Audit Report as of 6/30/2008 has been completed and reviewed by the Actuarial Division. As you are aware, the BWC updates the financial statements as of June 30, 2008 with revised liabilities (reserves) for unpaid loss and loss adjustment expenses to reflect the most accurate estimate of the costs associated with incurred claims. These estimates are prepared by our consulting actuaries, Oliver Wyman Actuarial Consulting, Inc. Each year, the Actuarial Division goes through the rigorous process of providing updated payments, claim counts, payroll, premium, benefit levels and all other new information on the BWC's ongoing operations to Oliver Wyman for use in this Report.

The estimates provided by Oliver Wyman were developed in accordance with principles of the Casualty Actuarial Society and applicable standards of practice issued by the Actuarial Standards Board. Jeffery J. Scott, Principal, and Jeffery W. Scholl, Principal, are Fellows of the Casualty Actuarial Society, members of the American Academy of Actuaries and meet the qualification standards to issue this report. My recommendation relies on the work performed by these qualified actuaries.

I recommend that the financial statements be updated with the following liabilities for unpaid loss and loss adjustment expense, as found in the Oliver Wyman reserve audit.

| **Fund name** | **Unpaid Loss and Loss Adjustment Expenses (millions)** | |
|---|---|---|
| | **Discounted at 5%** | **Undiscounted** |
| State Insurance Fund (SIF) | $14,838 | $26,928 |
| Self-Insured | 148 | 346 |
| Health Partnership Plan/MCO | 670 | 1,574 |
| Disabled Workers' Relief Fund (DWRF) | 1,895 | 3,828 |
| Coal Workers' Pneumoconiosis Fund (CWPF) | 63 | 98 |
| Public Workers' Relief Fund (PWRF) | 4 | 7 |
| Marine Industry Fund (MIF) | 3 | 6 |
| Self-insured Employers Guarantee Fund (SIEGF) | 719 | 1,625 |
| Administrative Cost Fund (ACF) | 1,096 | 2,019 |
| **Total incurred liability** | **$19,435** | **$36,431** |

Oliver Wyman's projected reserves have been discounted to their present value as of June 30, 2008 at an assumed annual interest rate of 5% as was provided by the BWC. Reducing the interest rate assumption to 4% would increase the SIF total discounted liability of $14,838 by $1,503 million, to $16,341 million. The long term medical inflation assumption is 9%. While recent trends in medical costs have been lower, this long-term inflationary trend is appropriate for the projections in this report which span five decades.

September 19, 2008

# 1/1/2009 Rate Indications for Public Employer -- Taxing Districts

## Ohio Bureau of Workers' Compensation

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September 19, 2008

Mr. John Pedrick, FCAS, MAAA
Chief Actuarial Officer
Ohio Bureau of Workers' Compensation
30 West Spring Street
Columbus, Ohio 43266-0581

Subject:
1/1/2009 Rate Indications for Public Employer -- Taxing Districts

Dear Mr. Pedrick:

The accompanying exhibits provide rate level scenarios, incurred loss projections and rate level factors for calculation of public employer – taxing districts (PEC) rates to be effective January 1, 2009.

We have calculated a baseline rate recommendation, as well as a reasonable range around that recommendation, as shown in Exhibit 1. The indicated rate change in the baseline scenario contemplates maintaining the "baseline" experience. The range around the baseline rate change is based on the average error from the baseline trend analysis. The following table illustrates the indicated rate changes by scenario:

| Interest Rate | Baseline | Reasonable Expectation Optimistic | Reasonable Expectation Conservative |
|---|---|---|---|
| 5.0% | -14.0% | -19.7% | -8.2% |
| 4.0% | -5.0% | -11.4% | 1.4% |

The "baseline" rate level indication in Exhibit 1 is a statistical extrapolation of the historical pure premiums for accident years 2001 to 2007. The pure premiums for accident years 2001 to 2007 are derived from our June 30, 2008 actuarial evaluation of the PEC losses, using the same assumptions and a similar degree of conservatism as was used in the projections of reserves in the actuarial audit.

Cost containment efforts and recent changes in BWC's procedures, to the extent they are reflected in payments, are considered in the rate indications.

The reasonable expectation-optimistic scenario relates to the low end of our range, as determined by one standard deviation around our base line trend. The result of this analysis is an indicated rate decrease of 19.7%. However, it is important to note that this view is a comparatively short term view and while responsive to recent changes is somewhat volatile.

The reasonable expectation-conservative scenario relates to the high end of our range, as determined by one standard deviation around our base line trend. The result is a higher loss cost prediction than the baseline, which translates into a decrease of 8.2%.

We have also shown our rate recommendation using a discount rate assumption of 4.00%. The resulting indications are approximately 9.0 percentage points higher. This discount rate assumption is one percentage point less than the discount rate used to calculate discounted reserves.

At this time, considering the various scenarios, it is our opinion that a rate change of -19.7% to +1.4% in the PEC rate level is appropriate. This range is wide primarily due to the different interest rate assumptions. Base rates for the individual manual classes should be adjusted according to their experience so as to achieve the applicable overall change in the total collectible premium per $100 payroll.

Exhibit 2 provides the applicable "rate level factors" for base rate calculations. Also included are incurred loss projections to be used to derive loss development factors for the base rate calculations.

If we can provide further information or assistance in the rate calculations, please let us know.

Sincerely,

Jeffery J. Scott, FCAS, MAAA

Jeffery W. Scholl, FCAS, MAAA

JJS/JWS/mpg

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# 1

## Background

Rates for public employer – taxing districts (PEC) are promulgated each January, to be applicable to payrolls from January 1 to December 31 of that year. Rates are applicable per $100 of payroll. Payroll reports will be mailed in December of 2009 and employers will be required to pay a portion (45%) by May 15, 2010 with the balance due by September 1, 2010. For the rate indications, we have assumed that 45% of the premiums will be collected on May 15th and the balance will be collected on September 1.

There were 10 manual rating classifications (type of political subdivision – county, village, school, etc.), each with its own base rate. Although the Public-Work Relief Employees' Compensation Fund (PWREF) is a separate Fund, rates are established for this Fund as a separate manual class, using the same calculations as are used to establish PEC base rates.

Employers with over $8,000 of expected losses for the experience period are experience rated. The experience period used for experience rating will be the oldest four of the last five calendar years (e.g., 2004 to 2007 for the 2009 rate calculations). Retrospective rating plans also apply on an optional basis for employers with at least $25,000 in annual premium.

Base rates are calculated for each class to cover the expected cost of accidents to be incurred during the coverage period. Anticipated investment income is reflected in the calculation of expected costs. The base rate calculations use the loss experience for the oldest four of the last five calendar years for each class to project pure premiums (i.e., premiums necessary to cover the losses for a specific period of time). The projected pure premiums for each class are compared to the current average class rate to determine the indicated rate changes by class. It has been a long-standing policy to limit the changes in rates by class to no more than 30%.

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## Rate Level Recommendations

Three rate level scenarios are calculated in Exhibit 1 using various interest rate assumptions, potential reductions in claim costs, and estimated average collectible rates.

The rate level indications are predicated on the following assumptions (see Exhibit 1):

- The overall annual trend in pure premiums has been approximately 0.9% per year over the period 2004-2007 and 2.4% over the period 2001-2007. We have selected the average of these trend assumptions in Exhibit 1 and the pure premiums calculated in the June 30, 2008 actuarial audit (discounted @ 5.00% interest rate) to estimate the "baseline" scenario pure premium for the rating year effective 1/1/2009. This indication does not consider possible additional savings from medical payment reduction initiatives or BWC's cost containment measures and claims management programs. The reasonable expectation-optimistic scenario relates to the low end of our range, as determined by one standard deviation around our base line trend. The reasonable expectation-conservative scenario relates to the high end of our range, as determined by one standard deviation around our base line trend.

- We have also shown rate indications using a 4.0% annual investment return assumption.

- HPP costs are projected to be 8.3% of the discounted total pure premium ($0.12 per $100 of payroll for the baseline scenario). The percentage was determined in our latest actuarial audit by relating MCO payments in the latest fiscal year to the fiscal year loss payments. The percentage is adjusted based on the current 2008 MCO contract fees for PEC employers of $22 million.

- We have included $0.01 per $100 of payroll for OSIF non-claim payments. These are payments paid out of the OSIF for investment managers fees, transitional work grants,

prepaid rehab services, attorney general fees, actuarial fees, transfers to safety grant programs, insurance premiums and other miscellaneous expenses.

- We have assumed that premium credits for the PDP and DFWP program will be offset by corresponding additional reductions in losses.

- An interest rate adjustment of 2.65% is included, which assumes an average premium collection date of July 13th. We have assumed that 45% of the premiums will be collected on May 15th and the balance will be collected on September 1, 2010.

- A loading of 1.00% is included for Safety and Hygiene;

- No margin has been included for contingencies.

- We have not included an adjustment for additional subrogation other than what is included in the historical data. The stated goal of the program is an offset of 1% of losses by subrogation.

- For all three scenarios, we have shown an estimated current average published rate of $1.85, which is based on the targeted collected rate for policy year 1/1/08.

Individual manual classification base rates should be changed using their own loss experience as well as "off-balance" factors resulting from experience rating and group rating.

# Change from the 1/1/2008 Rate Indication

In our prior rate indication study, our baseline estimated rate change at a 5.0% discount rate was for a decrease of 8.6%. The approved rate action for the 1/1/2008 policy year was no change to the rates. Based on the 2003 - 2006 trend of -1.1% shown in last years study, the expected change for this year would be -9.6%. Our current recommendation of -14.0% is lower than the expected, which reflects and additional improvement of 4.4 percentage points during the past 12 months.

| | | |
|---|---|---|
| (1) | Baseline Indicated Change at 1/1/2008<br>(From 1/1/08 rate indication at 5.0% discount rate) | -8.6% |
| (2) | Actual Rate Change<br>(Approved Rate Change for Policy Year 1/1/2008) | 0.0% |
| (3) | Pure Premium Trend (recent years) 2003-2006<br>(From 1/1/08 rate indication at 5.0% discount rate) | -1.1% |
| (4) | Expected Baseline Change at 1/1/2009<br>[{ 1 + (1) }/ { 1 +(2) }*{ 1 + (3) }] - 1 | -9.6% |
| (5) | Current Base Line Change<br>(From 7/1/08 rate indication at 5.0% discount rate) | -14.0% |
| (6) | Additional Improvement during past year<br>[ (5) - (6) ] | -4.4% |

## Terrorism Risk Insurance Act of 2002

Due to the passage of the Terrorism Risk Insurance Act and its subsequent renewal through December 31, 2014, the Ohio BWC is subject to assessment for terrorist related losses in other locations and lines of business, provided certain thresholds are met. The assessment is limited to a maximum of 3% of annual premium per year.

Consistent with our prior analyses, we have not included a provision for this act in the rate level indication. Due to Ohio's unique status as an exclusive fund, the ability to collect premium after the fact is a possibility that can be considered in any decision to collect for potential terrorism connected losses.

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## Caveats

The costs of claims to be covered by the 1/1/09 rates will be the result of many future contingent events. There is considerable uncertainty in the projection of these costs. We have analyzed past cost experience and applied informed judgment to project loss costs into the future. The actual required rate level can vary significantly from our forecasts for many reasons. Some reasons for possible variance from our projections are:

- unanticipated changes in wage and benefit levels
- legislative changes
- unforeseen changes in claims consciousness
- unforeseen changes in claims settlement practices, cost containment programs and fraud investigation efforts
- unexpected judicial interpretation of statutes
- changes in medical inflation rates or utilization of medical services
- unexpected investment results, and
- other unforeseen economic conditions.

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## Loss Cost Trends and Projections of Future Costs

Losses are separately projected for medical and indemnity in the base rate calculations. The projections use "rate level factors" to adjust the losses from the experience period to the level anticipated for the rate period. We have used data from our actuarial evaluation as of 6/30/08 to calculate the historical trends in medical and indemnity costs. The results of these calculations are shown in Exhibit 1. Our projection of the pure premium anticipated for the rating period is derived separately for medical and indemnity, and the total projected pure premium is the sum of the projections for medical and indemnity.

The annual pure premiums for medical and indemnity losses display annual trends from 2004-2007 of approximately 2.5% and -1.7%, respectively. The overall trend in loss costs for medical and indemnity combined is approximately 0.9%. This implies that combined medical and indemnity costs have been rising faster than payrolls have been increasing. The selected (discounted) pure premium for the rating year effective 1/1/09 to 12/31/09 is $1.41, using an extrapolation based on the "fitted" historical pure premiums as projected in the June 30, 2008 actuarial audit.

The rate level factors required to adjust the experience period losses to levels anticipated for the rate period are shown in Exhibit 2. We have also shown in Exhibit 2 the relevant incurred loss projections, which will be used to calculate "loss development factors" for the base rate calculations. These losses are calculated on a discounted basis (@ 5.00% interest), with an evaluation date as of December 31 of the accident year. For example, for accident year 2007, we have calculated the present value of losses as of December 31, 2007.

Various statistics are provided in Exhibit 4 and in the graphs in Exhibits 6 through 9.

The frequency trend of claims per employee is decreasing steadily from 2004 to 2007 at an annual rate of approximately 0.6%. For the period from 1999 to 2008, the annual frequency

of claims has declined at an annual rate of approximately 2.2%. As shown in Exhibit 8, the countrywide change in frequency from 1999 to 2007 has been –4.7%.

The exhibit below shows the loss time claim counts by accident year.

**Ohio Bureau of Workers' Compensation**
**Claims with Comp. Awarded**
**Public Employers-Taxing Districts**

| Accident Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1994** | 1,549 | 2,915 | 4,362 | 4,945 | 5,297 | 5,553 | 5,753 | 5,858 | 5,914 | 5,954 | 5,982 | 5,999 | 6,011 | 6,015 |
| **1995** | 1,450 | 2,909 | 3,978 | 4,518 | 4,804 | 5,011 | 5,198 | 5,293 | 5,355 | 5,391 | 5,421 | 5,433 | 5,440 | |
| **1996** | 1,438 | 2,735 | 3,882 | 4,431 | 4,742 | 4,947 | 5,128 | 5,223 | 5,280 | 5,317 | 5,347 | 5,361 | | |
| **1997** | 1,451 | 2,730 | 3,784 | 4,278 | 4,591 | 4,801 | 4,998 | 5,127 | 5,181 | 5,204 | 5,235 | | | |
| **1998** | 1,599 | 2,887 | 3,917 | 4,392 | 4,666 | 4,919 | 5,093 | 5,200 | 5,267 | 5,297 | | | | |
| **1999** | 1,848 | 3,290 | 4,519 | 4,975 | 5,287 | 5,510 | 5,720 | 5,827 | 5,895 | | | | | |
| **2000** | 1,911 | 3,381 | 4,598 | 5,060 | 5,346 | 5,593 | 5,804 | 5,910 | | | | | | |
| **2001** | 1,349 | 2,841 | 3,969 | 4,395 | 4,692 | 4,950 | 5,172 | | | | | | | |
| **2002** | 1,439 | 3,000 | 4,162 | 4,656 | 4,955 | 5,207 | | | | | | | | |
| **2003** | 1,278 | 2,734 | 3,847 | 4,352 | 4,661 | | | | | | | | | |
| **2004** | 1,126 | 2,573 | 3,819 | 4,283 | | | | | | | | | | |
| **2005** | 1,092 | 2,603 | 3,714 | | | | | | | | | | | |
| **2006** | 869 | 2,342 | | | | | | | | | | | | |
| **2007** | 846 | | | | | | | | | | | | | |

We have also shown a comparison to countrywide of the average medical severity in Exhibit 6 and in the table below.

| Medical Severity Trend | | |
|---|---|---|
| Years | Countrywide | BWC |
| 1996 - 2007 | 8.7% | 10.8% |
| 1997 - 2007 | 8.6% | 10.1% |
| 1998 - 2007 | 8.5% | 9.7% |
| 1999 - 2007 | 8.3% | 9.1% |
| 2000 - 2007 | 8.1% | 9.0% |
| 2001 - 2007 | 7.6% | 8.6% |
| 2002 - 2007 | 7.7% | 6.7% |
| 2003 - 2007 | 7.8% | 6.5% |
| 2004 - 2007 | 8.0% | 6.4% |
| 2005 - 2007 | 7.2% | 6.6% |
| | | |
| 1999 - 2008 | | 9.2% |

The average medical severity trend over the baseline period from 1999 to 2008 is 9.2%.

The comparison of average indemnity severity trend to countrywide is shown in Exhibit 7 and the table below.

| Indemnity Severity Trend | | |
|---|---|---|
| Years | Countrywide | BWC |
| 1996 - 2007 | 5.7% | 5.9% |
| 1997 - 2007 | 5.4% | 5.5% |
| 1998 - 2007 | 4.8% | 5.1% |
| 1999 - 2007 | 4.2% | 4.8% |
| 2000 - 2007 | 3.6% | 4.5% |
| 2001 - 2007 | 3.1% | 4.6% |
| 2002 - 2007 | 3.2% | 3.4% |
| 2003 - 2007 | 3.3% | 2.4% |
| 2004 - 2007 | 3.9% | 2.0% |
| 2005 - 2007 | 4.3% | 4.1% |
| | | |
| 1999 - 2008 | | 4.8% |

The average indemnity severity trend for the baseline period of 1999 to 2008 is 4.8%.

The table below shows the trend in average medical and indemnity severity for BWC.

| Medical and Indemnity Severity Trend | |
|---|---|
| Years | BWC |
| 1996 - 2007 | 8.7% |
| 1997 - 2007 | 8.2% |
| 1998 - 2007 | 7.8% |
| 1999 - 2007 | 7.4% |
| 2000 - 2007 | 7.1% |
| 2001 - 2007 | 7.0% |
| 2002 - 2007 | 5.4% |
| 2003 - 2007 | 4.9% |
| 2004 - 2007 | 4.7% |
| 2005 - 2007 | 5.7% |
| | |
| 1999 - 2008 | 7.4% |

The average medical and indemnity severity trend for the baseline period of 1999 to 2008 is 7.4%.

The payroll trend over the base line period is 2.9%. The actual reported payrolls and various trends are shown below.

| Calendar Year | Payroll |
|---|---|
| 1996 | $12,949 |
| 1997 | $13,597 |
| 1998 | $14,465 |
| 1999 | $15,089 |
| 2000 | $15,809 |
| 2001 | $16,717 |
| 2002 | $17,601 |
| 2003 | $18,004 |
| 2004 | $18,524 |
| 2005 | $18,569 |
| 2006 | $18,924 |
| 2007 | $19,418 |
| 2008* | $20,001 |

*Calendar year 2008 payroll is estimated.

| Payroll Trend | |
|---|---|
| Years | BWC |
| 1996 - 2007 | 3.8% |
| 1997 - 2007 | 3.6% |
| 1998 - 2007 | 3.3% |
| 1999 - 2007 | 3.1% |
| 2000 - 2007 | 2.7% |
| 2001 - 2007 | 2.3% |
| 2002 - 2007 | 1.9% |
| 2003 - 2007 | 1.7% |
| 2004 - 2007 | 1.6% |
| 2005 - 2007 | 2.3% |
| | |
| | |
| 1999 - 2008 | 2.9% |

The pure premium trend combines the frequency trend, the severity trend and the payroll trend. When using the base line trends as shown below, the indicated pure premium trend is +2.0%.

Pure Premium Trend = (Frequency Trend) X (Severity Trend) / (Payroll Trend) – 1

Pure Premium Trend = (1-0.022) X (1+0.074) / (1+.029) – 1

Pure Premium Trend = +2.0%

The resulting trend from our baseline pure premium analysis in Exhibit 1 is 1.7% (a weighted average of 0.9% and 2.4%). The main differences in the two analyses are:

- The baseline analysis in Exhibit 1 uses the pure premium, which incorporates all the individual components into one number, whereas the above analysis estimates the trends individually;
- The baseline analysis uses an average of different periods of time, whereas the above analysis uses one period of time.

The calculation of the separate trends allows one to identify the individual trend assumptions that underlie the total pure premium change.

# Ohio Bureau of Workers' Compensation
## Public Employers-Taxing Districts
## Rate Level Analysis at 1/1/09

| | Calendar Accident Year | Discounted Medical Pure Premium | Discounted Indemnity Pure Premium | Discounted Total Pure Premium |
|---|---|---|---|---|
| | 1998 | $0.53 | $0.47 | $1.00 |
| | 1999 | 0.68 | 0.53 | 1.21 |
| | 2000 | 0.72 | 0.57 | 1.29 |
| | 2001 | 0.63 | 0.47 | 1.10 |
| | 2002 | 0.78 | 0.52 | 1.30 |
| | 2003 | 0.78 | 0.53 | 1.31 |
| | 2004 | 0.79 | 0.53 | 1.32 |
| | 2005 | 0.84 | 0.51 | 1.35 |
| | 2006 | 0.78 | 0.48 | 1.26 |
| | 2007 | 0.88 | 0.51 | 1.40 |
| (estimated) | 2008 | 0.87 | 0.49 | 1.36 |
| (estimated) | 2009 | 0.90 | 0.48 | 1.37 |
| Fitted Annual % Change 2001 - 2007 | | 3.9% | 0.1% | 2.4% |
| Fitted Annual % Change 2004 - 2007 | | 2.5% | -1.7% | 0.9% |
| **1. Projected 1/1/2009 to 12/31/2009 using 01-07** | | **$0.93** | **$0.51** | **$1.45** |
| **2. Projected 1/1/2009 to 12/31/2009 using 04-07** | | **$0.88** | **$0.48** | **$1.37** |
| **3. Selected** | | **$0.91** | **$0.50** | **$1.41** |

| **Scenarios:** | **Baseline** | **Reasonable Expectation-Optimistic** | **Reasonable Expectation-Conservative** |
|---|---|---|---|
| Assumed Investment Return % | **5.00%** | **5.00%** | **5.00%** |
| Deviation from baseline due to claim cost and/or frequency changes | 0.00% | -6.73% | 6.73% |
| PDP/DFWP Adjustment | | | |
| Selected Discounted Pure Premium | $1.41 | $1.31 | $1.50 |
| Estimated Pure Premium for HPP Costs (Exhibit 5, Row 8) | $0.12 | $0.11 | $0.13 |
| Estimated Pure Premium for Non-Claim Payment Costs | $0.01 | $0.01 | $0.01 |
| Indicated Rate Change Prior to Loadings for 1/1/09 Rates: | -17.0% | -22.6% | -11.5% |
| Additional Loadings: | | | |
| S&H | 1.00% | 1.00% | 1.00% |
| Contingency Margin | 0.00% | 0.00% | 0.00% |
| Interest to 7/13/2009 (Notes 4 & 5) | 2.65% | 2.65% | 2.65% |
| Pure Premium including HPP Costs | $1.59 | $1.48 | $1.70 |
| Estimated Current Avg Rate, Inc. Retro Adj. | $1.85 | $1.85 | $1.85 |
| Indicated Rate Change | -14.0% | -19.7% | -8.2% |

**Notes:**

1. Pure premiums are based on the 6/30/08 actuarial evaluation Exhibit 4, page 12 (discounted @ 5.00% unless otherwise noted).
2. Pure premiums shown were rounded to 2 decimal places. Actual calculations were performed using unrounded numbers.
3. Assumptions in various scenarios based on discussions with BWC.
4. Assumes 45% of premiums will be collected on 5/15/2010 and 55% on 9/1/2010.
5. The evaluation date for the calendar - accident years is December 31 of each accident year.

Exhibit 2 - 5.00%

**Ohio Bureau of Workers' Compensation**
**Public Employers-Taxing Districts**
**Rate Level Factors and Incurred Loss**
**Projections at 1/1/09**

| Accident Year | 1/1/2009 Rate Level Factors Medical | Comp. | 1/1/2009 Incurred Loss Projections (000's) Including Catastrophe Losses And Excluding Loss Limitations Medical | Comp. | Totals |
|---|---|---|---|---|---|
| 2003 | 1.133 | 0.914 | $140,677 | $95,001 | $235,678 |
| 2004 | 1.116 | 0.908 | 146,906 | 98,393 | 245,299 |
| 2005 | 1.058 | 0.947 | 155,277 | 94,562 | 249,839 |
| 2006 | 1.139 | 1.006 | 147,064 | 90,719 | 237,783 |
| 2007 | 1.002 | 0.942 | 171,444 | 99,442 | 270,886 |

**Note:**
**Evaluation date of losses is December 31 of each accident year.**

Exhibit 3 - 5.00%

**Ohio Bureau of Workers' Compensation**
**Public Employers-Taxing Districts**
**Number of Lost-Time Claims, Frequency, and Ratio**
**Of Medical To Total Losses @ 12/31/07**

| (1) Accident Year | (2) Discounted Medical Incurred @ 12/xx | (3) Discounted Indemnity Incurred @ 12/xx | (4) Total Incurred @ 12/xx | (5) Ultimate Number of Claims | (6) Frequency per Employee | (7) SAWW | (8) Number of Employees (Millions) | (9) Discounted Medical % Total | (10) Payroll (Millions) |
|---|---|---|---|---|---|---|---|---|---|
| 1998 | 77,257 | 67,428 | 144,685 | 5,381 | 0.0112 | 577.29 | 0.482 | 53.4% | 14,465 |
| 1999 | 102,330 | 80,486 | 182,816 | 6,019 | 0.0124 | 596.41 | 0.487 | 56.0% | 15,089 |
| 2000 | 113,086 | 90,163 | 203,249 | 6,101 | 0.0124 | 618.35 | 0.492 | 55.6% | 15,809 |
| 2001 | 105,248 | 79,082 | 184,329 | 5,499 | 0.0108 | 631.45 | 0.509 | 57.1% | 16,717 |
| 2002 | 137,314 | 92,307 | 229,622 | 5,728 | 0.0110 | 652.48 | 0.519 | 59.8% | 17,601 |
| 2003 | 140,677 | 95,001 | 235,678 | 5,447 | 0.0106 | 670.77 | 0.516 | 59.7% | 18,004 |
| 2004 | 146,906 | 98,393 | 245,299 | 5,307 | 0.0103 | 694.68 | 0.513 | 59.9% | 18,524 |
| 2005 | 155,277 | 94,562 | 249,839 | 5,136 | 0.0102 | 710.72 | 0.502 | 62.2% | 18,569 |
| 2006 | 147,064 | 90,719 | 237,783 | 5,033 | 0.0102 | 735.05 | 0.495 | 61.8% | 18,924 |
| 2007 | 171,444 | 99,442 | 270,886 | 4,987 | 0.0102 | 761.22 | 0.491 | 63.3% | 19,418 |

**Notes :**

Columns (2), (3), And (4) Are In Thousands.
Col(6) = Col(5) / Col(8) / 1,000,000
Col(8) = Payroll / [Col(7) X 52].
All Data Is From Actuarial Evaluation as of June 30, 2008.

Exhibit 4 - 5.00%

## Ohio Bureau of Workers' Compensation
## Public Employers-Taxing Districts
## Rate Level Analysis at 1/1/09

| Calendar Accident Year | | (1) Discounted Total Pure Premium | (2) Projected Total Pure Premium | (3) Estimated Squared Error |
|---|---|---|---|---|
| 1998 | | $1.00 | $1.12 | 0.0139 |
| 1999 | | $1.21 | $1.15 | 0.0043 |
| 2000 | | $1.29 | $1.17 | 0.0125 |
| 2001 | | $1.10 | $1.20 | 0.0101 |
| 2002 | | $1.30 | $1.23 | 0.0051 |
| 2003 | | $1.31 | $1.26 | 0.0021 |
| 2004 | | $1.32 | $1.29 | 0.0009 |
| 2005 | | $1.35 | $1.33 | 0.0004 |
| 2006 | | $1.26 | $1.36 | 0.0106 |
| 2007 | | $1.40 | $1.39 | 0.0000 |
| 2008 | (estimated) | $1.36 | $1.43 | 0.0045 |
| 2009 | (estimated) | $1.37 | $1.46 | 0.0078 |
| | | | | 0.0721 |
| | | | **Standard Deviation** | **0.0949** |
| | | | **Baseline Pure Premium** | **$1.41** |
| | | | **Standard Deviation as a % of Pure Premium** | **6.73%** |

**Notes:**

Column 1 From Exhibit 1 - 5.00% column (3).

Column 2 Based on a regression of column (1).

Column (3) [Column (1) - Column (2)] ^ 2

Exhibit 5

# Ohio Bureau of Workers' Compensation

## HPP
## Rate Level Analysis at 1/1/09
**(Dollars in millions)**

| | | |
|---|---|---|
| | **Fiscal Year 2008 MCO Payments:** | |
| **(A)** | **PA** | **$137.2** |
| **(B)** | **PEC** | **$23.9** |
| **(C)** | **PES** | **$6.1** |
| **(D)** | **SI** | **$1.0** |
| **(1)** | **Fiscal Year 2008 MCO Payments - all employer groups** | **$168.3** |
| **(2)** | **Fiscal Year-End 2008 SIF Benefit Payments - all employer groups** | **$1,881.6** |
| **(3)** | **Paid HPP to Paid Benefit Ratio [(1) / (2)]** | **8.9%** |
| **(4)** | **Selected ratio** | **8.9%** |
| **(5)** | **Estimated PEC MCO Fee** | **$22.3** |
| **(6)** | **Selected adjusted ratio due to lower MCO fees** | **8.3%** |
| **(7)** | **Baseline Pure Premium** | **$1.41** |
| **(8)** | **MCO Fee** | **$0.12** |

**Notes by Row:**

**(1)** **From BWC Actuarial Department.**
**(2)** **From JPMT reports.**
**(3)** **Row (1) / Row (2)**
**(5)** **From BWC Actuarial Department.**
**(6)** **Row (4) x Row (5) / Row (A)**
**(7)** **Exhibit 1 - 5.00%, column (3) projected 2009 pure premium.**
**(8)** **Row (6) x Row (7)**

# Ohio Bureau of Workers' Compensation
## Public Employers-Taxing Districts
## Rate Level Analysis at 1/1/09

| | Calendar Accident Year | Discounted Medical Pure Premium | Discounted Indemnity Pure Premium | Discounted Total Pure Premium |
|---|---|---|---|---|
| | 1998 | $0.58 | $0.50 | $1.08 |
| | 1999 | 0.75 | 0.58 | 1.33 |
| | 2000 | 0.78 | 0.62 | 1.40 |
| | 2001 | 0.68 | 0.51 | 1.19 |
| | 2002 | 0.86 | 0.57 | 1.43 |
| | 2003 | 0.86 | 0.57 | 1.43 |
| | 2004 | 0.88 | 0.58 | 1.45 |
| | 2005 | 0.93 | 0.55 | 1.48 |
| | 2006 | 0.86 | 0.52 | 1.39 |
| | 2007 | 0.98 | 0.56 | 1.54 |
| (estimated) | 2008 | 0.98 | 0.53 | 1.51 |
| (estimated) | 2009 | 1.00 | 0.52 | 1.52 |
| Fitted Annual % Change 2001 - 2007 | | 4.3% | 0.3% | 2.7% |
| Fitted Annual % Change 2004 - 2007 | | 2.8% | -1.6% | 1.1% |
| **1. Projected 1/1/2009 to 12/31/2009 using 01-07** | | **$1.04** | **$0.56** | **$1.61** |
| **2. Projected 1/1/2009 to 12/31/2009 using 04-07** | | **$0.99** | **$0.53** | **$1.52** |
| **3. Selected** | | **$1.01** | **$0.54** | **$1.57** |

| **Scenarios:** | **Baseline** | **Reasonable Expectation-Optimistic** | **Reasonable Expectation-Conservative** |
|---|---|---|---|
| Assumed Investment Return % | **4.00%** | **4.00%** | **4.00%** |
| Deviation from baseline due to claim cost and/or frequency changes | 0.00% | -6.75% | 6.75% |
| PDP/DFWP Adjustment | | | |
| Selected Discounted Pure Premium | $1.57 | $1.46 | $1.67 |
| Estimated Pure Premium for HPP Costs (Exhibit 5, Row 6 x Column (3)) | $0.13 | $0.12 | $0.14 |
| Estimated Pure Premium for Non-Claim Payment Costs | $0.01 | $0.01 | $0.01 |
| Indicated Rate Change Prior to Loadings for 1/1/09 Rates: | -7.9% | -14.1% | -1.7% |
| Additional Loadings: | | | |
| S&H | 1.00% | 1.00% | 1.00% |
| Contingency Margin | 0.00% | 0.00% | 0.00% |
| Interest to 7/13/2009 (Notes 4 & 5) | 2.12% | 2.12% | 2.12% |
| Pure Premium including HPP Costs | $1.76 | $1.64 | $1.88 |
| Estimated Current Avg Rate, Inc. Retro Adj. | $1.85 | $1.85 | $1.85 |
| Indicated Rate Change | -5.0% | -11.4% | 1.4% |

**Notes:**

1. Pure premiums are based on the 6/30/08 actuarial evaluation Exhibit 4, page 12 (discounted @ 4.00% unless otherwise noted).
2. Pure premiums shown were rounded to 2 decimal places. Actual calculations were performed using unrounded numbers.
3. Assumptions in various scenarios based on discussions with BWC.
4. Assumes 45% of premiums will be collected on 5/15/2010 and 55% on 9/1/2010.
5. The evaluation date for the calendar - accident years is December 31 of each accident year.

Exhibit 2 - 4.00%

**Ohio Bureau of Workers' Compensation**
**Public Employers-Taxing Districts**
**Rate Level Factors and Incurred Loss**
**Projections at 1/1/09**

| Accident Year | 1/1/2009 Rate Level Factors Medical | Comp. | 1/1/2009 Incurred Loss Projections (000's) Including Catastrophe Losses And Excluding Loss Limitations Medical | Comp. | Totals |
|---|---|---|---|---|---|
| 2003 | 1.150 | 0.924 | $154,910 | $102,324 | $257,234 |
| 2004 | 1.129 | 0.910 | 162,406 | 106,864 | 269,270 |
| 2005 | 1.067 | 0.953 | 172,189 | 102,334 | 274,522 |
| 2006 | 1.144 | 1.007 | 163,659 | 98,648 | 262,307 |
| 2007 | 1.007 | 0.943 | 190,821 | 108,141 | 298,962 |

**Note:**
**Evaluation date of losses is December 31 of each accident year.**

Exhibit 3 - 4.00%

**Ohio Bureau of Workers' Compensation**
**Public Employers-Taxing Districts**
**Number of Lost-Time Claims, Frequency, and Ratio**
**Of Medical To Total Losses @ 12/31/07**

| (1) Accident Year | (2) Discounted Medical Incurred @ 12/xx | (3) Discounted Indemnity Incurred @ 12/xx | (4) Total Incurred @ 12/xx | (5) Ultimate Number of Claims | (6) Frequency per Employee | (7) SAWW | (8) Number of Employees (Millions) | (9) Discounted Medical % Total | (10) Payroll (Millions) |
|---|---|---|---|---|---|---|---|---|---|
| 1998 | 83,829 | 72,931 | 156,759 | 5,381 | 0.0112 | 577.29 | 0.482 | 53.5% | 14,465 |
| 1999 | 113,642 | 87,355 | 200,996 | 6,019 | 0.0124 | 596.41 | 0.487 | 56.5% | 15,089 |
| 2000 | 124,095 | 97,462 | 221,557 | 6,101 | 0.0124 | 618.35 | 0.492 | 56.0% | 15,809 |
| 2001 | 114,207 | 85,171 | 199,378 | 5,499 | 0.0108 | 631.45 | 0.509 | 57.3% | 16,717 |
| 2002 | 151,443 | 99,515 | 250,958 | 5,728 | 0.0110 | 652.48 | 0.519 | 60.3% | 17,601 |
| 2003 | 154,910 | 102,324 | 257,234 | 5,447 | 0.0106 | 670.77 | 0.516 | 60.2% | 18,004 |
| 2004 | 162,406 | 106,864 | 269,270 | 5,307 | 0.0103 | 694.68 | 0.513 | 60.3% | 18,524 |
| 2005 | 172,189 | 102,334 | 274,522 | 5,136 | 0.0102 | 710.72 | 0.502 | 62.7% | 18,569 |
| 2006 | 163,659 | 98,648 | 262,307 | 5,033 | 0.0102 | 735.05 | 0.495 | 62.4% | 18,924 |
| 2007 | 190,821 | 108,141 | 298,962 | 4,987 | 0.0102 | 761.22 | 0.491 | 63.8% | 19,418 |

**Notes :**

Columns (2), (3), And (4) Are In Thousands.
Col(6) = Col(5) / Col(8) / 1,000,000
Col(8) = Payroll / [Col(7) X 52].
All Data Is From Actuarial Evaluation as of June 30, 2008.

Exhibit 4 - 4.00%

## Ohio Bureau of Workers' Compensation
## Public Employers-Taxing Districts
## Rate Level Analysis at 1/1/09

| Calendar Accident Year | | (1) Discounted Total Pure Premium | (2) Projected Total Pure Premium | (3) Estimated Squared Error |
|---|---|---|---|---|
| 1998 | | $1.08 | $1.21 | 0.0171 |
| 1999 | | $1.33 | $1.25 | 0.0073 |
| 2000 | | $1.40 | $1.28 | 0.0149 |
| 2001 | | $1.19 | $1.31 | 0.0145 |
| 2002 | | $1.43 | $1.35 | 0.0061 |
| 2003 | | $1.43 | $1.38 | 0.0021 |
| 2004 | | $1.45 | $1.42 | 0.0011 |
| 2005 | | $1.48 | $1.46 | 0.0004 |
| 2006 | | $1.39 | $1.50 | 0.0121 |
| 2007 | | $1.54 | $1.54 | 0.0000 |
| 2008 | (estimated) | $1.51 | $1.58 | 0.0050 |
| 2009 | (estimated) | $1.52 | $1.62 | 0.0088 |
| | | | | 0.0894 |
| | | | **Standard Deviation** | **0.1057** |
| | | | **Baseline Pure Premium** | **$1.57** |
| | | | **Standard Deviation as a % of Pure Premium** | **6.75%** |

**Notes:**

Column 1 From Exhibit 1 - 4.00% column (3).

Column 2 Based on a regression of column (1).

Column (3) [Column (1) - Column (2)] ^ 2

Exhibit 6

# AVERAGE MEDICAL SEVERITY
## Countrywide and BWC (PEC)

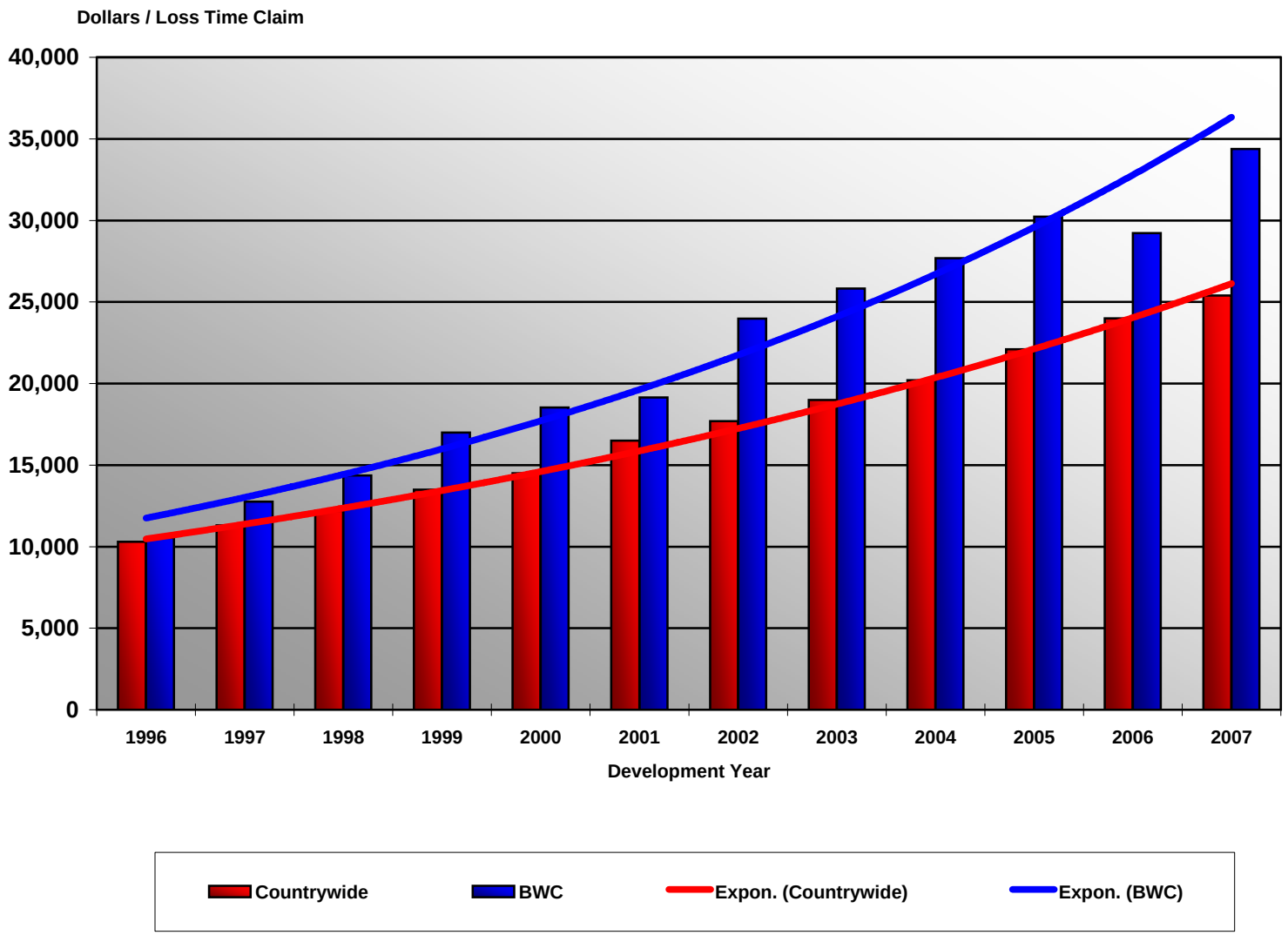


Exhibit 7

# AVERAGE INDEMNITY SEVERITY
## Countrywide and BWC (PEC)

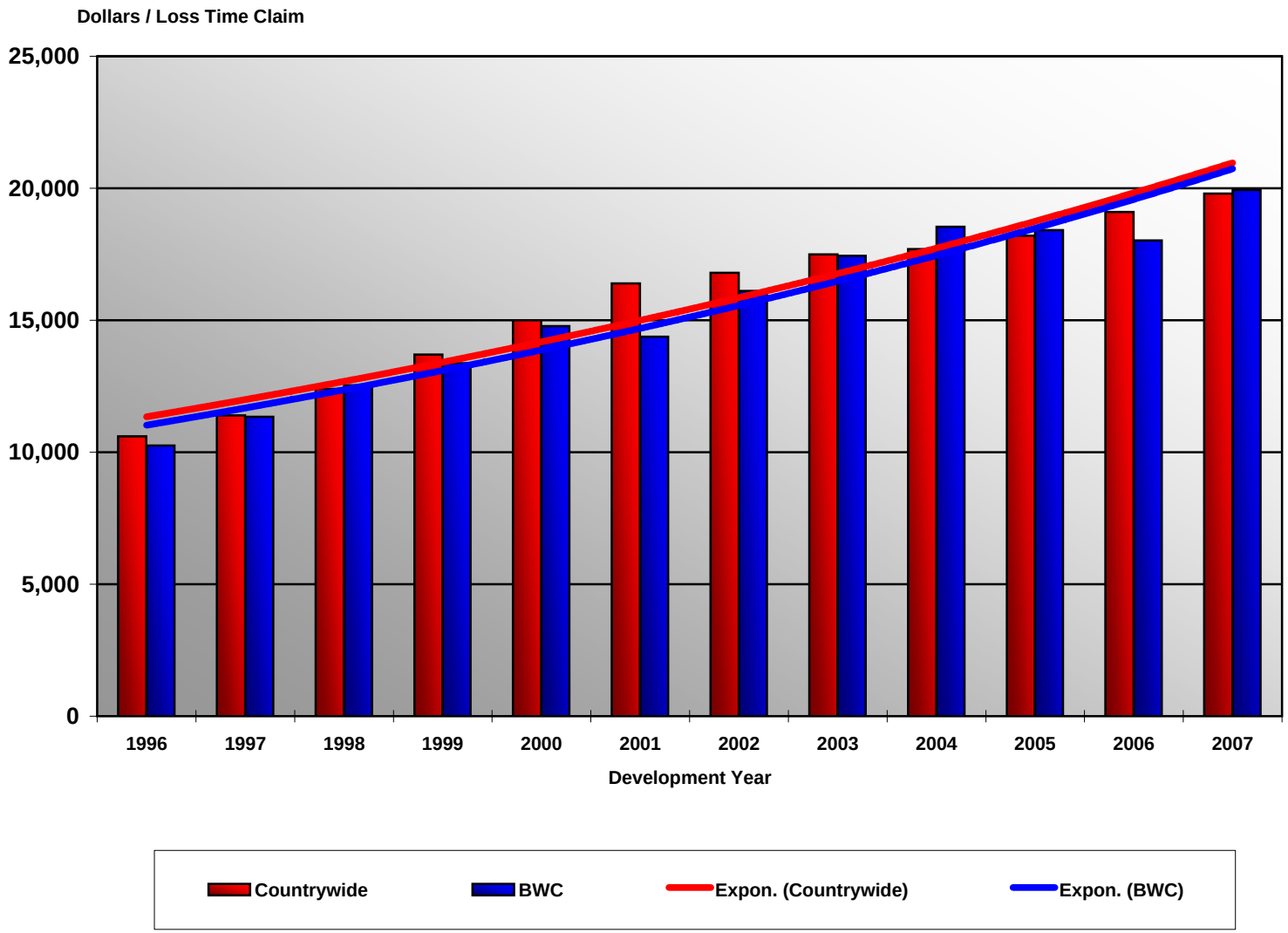


Exhibit 8

# LOSS TIME CLAIM FREQUENCY CHANGE
## Countrywide and BWC (PEC)

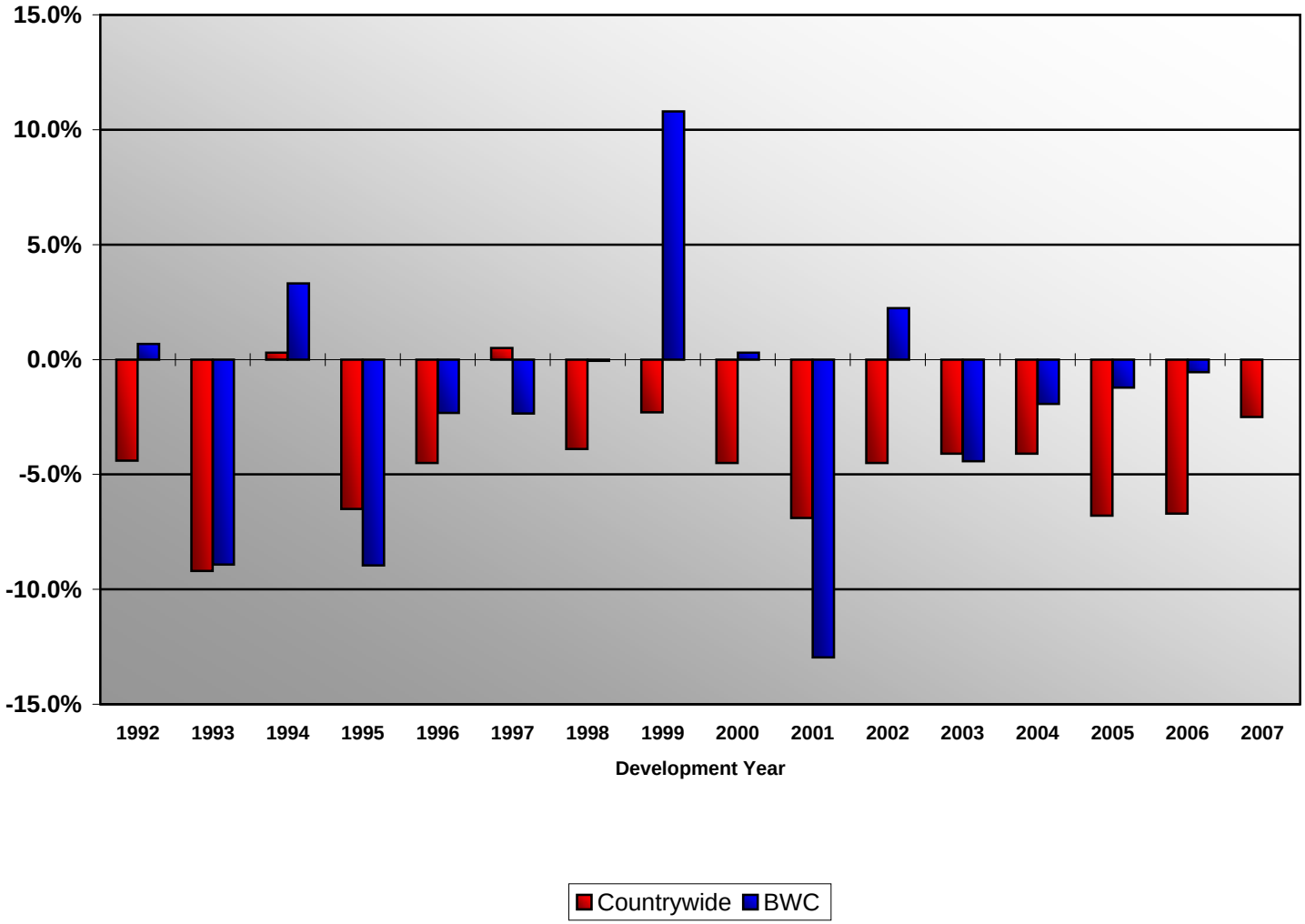
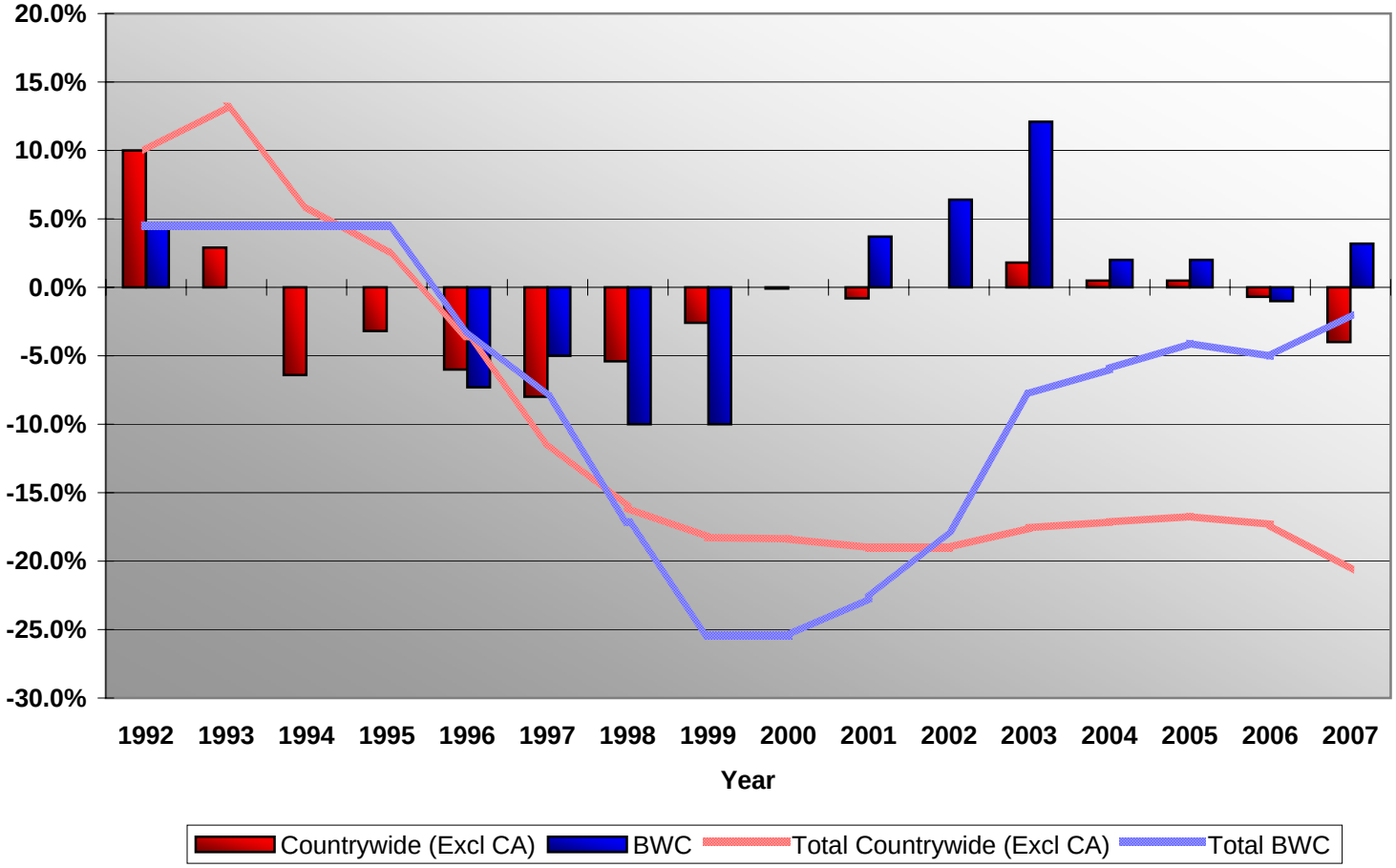


Exhibit 9

# RATE/LOSS COST CHANGE
## Countrywide (excl CA 2000-07) and BWC (PEC)



OLIVER WYMAN

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1 614 227 5509

Oliver Wyman Actuarial Consulting, Inc.

MMC MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN

## Total Wages (in thousands of dollars)
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Ohio | Adams | Allen | Ashland | Ashtabula | Athens | Auglaize | Belmont | Brown | Butler |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **$52,518,813** | **$50,389** | **$474,052** | **$147,945** | **$246,436** | **$157,185** | **$172,148** | **$167,243** | **$56,188** | **$1,407,857** |
| **Private Sector** | **45,848,433** | **38,579** | **415,502** | **124,182** | **203,316** | **76,338** | **153,769** | **136,141** | **36,477** | **1,212,497** |
| Agriculture, forestry, fishing and hunting | 87,315 | 105 | 524 | 731 | 229 | 155 | 392 | (c) | (c) | 272 |
| Mining | 155,899 | (c) | 858 | 353 | 779 | (c) | (c) | 18,384 | (c) | 2,856 |
| Utilities | 353,790 | (c) | 2,315 | (c) | 4,009 | (c) | (c) | 1,534 | (c) | 5,165 |
| Construction | 2,674,367 | 2,610 | 24,218 | 7,880 | 9,109 | 2,902 | 10,465 | 11,260 | 5,019 | 115,985 |
| Manufacturing | 10,497,876 | 9,078 | 124,993 | 36,654 | 86,345 | 3,906 | 81,140 | 14,752 | 7,725 | 254,454 |
| Wholesale trade | 3,430,150 | 2,387 | 26,445 | 9,013 | 7,045 | 2,577 | 9,946 | 5,634 | 1,474 | 159,277 |
| Retail trade | 3,614,334 | 5,492 | 39,376 | 10,957 | 22,006 | 15,622 | 11,163 | 20,381 | 4,735 | 92,234 |
| Transportation and warehousing | 1,840,216 | 274 | 14,296 | 4,571 | 4,441 | 1,127 | 3,766 | 4,702 | 1,055 | 66,371 |
| Information | 1,147,344 | 334 | 6,507 | 2,646 | 3,393 | 2,097 | 2,103 | 4,119 | 614 | 11,097 |
| Finance and insurance | 3,213,155 | 1,523 | 11,841 | 2,863 | 5,165 | 3,816 | 2,857 | 6,903 | 2,156 | 127,866 |
| Real estate and rental and leasing | 592,306 | 328 | 2,299 | 567 | 1,128 | 1,347 | 1,275 | 1,367 | 244 | 12,715 |
| Professional and technical services | 3,785,535 | 445 | 9,848 | 9,545 | 3,743 | 4,204 | 2,107 | 3,542 | 915 | 59,529 |
| Management of companies and enterprises | 2,099,757 | (c) | 4,800 | (c) | 1,049 | (c) | (c) | (c) | (c) | 20,041 |
| Administrative and waste services | 2,116,841 | 114 | 16,387 | 2,007 | 4,711 | 1,154 | 3,049 | 3,429 | 1,478 | 63,544 |
| Educational services | 668,562 | (c) | 6,650 | (c) | 1,009 | 90 | 471 | 749 | 426 | 6,390 |
| Health care and social assistance | 6,759,250 | 4,404 | 100,801 | 18,162 | 38,135 | 25,250 | 15,227 | 26,805 | 6,844 | 146,918 |
| Arts, entertainment, and recreation | 432,880 | 74 | 1,280 | 463 | 608 | 473 | 609 | 474 | 152 | 3,530 |
| Accommodation and food services | 1,349,570 | 1,329 | 12,831 | 3,755 | 6,752 | 5,499 | 2,958 | 6,828 | 1,926 | 39,409 |
| Other services, except public administration | 1,029,285 | 382 | 9,232 | 4,643 | 3,659 | 2,466 | 4,640 | 3,089 | 943 | 24,844 |
| **State & Local Government** | **6,670,380** | **11,810** | **58,550** | **23,763** | **43,120** | **80,847** | **18,379** | **31,102** | **19,711** | **195,360** |
| State Government | 1,438,997 | 382 | 15,599 | 5,349 | 2,598 | (c) | 1,044 | 7,139 | 1,994 | (c) |
| Local Government | 5,231,383 | 11,428 | 42,951 | 18,414 | 40,522 | (c) | 17,335 | 23,962 | 17,717 | (c) |
| **Federal Government (d)** | **1,195,047** | **689** | **5,532** | **1,132** | **2,643** | **3,295** | **1,317** | **2,126** | **924** | **7,842** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes total wages of workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; total wages of government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.2-BN

## Total Wages (in thousands of dollars)
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Carroll | Champaign | Clark | Clermont | Clinton | Columbiana | Coshocton | Crawford | Cuyahoga | Darke |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **$43,361** | **$92,825** | **$418,799** | **$531,422** | **$261,078** | **$236,384** | **$98,873** | **$112,705** | **$8,315,404** | **$141,307** |
| **Private Sector** | **35,192** | **76,641** | **360,907** | **462,182** | **231,062** | **200,453** | **86,661** | **96,687** | **7,372,999** | **123,913** |
| Agriculture, forestry, fishing and hunting | 83 | 1,118 | 3,400 | (c) | 77 | 651 | 591 | 893 | 1,567 | 4,429 |
| Mining | (c) | (c) | (c) | (c) | (c) | 2,690 | 1,884 | (c) | 4,203 | (c) |
| Utilities | (c) | (c) | 1,931 | 9,313 | (c) | 1,728 | 7,121 | (c) | 27,635 | (c) |
| Construction | 1,734 | 2,157 | 13,873 | 35,181 | 2,845 | 10,867 | 2,766 | 3,546 | 325,157 | 10,849 |
| Manufacturing | 13,554 | 43,112 | 95,760 | 98,951 | 52,376 | 61,868 | 37,571 | 44,561 | 1,182,408 | 44,741 |
| Wholesale trade | 1,810 | 2,966 | 19,481 | 37,914 | 9,418 | 11,218 | 1,494 | 5,496 | 662,407 | 6,767 |
| Retail trade | 4,524 | 6,520 | 34,580 | 58,763 | 9,192 | 21,594 | 5,706 | 6,665 | 433,095 | 10,756 |
| Transportation and warehousing | 2,680 | 1,083 | 22,206 | 13,628 | 121,340 | 9,887 | 2,632 | 1,399 | 239,291 | 9,808 |
| Information | 398 | 957 | 3,451 | 21,229 | 2,179 | 1,433 | 774 | 671 | 220,833 | 879 |
| Finance and insurance | 520 | 2,111 | 20,290 | 49,037 | 5,804 | 7,558 | 2,116 | 5,808 | 878,090 | 5,996 |
| Real estate and rental and leasing | 219 | 518 | 3,206 | 7,494 | 928 | 1,277 | 321 | 607 | 133,547 | 676 |
| Professional and technical services | 646 | 2,106 | 8,633 | 29,646 | 1,928 | 6,196 | 1,254 | 3,968 | 796,454 | 4,925 |
| Management of companies and enterprises | (c) | (c) | (c) | 4,072 | 2,665 | 3,242 | 350 | (c) | 298,933 | (c) |
| Administrative and waste services | 366 | 1,329 | 6,901 | 15,081 | 2,993 | 8,951 | 4,433 | 1,060 | 348,625 | 4,058 |
| Educational services | 16 | (c) | 7,303 | 2,125 | (c) | 1,068 | 115 | (c) | 166,993 | 191 |
| Health care and social assistance | 4,351 | 6,020 | 75,927 | 47,100 | 10,800 | 37,493 | 14,190 | 15,773 | 1,175,885 | 13,521 |
| Arts, entertainment, and recreation | 177 | 270 | 1,709 | 3,014 | 314 | 696 | 423 | 317 | 123,427 | 543 |
| Accommodation and food services | 1,185 | 2,925 | 12,975 | 17,986 | 3,308 | 6,437 | 1,555 | 2,457 | 190,752 | 2,431 |
| Other services, except public administration | 921 | 1,042 | 15,928 | 11,413 | 2,337 | 5,599 | 1,368 | 1,645 | 163,696 | 2,705 |
| **State & Local Government** | **8,169** | **16,185** | **57,893** | **69,241** | **30,016** | **35,931** | **12,212** | **16,018** | **942,405** | **17,394** |
| State Government | 385 | 546 | 2,452 | 4,677 | 1,227 | 3,067 | 409 | 1,034 | 60,604 | 363 |
| Local Government | 7,784 | 15,638 | 55,440 | 64,564 | 28,789 | 32,864 | 11,803 | 14,983 | 881,801 | 17,030 |
| **Federal Government (d)** | **451** | **767** | **8,410** | **3,775** | **2,646** | **7,918** | **1,108** | **859** | **266,167** | **1,203** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes total wages of workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; total wages of government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.2-BN

## Total Wages (in thousands of dollars)
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Defiance | Delaware | Erie | Fairfield | Fayette | Franklin | Fulton | Gallia | Geauga | Greene |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **$157,448** | **$724,091** | **$326,216** | **$309,422** | **$83,114** | **$7,305,279** | **$174,486** | **$114,715** | **$325,890** | **$510,140** |
| **Private Sector** | **140,590** | **649,304** | **277,439** | **234,620** | **70,156** | **6,235,690** | **153,505** | **98,742** | **290,789** | **415,684** |
| Agriculture, forestry, fishing and hunting | 250 | 1,716 | 1,174 | 337 | 155 | 2,652 | 1,417 | 268 | 1,842 | 566 |
| Mining | (c) | 1,293 | (c) | 60 | (c) | 3,476 | (c) | 1,160 | (c) | (c) |
| Utilities | (c) | 1,835 | (c) | 2,601 | (c) | 45,140 | (c) | 12,374 | (c) | (c) |
| Construction | 5,082 | 37,783 | 10,992 | 22,429 | 2,938 | 347,358 | 10,642 | 14,671 | 28,741 | 20,106 |
| Manufacturing | 74,664 | 74,354 | 104,189 | 60,458 | 26,154 | 575,758 | 89,232 | 6,389 | 106,343 | 45,942 |
| Wholesale trade | 5,049 | 32,535 | 17,690 | 9,817 | 5,899 | 421,369 | 7,395 | 1,783 | 27,352 | 19,802 |
| Retail trade | 12,475 | 60,357 | 27,471 | 31,539 | 11,394 | 550,389 | 8,652 | 7,903 | 25,385 | 52,315 |
| Transportation and warehousing | 3,395 | 17,186 | 7,839 | 3,993 | (c) | 431,330 | 2,311 | 2,502 | 5,406 | 5,748 |
| Information | 2,520 | 16,998 | 2,948 | 2,300 | 509 | 237,269 | 1,173 | 748 | 1,582 | 15,105 |
| Finance and insurance | 6,656 | 71,752 | 6,779 | 7,544 | 3,319 | 690,132 | 4,853 | 4,962 | 8,438 | 22,087 |
| Real estate and rental and leasing | 467 | 8,100 | 1,663 | 3,295 | 545 | 119,817 | 721 | 434 | 1,718 | 3,363 |
| Professional and technical services | 2,913 | 191,099 | 8,393 | 11,810 | 885 | 704,691 | 1,881 | 903 | 14,044 | 117,108 |
| Management of companies and enterprises | 1,035 | 20,823 | 612 | 1,477 | (c) | 396,818 | 1,111 | (c) | 5,790 | 3,218 |
| Administrative and waste services | 1,898 | 15,604 | 6,054 | 18,480 | 898 | 377,589 | 3,098 | 1,394 | 12,783 | 18,662 |
| Educational services | 1,713 | 11,776 | (c) | 1,505 | (c) | 85,710 | (c) | (c) | 4,018 | 14,683 |
| Health care and social assistance | 15,593 | 39,468 | 45,032 | 34,270 | 5,399 | 795,656 | 14,662 | 35,668 | 30,025 | 46,938 |
| Arts, entertainment, and recreation | 357 | 9,455 | 12,670 | 1,320 | 133 | 55,006 | 1,060 | 92 | 2,079 | 2,443 |
| Accommodation and food services | 3,419 | 26,084 | 15,871 | 12,815 | 2,861 | 224,960 | 2,266 | 2,420 | 6,706 | 19,638 |
| Other services, except public administration | 2,740 | 11,085 | 4,020 | 8,570 | 1,106 | 170,569 | 2,008 | 2,086 | 7,035 | 6,157 |
| **State & Local Government** | **16,858** | **74,787** | **48,777** | **74,801** | **12,958** | **1,069,589** | **20,981** | **15,973** | **35,101** | **94,456** |
| State Government | 980 | 12,406 | 9,309 | 7,206 | 441 | 515,468 | 1,696 | (c) | 1,779 | 34,981 |
| Local Government | 15,877 | 62,382 | 39,468 | 67,595 | 12,517 | 554,121 | 19,284 | (c) | 33,323 | 59,475 |
| **Federal Government (d)** | **1,152** | **3,025** | **2,607** | **3,014** | **615** | **182,849** | **966** | **877** | **1,358** | **231,512** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes total wages of workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; total wages of government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.2-BN

## Total Wages (in thousands of dollars)
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Guernsey | Hamilton | Hancock | Hardin | Harrison | Henry | Highland | Hocking | Holmes | Huron |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **$109,362** | **$6,133,037** | **$395,838** | **$65,742** | **$25,273** | **$105,914** | **$88,808** | **$48,696** | **$128,108** | **$200,739** |
| **Private Sector** | **89,302** | **5,623,916** | **365,563** | **54,772** | **20,443** | **90,002** | **67,106** | **33,244** | **115,246** | **178,851** |
| Agriculture, forestry, fishing and hunting | (c) | 883 | (c) | 658 | 134 | 542 | 107 | 158 | 1,272 | 2,793 |
| Mining | 1,407 | 2,521 | (c) | (c) | 4,211 | (c) | 688 | 1,543 | 1,744 | (c) |
| Utilities | 614 | 23,761 | 1,607 | 763 | 72 | (c) | 844 | (c) | (c) | (c) |
| Construction | 5,335 | 321,178 | 10,247 | 1,027 | 793 | 6,910 | 2,846 | 2,431 | 14,971 | 22,381 |
| Manufacturing | 30,079 | 855,929 | 131,768 | 23,790 | 6,303 | 48,143 | 24,843 | 11,021 | 51,312 | 79,749 |
| Wholesale trade | 3,225 | 459,761 | 13,706 | 3,273 | 1,275 | 3,081 | 1,614 | 980 | 4,418 | 8,006 |
| Retail trade | 9,617 | 310,090 | 33,964 | 4,645 | 1,353 | 6,087 | 8,605 | 4,913 | 10,873 | 11,224 |
| Transportation and warehousing | 3,748 | 120,121 | 18,190 | 849 | 684 | 7,582 | 2,546 | 898 | 5,266 | 9,147 |
| Information | 858 | 148,380 | 3,877 | 587 | 182 | 1,238 | 3,280 | 319 | 651 | 2,284 |
| Finance and insurance | 2,291 | 382,721 | 8,395 | 1,698 | 334 | 2,684 | 5,541 | 1,774 | 3,156 | 4,352 |
| Real estate and rental and leasing | 668 | 85,231 | 3,762 | 325 | (c) | 415 | 403 | 439 | 172 | 810 |
| Professional and technical services | 3,061 | 633,061 | 12,481 | 679 | 346 | 698 | 985 | 603 | 2,946 | 4,483 |
| Management of companies and enterprises | (c) | 630,942 | 8,630 | (c) | (c) | (c) | (c) | (c) | 471 | 927 |
| Administrative and waste services | 1,982 | 301,110 | 19,490 | 328 | 426 | 807 | 835 | 728 | 6,279 | 2,800 |
| Educational services | 183 | 77,709 | 8,301 | (c) | (c) | 140 | (c) | 243 | (c) | (c) |
| Health care and social assistance | 18,900 | 903,186 | 42,297 | 5,558 | 3,077 | 8,232 | 9,160 | 3,581 | 6,464 | 20,163 |
| Arts, entertainment, and recreation | 190 | 102,245 | 811 | 171 | 138 | (c) | 261 | 172 | 201 | 428 |
| Accommodation and food services | 4,326 | 136,758 | 9,970 | 2,517 | 328 | 1,220 | 2,350 | 2,527 | 3,191 | 4,331 |
| Other services, except public administration | 1,757 | 128,327 | 5,985 | 902 | 277 | 1,917 | 1,097 | 879 | 1,265 | 3,410 |
| **State & Local Government** | **20,060** | **509,121** | **30,275** | **10,969** | **4,830** | **15,913** | **21,702** | **15,451** | **12,862** | **21,888** |
| State Government | 6,819 | (c) | 2,131 | 300 | 243 | 218 | 862 | 3,805 | 289 | 823 |
| Local Government | 13,241 | (c) | 28,143 | 10,670 | 4,587 | 15,694 | 20,840 | 11,646 | 12,573 | 21,064 |
| **Federal Government (d)** | **1,130** | **150,802** | **2,122** | **801** | **614** | **1,408** | **1,241** | **465** | **654** | **1,359** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes total wages of workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; total wages of government employees stationed outside Ohio.

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## Total Wages (in thousands of dollars)
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Jackson | Jefferson | Knox | Lake | Lawrence | Licking | Logan | Lorain | Lucas | Madison |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **$79,988** | **$206,151** | **$169,480** | **$942,656** | **$84,877** | **$458,489** | **$213,244** | **$893,097** | **$2,164,763** | **$121,785** |
| **Private Sector** | **67,268** | **180,087** | **145,322** | **825,480** | **60,796** | **386,363** | **193,279** | **758,432** | **1,882,111** | **91,807** |
| Agriculture, forestry, fishing and hunting | 522 | (c) | 351 | 5,181 | (c) | 2,200 | 423 | 5,309 | 2,065 | 577 |
| Mining | 2,054 | 1,465 | 1,141 | 3,526 | (c) | 1,132 | (c) | (c) | 991 | (c) |
| Utilities | (c) | 15,431 | 530 | 32,018 | 1,163 | 2,555 | 450 | (c) | 10,292 | (c) |
| Construction | 3,904 | 13,354 | 8,148 | 48,537 | 5,794 | 35,364 | 6,763 | 53,250 | 135,495 | 4,424 |
| Manufacturing | 30,599 | 46,892 | 67,771 | 290,211 | 6,343 | 91,211 | 112,597 | 280,542 | 375,248 | 36,840 |
| Wholesale trade | 1,737 | 5,868 | 3,527 | 61,582 | 1,693 | 15,645 | 4,326 | 35,154 | 114,765 | 4,778 |
| Retail trade | 7,356 | 16,288 | 11,223 | 87,963 | 11,308 | 47,219 | 9,820 | 75,036 | 149,778 | 11,610 |
| Transportation and warehousing | 918 | 3,454 | 1,150 | 9,244 | 7,450 | 19,810 | 13,900 | 17,097 | 85,495 | 9,331 |
| Information | 651 | 5,221 | 3,453 | 8,429 | 1,087 | 5,149 | 838 | 12,521 | 36,780 | 428 |
| Finance and insurance | 3,613 | 3,466 | 3,077 | 24,600 | 2,574 | 22,837 | 2,951 | 21,036 | 92,516 | 1,311 |
| Real estate and rental and leasing | 353 | 2,079 | 839 | 8,259 | 261 | 4,899 | 1,241 | 6,034 | 20,357 | 474 |
| Professional and technical services | 800 | 4,326 | 2,682 | 46,044 | 2,500 | 22,438 | 5,739 | 31,155 | 134,863 | 6,328 |
| Management of companies and enterprises | (c) | (c) | 714 | 18,271 | 1,689 | 15,718 | (c) | 8,367 | 92,523 | 214 |
| Administrative and waste services | 2,179 | 12,795 | 2,661 | 31,590 | 2,642 | 16,115 | 10,016 | 29,283 | 90,080 | 3,353 |
| Educational services | 105 | 4,270 | 12,184 | 8,856 | 159 | 10,948 | 125 | 19,611 | 27,103 | 263 |
| Health care and social assistance | 7,892 | 35,055 | 18,903 | 89,316 | 11,477 | 47,727 | 16,661 | 115,160 | 396,715 | 8,101 |
| Arts, entertainment, and recreation | 113 | 1,047 | 427 | 4,977 | 84 | 2,640 | 470 | 3,995 | 13,833 | 136 |
| Accommodation and food services | 2,509 | 4,807 | 4,021 | 25,906 | 2,909 | 14,686 | 3,149 | 22,199 | 56,059 | 2,748 |
| Other services, except public administration | 1,045 | 3,195 | 2,520 | 20,971 | 1,624 | 8,070 | 3,066 | 16,496 | 47,152 | 835 |
| **State & Local Government** | **12,720** | **26,063** | **24,157** | **117,176** | **24,081** | **72,126** | **19,964** | **134,665** | **282,652** | **29,978** |
| State Government | 1,748 | 943 | (c) | 1,408 | 2,237 | 10,712 | 563 | 12,301 | 85,706 | 14,765 |
| Local Government | 10,971 | 25,120 | (c) | 115,768 | 21,844 | 61,414 | 19,402 | 122,364 | 196,945 | 15,213 |
| **Federal Government (d)** | **800** | **2,646** | **1,180** | **6,269** | **1,487** | **6,872** | **1,711** | **26,856** | **27,529** | **930** |

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## Total Wages (in thousands of dollars)
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Mahoning | Marion | Medina | Meigs | Mercer | Miami | Monroe | Montgomery | Morgan | Morrow |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **$833,123** | **$235,476** | **$531,886** | **$21,688** | **$141,420** | **$363,822** | **$24,490** | **$2,856,764** | **$15,940** | **$41,856** |
| **Private Sector** | **707,892** | **181,389** | **466,601** | **14,484** | **121,230** | **320,081** | **19,458** | **2,553,386** | **10,968** | **29,222** |
| Agriculture, forestry, fishing and hunting | 1,102 | 662 | 1,076 | 142 | 2,288 | 612 | 33 | 4,148 | (c) | 183 |
| Mining | 3,545 | (c) | (c) | 998 | (c) | 714 | 289 | (c) | (c) | 420 |
| Utilities | 6,425 | (c) | (c) | 301 | (c) | (c) | 363 | (c) | (c) | (c) |
| Construction | 64,836 | 8,552 | 40,478 | 2,682 | 9,293 | 20,146 | 1,494 | 114,978 | 1,272 | 3,552 |
| Manufacturing | 106,607 | 74,301 | 112,117 | 820 | 53,453 | 121,678 | 7,480 | 660,461 | 3,549 | 13,012 |
| Wholesale trade | 50,298 | 7,426 | 39,725 | 673 | 7,827 | 25,777 | 690 | 128,701 | 842 | 781 |
| Retail trade | 80,222 | 14,586 | 48,747 | 2,854 | 12,500 | 27,042 | 1,355 | 155,097 | 1,260 | 3,726 |
| Transportation and warehousing | 36,743 | 5,790 | 28,088 | 172 | 10,385 | 13,053 | 802 | 80,694 | (c) | 403 |
| Information | 20,213 | (c) | 5,182 | (c) | 1,265 | 2,640 | (c) | 125,129 | 216 | 377 |
| Finance and insurance | 33,715 | 4,774 | 13,562 | 1,095 | 5,547 | 9,723 | 3,183 | 147,205 | 652 | 689 |
| Real estate and rental and leasing | 8,598 | 3,188 | 4,553 | 30 | 879 | 3,020 | 19 | 32,802 | 5 | 171 |
| Professional and technical services | 35,896 | 4,307 | 26,974 | 325 | 2,493 | 9,971 | 239 | 194,804 | 183 | 492 |
| Management of companies and enterprises | 9,630 | 1,703 | 45,013 | (c) | 406 | (c) | (c) | 102,672 | (c) | (c) |
| Administrative and waste services | 46,244 | 7,000 | 20,796 | 406 | 1,557 | 14,195 | 1,787 | 109,640 | 116 | 355 |
| Educational services | 7,428 | 431 | 1,608 | (c) | 191 | 988 | 135 | 58,329 | (c) | (c) |
| Health care and social assistance | 147,708 | 26,509 | 52,011 | 2,609 | 6,805 | 41,555 | 767 | 482,314 | 1,868 | 3,039 |
| Arts, entertainment, and recreation | 2,528 | 320 | 3,124 | (c) | 521 | 1,042 | 43 | 11,852 | 15 | 138 |
| Accommodation and food services | 25,785 | 4,912 | 13,141 | 915 | 2,660 | 9,713 | 195 | 70,466 | 330 | 888 |
| Other services, except public administration | 20,369 | 3,573 | 8,741 | 291 | 2,958 | 5,845 | 385 | 55,716 | 183 | 294 |
| **State & Local Government** | **125,232** | **54,087** | **65,284** | **7,205** | **20,190** | **43,741** | **5,032** | **303,378** | **4,972** | **12,634** |
| State Government | 32,680 | 13,535 | 1,498 | 337 | 1,176 | 1,189 | 259 | 22,698 | 458 | 730 |
| Local Government | 92,551 | 40,551 | 63,787 | 6,867 | 19,014 | 42,552 | 4,773 | 280,680 | 4,514 | 11,904 |
| **Federal Government (d)** | **18,970** | **1,787** | **4,385** | **721** | **1,040** | **2,424** | **516** | **65,366** | **364** | **417** |

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## Total Wages (in thousands of dollars)
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Muskingum | Noble | Ottawa | Paulding | Perry | Pickaway | Pike | Portage | Preble | Putnam |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **$269,209** | **$23,545** | **$118,569** | **$37,769** | **$47,245** | **$122,079** | **$83,291** | **$489,491** | **$87,222** | **$83,025** |
| **Private Sector** | **229,099** | **14,984** | **99,126** | **29,190** | **34,069** | **82,624** | **69,629** | **363,777** | **73,710** | **70,576** |
| Agriculture, forestry, fishing and hunting | 111 | 41 | 840 | 3,591 | 102 | 820 | 291 | 832 | 767 | 709 |
| Mining | 5,284 | 1,551 | 2,611 | (c) | 2,779 | (c) | (c) | 4,463 | (c) | (c) |
| Utilities | 2,991 | 95 | (c) | (c) | 589 | 929 | (c) | 309 | (c) | (c) |
| Construction | 10,589 | 682 | 4,691 | 1,590 | 6,883 | 7,850 | 6,746 | 25,352 | 3,427 | 9,432 |
| Manufacturing | 50,021 | 5,433 | 28,531 | 12,935 | 9,870 | 29,406 | 34,842 | 141,284 | 40,216 | 33,653 |
| Wholesale trade | 11,937 | 557 | 2,696 | 1,428 | 591 | 4,833 | 680 | 42,316 | 3,587 | 2,103 |
| Retail trade | 31,683 | 1,705 | 9,958 | 2,240 | 3,002 | 7,851 | 5,053 | 32,558 | 6,628 | 5,560 |
| Transportation and warehousing | 8,992 | 469 | 3,442 | 759 | 309 | 1,145 | 1,001 | 10,078 | 1,459 | 3,513 |
| Information | 3,081 | 183 | 786 | 101 | 390 | 767 | 338 | 4,517 | 333 | 761 |
| Finance and insurance | 8,676 | 689 | 3,165 | 788 | 1,452 | 2,942 | 1,619 | 6,718 | 2,334 | 3,138 |
| Real estate and rental and leasing | 1,893 | (c) | 980 | 99 | 134 | 609 | 208 | 3,879 | 346 | 215 |
| Professional and technical services | 5,581 | 286 | 1,510 | 901 | 883 | 2,822 | 2,298 | 16,915 | 1,024 | 1,071 |
| Management of companies and enterprises | 1,221 | (c) | (c) | (c) | (c) | 1,007 | (c) | 8,485 | (c) | (c) |
| Administrative and waste services | 5,688 | (c) | 1,134 | 236 | 481 | 3,540 | 4,888 | 9,007 | 2,256 | 1,386 |
| Educational services | 4,521 | (c) | (c) | (c) | (c) | (c) | (c) | 4,513 | 20 | (c) |
| Health care and social assistance | 60,319 | 2,788 | 11,266 | 2,569 | 4,756 | 13,726 | 7,337 | 26,358 | 6,823 | 5,261 |
| Arts, entertainment, and recreation | 1,221 | (c) | 2,957 | 41 | 76 | 657 | 47 | 3,930 | 181 | 244 |
| Accommodation and food services | 9,002 | 251 | 4,339 | 521 | 807 | 2,397 | 1,692 | 12,956 | 2,104 | 1,420 |
| Other services, except public administration | 6,288 | 148 | 2,147 | 694 | 680 | 1,178 | 705 | 9,306 | 1,346 | 1,411 |
| **State & Local Government** | **40,110** | **8,561** | **19,443** | **8,578** | **13,175** | **39,456** | **13,662** | **125,714** | **13,511** | **12,450** |
| State Government | 3,237 | (c) | 2,028 | 239 | 336 | 16,540 | 543 | (c) | 625 | 477 |
| Local Government | 36,873 | (c) | 17,415 | 8,339 | 12,839 | 22,915 | 13,119 | (c) | 12,886 | 11,973 |
| **Federal Government (d)** | **3,438** | **247** | **1,943** | **459** | **665** | **959** | **772** | **3,217** | **932** | **738** |

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## Total Wages (in thousands of dollars)
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Richland | Ross | Sandusky | Scioto | Seneca | Shelby | Stark | Summit | Trumbull | Tuscarawas |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **$477,800** | **$222,881** | **$217,671** | **$173,501** | **$166,628** | **$339,883** | **$1,403,694** | **$2,784,406** | **$874,323** | **$280,269** |
| **Private Sector** | **408,235** | **177,060** | **188,844** | **128,231** | **143,953** | **315,894** | **1,239,100** | **2,484,695** | **788,059** | **242,682** |
| Agriculture, forestry, fishing and hunting | 661 | 282 | 917 | 286 | 937 | 675 | 1,752 | 1,264 | 294 | 1,580 |
| Mining | (c) | 202 | (c) | 22 | 1,417 | (c) | 3,491 | 1,801 | 472 | 5,660 |
| Utilities | (c) | 2,416 | (c) | 1,515 | 1,393 | (c) | 10,135 | 23,826 | 3,052 | 899 |
| Construction | 21,088 | 8,525 | 8,953 | 9,747 | 12,832 | 17,860 | 87,286 | 137,286 | 26,949 | 14,556 |
| Manufacturing | 158,817 | 63,161 | 99,290 | 18,632 | 55,918 | 206,332 | 355,240 | 461,549 | 399,446 | 85,376 |
| Wholesale trade | 20,922 | 6,336 | 6,040 | 2,470 | 5,056 | 20,110 | 77,683 | 227,524 | 27,366 | 12,329 |
| Retail trade | 41,760 | 19,994 | 16,081 | 15,890 | 12,313 | 14,543 | 117,157 | 206,078 | 61,078 | 22,965 |
| Transportation and warehousing | 12,003 | 5,290 | 2,844 | 3,669 | 3,495 | 8,218 | 25,517 | 98,527 | 25,590 | 8,780 |
| Information | 12,878 | 4,314 | 1,497 | 1,905 | 1,885 | 2,826 | 19,549 | 51,223 | 8,269 | 3,731 |
| Finance and insurance | 10,979 | 4,963 | 4,441 | 4,658 | 7,017 | 3,268 | 66,575 | 118,196 | 18,242 | 6,420 |
| Real estate and rental and leasing | 2,449 | 1,057 | 3,341 | 1,290 | (c) | 2,071 | 11,597 | 22,935 | 7,945 | 1,870 |
| Professional and technical services | 10,020 | 2,536 | 3,134 | 4,644 | 3,079 | 4,485 | 50,584 | 202,787 | 16,787 | 12,993 |
| Management of companies and enterprises | 941 | 2,544 | 1,783 | 479 | (c) | (c) | 12,886 | 261,165 | 10,794 | 1,787 |
| Administrative and waste services | 16,070 | 6,379 | 6,089 | 2,793 | 3,051 | 8,273 | 49,048 | 117,960 | 23,008 | 8,825 |
| Educational services | 2,062 | 601 | (c) | 980 | 6,086 | 742 | 19,009 | 23,334 | 4,078 | 735 |
| Health care and social assistance | 70,382 | 38,574 | 23,016 | 51,707 | 19,371 | 16,937 | 252,628 | 401,851 | 123,914 | 36,256 |
| Arts, entertainment, and recreation | 1,650 | 516 | 965 | 180 | 498 | 281 | 6,561 | 15,239 | 2,534 | 811 |
| Accommodation and food services | 13,221 | 6,872 | 4,924 | 5,428 | 3,311 | 3,732 | 40,936 | 63,698 | 17,989 | 9,146 |
| Other services, except public administration | 9,933 | 2,495 | 3,945 | 1,936 | 2,840 | 4,386 | 31,467 | 48,452 | 10,253 | 7,964 |
| **State & Local Government** | **69,565** | **45,821** | **28,827** | **45,270** | **22,676** | **23,989** | **164,594** | **299,711** | **86,264** | **37,587** |
| State Government | 16,109 | 17,499 | 2,763 | 17,299 | 4,048 | 3,246 | 13,816 | 56,251 | 9,819 | 4,805 |
| Local Government | 53,456 | 28,322 | 26,064 | 27,971 | 18,628 | 20,743 | 150,778 | 243,460 | 76,445 | 32,783 |
| **Federal Government (d)** | **8,306** | **23,406** | **1,247** | **1,955** | **1,421** | **976** | **14,383** | **27,532** | **5,622** | **2,367** |

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## Total Wages (in thousands of dollars)
## as Covered under the Ohio and Federal Unemployment Compensation Laws
## by North American Industry Classification System (NAICS) Industrial Sector and County (a)

| NAICS Industrial Sector | Union | Van Wert | Vinton | Warren | Washington | Wayne | Williams | Wood | Wyandot | Out of state (e) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total covered under Ohio UC Law (b)** | **$446,430** | **$88,170** | **$17,346** | **$690,589** | **$205,268** | **$396,762** | **$139,713** | **$573,090** | **$71,362** | **$722,669** |
| **Private Sector** | **414,105** | **75,995** | **11,497** | **604,625** | **181,640** | **341,197** | **123,260** | **464,573** | **61,669** | **722,212** |
| Agriculture, forestry, fishing and hunting | 2,929 | 417 | 352 | 837 | 507 | 2,356 | 785 | 1,216 | 963 | 132 |
| Mining | (c) | (c) | 362 | 267 | 4,052 | 5,586 | 232 | 559 | 1,752 | 465 |
| Utilities | 1,296 | (c) | (c) | 699 | 7,515 | (c) | (c) | 3,375 | (c) | 1,062 |
| Construction | 8,845 | 2,491 | 1,215 | 28,150 | 15,611 | 27,861 | 5,706 | 38,389 | 6,041 | 48,130 |
| Manufacturing | 279,214 | 36,017 | 5,040 | 164,211 | 50,021 | 148,878 | 69,627 | 196,259 | 30,977 | 15,576 |
| Wholesale trade | 17,384 | 2,714 | 357 | 49,347 | 7,554 | 18,697 | 5,427 | 37,210 | 4,159 | 268,123 |
| Retail trade | 9,134 | 6,473 | 727 | 64,499 | 15,789 | 27,359 | 6,710 | 31,118 | 4,505 | 36,318 |
| Transportation and warehousing | 10,445 | 2,605 | 616 | 5,900 | 6,633 | 11,598 | 3,027 | 30,319 | 1,205 | 17,679 |
| Information | 1,146 | 394 | (c) | 23,191 | 1,254 | 3,541 | 969 | 5,954 | 673 | 20,543 |
| Finance and insurance | 4,277 | 6,570 | 640 | 55,830 | 6,717 | 12,593 | 2,913 | 8,435 | 1,734 | 57,249 |
| Real estate and rental and leasing | 837 | 821 | 29 | 6,467 | 2,496 | 2,778 | 360 | 6,887 | 138 | 7,222 |
| Professional and technical services | 47,799 | 1,739 | 295 | 46,682 | 9,209 | 8,983 | 1,333 | 15,232 | 603 | 114,053 |
| Management of companies and enterprises | (c) | (c) | (c) | 29,886 | 975 | 6,124 | (c) | 8,285 | (c) | 8,956 |
| Administrative and waste services | 14,658 | 861 | (c) | 38,027 | 6,999 | 6,862 | 1,930 | 10,037 | 1,921 | 81,573 |
| Educational services | 96 | 120 | (c) | 2,925 | (c) | (c) | 342 | 2,649 | (c) | 3,809 |
| Health care and social assistance | 8,000 | 10,886 | 1,090 | 39,975 | 33,707 | 33,502 | 18,144 | 41,958 | 3,105 | 13,915 |
| Arts, entertainment, and recreation | 417 | 237 | (c) | 12,906 | (c) | 1,074 | 342 | 1,284 | 83 | 2,365 |
| Accommodation and food services | 3,774 | 1,360 | 166 | 23,788 | 5,642 | 8,041 | 2,086 | 15,086 | 1,379 | 7,650 |
| Other services, except public administration | 3,323 | 1,629 | 105 | 11,038 | 2,865 | 6,721 | 1,834 | 10,322 | 1,412 | 17,392 |
| **State & Local Government** | **32,325** | **12,175** | **5,849** | **85,964** | **23,628** | **55,565** | **16,453** | **108,517** | **9,694** | **456** |
| State Government | (c) | 693 | 536 | 14,249 | 3,110 | 7,835 | 1,390 | (c) | 395 | (c) |
| Local Government | (c) | 11,482 | 5,313 | 71,716 | 20,518 | 47,729 | 15,063 | (c) | 9,299 | (c) |
| **Federal Government (d)** | **809** | **690** | **205** | **3,448** | **2,516** | **2,381** | **823** | **2,768** | **1,173** | **4** |

(a) Preliminary, based upon employers' reports for fourth quarter 2006 received in the Bureau of Labor Market Information through April 1, 2007. (b) Summed totals and subtotals for the state and each county may not equal the sum of industrial divisions because of the exclusion of those industries with fewer than three employers or because of rounding. Includes the Private Sector, State and Local Government entities, but excludes Federal Government agencies. (c) Suppressed for confidentiality. (d) Includes only Federal Government agencies. (e) Out of state includes total wages of workers employed in Ohio, who report to a base outside Ohio, and are not classifiable by county; total wages of government employees stationed outside Ohio.

Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43266 06/05/07 RS 203.2-BN

OLIVER WYMAN

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September 5, 2008

Mr. John Pedrick, FCAS, MAAA
Chief Actuarial Officer
Ohio Bureau of Workers' Compensation
30 West Spring Street
Columbus, Ohio 43266-0581

Subject:
Governmental Accounting Standards Board (GASB) Exhibits

Dear Mr. Pedrick:

Attached are the loss development summaries required by the Governmental Accounting Standards Board (GASB) and GASB changes in liabilities - Section 4 form.

## Methodology

The calculations use procedures similar to those used in prior years. Discounted and nominal unpaid liability as of June 30, 2008 as well as the latest fiscal year payments were obtained from the actuarial audit for each of the accident years 1998 through 2008, and in total. Some of the payments and reserves (e.g., HPP, ACF, SI) are not directly available by accident year. In these cases, the total reserves and fiscal year payments were allocated to accident years using formulas. These allocations are based on assumptions similar to the assumptions underlying the calculations of the reserves for these funds in the actuarial audit.

To determine the payments and discounted liability for the fiscal/accident year ending June 30, 2008 (required for GASB, Section 4, lines 2 and 5 – Exhibit 1), we assumed the fiscal year equals the first half of accident year 2008 plus one-half of accident year 2007.

If we can be of further assistance, please let us know.

Sincerely,

Jeffery J. Scott, FCAS, MAAA

Jeffery W. Scholl, FCAS, MAAA

**Exhibit 1**

# Ohio Bureau of Workers' Compensation

## GASB Changes in Liabilities - Section 4 as of June 30, 2008

**(Dollars in Millions)**

| | | 2008 | 2007 |
|---|---|---|---|
| **1.** | Unpaid Loss, LAE, Surety Losses at beginning of the year: Total SIF + Ancillary Funds | $19,271 | $18,927 |
| **2.** | Incurred for Current Fiscal Accident Year | $2,219 | $2,327 |
| **3.** | Incurred from Prior Fiscal Accident Years | $449 | $422 |
| **4.** | Total Incurred | $2,668 | $2,749 |
| **5.** | Paid for Current Fiscal Accident Year | $415 | $423 |
| **6.** | Paid for Prior Fiscal Accident Years | $2,088 | $1,983 |
| **7.** | Total Paid | $2,503 | $2,397 |
| **8.** | Unpaid Loss, LAE, Surety Losses at the end of the year: | | |
| **8A.** | Total SIF + Ancillary Funds | $19,435 | $19,271 |
| **8B.** | Total SIF + Ancillary Funds, Excluding HPP | $18,765 | $18,550 |

**Notes by line:**

**Fiscal Year 2008:**

1. **From 6/30/2008 actuarial audit – Exhibit 2, page 1, col (2).**
2. **Based on accident year payments and reserves from 6/30/2008 actuarial audit.**
3. **(4)-(2); 2008 includes approximately $911 million in interest amortization.**
4. **(8A)-(1)+(7)**
5. **Based on accident year payments from 6/30/2008 actuarial audit.**
6. **(7)-(5)**
7. **Based on 6/30/2008 actuarial audit, appendices U.4, K, L, Q.3.**
8. **From 6/30/2008 actuarial audit – Exhibit 2, page 1, cols (1),(2)**

**Fiscal Year 2007:**

1. **From 6/30/2007 actuarial audit – Exhibit 2, page 1, col (2).**
2. **(4)-(3)**
3. **6/30/2007 actuarial audit: [Appendix R.1 totals, (col (2) + col (1) - col (4)) / col (4)]*(1)**
4. **(8A)-(1)+(7)**
5. **(7)-(6)**
6. **6/30/2007 actuarial audit: [Appendix R.1 col (2) total / col (4) total] * (1)**
7. **Based on 6/30/2007 actuarial audit, appendices U.4, K, L, Q.3.**
8. **From 6/30/2007 actuarial audit – Exhibit 2, page 1, cols (1),(2)**

Exhibit 2

# Ohio Bureau Of Workers' Compensation

## Total Fund Including ACF, SI, SIEGF, DWRF and HPP Unpaid Loss and LAE

## GASB 10 - Loss Development as of June 30, 2008

**(Dollars In Millions)**

| | Fiscal/Accident Years | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Discounted | 1,720 | 1,490 | 1,661 | 1,688 | 1,792 | 1,935 | 1,886 | 1,943 | 1,853 | 1,904 | 1,803 |
| Amount of Discount | 3,115 | 2,576 | 2,274 | 2,443 | 2,374 | 2,544 | 2,447 | 2,227 | 2,147 | 2,099 | 1,892 |
| Nominal | 4,835 | 4,067 | 3,935 | 4,131 | 4,167 | 4,479 | 4,333 | 4,170 | 4,000 | 4,003 | 3,695 |
| Payments during 1st Year | 358 | 401 | 391 | 421 | 441 | 470 | 449 | 449 | 417 | 423 | 415 |
| **Cumulative Payments as of:** | | | | | | | | | | | |
| One year later | 533 | 692 | 734 | 798 | 826 | 842 | 819 | 800 | 757 | 760 | |
| Two years later | 706 | 862 | 937 | 1,007 | 1,029 | 1,052 | 1,016 | 992 | 948 | | |
| Three years later | 820 | 996 | 1,087 | 1,157 | 1,185 | 1,206 | 1,166 | 1,140 | | | |
| Four years later | 915 | 1,103 | 1,205 | 1,281 | 1,308 | 1,334 | 1,292 | | | | |
| Five years later | 995 | 1,192 | 1,309 | 1,382 | 1,421 | 1,453 | | | | | |
| Six years later | 1,064 | 1,274 | 1,395 | 1,481 | 1,525 | | | | | | |
| Seven years later | 1,128 | 1,343 | 1,479 | 1,571 | | | | | | | |
| Eight years later | 1,184 | 1,409 | 1,560 | | | | | | | | |
| Nine years later | 1,237 | 1,475 | | | | | | | | | |
| Ten years later | 1,342 | | | | | | | | | | |
| **Liability reestimated as of:** | | | | | | | | | | | |
| One year later | 3,575 | 3,612 | 3,953 | 4,022 | 4,028 | 4,183 | 4,155 | 4,007 | 3,670 | 3,523 | |
| Two years later | 3,272 | 3,695 | 3,818 | 4,007 | 3,943 | 4,027 | 3,920 | 3,636 | 3,462 | | |
| Three years later | 3,326 | 3,534 | 3,880 | 3,856 | 3,787 | 3,827 | 3,689 | 3,480 | | | |
| Four years later | 3,071 | 3,453 | 3,680 | 3,617 | 3,639 | 3,638 | 3,393 | | | | |
| Five years later | 2,930 | 3,183 | 3,448 | 3,441 | 3,376 | 3,302 | | | | | |
| Six years later | 2,691 | 3,001 | 3,222 | 3,119 | 3,124 | | | | | | |
| Seven years later | 2,542 | 2,807 | 2,936 | 2,982 | | | | | | | |
| Eight years later | 2,352 | 2,584 | 2,854 | | | | | | | | |
| Nine years later | 2,191 | 2,495 | | | | | | | | | |
| Ten years later | 2,163 | | | | | | | | | | |

1997 and subsequent Represent Fiscal Years 7/1/xx-1 through 6/30/xx.

# Workers' Compensation Board of Directors
# Executive Summary
# Public Employer Taxing District Overall Rate Change Indication
# January 1, 2009 Policy Year

**Public Employer Taxing Districts**
Public Employer Taxing Districts include all non-state government entities in Ohio. They consist of approximately 3,800 cities, counties, townships, villages, schools and special districts.

**Time Line**
The policy year for the taxing districts' rates that are currently being calculated is January 1, 2009, through December 31, 2009. The premium will be due to the BWC in May and September 2010.

Manual classification base rates for taxing districts must be filed with the Legislative Services Commission and the Secretary of State by December 20, 2008, ten days prior to the effective date of January 1, 2009.

Letters informing the taxing districts of their premium rates will be created and mailed by January 1, 2009.

**Workers' Compensation Board of Directors Process**
The BWC Administrator recommends a premium rate level to the Workers' Compensation Board of Directors (WCB). The WCB provides its advice and consent at the September meeting. In November, the Administrator will present two rate rules for approval by the WCB using the change in premium rate level that the WCB adopted in September. These rules will contain the calculated base rates for all manual classifications assigned to taxing districts. (The Actuarial Division will calculate these base rates in October and early November.)

**Rate Level Recommendation**
The Administrator is recommending a 5.0% rate decrease for the policy year beginning January 1, 2009.

**Rate Level Changes**
The overall rate level change affects employers differently. A base or average rate is calculated for each manual classification. These rates result in an overall rate level that is the required change from last year at the aggregate level. However, some manual classifications may have rate changes that are smaller or larger than the rate change indication presented today. In addition, many employers are experience rated. For these employers, their individual loss data are used to help determine the individual rates they must pay.

**Past Rate Changes**

| Policy Year | Percent Change |
|---|---|
| 1-1-2003 | 12.1% increase |
| 1-1-2004 | 2% increase |
| 1-1-2005 | 2% increase |
| 1-1-2006 | 1% decrease |
| 1-1-2007 | 3.2% increase |
| 1-1-2008 | No change |

Ohio | Bureau of Workers' Compensation
30 W. Spring St.
Columbus, OH 43215-2256

Governor **Ted Strickland**
Administrator **Marsha P. Ryan**
ohiobwc.com
1-800-OHIOBWC

To: Chuck Bryan, Chairman, Actuarial Committee of the Board
From: John Pedrick, Chief Actuarial Officer
Date: September 15, 2008
Subject: Ohio Revised Code 4121.125(C)(6)

Per your request I am offering the following recommendation regarding the process that the Board should implement upon receiving information about pending legislation.

The Ohio Revised Code (ORC) 4121.125(C)(6) states that the Board must "have prepared by or under the supervision of an actuary an actuarial analysis of any introduced legislation expected to have a measurable financial impact on the workers' compensation system." Per the attached legal opinion from Ann Shannon, "according to RC 4121.125(C)(7), the actuary must submit this report to the Board, who must submit the report not later than 60 days after introduction of legislation to the Legislative Services Commission, the standing committees of the House and Senate with primary responsibility for workers' compensation legislation, and the Workers' Compensation Council." (WCC)

At the time that the BWC is notified of pending legislation, the BWC will convene a committee consisting of the Chief Operating Officer, the Legislative Liaison, the WCC Liaison, Legal Counsel and the Chief Actuarial Officer to consider the level of analysis and response required. The committee will determine if the proposed legislation is expected to have a "measurable financial impact" and require an actuarial analysis to be performed by a supervising actuary.

For detailed actuarial analysi, the BWC will engage our consulting actuaries currently retained on contract to provide a written analysis of the impact of the legislation. The actuarial contract contains the following language below, which enables the BWC to swiftly utilize the current consultant to conduct actuarial analysis of any legislation that involves premium rate needs; the rate making methodology or the actuarial audit of reserves.

> ***Analyze Impact of Legislation***
> *As needed, the CONSULTANT will analyze the actuarial impact of specific programs mandated by legislation, and will assist in implementation of those programs. The services required by BWC regarding such legislation will vary and may be unanticipated as well as of the highest priority. BWC recognizes the difficulty in estimating the cost of the projects, but the CONSULTANT should recognize that the time constraints for such projects might be significant.*

Use of the current consulting actuaries for these analyses is cost effective. In addition, given the 60 day requirement to produce a report, provide the information to the BWC Board of Directors and all others designated by the ORC, it is not practical to engage an additional external actuary. The Request for Proposal process is time consuming and involves using the Department of Administrative Services (DAS) which would not allow time to hire an external consultant much less complete an analysis.

A review of the DAS State Term Contract site that lists all the approved vendors for the state of Ohio does not have any actuarial firms.

Ohio | Bureau of Workers' Compensation

30 W. Spring St.
Columbus OH 43215-2256

# MEMO

ohiobwc.com
1-800-OHIOBWC

To: John Pedrick, Chief Actuarial Officer

From: Ann M. Shannon, BWC Legal Counsel

Date: September 16, 2008

---

**ACTUARIAL ANALYSIS OF LEGISLATION**

This memorandum is in response to your request for a legal analysis of the statutory requirements for an actuarial review of pending legislation. As you are aware, RC 4121.125(C)(6) states that the Board must "[h]ave prepared ***by or under the supervision of an actuary*** an actuarial analysis of any introduced legislation expected to have a measurable financial impact on the workers' compensation system." (Emphasis added.)

Because the statute only specifies that this analysis must be done under the supervision of an actuary, the Board has discretion to decide who the actuary will be. Possible choices for the Board to select include:

a) Actuary employed by BWC (e.g. Chief Actuarial Officer);
b) Actuaries retained to conduct yearly actuarial audit (e.g. Oliver Wyman);
c) Actuaries retained specifically for legislative analysis and/or other possible actuarial projects deemed necessary by the Board.

The statute goes on to enumerate the specifics that must be included in the report of the pending legislation. RC 4121.125(G) states that the analysis must be done in accordance with actuarial standards of practice of the American Academy of Actuaries and the report must include:

a) Summary of statutory changes evaluated;
b) Description of or reference to actuarial assumptions and actuarial cost method used in the report;
c) Description of participant group(s) included in the report;
d) Statement of financial impact of legislation, including resulting increase, if any, in employer premiums, in actuarial accrued liabilities, and, if an increase in actuarial accrued liabilities is predicted, the percent of premium increase that would be required to amortize the increase in those liabilities as a level percent of employer premiums over a period not to exceed 30 years;
e) Statement of whether the employer premiums paid to BWC after the proposed change is enacted are expected to be sufficient to satisfy the funding objectives established by the Board.

According to RC 4121.125(C)(7), the actuary must submit this report to the Board, who must submit the report not later than 60 days after introduction of legislation to the Legislative Services Commission, the standing committees of the House and Senate with primary responsibility for workers' compensation legislation, and the Workers' Compensation Council.

Should you have any additional questions regarding this matter, please do not hesitate to contact me.

AMS 9-16-08
h:\admin\actuarial analysis of legislation memo.doc

7 August 2002

# Ohio Bureau of Workers Compensation

## Documentation of Mortality Study

MMC ENTERPRISE RISK

Prepared by:
David Graham, ASA, MAAA

MMC Marsh & McLennan Companies

# Contents

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# Introduction

The purpose of this project was to develop group specific annuity factors for the Ohio Bureau of Workers' Compensation. The data was broken down into 6 groups:

- Permanent and Total Disability – Public Employers, Regular Accident Type
- Permanent and Total Disability – Private Employers, Regular Accident Type
- Permanent and Total Disability – OD – Lung
- Permanent and Total Disability – OD – Non-Lung
- Death – Public Employers
- Death – Private Employers

The first step in developing these annuity factors was creating the mortality tables for the data from the groups. For the death groups we needed to create remarriage factors for the individuals in the group, along with looking at U.S. Census Bureau data on family household makeup.

The final analysis only uses the actual data from three of the groups. The PTD – Private, and Death – Private studies were the only ones with enough credibility to calculate results. For the other studies we equated them to the ones with credible data. PTD – Public and OD – Non lung were set to be equivalent to PTD – Private. Death – Public was set to be equivalent to Death – Private. The OD-Lung study used the slope of the PTD – Private results, but we chose to use the level of mortality from the OD-Lung experience because it was significantly higher than the PTD-Private table.

The final data is contained in the appendices. These consist of the annuity factors calculated at 7% interest, the detail calculation of the mortality data for the studies used and the detail calculation of the remarriage factors. We have also included a Microsoft

Excel spreadsheet, which calculates the annuity factors. This spreadsheet allows the user to change the interest rate assumption used in calculating the factors.

## Methodology

The general methodology was the same for each study so it will be discussed here in a general sense. Any changes to the methods are discussed in detail in the next section.

We were supplied with two tables of data, one for PTD and the other for Death. The time period for the data was from January 1, 1981 through December 31, 2000. Before extracting the data into the exposures and deaths we needed to do some checks and make assumptions about any missing data elements.

For any missing injury date, the injury date was set equal to the effective date. If the date of birth was missing it was set to the injury date less the injury age. Do to inconsistencies in the data, there were some individual whose ages were incorrect (such as well over 100 years old on the entry date into the exposure data) and this data was ignored.

For each year a life was in the study it got one year of exposure for the age at the beginning of that year, including the year of death. The only exception to this rule is the initial year entering into the study. For the first year a fractional exposure was added to the total representing the portion of the year it was in the study. This is known as the Balducci hypothesis.

Using the exposure results and the death totals from the data we can create a mortality table using actual data for each of the groups. This is done by simply dividing the deaths by the exposure at each age. At this point in time we will need to do some smoothing on the data and look at the exposures by age to see where the most credibility in the data lies.

There were three age ranges used for blending and smoothing the data. In the first range we used the 2000 Annuity Basic Male table and multiplied it by a "mortality ratio". The "mortality ratio" is calculated according to the following formula:

$$MR = \frac{\sum_{agestart}^{agestop} deaths_x}{\sum_{agestart}^{agestop} \left( exposures_x \times q_x \right)}$$

Where deaths and exposures are pulled from the data and $q_x$ is the mortality from the 2000 Annuity Basic Male table.

The second range was smoothed using the Whittaker-Henderson graduation method. The determination of the range was based on a visual inspection of the data. The weightings for the fit portion of the formula were set equal to the exposure for the age. The smoothing factor (h) was set to the average exposure over the range and the difference polynomial was set to 2.

The final range was calculated by blending the final graduated mortality age rate to 1 over the remaining time period in the table using the same slope as the 2000 Annuity Basic Male table.

The final step was to adjust the created table to fit the actual results. This is done by calculating an actual and expected result based on the actual exposures and deaths, and the newly created mortality table. The table is then multiplied by the ratio of (actual deaths) divided by (expected deaths). This gives us our final table.

The detail of each range and the results for each study will be discussed in the summary of results.

## Summary of Results

The following is a summary of the data and specific procedures for each study. It will detail the age ranges used in the calculations and factors used to obtain the final results. Any details specific to that study will also be discussed.

### Exposures

| Study | Table | Risk Type | Accident Type | Exposures |
|---|---|---|---|---|
| 1 | PTD | Public | Regular | 59,737 |
| 2 | PTD | Private | Regular | 425,646 |
| 3 | PTD | | OD-Lung | 3,836 |
| 4 | PTD | | OD-Non Lung | 11,408 |
| 5 | Death | Public | | 9,431 |
| 6 | Death | Private | | 49,167 |

### PTD Public Employers Summary

The total exposures for this group over the designated time period were 59,737. The total deaths were 2,920.

The mortality ratio was calculated over ages 0 through 58. The mortality ratio was calculated to be 5.41 and this ratio was applied to ages 0-18. From 19 through 58 the ratio was graded from 5.41 to 4.40 which is the ratio based on the graduation results at age 59.

The Whittaker-Henderson graduation method was performed on the data between ages 59 and 92.

The final table used for this analysis was adjusted to match the PTD Private Employers table. There are few exposures in this study impacting the credibility of the results. The general shape and level of mortality in this study is similar to the PTD Private Employers.

## PTD Private Employers Summary

The total exposures for this group over the designated time period were 425,646. The total deaths were 18,398.

The mortality ratio was calculated over ages 0 through 58. The mortality ratio was calculated to be 5.44 and this ratio was applied to ages 0-18. From 19 through 58 the ratio was graded from 5.44 to 3.98 which is the ratio based on the graduation results at age 59.

The Whittaker-Henderson graduation method was performed on the data between ages 59 and 92.

The table was adjusted by a factor of 1.04 to equate the actual and expected deaths.

## OD Lung Summary

The total exposures for this group over the designated time period were 3,836. The total deaths were 336.

The mortality ratio was calculated over ages 0 through 58. The mortality ratio was calculated to be 10.28 and this ratio was applied to ages 0-18. From 19 through 58 the ratio was graded from 10.28 to 7.55 which is the ratio based on the graduation results at age 59.

The Whittaker-Henderson graduation method was performed on the data between ages 59 and 92.

The final table used for this analysis was adjusted to match the slope of the PTD Private Employers table. The PTD Private table was multiplied by a factor of 1.64 to equate the actual and expected deaths. There are few exposures in this study impacting the credibility of the results.

## OD Non Lung Summary

The total exposures for this group over the designated time period were 11,408. The total deaths were 495.

The mortality ratio was calculated over ages 0 through 58. The mortality ratio was calculated to be 4.79 and this ratio was applied to ages 0-18. From 19 through 58 the ratio was graded from 4.79 to 4.59 which is the ratio based on the graduation results at age 59.

The Whittaker-Henderson graduation method was performed on the data between ages 59 and 92.

The final table used for this analysis was adjusted to match the PTD Private Employers table. There are few exposures in this study impacting the credibility of the results. The general shape and level of mortality in this study is similar to the PTD Private Employers.

## Death Public Summary

The total exposures for this group over the designated time period were 9,431. The total deaths were 80. Due to the low number of exposures for this study we chose to equate this study with the Death – Public study.

## Death Private Summary

The total exposures for this group over the designated time period were 49,167. The total decrements were 443.

Because the product type for this study is different from the first four multiple changes needed to be made to the methodology.

The first change is adjusting the base mortality table used. Because these annuity benefits are generally paid to women we used the 2000 Basic Female Annuity table as our base table. The second change is because of how benefits cease payment. Payments will end on death of the annuitant or at remarriage of the annuitant. At remarriage the annuitant will receive a lump sum of two payments. Finally any children will receive benefits until turning 18 or 25 if in school.

In the data there was no breakout for decrements due to death or due to remarriage. For this reason we derived the remarriage decrements by subtracting out the deaths. We used a multiple of the Female 2000a table for calculating the mortality of the group. In order

to get the multiple we looked at the range of 80-100 year olds and calculated the actual to expected deaths. We chose this range because we made the assumption that there would be no remarriages in this range (or they would be minimal). The ratio was 57% of the table.

The remarriage factor initially was set to the experience decrement factors less the mortality (57% of the 2000a table). This data, the remarriage decrement factor, was then graduated using the Whittaker-Henderson method over the ages of 17-83. The graduated results were still not very smooth so we fitted a curve to the data in order to smooth out the results. The resultant equation was $y= -0.0036Ln (x-16)+ 0.0166$.

After getting the results from the curve we compared actual to expected results for the remarriage data and adjusted the results accordingly. This required a multiple of 0.86. This gives us our total decrements due to remarriage and mortality. See Appendix A – Study 6

Next we calculated the annuity factor for children based on the age of the annuitant. The data for the study was taken from the US Census Bureau. It is from Table F1 – Base Family Household data. The release date was June 29, 2001. A copy of the data, along with all of the calculations performed can be found in Appendix C. The data used was from the "Age of Own Children" section. The data was placed into groups for the age of Householder by age of child. Then each group was divided by the total number of households. This gives us the probability distribution for each age of child and for no children. Then a term certain annuity factor was calculated for each age and multiplied by the probability of having children that age. Summing these numbers up gives us the total annuity factor for children by age of householder.

Appendix B shows our detailed calculation of how we get to the total benefit factor. The first section titled "Final Tables" is simply the mortality and remarry decrement tables as calculated above.

The second section titles "Annuity Benefits" is the calculation of the annuity factors. The base annuity benefit is simply a life annuity calculation using the total decrement column for the mortality. The next column titled "Additional Remarry Benefit" is the actuarial present value of the future remarry benefits, which include the children's benefit and is listed under "Total Factor". This is the sum of the product of the Remarry decrement and the Total Factor discounted for interest.

The final section is the calculation of the factor for the children/remarry benefits. The minimum factor for this benefit is 2 because the lump sum benefit is 2. The "Children Annuity Factor" and "Probability of no Children" columns are from Appendix C. The bolded lines are straight from the appendix and the ages in between those are calculated

by linear interpolation. Remarry – No Kids is the probability of no children times 2 to represent the lump sum benefit portion. The total factor is the sum of the Children Factor and the Remarry Factor.

This gives us our final annuity factor for the Death – Private Employer study.

## Excel Spreadsheet

Included with this report is a spreadsheet to calculate the annuity factors at any interest rate that is input into the cell. The name of the file is "Final Tables.xls". The first tab in the spreadsheet is labeled "Final Annuity Tables". This is the sheet on which the user can input the data. Two fields are highlighted and these are the two that the user can change. The interest rate is the first cell and the second cell is a multiplier to change between weekly or annual factors.

There are secondary sheets in this spreadsheet that contain all of the final data from the analysis. This sheet should not be changed and flow through to the main sheet.

# Appendices

Appendix A: Table Construction

Appendix B: Remarriage Factors and Annuity Calculations

Appendix C: US Census Bureau Data and Child Annuity Factor Calculations

Appendix D: Whole Life Annuity Factors by Study

| Experience Data | | | | | Graduation Data | | | | | | Table Calculation | | | | | | | | Results | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Study | Age | Exposure | Deaths | Qx | 1996 US Annuity 2000 Basic, Male | Qx = Ux | Weights (nx) | Vx | (Vx-Ux)^2 | Z Difference ^2 | Graduated | Un Grad | Table | Ratio Grad Mort/ Table | Mortality Ratio | First Section | Second Section | Last Section | Pre Adjusted Mort Table | Predicted Deaths | Final Mort Table | Final Predicted Deaths |
| 2 | 0 | - | - | - | 0.00231 | - | - | - | - | - | | | | | 5.442 | 0.0126 | | | 0.01258 | - | **0.01304** | - |
| 2 | 1 | - | - | - | 0.00091 | - | - | - | - | - | | | | | 5.442 | 0.0049 | | | 0.00493 | - | **0.00511** | - |
| 2 | 2 | - | - | - | 0.00050 | - | - | - | - | - | | | | | 5.442 | 0.0027 | | | 0.00274 | - | **0.00284** | - |
| 2 | 3 | - | - | - | 0.00041 | - | - | - | - | - | | | | | 5.442 | 0.0022 | | | 0.00222 | - | **0.00230** | - |
| 2 | 4 | - | - | - | 0.00036 | - | - | - | - | - | | | | | 5.442 | 0.0019 | | | 0.00194 | - | **0.00201** | - |
| 2 | 5 | 0.605 | - | - | 0.00032 | - | - | - | - | - | | | | | 5.442 | 0.0018 | | | 0.00176 | 0.00 | **0.00183** | 0.00 |
| 2 | 6 | 1.000 | - | - | 0.00030 | - | - | - | - | - | | | | | 5.442 | 0.0016 | | | 0.00164 | 0.00 | **0.00170** | 0.00 |
| 2 | 7 | 1.000 | - | - | 0.00029 | - | - | - | - | - | | | | | 5.442 | 0.0016 | | | 0.00156 | 0.00 | **0.00161** | 0.00 |
| 2 | 8 | 1.841 | - | - | 0.00033 | - | - | - | - | - | | | | | 5.442 | 0.0018 | | | 0.00178 | 0.00 | **0.00185** | 0.00 |
| 2 | 9 | 2.000 | - | - | 0.00036 | - | - | - | - | - | | | | | 5.442 | 0.0020 | | | 0.00197 | 0.00 | **0.00204** | 0.00 |
| 2 | 10 | 2.000 | - | - | 0.00039 | - | - | - | - | - | | | | | 5.442 | 0.0021 | | | 0.00212 | 0.00 | **0.00220** | 0.00 |
| 2 | 11 | 2.000 | 1.0 | 0.50000 | 0.00041 | - | - | - | - | - | | | | | 5.442 | 0.0022 | | | 0.00225 | 0.00 | **0.00233** | 0.00 |
| 2 | 12 | 1.000 | - | - | 0.00043 | - | - | - | - | - | | | | | 5.442 | 0.0023 | | | 0.00235 | 0.00 | **0.00243** | 0.00 |
| 2 | 13 | 1.625 | - | - | 0.00045 | - | - | - | - | - | | | | | 5.442 | 0.0024 | | | 0.00243 | 0.00 | **0.00252** | 0.00 |
| 2 | 14 | 2.000 | - | - | 0.00046 | - | - | - | - | - | | | | | 5.442 | 0.0025 | | | 0.00249 | 0.00 | **0.00258** | 0.01 |
| 2 | 15 | 2.205 | - | - | 0.00047 | - | - | - | - | - | | | | | 5.442 | 0.0026 | | | 0.00256 | 0.01 | **0.00265** | 0.01 |
| 2 | 16 | 3.000 | - | - | 0.00048 | - | - | - | - | - | | | | | 5.442 | 0.0026 | | | 0.00262 | 0.01 | **0.00271** | 0.01 |
| 2 | 17 | 3.433 | 1.0 | 0.29130 | 0.00050 | - | - | - | - | - | | | | | 5.442 | 0.0027 | | | 0.00269 | 0.01 | **0.00279** | 0.01 |
| 2 | 18 | 3.000 | - | - | 0.00051 | - | - | - | - | - | | | | | 5.442 | 0.0028 | | | 0.00278 | 0.01 | **0.00288** | 0.01 |
| 2 | 19 | 4.241 | - | - | 0.00053 | - | - | - | - | - | | | | | 5.406 | 0.0029 | | | 0.00285 | 0.01 | **0.00296** | 0.01 |
| 2 | 20 | 5.079 | - | - | 0.00055 | - | - | - | - | - | | | | | 5.370 | 0.0029 | | | 0.00295 | 0.01 | **0.00306** | 0.02 |
| 2 | 21 | 8.838 | - | - | 0.00057 | - | - | - | - | - | | | | | 5.334 | 0.0031 | | | 0.00306 | 0.03 | **0.00317** | 0.03 |
| 2 | 22 | 16.586 | - | - | 0.00060 | - | - | - | - | - | | | | | 5.299 | 0.0032 | | | 0.00317 | 0.05 | **0.00329** | 0.05 |
| 2 | 23 | 21.699 | 2.0 | 0.09217 | 0.00063 | - | - | - | - | - | | | | | 5.263 | 0.0033 | | | 0.00330 | 0.07 | **0.00342** | 0.07 |
| 2 | 24 | 23.830 | 1.0 | 0.04196 | 0.00066 | - | - | - | - | - | | | | | 5.227 | 0.0034 | | | 0.00343 | 0.08 | **0.00356** | 0.08 |
| 2 | 25 | 28.636 | - | - | 0.00069 | - | - | - | - | - | | | | | 5.191 | 0.0036 | | | 0.00356 | 0.10 | **0.00369** | 0.11 |
| 2 | 26 | 45.099 | - | - | 0.00071 | - | - | - | - | - | | | | | 5.155 | 0.0037 | | | 0.00368 | 0.17 | **0.00382** | 0.17 |
| 2 | 27 | 78.803 | 3.0 | 0.03807 | 0.00074 | - | - | - | - | - | | | | | 5.119 | 0.0038 | | | 0.00378 | 0.30 | **0.00392** | 0.31 |
| 2 | 28 | 112.047 | 2.0 | 0.01785 | 0.00076 | - | - | - | - | - | | | | | 5.083 | 0.0039 | | | 0.00385 | 0.43 | **0.00399** | 0.45 |
| 2 | 29 | 156.540 | 4.0 | 0.02555 | 0.00077 | - | - | - | - | - | | | | | 5.048 | 0.0039 | | | 0.00391 | 0.61 | **0.00405** | 0.63 |
| 2 | 30 | 207.016 | 1.0 | 0.00483 | 0.00078 | - | - | - | - | - | | | | | 5.012 | 0.0039 | | | 0.00393 | 0.81 | **0.00407** | 0.84 |
| 2 | 31 | 283.455 | 6.0 | 0.02117 | 0.00079 | - | - | - | - | - | | | | | 4.976 | 0.0039 | | | 0.00393 | 1.11 | **0.00407** | 1.15 |
| 2 | 32 | 360.605 | 6.0 | 0.01664 | 0.00079 | - | - | - | - | - | | | | | 4.940 | 0.0039 | | | 0.00390 | 1.41 | **0.00404** | 1.46 |
| 2 | 33 | 462.792 | 11.0 | 0.02377 | 0.00079 | - | - | - | - | - | | | | | 4.904 | 0.0039 | | | 0.00387 | 1.79 | **0.00402** | 1.86 |
| 2 | 34 | 595.416 | 8.0 | 0.01344 | 0.00079 | - | - | - | - | - | | | | | 4.868 | 0.0039 | | | 0.00385 | 2.29 | **0.00399** | 2.38 |
| 2 | 35 | 760.597 | 20.0 | 0.02630 | 0.00079 | - | - | - | - | - | | | | | 4.833 | 0.0038 | | | 0.00383 | 2.91 | **0.00397** | 3.02 |
| 2 | 36 | 960.877 | 14.0 | 0.01457 | 0.00079 | - | - | - | - | - | | | | | 4.797 | 0.0038 | | | 0.00381 | 3.66 | **0.00395** | 3.79 |
| 2 | 37 | 1,192.548 | 23.0 | 0.01929 | 0.00082 | - | - | - | - | - | | | | | 4.761 | 0.0039 | | | 0.00392 | 4.67 | **0.00406** | 4.84 |
| 2 | 38 | 1,445.926 | 40.0 | 0.02766 | 0.00087 | - | - | - | - | - | | | | | 4.725 | 0.0041 | | | 0.00412 | 5.96 | **0.00427** | 6.18 |
| 2 | 39 | 1,712.145 | 34.0 | 0.01986 | 0.00095 | - | - | - | - | - | | | | | 4.689 | 0.0044 | | | 0.00443 | 7.59 | **0.00459** | 7.86 |
| 2 | 40 | 2,034.556 | 40.0 | 0.01966 | 0.00104 | - | - | - | - | - | | | | | 4.653 | 0.0049 | | | 0.00485 | 9.87 | **0.00503** | 10.24 |
| 2 | 41 | 2,386.740 | 41.0 | 0.01718 | 0.00117 | - | - | - | - | - | | | | | 4.618 | 0.0054 | | | 0.00539 | 12.87 | **0.00559** | 13.34 |
| 2 | 42 | 2,778.241 | 48.0 | 0.01728 | 0.00132 | - | - | - | - | - | | | | | 4.582 | 0.0061 | | | 0.00606 | 16.83 | **0.00628** | 17.44 |
| 2 | 43 | 3,199.340 | 47.0 | 0.01469 | 0.00151 | - | - | - | - | - | | | | | 4.546 | 0.0068 | | | 0.00684 | 21.89 | **0.00709** | 22.69 |
| 2 | 44 | 3,596.959 | 64.0 | 0.01779 | 0.00172 | - | - | - | - | - | | | | | 4.510 | 0.0077 | | | 0.00773 | 27.82 | **0.00802** | 28.84 |
| 2 | 45 | 4,070.293 | 71.0 | 0.01744 | 0.00195 | - | - | - | - | - | | | | | 4.474 | 0.0087 | | | 0.00872 | 35.48 | **0.00903** | 36.77 |
| 2 | 46 | 4,622.951 | 88.0 | 0.01904 | 0.00220 | - | - | - | - | - | | | | | 4.438 | 0.0098 | | | 0.00976 | 45.10 | **0.01011** | 46.75 |
| 2 | 47 | 5,191.764 | 109.0 | 0.02099 | 0.00246 | - | - | - | - | - | | | | | 4.402 | 0.0108 | | | 0.01084 | 56.30 | **0.01124** | 58.36 |
| 2 | 48 | 5,785.797 | 99.0 | 0.01711 | 0.00274 | - | - | - | - | - | | | | | 4.367 | 0.0120 | | | 0.01196 | 69.22 | **0.01240** | 71.76 |
| 2 | 49 | 6,377.507 | 123.0 | 0.01929 | 0.00303 | - | - | - | - | - | | | | | 4.331 | 0.0131 | | | 0.01311 | 83.63 | **0.01359** | 86.69 |
| 2 | 50 | 7,019.216 | 144.0 | 0.02052 | 0.00333 | - | - | - | - | - | | | | | 4.295 | 0.0143 | | | 0.01430 | 100.39 | **0.01483** | 104.06 |
| 2 | 51 | 7,667.145 | 144.0 | 0.01878 | 0.00365 | - | - | - | - | - | | | | | 4.259 | 0.0155 | | | 0.01553 | 119.09 | **0.01610** | 123.45 |
| 2 | 52 | 8,380.192 | 154.0 | 0.01838 | 0.00398 | - | - | - | - | - | | | | | 4.223 | 0.0168 | | | 0.01681 | 140.86 | **0.01742** | 146.01 |
| 2 | 53 | 9,149.912 | 221.0 | 0.02415 | 0.00433 | - | - | - | - | - | | | | | 4.187 | 0.0181 | | | 0.01814 | 165.94 | **0.01880** | 172.01 |
| 2 | 54 | 9,808.871 | 223.0 | 0.02271 | 0.00470 | - | - | - | - | - | | | | | 4.152 | 0.0195 | | | 0.01950 | 191.31 | **0.02022** | 198.31 |
| 2 | 55 | 10,554.107 | 215.0 | 0.02037 | 0.00508 | - | - | - | - | - | | | | | 4.116 | 0.0209 | | | 0.02090 | 220.54 | **0.02166** | 228.60 |
| 2 | 56 | 11,332.784 | 259.0 | 0.02285 | 0.00547 | - | - | - | - | - | | | | | 4.080 | 0.0223 | | | 0.02230 | 252.68 | **0.02311** | 261.93 |
| 2 | 57 | 12,049.244 | 308.0 | 0.02556 | 0.00586 | - | - | - | - | - | | | | | 4.044 | 0.0237 | | | 0.02370 | 285.59 | **0.02457** | 296.04 |
| 2 | 58 | 12,618.066 | 300.0 | 0.02378 | 0.00627 | - | - | - | - | - | | | | | 4.008 | 0.0251 | | | 0.02511 | 316.86 | **0.02603** | 328.45 |
| 2 | 59 | 13,263.816 | 338.0 | 0.02548 | 0.00669 | 0.02548 | 13,263.816 | 0.026591 | 0.016 | 0.000004 | 0.02659 | 0.02548 | 0.00669 | 3.972 | Not Used | | 0.0266 | | 0.02659 | 352.70 | **0.02756** | 365.60 |
| 2 | 60 | 13,823.540 | 397.0 | 0.02872 | 0.00717 | 0.02872 | 13,823.540 | 0.028478 | 0.001 | 0.000002 | 0.02848 | 0.02872 | 0.00717 | 3.972 | Not Used | | 0.0285 | | 0.02848 | 393.66 | **0.02952** | 408.06 |
| 2 | 61 | 14,280.104 | 424.0 | 0.02969 | 0.00771 | 0.02969 | 14,280.104 | 0.029936 | 0.001 | 0.000004 | 0.02994 | 0.02969 | 0.00771 | 3.881 | Not Used | | 0.0299 | | 0.02994 | 427.49 | **0.03103** | 443.12 |
| 2 | 62 | 14,733.942 | 477.0 | 0.03237 | 0.00835 | 0.03237 | 14,733.942 | 0.031843 | 0.004 | 0.000001 | 0.03184 | 0.03237 | 0.00835 | 3.814 | Not Used | | 0.0318 | | 0.03184 | 469.15 | **0.03301** | 486.31 |
| 2 | 63 | 15,064.836 | 488.0 | 0.03239 | 0.00909 | 0.03239 | 15,064.836 | 0.032740 | 0.002 | 0.000002 | 0.03274 | 0.03239 | 0.00909 | 3.601 | Not Used | | 0.0327 | | 0.03274 | 493.22 | **0.03394** | 511.26 |
| 2 | 64 | 15,368.268 | 525.0 | 0.03416 | 0.00997 | 0.03416 | 15,368.268 | 0.034309 | 0.000 | 0.000003 | 0.03431 | 0.03416 | 0.00997 | 3.442 | Not Used | | 0.0343 | | 0.03431 | 527.26 | **0.03556** | 546.55 |
| 2 | 65 | 15,593.512 | 557.0 | 0.03572 | 0.01099 | 0.03572 | 15,593.512 | 0.036168 | 0.003 | 0.000008 | 0.03617 | 0.03572 | 0.01099 | 3.290 | Not Used | | 0.0362 | | 0.03617 | 563.98 | **0.03749** | 584.61 |
| 2 | 66 | 15,553.079 | 613.0 | 0.03941 | 0.01219 | 0.03941 | 15,553.079 | 0.038923 | 0.004 | 0.000003 | 0.03892 | 0.03941 | 0.01219 | 3.194 | Not Used | | 0.0389 | | 0.03892 | 605.37 | **0.04035** | 627.52 |
| 2 | 67 | 15,337.036 | 611.0 | 0.03984 | 0.01357 | 0.03984 | 15,337.036 | 0.040700 | 0.011 | 0.000012 | 0.04070 | 0.03984 | 0.01357 | 2.999 | Not Used | | 0.0407 | | 0.04070 | 624.21 | **0.04219** | 647.05 |
| 2 | 68 | 14,975.932 | 669.0 | 0.04467 | 0.01516 | 0.04467 | 14,975.932 | 0.044172 | 0.004 | 0.000006 | 0.04417 | 0.04467 | 0.01516 | 2.914 | Not Used | | 0.0442 | | 0.04417 | 661.51 | **0.04579** | 685.71 |

Appendix A

# Table Construction

Study 2

## Experience Data

| Study | Age | Exposure | Deaths | Qx |
|---|---|---|---|---|
| 2 | 69 | 14,471.616 | 655.0 | 0.04526 |
| 2 | 70 | 13,914.597 | 740.0 | 0.05318 |
| 2 | 71 | 13,174.266 | 733.0 | 0.05564 |
| 2 | 72 | 12,318.964 | 662.0 | 0.05374 |
| 2 | 73 | 11,437.847 | 683.0 | 0.05971 |
| 2 | 74 | 10,441.696 | 655.0 | 0.06273 |
| 2 | 75 | 9,460.463 | 628.0 | 0.06638 |
| 2 | 76 | 8,520.923 | 594.0 | 0.06971 |
| 2 | 77 | 7,572.701 | 598.0 | 0.07897 |
| 2 | 78 | 6,635.197 | 547.0 | 0.08244 |
| 2 | 79 | 5,772.734 | 514.0 | 0.08904 |
| 2 | 80 | 4,986.641 | 472.0 | 0.09465 |
| 2 | 81 | 4,288.890 | 452.0 | 0.10539 |
| 2 | 82 | 3,608.413 | 383.0 | 0.10614 |
| 2 | 83 | 3,017.542 | 345.0 | 0.11433 |
| 2 | 84 | 2,481.638 | 312.0 | 0.12572 |
| 2 | 85 | 2,008.181 | 268.0 | 0.13345 |
| 2 | 86 | 1,616.595 | 224.0 | 0.13856 |
| 2 | 87 | 1,282.378 | 221.0 | 0.17234 |
| 2 | 88 | 978.142 | 166.0 | 0.16971 |
| 2 | 89 | 752.367 | 142.0 | 0.18874 |
| 2 | 90 | 555.362 | 119.0 | 0.21427 |
| 2 | 91 | 385.825 | 86.0 | 0.22290 |
| 2 | 92 | 273.227 | 72.0 | 0.26352 |
| 2 | 93 | 184.838 | 46.0 | 0.24887 |
| 2 | 94 | 122.036 | 31.0 | 0.25402 |
| 2 | 95 | 80.370 | 28.0 | 0.34839 |
| 2 | 96 | 49.753 | 17.0 | 0.34169 |
| 2 | 97 | 31.238 | 11.0 | 0.35213 |
| 2 | 98 | 19.263 | 7.0 | 0.36339 |
| 2 | 99 | 11.742 | 2.0 | 0.17032 |
| 2 | 100 | 10.359 | 1.0 | 0.09654 |
| 2 | 101 | 10.000 | 2.0 | 0.20000 |
| 2 | 102 | 7.816 | 1.0 | 0.12794 |
| 2 | 103 | 6.000 | 1.0 | 0.16667 |
| 2 | 104 | 5.000 | 2.0 | 0.40000 |
| 2 | 105 | 3.047 | 1.0 | 0.32824 |
| 2 | 106 | 3.000 | 1.0 | 0.33333 |
| 2 | 107 | 2.000 | - | - |
| 2 | 108 | 1.000 | - | - |
| 2 | 109 | 1.000 | - | - |
| 2 | 110 | 1.000 | - | - |
| 2 | 111 | 1.000 | - | - |
| 2 | 112 | 1.000 | - | - |
| 2 | 113 | 1.000 | - | - |
| 2 | 114 | 1.000 | - | - |
| 2 | 115 | 1.847 | - | - |
| 2 | 116 | 2.000 | - | - |
| 2 | 117 | 2.000 | - | - |
| 2 | 118 | 2.000 | 1.0 | 0.50000 |
| 2 | 119 | 1.000 | 1.0 | 1.00000 |
| 2 | 120 | - | - | - |
| | | 425,645.75 | 18,398.0 | |

## Graduation Data

| 1996 US Annuity 2000 Basic, Male | Qx = Ux | Weights (nx) | Vx | (Vx-Ux)^2 | Z Difference ^2 |
|---|---|---|---|---|---|
| 0.01695 | 0.04526 | 14,471.616 | 0.046084 | 0.029 | 0.000027 |
| 0.01892 | 0.05318 | 13,914.597 | 0.051838 | 0.025 | 0.000008 |
| 0.02107 | 0.05564 | 13,174.266 | 0.054592 | 0.014 | 0.000001 |
| 0.02339 | 0.05374 | 12,318.964 | 0.055577 | 0.042 | 0.000015 |
| 0.02587 | 0.05971 | 11,437.847 | 0.059470 | 0.001 | 0.000012 |
| 0.02855 | 0.06273 | 10,441.696 | 0.063005 | 0.001 | 0.000015 |
| 0.03148 | 0.06638 | 9,460.463 | 0.066911 | 0.003 | 0.000021 |
| 0.03469 | 0.06971 | 8,520.923 | 0.071455 | 0.026 | 0.000042 |
| 0.03823 | 0.07897 | 7,572.701 | 0.077906 | 0.009 | 0.000029 |
| 0.04213 | 0.08244 | 6,635.197 | 0.083326 | 0.005 | 0.000038 |
| 0.04643 | 0.08904 | 5,772.734 | 0.089505 | 0.001 | 0.000042 |
| 0.05113 | 0.09465 | 4,986.641 | 0.096017 | 0.009 | 0.000055 |
| 0.05625 | 0.10539 | 4,288.890 | 0.103406 | 0.017 | 0.000049 |
| 0.06181 | 0.10614 | 3,608.413 | 0.109704 | 0.046 | 0.000063 |
| 0.06783 | 0.11433 | 3,017.542 | 0.117650 | 0.033 | 0.000085 |
| 0.07432 | 0.12572 | 2,481.638 | 0.126884 | 0.003 | 0.000092 |
| 0.08133 | 0.13345 | 2,008.181 | 0.136487 | 0.018 | 0.000108 |
| 0.08886 | 0.13856 | 1,616.595 | 0.146872 | 0.112 | 0.000147 |
| 0.09696 | 0.17234 | 1,282.378 | 0.158980 | 0.229 | 0.000098 |
| 0.10563 | 0.16971 | 978.142 | 0.168890 | 0.001 | 0.000096 |
| 0.11486 | 0.18874 | 752.367 | 0.178698 | 0.076 | 0.000078 |
| 0.12461 | 0.21427 | 555.362 | 0.187536 | 0.397 | 0.000048 |
| 0.13486 | 0.22290 | 385.825 | 0.194470 | 0.312 | 0.000031 |
| 0.14558 | 0.26352 | 273.227 | 0.199996 | 1.102 | 0.000011 |
| 0.15673 | 0.24887 | 184.838 | 0.203295 | 0.384 | 0.000005 |
| 0.16829 | 0.25402 | 122.036 | 0.205513 | 0.287 | 0.000002 |
| 0.18025 | 0.34839 | 80.370 | 0.206971 | 1.607 | |
| 0.19257 | - | - | - | - | - |
| 0.20523 | - | - | - | - | - |
| 0.21868 | - | - | - | - | - |
| 0.23337 | - | - | - | - | - |
| 0.24974 | - | - | - | - | - |
| 0.26824 | - | - | - | - | - |
| 0.28931 | - | - | - | - | - |
| 0.31339 | - | - | - | - | - |
| 0.34094 | - | - | - | - | - |
| 0.37240 | - | - | - | - | - |
| 0.40821 | - | - | - | - | - |
| 0.44882 | - | - | - | - | - |
| 0.49468 | - | - | - | - | - |
| 0.54623 | - | - | - | - | - |
| 0.60392 | - | - | - | - | - |
| 0.66819 | - | - | - | - | - |
| 0.73948 | - | - | - | - | - |
| 0.81825 | - | - | - | - | - |
| 0.90495 | - | - | - | - | - |
| 1.00000 | - | - | - | - | - |
| 1.00000 | - | - | - | - | - |
| 1.00000 | - | - | - | - | - |
| 1.00000 | - | - | - | - | - |
| 1.00000 | - | - | - | - | - |
| 1.00000 | - | - | - | - | - |
| | | 288,337.515 | 3.605 | 4.835 | 0.001254 |

## Table Calculation

| Graduated | Un Grad | Table | Ratio Grad Mort/ Table | Mortality Ratio | First Section | Second Section | Last Section |
|---|---|---|---|---|---|---|---|
| 0.04668 | 0.04526 | 0.01695 | 2.755 | Not Used | | 0.0467 | |
| 0.05184 | 0.05318 | 0.01892 | 2.740 | Not Used | | 0.0518 | |
| 0.05459 | 0.05564 | 0.02107 | 2.591 | Not Used | | 0.0546 | |
| 0.05558 | 0.05374 | 0.02339 | 2.376 | Not Used | | 0.0556 | |
| 0.05947 | 0.05971 | 0.02587 | 2.299 | Not Used | | 0.0595 | |
| 0.06301 | 0.06273 | 0.02855 | 2.207 | Not Used | | 0.0630 | |
| 0.06691 | 0.06638 | 0.03148 | 2.126 | Not Used | | 0.0669 | |
| 0.07146 | 0.06971 | 0.03469 | 2.060 | Not Used | | 0.0715 | |
| 0.07791 | 0.07897 | 0.03823 | 2.038 | Not Used | | 0.0779 | |
| 0.08333 | 0.08244 | 0.04213 | 1.978 | Not Used | | 0.0833 | |
| 0.08950 | 0.08904 | 0.04643 | 1.928 | Not Used | | 0.0895 | |
| 0.09602 | 0.09465 | 0.05113 | 1.878 | Not Used | | 0.0960 | |
| 0.10341 | 0.10539 | 0.05625 | 1.838 | Not Used | | 0.1034 | |
| 0.10970 | 0.10614 | 0.06181 | 1.775 | Not Used | | 0.1097 | |
| 0.11765 | 0.11433 | 0.06783 | 1.735 | Not Used | | 0.1177 | |
| 0.12688 | 0.12572 | 0.07432 | 1.707 | Not Used | | 0.1269 | |
| 0.13649 | 0.13345 | 0.08133 | 1.678 | Not Used | | 0.1365 | |
| 0.14687 | 0.13856 | 0.08886 | 1.653 | Not Used | | 0.1469 | |
| 0.15898 | 0.17234 | 0.09696 | 1.640 | Not Used | | 0.1590 | |
| 0.16889 | 0.16971 | 0.10563 | 1.599 | Not Used | | 0.1689 | |
| 0.17870 | 0.18874 | 0.11486 | 1.556 | Not Used | | 0.1787 | |
| 0.18754 | 0.21427 | 0.12461 | 1.505 | Not Used | | 0.1875 | |
| 0.19447 | 0.22290 | 0.13486 | 1.442 | Not Used | | 0.1945 | |
| 0.20000 | 0.26352 | 0.14558 | 1.374 | Not Used | | 0.2000 | |
| 0.20329 | 0.24887 | 0.15673 | 1.297 | Not Used | | | 0.2128 |
| 0.20551 | 0.25402 | 0.16829 | 1.221 | Not Used | | | 0.2257 |
| 0.20897 | 0.34839 | 0.18025 | 1.148 | Not Used | | | 0.2388 |
| | | | | Not Used | | | 0.2520 |
| | | | | Not Used | | | 0.2653 |
| | | | | Not Used | | | 0.2791 |
| | | | | Not Used | | | 0.2941 |
| | | | | Not Used | | | 0.3106 |
| | | | | Not Used | | | 0.3293 |
| | | | | Not Used | | | 0.3504 |
| | | | | Not Used | | | 0.3745 |
| | | | | Not Used | | | 0.4019 |
| | | | | Not Used | | | 0.4329 |
| | | | | Not Used | | | 0.4679 |
| | | | | Not Used | | | 0.5072 |
| | | | | Not Used | | | 0.5510 |
| | | | | Not Used | | | 0.5995 |
| | | | | Not Used | | | 0.6530 |
| | | | | Not Used | | | 0.7116 |
| | | | | Not Used | | | 0.7755 |
| | | | | Not Used | | | 0.8449 |
| | | | | Not Used | | | 0.9197 |
| | | | | Not Used | | | 1.0000 |

## Results

| Pre Adjusted Mort Table | Predicted Deaths | Final Mort Table | Final Predicted Deaths |
|---|---|---|---|
| 0.04668 | 675.59 | **0.04839** | 700.30 |
| 0.05184 | 721.30 | **0.05373** | 747.69 |
| 0.05459 | 719.21 | **0.05659** | 745.52 |
| 0.05558 | 684.66 | **0.05761** | 709.70 |
| 0.05947 | 680.21 | **0.06165** | 705.10 |
| 0.06301 | 657.88 | **0.06531** | 681.95 |
| 0.06691 | 633.01 | **0.06936** | 656.17 |
| 0.07146 | 608.87 | **0.07407** | 631.14 |
| 0.07791 | 589.96 | **0.08076** | 611.54 |
| 0.08333 | 552.89 | **0.08637** | 573.11 |
| 0.08950 | 516.67 | **0.09278** | 535.57 |
| 0.09602 | 478.80 | **0.09953** | 496.32 |
| 0.10341 | 443.50 | **0.10719** | 459.72 |
| 0.10970 | 395.86 | **0.11372** | 410.34 |
| 0.11765 | 355.02 | **0.12195** | 368.00 |
| 0.12688 | 314.88 | **0.13153** | 326.40 |
| 0.13649 | 274.09 | **0.14148** | 284.12 |
| 0.14687 | 237.43 | **0.15224** | 246.12 |
| 0.15898 | 203.87 | **0.16480** | 211.33 |
| 0.16889 | 165.20 | **0.17507** | 171.24 |
| 0.17870 | 134.45 | **0.18523** | 139.36 |
| 0.18754 | 104.15 | **0.19440** | 107.96 |
| 0.19447 | 75.03 | **0.20158** | 77.78 |
| 0.20000 | 54.64 | **0.20731** | 56.64 |
| 0.21277 | 39.33 | **0.22055** | 40.77 |
| 0.22573 | 27.55 | **0.23399** | 28.56 |
| 0.23884 | 19.20 | **0.24758** | 19.90 |
| 0.25203 | 12.54 | **0.26125** | 13.00 |
| 0.26527 | 8.29 | **0.27498** | 8.59 |
| 0.27911 | 5.38 | **0.28932** | 5.57 |
| 0.29406 | 3.45 | **0.30482** | 3.58 |
| 0.31063 | 3.22 | **0.32199** | 3.34 |
| 0.32927 | 3.29 | **0.34132** | 3.41 |
| 0.35043 | 2.74 | **0.36325** | 2.84 |
| 0.37452 | 2.25 | **0.38822** | 2.33 |
| 0.40190 | 2.01 | **0.41660** | 2.08 |
| 0.43293 | 1.32 | **0.44876** | 1.37 |
| 0.46792 | 1.40 | **0.48504** | 1.46 |
| 0.50718 | 1.01 | **0.52574** | 1.05 |
| 0.55096 | 0.55 | **0.57112** | 0.57 |
| 0.59950 | 0.60 | **0.62143** | 0.62 |
| 0.65300 | 0.65 | **0.67689** | 0.68 |
| 0.71163 | 0.71 | **0.73766** | 0.74 |
| 0.77554 | 0.78 | **0.80391** | 0.80 |
| 0.84485 | 0.84 | **0.87576** | 0.88 |
| 0.91965 | 0.92 | **0.95330** | 0.95 |
| 1.00000 | 1.85 | **1.00000** | 1.85 |
| 1.00000 | 2.00 | **1.00000** | 2.00 |
| 1.00000 | 2.00 | **1.00000** | 2.00 |
| 1.00000 | 2.00 | **1.00000** | 2.00 |
| 1.00000 | 1.00 | **1.00000** | 1.00 |
| 1.00000 | - | **1.00000** | - |
| Predicted | 17,740.16 | | 18,398.0 |
| Actual | 18,389.15 | | 18,398.0 |
| Ratio | 1.04 | | |
| Over 115 | 8.85 | | |

| Experience Data | | | | | Graduation Data | | | | | Table Calculation | | | | | | | | Results Based on Calculation | | | | Results Using Study 2 as Slope | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Study | Age | Exposure | Deaths | Qx | 1996 US Annuity 2000 Basic, Male | Qx = Ux | Weights (ns) | Vx | (Vx-Ux)^2 | Z Difference ^2 | Graduated | Un Grad | Table | Ratio Grad Mort/ Table | Mortality Ratio | First Section | Second Section | Last Section | Pre Adjusted Mort Table | Predicted Deaths | Final Mort Table | Final Predicted Deaths | Base Table (Study 2) | Predicted | Final Mort Table | Final Predicted Deaths |
| 3 | 0 | | | | 0.00231 | | | | | | | | | | 10.283 | 0.0238 | | | 0.02376 | - | 0.02425 | - | 0.01304 | - | 0.02134 | - |
| 3 | 1 | | | | 0.00091 | | | | | | | | | | 10.283 | 0.0093 | | | 0.00932 | - | 0.00951 | - | 0.00511 | - | 0.00837 | - |
| 3 | 2 | | | | 0.00050 | | | | | | | | | | 10.283 | 0.0052 | | | 0.00518 | - | 0.00529 | - | 0.00284 | - | 0.00465 | - |
| 3 | 3 | | | | 0.00041 | | | | | | | | | | 10.283 | 0.0042 | | | 0.00420 | - | 0.00428 | - | 0.00230 | - | 0.00377 | - |
| 3 | 4 | | | | 0.00036 | | | | | | | | | | 10.283 | 0.0037 | | | 0.00367 | - | 0.00375 | - | 0.00201 | - | 0.00330 | - |
| 3 | 5 | | | | 0.00032 | | | | | | | | | | 10.283 | 0.0033 | | | 0.00333 | - | 0.00340 | - | 0.00183 | - | 0.00299 | - |
| 3 | 6 | | | | 0.00030 | | | | | | | | | | 10.283 | 0.0031 | | | 0.00310 | - | 0.00316 | - | 0.00170 | - | 0.00278 | - |
| 3 | 7 | | | | 0.00029 | | | | | | | | | | 10.283 | 0.0029 | | | 0.00294 | - | 0.00300 | - | 0.00161 | - | 0.00264 | - |
| 3 | 8 | | | | 0.00033 | | | | | | | | | | 10.283 | 0.0034 | | | 0.00337 | - | 0.00344 | - | 0.00185 | - | 0.00303 | - |
| 3 | 9 | | | | 0.00036 | | | | | | | | | | 10.283 | 0.0037 | | | 0.00372 | - | 0.00380 | - | 0.00204 | - | 0.00334 | - |
| 3 | 10 | | | | 0.00039 | | | | | | | | | | 10.283 | 0.0040 | | | 0.00401 | - | 0.00409 | - | 0.00220 | - | 0.00360 | - |
| 3 | 11 | | | | 0.00041 | | | | | | | | | | 10.283 | 0.0042 | | | 0.00425 | - | 0.00433 | - | 0.00233 | - | 0.00381 | - |
| 3 | 12 | | | | 0.00043 | | | | | | | | | | 10.283 | 0.0044 | | | 0.00443 | - | 0.00452 | - | 0.00243 | - | 0.00398 | - |
| 3 | 13 | | | | 0.00045 | | | | | | | | | | 10.283 | 0.0046 | | | 0.00459 | - | 0.00468 | - | 0.00252 | - | 0.00412 | - |
| 3 | 14 | | | | 0.00046 | | | | | | | | | | 10.283 | 0.0047 | | | 0.00471 | - | 0.00481 | - | 0.00258 | - | 0.00423 | - |
| 3 | 15 | | | | 0.00047 | | | | | | | | | | 10.283 | 0.0048 | | | 0.00483 | - | 0.00493 | - | 0.00265 | - | 0.00434 | - |
| 3 | 16 | | | | 0.00048 | | | | | | | | | | 10.283 | 0.0049 | | | 0.00495 | - | 0.00505 | - | 0.00271 | - | 0.00444 | - |
| 3 | 17 | | | | 0.00050 | | | | | | | | | | 10.283 | 0.0051 | | | 0.00509 | - | 0.00519 | - | 0.00279 | - | 0.00457 | - |
| 3 | 18 | | | | 0.00051 | | | | | | | | | | 10.283 | 0.0052 | | | 0.00524 | - | 0.00535 | - | 0.00288 | - | 0.00471 | - |
| 3 | 19 | | | | 0.00053 | | | | | | | | | | 10.216 | 0.0054 | | | 0.00539 | - | 0.00550 | - | 0.00296 | - | 0.00484 | - |
| 3 | 20 | | | | 0.00055 | | | | | | | | | | 10.150 | 0.0056 | | | 0.00557 | - | 0.00569 | - | 0.00306 | - | 0.00500 | - |
| 3 | 21 | | | | 0.00057 | | | | | | | | | | 10.083 | 0.0058 | | | 0.00578 | - | 0.00590 | - | 0.00317 | - | 0.00519 | - |
| 3 | 22 | | | | 0.00060 | | | | | | | | | | 10.017 | 0.0060 | | | 0.00600 | - | 0.00612 | - | 0.00329 | - | 0.00538 | - |
| 3 | 23 | | | | 0.00063 | | | | | | | | | | 9.950 | 0.0062 | | | 0.00624 | - | 0.00637 | - | 0.00342 | - | 0.00560 | - |
| 3 | 24 | | | | 0.00064 | | | | | | | | | | 9.883 | 0.0065 | | | 0.00649 | - | 0.00663 | - | 0.00356 | - | 0.00583 | - |
| 3 | 25 | | | | 0.00069 | | | | | | | | | | 9.817 | 0.0067 | | | 0.00673 | - | 0.00687 | - | 0.00369 | - | 0.00604 | - |
| 3 | 26 | 0.789 | | | 0.00071 | | | | | | | | | | 9.750 | 0.0070 | | | 0.00696 | 0.01 | 0.00710 | 0.01 | 0.00382 | 0.00 | 0.00625 | 0.00 |
| 3 | 27 | 1.881 | | | 0.00074 | | | | | | | | | | 9.684 | 0.0071 | | | 0.00715 | 0.01 | 0.00729 | 0.01 | 0.00392 | 0.00 | 0.00641 | 0.01 |
| 3 | 28 | 1.000 | | | 0.00076 | | | | | | | | | | 9.617 | 0.0073 | | | 0.00729 | 0.01 | 0.00744 | 0.01 | 0.00399 | 0.00 | 0.00654 | 0.01 |
| 3 | 29 | 1.474 | | | 0.00077 | | | | | | | | | | 9.550 | 0.0074 | | | 0.00739 | 0.01 | 0.00754 | 0.01 | 0.00405 | 0.01 | 0.00663 | 0.01 |
| 3 | 30 | 2.633 | | | 0.00078 | | | | | | | | | | 9.484 | 0.0074 | | | 0.00744 | 0.02 | 0.00759 | 0.02 | 0.00407 | 0.01 | 0.00667 | 0.02 |
| 3 | 31 | 3.000 | | | 0.00079 | | | | | | | | | | 9.417 | 0.0074 | | | 0.00743 | 0.02 | 0.00758 | 0.02 | 0.00407 | 0.01 | 0.00666 | 0.02 |
| 3 | 32 | 3.000 | | | 0.00079 | | | | | | | | | | 9.351 | 0.0074 | | | 0.00738 | 0.02 | 0.00753 | 0.02 | 0.00404 | 0.01 | 0.00661 | 0.02 |
| 3 | 33 | 2.622 | 1.0 | 0.38140 | 0.00079 | | | | | | | | | | 9.284 | 0.0073 | | | 0.00733 | 0.02 | 0.00748 | 0.02 | 0.00402 | 0.01 | 0.00657 | 0.02 |
| 3 | 34 | 1.000 | | | 0.00079 | | | | | | | | | | 9.217 | 0.0073 | | | 0.00729 | 0.01 | 0.00744 | 0.01 | 0.00399 | 0.00 | 0.00653 | 0.01 |
| 3 | 35 | 1.704 | | | 0.00079 | | | | | | | | | | 9.151 | 0.0072 | | | 0.00725 | 0.01 | 0.00740 | 0.01 | 0.00397 | 0.01 | 0.00649 | 0.01 |
| 3 | 36 | 2.238 | | | 0.00079 | | | | | | | | | | 9.084 | 0.0072 | | | 0.00721 | 0.02 | 0.00736 | 0.02 | 0.00395 | 0.01 | 0.00646 | 0.01 |
| 3 | 37 | 4.000 | 1.0 | 0.25000 | 0.00082 | | | | | | | | | | 9.018 | 0.0074 | | | 0.00742 | 0.03 | 0.00757 | 0.03 | 0.00406 | 0.02 | 0.00665 | 0.03 |
| 3 | 38 | 4.268 | | | 0.00087 | | | | | | | | | | 8.951 | 0.0078 | | | 0.00781 | 0.03 | 0.00796 | 0.03 | 0.00427 | 0.02 | 0.00699 | 0.03 |
| 3 | 39 | 7.237 | | | 0.00095 | | | | | | | | | | 8.884 | 0.0084 | | | 0.00840 | 0.06 | 0.00857 | 0.06 | 0.00459 | 0.03 | 0.00752 | 0.05 |
| 3 | 40 | 9.268 | | | 0.00104 | | | | | | | | | | 8.818 | 0.0092 | | | 0.00920 | 0.09 | 0.00938 | 0.09 | 0.00503 | 0.05 | 0.00823 | 0.08 |
| 3 | 41 | 8.493 | 1.0 | 0.11778 | 0.00117 | | | | | | | | | | 8.751 | 0.0102 | | | 0.01022 | 0.09 | 0.01043 | 0.09 | 0.00559 | 0.05 | 0.00915 | 0.08 |
| 3 | 42 | 10.733 | | | 0.00132 | | | | | | | | | | 8.685 | 0.0115 | | | 0.01148 | 0.12 | 0.01171 | 0.13 | 0.00628 | 0.07 | 0.01028 | 0.11 |
| 3 | 43 | 12.000 | | | 0.00151 | | | | | | | | | | 8.618 | 0.0130 | | | 0.01297 | 0.16 | 0.01323 | 0.16 | 0.00709 | 0.09 | 0.01161 | 0.14 |
| 3 | 44 | 12.333 | | | 0.00172 | | | | | | | | | | 8.551 | 0.0147 | | | 0.01467 | 0.18 | 0.01496 | 0.19 | 0.00802 | 0.10 | 0.01312 | 0.16 |
| 3 | 45 | 11.142 | | | 0.00195 | | | | | | | | | | 8.485 | 0.0165 | | | 0.01653 | 0.22 | 0.01687 | 0.22 | 0.00903 | 0.12 | 0.01479 | 0.19 |
| 3 | 46 | 14.378 | | | 0.00221 | | | | | | | | | | 8.418 | 0.0185 | | | 0.01850 | 0.27 | 0.01888 | 0.27 | 0.01011 | 0.15 | 0.01655 | 0.24 |
| 3 | 47 | 20.614 | | | 0.00246 | | | | | | | | | | 8.352 | 0.0206 | | | 0.02057 | 0.42 | 0.02099 | 0.43 | 0.01124 | 0.23 | 0.01840 | 0.38 |
| 3 | 48 | 22.447 | | | 0.00274 | | | | | | | | | | 8.285 | 0.0227 | | | 0.02270 | 0.51 | 0.02316 | 0.52 | 0.01240 | 0.28 | 0.02030 | 0.46 |
| 3 | 49 | 26.293 | 3.0 | 0.11410 | 0.00303 | | | | | | | | | | 8.218 | 0.0249 | | | 0.02488 | 0.65 | 0.02539 | 0.67 | 0.01359 | 0.36 | 0.02225 | 0.59 |
| 3 | 50 | 29.068 | | | 0.00333 | | | | | | | | | | 8.152 | 0.0271 | | | 0.02715 | 0.79 | 0.02770 | 0.81 | 0.01483 | 0.43 | 0.02427 | 0.71 |
| 3 | 51 | 34.622 | 2.0 | 0.05777 | 0.00369 | | | | | | | | | | 8.085 | 0.0295 | | | 0.02949 | 1.02 | 0.03008 | 1.04 | 0.01610 | 0.56 | 0.02635 | 0.91 |
| 3 | 52 | 36.841 | 1.0 | 0.02714 | 0.00398 | | | | | | | | | | 8.019 | 0.0319 | | | 0.03191 | 1.18 | 0.03256 | 1.20 | 0.01742 | 0.64 | 0.02852 | 1.05 |
| 3 | 53 | 43.293 | 2.0 | 0.04620 | 0.00433 | | | | | | | | | | 7.952 | 0.0344 | | | 0.03444 | 1.49 | 0.03514 | 1.52 | 0.01880 | 0.81 | 0.03077 | 1.33 |
| 3 | 54 | 50.938 | 3.0 | 0.05962 | 0.00479 | | | | | | | | | | 7.885 | 0.0370 | | | 0.03705 | 1.86 | 0.03780 | 1.90 | 0.02022 | 1.02 | 0.03309 | 1.67 |
| 3 | 55 | 60.438 | 2.0 | 0.03311 | 0.00538 | | | | | | | | | | 7.819 | 0.0397 | | | 0.03970 | 2.40 | 0.04050 | 2.45 | 0.02166 | 1.31 | 0.03546 | 2.14 |
| 3 | 56 | 73.071 | 3.0 | 0.04106 | 0.00547 | | | | | | | | | | 7.752 | 0.0424 | | | 0.04237 | 3.10 | 0.04323 | 3.16 | 0.02311 | 1.69 | 0.03783 | 2.76 |
| 3 | 57 | 85.748 | 6.0 | 0.06997 | 0.00586 | | | | | | | | | | 7.686 | 0.0450 | | | 0.04504 | 3.86 | 0.04596 | 3.94 | 0.02457 | 2.11 | 0.04021 | 3.45 |
| 3 | 58 | 89.901 | 5.0 | 0.05562 | 0.00627 | | | | | | | | | | 7.619 | 0.0477 | | | 0.04773 | 4.29 | 0.04871 | 4.38 | 0.02603 | 2.34 | 0.04261 | 3.83 |
| 3 | 59 | 103.819 | 5.0 | 0.04816 | 0.00669 | 0.04816 | 103.8 | 0.05056 | 0.001 | 0.000007 | 0.05056 | 0.04816 | 0.00669 | 7.552 | Other | | 0.0506 | | 0.05056 | 5.25 | 0.05159 | 5.36 | 0.02756 | 2.86 | 0.04512 | 4.68 |
| 3 | 60 | 109.348 | 5.0 | 0.04573 | 0.00717 | 0.04573 | 109.3 | 0.05327 | 0.006 | 0.000156 | 0.05327 | 0.04573 | 0.00717 | 7.429 | Other | | 0.0533 | | 0.05327 | 5.82 | 0.05435 | 5.94 | 0.02952 | 3.23 | 0.04832 | 5.28 |
| 3 | 61 | 125.962 | 10.0 | 0.07939 | 0.00771 | 0.07939 | 126.0 | 0.06575 | 0.023 | 0.000668 | 0.06575 | 0.07939 | 0.00771 | 8.523 | Other | | 0.0657 | | 0.06575 | 8.28 | 0.06709 | 8.45 | 0.03103 | 3.91 | 0.05079 | 6.40 |
| 3 | 62 | 134.696 | 7.0 | 0.05197 | 0.00835 | 0.05197 | 134.7 | 0.05751 | 0.004 | 0.000061 | 0.05751 | 0.05197 | 0.00835 | 6.889 | Other | | 0.0575 | | 0.05751 | 7.75 | 0.05868 | 7.90 | 0.03301 | 4.45 | 0.05402 | 7.28 |
| 3 | 63 | 147.778 | 8.0 | 0.05414 | 0.00909 | 0.05414 | 147.8 | 0.05839 | 0.003 | 0.000078 | 0.05839 | 0.05414 | 0.00909 | 6.421 | Other | | 0.0584 | | 0.05839 | 8.63 | 0.05956 | 8.80 | 0.03394 | 5.02 | 0.05655 | 8.21 |
| 3 | 64 | 156.619 | 11.0 | 0.07023 | 0.00997 | 0.07023 | 156.6 | 0.06724 | 0.003 | 0.000019 | 0.06724 | 0.07023 | 0.00997 | 6.746 | Other | | 0.0672 | | 0.06724 | 10.53 | 0.06861 | 10.75 | 0.03556 | 5.57 | 0.05821 | 9.12 |
| 3 | 65 | 161.814 | 11.0 | 0.06798 | 0.01099 | 0.06798 | 161.8 | 0.07044 | 0.001 | 0.000061 | 0.07044 | 0.06798 | 0.01099 | 6.408 | Other | | 0.0704 | | 0.07044 | 11.40 | 0.07188 | 11.63 | 0.03749 | 6.07 | 0.06136 | 9.93 |
| 3 | 66 | 166.014 | 15.0 | 0.09035 | 0.01219 | 0.09035 | 166.0 | 0.07825 | 0.024 | 0.002250 | 0.07825 | 0.09035 | 0.01219 | 6.420 | Other | | 0.0782 | | 0.07825 | 12.99 | 0.07984 | 13.25 | 0.04035 | 6.70 | 0.06604 | 10.96 |
| 3 | 67 | 165.745 | 7.0 | 0.04223 | 0.01357 | 0.04223 | 165.7 | 0.06244 | 0.068 | 0.000556 | 0.06244 | 0.04223 | 0.01357 | 4.601 | Other | | 0.0624 | | 0.06244 | 10.35 | 0.06371 | 10.56 | 0.04219 | 6.99 | 0.06905 | 11.45 |
| 3 | 68 | 169.299 | 14.0 | 0.08734 | 0.01516 | 0.08734 | 169.3 | 0.08602 | 0.000 | 0.000440 | 0.08602 | 0.08734 | 0.01516 | 5.674 | Other | | 0.0860 | | 0.08602 | 13.79 | 0.08778 | 14.07 | 0.04579 | 7.34 | 0.07454 | 12.01 |
| 3 | 69 | 157.512 | 19.0 | 0.12063 | 0.01695 | 0.12063 | 157.5 | 0.10700 | 0.029 | 0.000039 | 0.10700 | 0.12063 | 0.01695 | 6.314 | Other | | 0.1070 | | 0.10700 | 16.85 | 0.10819 | 17.20 | 0.04839 | 7.62 | 0.07921 | 12.48 |
| 3 | 70 | 146.038 | 15.0 | 0.10271 | 0.01892 | 0.10271 | 146.0 | 0.10266 | 0.000 | 0.000010 | 0.10266 | 0.10271 | 0.01892 | 5.426 | Other | | 0.1027 | | 0.10266 | 14.99 | 0.10475 | 15.30 | 0.05373 | 7.85 | 0.08795 | 12.84 |
| 3 | 71 | 143.987 | 15.0 | 0.10423 | 0.02107 | 0.10423 | 143.9 | 0.09861 | 0.005 | 0.000188 | 0.09861 | 0.10423 | 0.02107 | 4.680 | Other | | 0.0986 | | 0.09861 | 14.19 | 0.10062 | 14.48 | 0.05659 | 8.14 | 0.09262 | 13.33 |
| 3 | 72 | 130.696 | 9.0 | 0.06886 | 0.02339 | 0.06886 | 130.7 | 0.08491 | 0.034 | 0.000116 | 0.08491 | 0.06886 | 0.02339 | 3.630 | Other | | 0.0849 | | 0.08491 | 11.10 | 0.08664 | 11.32 | 0.05761 | 7.53 | 0.09430 | 12.32 |
| 3 | 73 | 124.668 | 13.0 | 0.10426 | 0.02587 | 0.10426 | 124.7 | 0.09566 | 0.009 | 0.000002 | 0.09566 | 0.10426 | 0.02587 | 3.698 | Other | | 0.0957 | | 0.09566 | 11.83 | 0.09761 | 12.17 | 0.06165 | 7.69 | 0.10090 | 12.58 |
| 3 | 74 | 116.501 | 11.0 | 0.09442 | 0.02855 | 0.09442 | 116.5 | 0.09418 | 0.000 | 0.000004 | 0.09418 | 0.09442 | 0.02855 | 3.298 | Other | | 0.0942 | | 0.09418 | 10.97 | 0.09609 | 11.20 | 0.06531 | 7.61 | 0.10690 | 12.45 |
| 3 | 75 | 105.830 | 9.0 | 0.08504 | 0.03148 | 0.08504 | 105.8 | 0.09228 | 0.006 | 0.000054 | 0.09228 | 0.08504 | 0.03148 | 2.932 | Other | | 0.0923 | | 0.09228 | 9.77 | 0.09419 | 9.96 | 0.06936 | 7.34 | 0.11353 | 12.01 |
| 3 | 76 | 94.893 | 8.0 | 0.08431 | 0.03469 | 0.08431 | 94.9 | 0.09960 | 0.022 | 0.000585 | 0.09960 | 0.08431 | 0.03469 | 2.872 | Other | | 0.0996 | | 0.09960 | 9.45 | 0.10163 | 9.64 | 0.07407 | 7.03 | 0.12124 | 11.50 |
| 3 | 77 | 90.819 | 14.0 | 0.15415 | 0.03823 | 0.15415 | 90.8 | 0.12378 | 0.084 | 0.000665 | 0.12378 | 0.15415 | 0.03823 | 3.238 | Other | | 0.1238 | | 0.12378 | 11.24 | 0.12631 | 11.47 | 0.08076 | 7.33 | 0.13218 | 12.00 |
| 3 | 78 | 84.603 | 9.0 | 0.10638 | 0.04213 | 0.10638 | 84.6 | 0.11571 | 0.007 | 0.000002 | 0.11571 | 0.10638 | 0.04213 | 2.746 | Other | | 0.1157 | | 0.11571 | 9.79 | 0.11807 | 9.99 | 0.08637 | 7.31 | 0.14138 | 11.96 |
| 3 | 79 | 76.819 | 10.0 | 0.13018 | 0.04643 | 0.13018 | 76.8 | 0.11697 | 0.013 | 0.000098 | 0.11697 | 0.13018 | 0.04643 | 2.519 | Other | | 0.1170 | | 0.11697 | 8.99 | 0.11935 | 9.17 | 0.09278 | 7.13 | 0.15185 | 11.67 |
| 3 | 80 | 71.181 | 5.0 | 0.07024 | 0.05113 | 0.07024 | 71.2 | 0.10707 | 0.097 | 0.000454 | 0.10707 | 0.07024 | 0.05113 | 2.094 | Other | | 0.1071 | | 0.10707 | 7.62 | 0.10925 | 7.78 | 0.09953 | 7.08 | 0.16291 | 11.60 |
| 3 | 81 | 69.893 | 8.0 | 0.11446 | 0.05625 | 0.11446 | 69.9 | 0.12838 | 0.014 | 0.001077 | 0.12838 | 0.11446 | 0.05625 | 2.282 | Other | | 0.1284 | | 0.12838 | 8.97 | 0.13100 | 9.16 | 0.10719 | 7.49 | 0.17545 | 12.26 |
| 3 | 82 | 63.745 | 9.0 | 0.14119 | 0.06181 | 0.14119 | 63.7 | 0.16121 | 0.026 | 0.002296 | 0.16121 | 0.14119 | 0.06181 | 2.608 | Other | | 0.1612 | | 0.16121 | 10.28 | 0.16449 | 10.49 | 0.11372 | 7.25 | 0.18613 | 11.86 |
| 3 | 83 | 57.452 | 14.0 | 0.24368 | 0.06783 | 0.24368 | 57.5 | 0.20912 | 0.069 | 0.000597 | 0.20912 | 0.24368 | 0.06783 | 3.083 | Other | | 0.2091 | | 0.20912 | 12.01 | 0.21338 | 12.26 | 0.12195 | 7.01 | 0.19961 | 11.47 |
| 3 | 84 | 45.392 | 12.0 | 0.26437 | 0.07432 | 0.26437 | 45.4 | 0.23356 | 0.043 | 0.000057 | 0.23356 | 0.26437 | 0.07432 | 3.143 | Other | | 0.2336 | | 0.23356 | 10.60 | 0.23832 | 10.82 | 0.13153 | 5.97 | 0.21528 | 9.77 |
| 3 | 85 | 33.000 | 9.0 | 0.27273 | 0.08133 | 0.27273 | 33.0 | 0.24111 | 0.033 | 0.000022 | 0.24111 | 0.27273 | 0.08133 | 2.965 | Other | | 0.2411 | | 0.24111 | 7.96 | 0.24603 | 8.12 | 0.14148 | 4.67 | 0.23157 | 7.64 |
| 3 | 86 | 25.252 | 5.0 | 0.19800 | 0.08886 | 0.19800 | 25.3 | 0.23643 | 0.037 | 0.000040 | 0.23643 | 0.19800 | 0.08886 | 2.661 | Other | | 0.2364 | | 0.23643 | 5.97 | 0.24125 | 6.09 | 0.15224 | 3.84 | 0.24919 | 6.29 |

## Experience Data

| Study | Age | Exposure | Deaths | Qx |
|---|---|---|---|---|
| 3 | 87 | 19 904 | 5 0 | 0 25021 |
| 3 | 88 | 14 271 | 5 0 | 0 34551 |
| 3 | 89 | 10 085 | 2 0 | 0 19832 |
| 3 | 90 | 8 499 | 1 0 | 0 11767 |
| 3 | 91 | 6 230 | 2 0 | 0 32102 |
| 3 | 92 | 5 000 | 2 0 | 0 40000 |
| 3 | 93 | 3 000 | - | - |
| 3 | 94 | 3 000 | - | - |
| 3 | 95 | 3 000 | 1 0 | 0 33333 |
| 3 | 96 | 2 000 | - | - |
| 3 | 97 | 1 679 | 1 0 | 0 59543 |
| 3 | 98 | - | - | - |
| 3 | 99 | - | - | - |
| 3 | 100 | - | - | - |
| 3 | 101 | - | - | - |
| 3 | 102 | - | - | - |
| 3 | 103 | - | - | - |
| 3 | 104 | - | - | - |
| 3 | 105 | - | - | - |
| 3 | 106 | - | - | - |
| 3 | 107 | - | - | - |
| 3 | 108 | - | - | - |
| 3 | 109 | - | - | - |
| 3 | 110 | - | - | - |
| 3 | 111 | - | - | - |
| 3 | 112 | - | - | - |
| 3 | 113 | - | - | - |
| 3 | 114 | - | - | - |
| 3 | 115 | - | - | - |
| 3 | 116 | - | - | - |
| 3 | 117 | - | - | - |
| 3 | 118 | - | - | - |
| 3 | 119 | - | - | - |
| 3 | 120 | - | - | - |
| | | 3,836 27 | 336 0 | 6 912601 |

## Graduation Data

| 1996 US Annuity 2000 Basic, Male | Qx = Ux | Weights (nx) | vx | (Vx-Ux)*2 | Z Difference *2 |
|---|---|---|---|---|---|
| 0 09696 | 0 25021 | 20 0 | 0 24322 | 0 001 | 0 000025 |
| 0 10563 | 0 34551 | 14 5 | 0 24819 | 0 177 | 0 000131 |
| 0 11486 | 0 19832 | 10 1 | 0 23676 | 0 015 | 0 000044 |
| 0 12461 | 0 11767 | 8 5 | 0 23010 | 0 507 | 0 000023 |
| 0 13486 | 0 32102 | 6 2 | 0 23489 | 0 046 | 0 000003 |
| 0 14558 | 0 40000 | 5 0 | 0 23321 | 0 139 | 0 000141 |
| 0 15673 | - | 3 0 | 0 22133 | 0 147 | 0 000017 |
| 0 16829 | - | 3 0 | 0 21718 | 0 141 | 0 000014 |
| 0 18025 | 0 33333 | 3 0 | 0 22093 | 0 038 | |
| 0 19257 | - | - | - | - | |
| 0 20523 | - | - | - | - | |
| 0 21806 | - | - | - | - | |
| 0 23337 | - | - | - | - | |
| 0 24974 | - | - | - | - | |
| 0 26823 | - | - | - | - | |
| 0 28931 | - | - | - | - | |
| 0 31339 | - | - | - | - | |
| 0 34094 | - | - | - | - | |
| 0 37240 | - | - | - | - | |
| 0 40821 | - | - | - | - | |
| 0 44882 | - | - | - | - | |
| 0 49468 | - | - | - | - | |
| 0 54623 | - | - | - | - | |
| 0 60392 | - | - | - | - | |
| 0 66819 | - | - | - | - | |
| 0 73948 | - | - | - | - | |
| 0 81825 | - | - | - | - | |
| 0 90495 | - | - | - | - | |
| 1 000000 | - | - | - | - | |
| 1 000000 | - | - | - | - | |
| 1 000000 | - | - | - | - | |
| 1 000000 | - | - | - | - | |
| 1 000000 | - | - | - | - | |
| 1 000000 | - | - | - | - | |
| | 5 063 | 3,143 6 | 5 184 | 1 430 | 0 007723 |

## Table Calculation

| Graduated | Un Grad | Table | Ratio Grad Mort/ Table | Mortality Ratio | First Section | Second Section | Last Section |
|---|---|---|---|---|---|---|---|
| 0.24322 | 0.25021 | 0.09696 | 2.509 | Other | | 0.2432 | |
| 0.24819 | 0.34551 | 0.10563 | 2.350 | Other | | 0.2482 | |
| 0.23676 | 0.19832 | 0.11486 | 2.061 | Other | | 0.2368 | |
| 0.23010 | 0.11767 | 0.12461 | 1.847 | Other | | 0.2301 | |
| 0.23489 | 0.32102 | 0.13486 | 1.742 | Other | | 0.2349 | |
| 0.23321 | 0.40000 | 0.14558 | 1.602 | Other | | 0.2332 | |
| 0.22133 | - | 0.15673 | 1.412 | Other | | | 0.2470 |
| 0.21718 | - | 0.16829 | 1.290 | Other | | | 0.2608 |
| 0.22093 | 0.33333 | 0.18025 | 1.226 | Other | | | 0.2746 |
| | | | | Other | | | 0.2883 |
| | | | | Other | | | 0.3019 |
| | | | | Other | | | 0.3160 |
| | | | | Other | | | 0.3311 |
| | | | | Other | | | 0.3478 |
| | | | | Other | | | 0.3665 |
| | | | | Other | | | 0.3877 |
| | | | | Other | | | 0.4118 |
| | | | | Other | | | 0.4391 |
| | | | | Other | | | 0.4699 |
| | | | | Other | | | 0.5044 |
| | | | | Other | | | 0.5428 |
| | | | | Other | | | 0.5853 |
| | | | | Other | | | 0.6320 |
| | | | | Other | | | 0.6829 |
| | | | | Other | | | 0.7381 |
| | | | | Other | | | 0.7975 |
| | | | | Other | | | 0.8611 |
| | | | | Other | | | 0.9286 |
| | | | | Other | | | 1.0000 |

## Results Based on Calculation

| Pre Adjusted Mort Table | Predicted Deaths | Final Mort Table | Final Predicted Deaths |
|---|---|---|---|
| 0.24322 | 4.86 | **0.24818** | 4.96 |
| 0.24819 | 3.59 | **0.25325** | 3.66 |
| 0.23676 | 2.39 | **0.24158** | 2.44 |
| 0.23010 | 1.96 | **0.23479** | 2.00 |
| 0.23489 | 1.46 | **0.23968** | 1.49 |
| 0.23321 | 1.17 | **0.23796** | 1.19 |
| 0.24697 | 0.74 | **0.25200** | 0.76 |
| 0.26079 | 0.78 | **0.26610** | 0.80 |
| 0.27459 | 0.82 | **0.28019** | 0.84 |
| 0.28832 | 0.58 | **0.29420** | 0.59 |
| 0.30191 | 0.51 | **0.30807** | 0.52 |
| 0.31598 | - | **0.32242** | - |
| 0.33110 | - | **0.33785** | - |
| 0.34779 | - | **0.35487** | - |
| 0.36652 | - | **0.37399** | - |
| 0.38774 | - | **0.39564** | - |
| 0.41182 | - | **0.42021** | - |
| 0.43910 | - | **0.44805** | - |
| 0.46986 | - | **0.47944** | - |
| 0.50437 | - | **0.51464** | - |
| 0.54280 | - | **0.55386** | - |
| 0.58531 | - | **0.59724** | - |
| 0.63201 | - | **0.64485** | - |
| 0.68295 | - | **0.69687** | - |
| 0.73814 | - | **0.75318** | - |
| 0.79755 | - | **0.81380** | - |
| 0.86109 | - | **0.87863** | - |
| 0.92863 | - | **0.94755** | - |
| 1.00000 | - | **1.00000** | - |
| 1.00000 | - | **1.00000** | - |
| 1.00000 | - | **1.00000** | - |
| 1.00000 | - | **1.00000** | - |
| 1.00000 | - | **1.00000** | - |
| 1.00000 | - | **1.00000** | - |

| | | |
|---|---|---|
| Predicted | 329.29 | 336 0 |
| Actual | 336 00 | 336 0 |
| Ratio | 1 02 | |
| Over 115 | - | |

## Results Using Study 2 as Slope

| Base Table (Study 2) | Predicted | Final Mort Table | Final Predicted Deaths |
|---|---|---|---|
| 0 16480 | 3.29 | **0.26974** | 5.39 |
| 0 17507 | 2 53 | **0.28656** | 4.15 |
| 0 18523 | 1 87 | **0.30319** | 3 06 |
| 0 19440 | 1 65 | **0.31819** | 2.70 |
| 0 20158 | 1 26 | **0.32996** | 2 06 |
| 0 20731 | 1 04 | **0.33933** | 1.70 |
| 0 22055 | 0 66 | **0.36100** | 1 08 |
| 0 23399 | 0.70 | **0.38299** | 1 15 |
| 0 24758 | 0 74 | **0.40523** | 1.22 |
| 0 26125 | 0 52 | **0.42762** | 0 86 |
| 0 27498 | 0.46 | **0.45008** | 0.75 |
| 0 28932 | - | **0.47365** | - |
| 0 30482 | - | **0.49892** | - |
| 0 32199 | - | **0.52703** | - |
| 0 34132 | - | **0.55867** | - |
| 0 36325 | - | **0.59457** | - |
| 0 38822 | - | **0.63543** | - |
| 0 41660 | - | **0.68189** | - |
| 0 44876 | - | **0.73453** | - |
| 0 48504 | - | **0.79391** | - |
| 0 52574 | - | **0.86052** | - |
| 0 57112 | - | **0.93480** | - |
| 0.62143 | - | **1.00000** | - |
| 0 67689 | - | **1.00000** | - |
| 0 73766 | - | **1.00000** | - |
| 0 80391 | - | **1.00000** | - |
| 0 87576 | - | **1.00000** | - |
| 0.95330 | - | **1.00000** | - |
| 1 00000 | - | **1.00000** | - |
| 1 00000 | - | **1.00000** | - |
| 1 00000 | - | **1.00000** | - |
| 1 00000 | - | **1.00000** | - |
| 1 00000 | - | **1.00000** | - |
| 1 00000 | - | **1.00000** | - |

| | | |
|---|---|---|
| Predicted | 205 28 | 336 0 |
| Actual | 336 00 | 336 0 |
| Ratio | 1 64 | |
| Over 115 | - | |

| Experience Data | | | | | | Remarriage Adjustment | | | Graduation Data | | | | | Remarry Results | | | | | Final Tables | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| StudyNum | Age | Exposure | Deaths | Qx | 1996 US Annuity 2000 Basic, Female q | New Base q Table | (Frm) Remarriage Factor (Q-q) | Exposure * qx | Qx = Ux | Weights (nx) | Vx | (Vx-Ux)^2 | Z Difference ^2 | Pre Adjusted Remarry Table | Predicted Remarry | Final Remarry Table | Final Predicted Remarry | Final Mortality Table | Final Remarry Table | Total Decrement |
| 2 | 0 | - | - | - | 0.00179 | 0.00102 | - | - | - | - | - | - | - | - | - | - | - | 0.00102 | - | **0.00102** |
| 2 | 1 | - | - | - | 0.00076 | 0.00043 | - | - | - | - | - | - | - | - | - | - | - | 0.00043 | - | **0.00043** |
| 2 | 2 | - | - | - | 0.00039 | 0.00022 | - | - | - | - | - | - | - | - | - | - | - | 0.00022 | - | **0.00022** |
| 2 | 3 | - | - | - | 0.00029 | 0.00017 | - | - | - | - | - | - | - | - | - | - | - | 0.00017 | - | **0.00017** |
| 2 | 4 | - | - | - | 0.00023 | 0.00013 | - | - | - | - | - | - | - | - | - | - | - | 0.00013 | - | **0.00013** |
| 2 | 5 | - | - | - | 0.00019 | 0.00011 | - | - | - | - | - | - | - | - | - | - | - | 0.00011 | - | **0.00011** |
| 2 | 6 | - | - | - | 0.00016 | 0.00009 | - | - | - | - | - | - | - | - | - | - | - | 0.00009 | - | **0.00009** |
| 2 | 7 | - | - | - | 0.00013 | 0.00007 | - | - | - | - | - | - | - | - | - | - | - | 0.00007 | - | **0.00007** |
| 2 | 8 | - | - | - | 0.00013 | 0.00007 | - | - | - | - | - | - | - | - | - | - | - | 0.00007 | - | **0.00007** |
| 2 | 9 | - | - | - | 0.00013 | 0.00008 | - | - | - | - | - | - | - | - | - | - | - | 0.00008 | - | **0.00008** |
| 2 | 10 | 1.663 | - | - | 0.00014 | 0.00008 | - | 0.00 | - | - | - | - | - | - | - | - | - | 0.00008 | - | **0.00008** |
| 2 | 11 | 7.866 | - | - | 0.00015 | 0.00008 | - | 0.00 | - | - | - | - | - | - | - | - | - | 0.00008 | - | **0.00008** |
| 2 | 12 | 12.578 | - | - | 0.00016 | 0.00009 | - | 0.00 | - | - | - | - | - | - | - | - | - | 0.00009 | - | **0.00009** |
| 2 | 13 | 15.060 | - | - | 0.00017 | 0.00010 | - | 0.00 | - | - | - | - | - | - | - | - | - | 0.00010 | - | **0.00010** |
| 2 | 14 | 16.805 | - | - | 0.00018 | 0.00010 | - | 0.00 | - | - | - | - | - | - | - | - | - | 0.00010 | - | **0.00010** |
| 2 | 15 | 22.959 | - | - | 0.00020 | 0.00011 | - | 0.00 | - | - | - | - | - | - | - | - | - | 0.00011 | - | **0.00011** |
| 2 | 16 | 26.874 | 1.0 | 0.03721 | 0.00021 | 0.00012 | - | 0.00 | - | - | - | - | - | - | - | - | - | 0.00012 | - | **0.00012** |
| 2 | 17 | 28.266 | - | - | 0.00023 | 0.00013 | - | 0.00 | - | 28.3 | 0.01640 | 0.008 | 0.000000 | 0.01660 | 0.47 | **0.01429** | 0.40 | 0.00013 | 0.01429 | **0.01442** |
| 2 | 18 | 30.945 | - | - | 0.00024 | 0.00014 | - | 0.00 | - | 30.9 | 0.01706 | 0.009 | 0.000002 | 0.01410 | 0.44 | **0.01214** | 0.38 | 0.00014 | 0.01214 | **0.01228** |
| 2 | 19 | 32.063 | 3.0 | 0.09357 | 0.00026 | 0.00015 | 0.09342 | 0.00 | 0.09342 | 32.1 | 0.01852 | 0.180 | 0.000004 | 0.01264 | 0.41 | **0.01088** | 0.35 | 0.00015 | 0.01088 | **0.01103** |
| 2 | 20 | 37.304 | 1.0 | 0.02681 | 0.00028 | 0.00016 | 0.02665 | 0.01 | 0.02665 | 37.3 | 0.01656 | 0.004 | 0.000006 | 0.01161 | 0.43 | **0.00999** | 0.37 | 0.00016 | 0.00999 | **0.01015** |
| 2 | 21 | 52.660 | - | - | 0.00029 | 0.00017 | - | 0.01 | - | 52.7 | 0.01403 | 0.010 | 0.000002 | 0.01081 | 0.57 | **0.00930** | 0.49 | 0.00017 | 0.00930 | **0.00947** |
| 2 | 22 | 73.696 | - | - | 0.00031 | 0.00018 | - | 0.01 | - | 73.7 | 0.01250 | 0.012 | 0.000000 | 0.01015 | 0.75 | **0.00874** | 0.64 | 0.00018 | 0.00874 | **0.00891** |
| 2 | 23 | 88.792 | 3.0 | 0.03379 | 0.00033 | 0.00019 | 0.03360 | 0.02 | 0.03360 | 88.8 | 0.01221 | 0.041 | 0.000009 | 0.00959 | 0.85 | **0.00826** | 0.73 | 0.00019 | 0.00826 | **0.00845** |
| 2 | 24 | 102.704 | - | - | 0.00035 | 0.00020 | - | 0.02 | - | 102.7 | 0.00925 | 0.009 | 0.000003 | 0.00911 | 0.94 | **0.00784** | 0.81 | 0.00020 | 0.00784 | **0.00804** |
| 2 | 25 | 131.110 | 1.0 | 0.00763 | 0.00037 | 0.00021 | 0.00742 | 0.03 | 0.00742 | 131.1 | 0.00750 | 0.000 | 0.000003 | 0.00869 | 1.14 | **0.00748** | 0.98 | 0.00021 | 0.00748 | **0.00769** |
| 2 | 26 | 159.011 | 1.0 | 0.00629 | 0.00039 | 0.00022 | 0.00607 | 0.03 | 0.00607 | 159.0 | 0.00575 | 0.000 | 0.000003 | 0.00831 | 1.32 | **0.00715** | 1.14 | 0.00022 | 0.00715 | **0.00737** |
| 2 | 27 | 191.808 | - | - | 0.00040 | 0.00023 | - | 0.04 | - | 191.8 | 0.00403 | 0.003 | 0.000001 | 0.00797 | 1.53 | **0.00686** | 1.32 | 0.00023 | 0.00686 | **0.00709** |
| 2 | 28 | 224.808 | - | - | 0.00042 | 0.00024 | - | 0.05 | - | 224.8 | 0.00321 | 0.002 | 0.000000 | 0.00765 | 1.72 | **0.00659** | 1.48 | 0.00024 | 0.00659 | **0.00683** |
| 2 | 29 | 258.178 | - | - | 0.00044 | 0.00025 | - | 0.06 | - | 258.2 | 0.00344 | 0.003 | 0.000002 | 0.00737 | 1.90 | **0.00634** | 1.64 | 0.00025 | 0.00634 | **0.00659** |
| 2 | 30 | 289.151 | 2.0 | 0.00692 | 0.00045 | 0.00026 | 0.00666 | 0.07 | 0.00666 | 289.2 | 0.00471 | 0.001 | 0.000000 | 0.00710 | 2.05 | **0.00611** | 1.77 | 0.00026 | 0.00611 | **0.00637** |
| 2 | 31 | 323.403 | 3.0 | 0.00928 | 0.00046 | 0.00026 | 0.00901 | 0.09 | 0.00901 | 323.4 | 0.00493 | 0.005 | 0.000003 | 0.00685 | 2.22 | **0.00590** | 1.91 | 0.00026 | 0.00590 | **0.00616** |
| 2 | 32 | 357.036 | - | - | 0.00048 | 0.00027 | - | 0.10 | - | 357.0 | 0.00306 | 0.003 | 0.000000 | 0.00662 | 2.36 | **0.00570** | 2.03 | 0.00027 | 0.00570 | **0.00597** |
| 2 | 33 | 386.981 | 1.0 | 0.00258 | 0.00049 | 0.00028 | 0.00231 | 0.11 | 0.00231 | 387.0 | 0.00294 | 0.000 | 0.000000 | 0.00640 | 2.48 | **0.00551** | 2.13 | 0.00028 | 0.00551 | **0.00579** |
| 2 | 34 | 412.868 | 1.0 | 0.00242 | 0.00050 | 0.00029 | 0.00214 | 0.12 | 0.00214 | 412.9 | 0.00320 | 0.000 | 0.000001 | 0.00619 | 2.56 | **0.00533** | 2.20 | 0.00029 | 0.00533 | **0.00562** |
| 2 | 35 | 449.800 | 3.0 | 0.00667 | 0.00052 | 0.00029 | 0.00638 | 0.13 | 0.00638 | 449.8 | 0.00409 | 0.002 | 0.000000 | 0.00600 | 2.70 | **0.00516** | 2.32 | 0.00029 | 0.00516 | **0.00546** |
| 2 | 36 | 476.534 | 1.0 | 0.00210 | 0.00053 | 0.00030 | 0.00179 | 0.15 | 0.00179 | 476.5 | 0.00340 | 0.001 | 0.000000 | 0.00582 | 2.77 | **0.00501** | 2.39 | 0.00030 | 0.00501 | **0.00531** |
| 2 | 37 | 517.074 | 1.0 | 0.00193 | 0.00056 | 0.00032 | 0.00162 | 0.16 | 0.00162 | 517.1 | 0.00386 | 0.003 | 0.000004 | 0.00564 | 2.92 | **0.00485** | 2.51 | 0.00032 | 0.00485 | **0.00517** |
| 2 | 38 | 558.027 | 5.0 | 0.00896 | 0.00059 | 0.00034 | 0.00862 | 0.19 | 0.00862 | 558.0 | 0.00596 | 0.004 | 0.000000 | 0.00547 | 3.05 | **0.00471** | 2.63 | 0.00034 | 0.00471 | **0.00505** |
| 2 | 39 | 580.896 | 4.0 | 0.00689 | 0.00063 | 0.00036 | 0.00653 | 0.21 | 0.00653 | 580.9 | 0.00593 | 0.000 | 0.000000 | 0.00531 | 3.09 | **0.00457** | 2.66 | 0.00036 | 0.00457 | **0.00493** |
| 2 | 40 | 612.962 | 4.0 | 0.00653 | 0.00068 | 0.00039 | 0.00614 | 0.24 | 0.00614 | 613.0 | 0.00542 | 0.000 | 0.000001 | 0.00516 | 3.16 | **0.00444** | 2.72 | 0.00039 | 0.00444 | **0.00483** |
| 2 | 41 | 636.477 | 2.0 | 0.00314 | 0.00073 | 0.00042 | 0.00272 | 0.27 | 0.00272 | 636.5 | 0.00424 | 0.001 | 0.000000 | 0.00501 | 3.19 | **0.00431** | 2.75 | 0.00042 | 0.00431 | **0.00473** |
| 2 | 42 | 660.852 | 4.0 | 0.00605 | 0.00080 | 0.00045 | 0.00560 | 0.30 | 0.00560 | 660.9 | 0.00449 | 0.001 | 0.000001 | 0.00487 | 3.22 | **0.00419** | 2.77 | 0.00045 | 0.00419 | **0.00465** |
| 2 | 43 | 684.288 | 2.0 | 0.00292 | 0.00087 | 0.00049 | 0.00243 | 0.34 | 0.00243 | 684.3 | 0.00370 | 0.001 | 0.000000 | 0.00473 | 3.24 | **0.00408** | 2.79 | 0.00049 | 0.00408 | **0.00457** |
| 2 | 44 | 706.627 | 4.0 | 0.00566 | 0.00095 | 0.00054 | 0.00512 | 0.38 | 0.00512 | 706.6 | 0.00413 | 0.001 | 0.000000 | 0.00460 | 3.25 | **0.00396** | 2.80 | 0.00054 | 0.00396 | **0.00450** |
| 2 | 45 | 733.515 | 3.0 | 0.00409 | 0.00104 | 0.00059 | 0.00350 | 0.44 | 0.00350 | 733.5 | 0.00359 | 0.000 | 0.000000 | 0.00448 | 3.28 | **0.00385** | 2.83 | 0.00059 | 0.00385 | **0.00445** |
| 2 | 46 | 746.036 | 2.0 | 0.00268 | 0.00115 | 0.00065 | 0.00203 | 0.49 | 0.00203 | 746.0 | 0.00309 | 0.001 | 0.000000 | 0.00436 | 3.25 | **0.00375** | 2.80 | 0.00065 | 0.00375 | **0.00440** |
| 2 | 47 | 766.093 | 4.0 | 0.00522 | 0.00127 | 0.00072 | 0.00450 | 0.55 | 0.00450 | 766.1 | 0.00378 | 0.000 | 0.000000 | 0.00424 | 3.25 | **0.00365** | 2.79 | 0.00072 | 0.00365 | **0.00437** |
| 2 | 48 | 797.088 | 4.0 | 0.00502 | 0.00140 | 0.00080 | 0.00422 | 0.64 | 0.00422 | 797.1 | 0.00368 | 0.000 | 0.000001 | 0.00412 | 3.29 | **0.00355** | 2.83 | 0.00080 | 0.00355 | **0.00435** |
| 2 | 49 | 812.603 | 3.0 | 0.00369 | 0.00155 | 0.00088 | 0.00281 | 0.72 | 0.00281 | 812.6 | 0.00295 | 0.000 | 0.000000 | 0.00401 | 3.26 | **0.00345** | 2.81 | 0.00088 | 0.00345 | **0.00434** |
| 2 | 50 | 841.748 | 2.0 | 0.00238 | 0.00171 | 0.00098 | 0.00140 | 0.82 | 0.00140 | 841.7 | 0.00240 | 0.001 | 0.000000 | 0.00391 | 3.29 | **0.00336** | 2.83 | 0.00098 | 0.00336 | **0.00434** |
| 2 | 51 | 871.085 | 5.0 | 0.00574 | 0.00189 | 0.00108 | 0.00466 | 0.94 | 0.00466 | 871.1 | 0.00302 | 0.002 | 0.000002 | 0.00380 | 3.31 | **0.00327** | 2.86 | 0.00108 | 0.00327 | **0.00435** |
| 2 | 52 | 921.627 | 2.0 | 0.00217 | 0.00208 | 0.00119 | 0.00098 | 1.09 | 0.00098 | 921.6 | 0.00166 | 0.000 | 0.000000 | 0.00370 | 3.41 | **0.00318** | 2.93 | 0.00119 | 0.00318 | **0.00437** |
| 2 | 53 | 968.049 | 1.0 | 0.00103 | 0.00229 | 0.00130 | - | 1.26 | - | 968.0 | 0.00115 | 0.001 | 0.000001 | 0.00360 | 3.49 | **0.00310** | 3.00 | 0.00130 | 0.00310 | **0.00440** |
| 2 | 54 | 1,003.907 | 3.0 | 0.00299 | 0.00251 | 0.00143 | 0.00156 | 1.44 | 0.00156 | 1,003.9 | 0.00222 | 0.000 | 0.000004 | 0.00350 | 3.52 | **0.00302** | 3.03 | 0.00143 | 0.00302 | **0.00445** |
| 2 | 55 | 1,036.014 | 8.0 | 0.00772 | 0.00275 | 0.00157 | 0.00616 | 1.62 | 0.00616 | 1,036.0 | 0.00427 | 0.004 | 0.000001 | 0.00341 | 3.53 | **0.00294** | 3.04 | 0.00157 | 0.00294 | **0.00450** |
| 2 | 56 | 1,063.767 | 6.0 | 0.00564 | 0.00300 | 0.00171 | 0.00393 | 1.82 | 0.00393 | 1,063.8 | 0.00348 | 0.000 | 0.000002 | 0.00332 | 3.53 | **0.00286** | 3.04 | 0.00171 | 0.00286 | **0.00457** |
| 2 | 57 | 1,105.663 | 3.0 | 0.00271 | 0.00328 | 0.00187 | 0.00084 | 2.07 | 0.00084 | 1,105.7 | 0.00207 | 0.002 | 0.000000 | 0.00323 | 3.57 | **0.00278** | 3.07 | 0.00187 | 0.00278 | **0.00465** |
| 2 | 58 | 1,150.047 | 6.0 | 0.00522 | 0.00358 | 0.00204 | 0.00318 | 2.35 | 0.00318 | 1,150.0 | 0.00255 | 0.000 | 0.000000 | 0.00314 | 3.62 | **0.00271** | 3.11 | 0.00204 | 0.00271 | **0.00475** |
| 2 | 59 | 1,196.910 | 5.0 | 0.00418 | 0.00391 | 0.00223 | 0.00195 | 2.67 | 0.00195 | 1,196.9 | 0.00200 | 0.000 | 0.000000 | 0.00306 | 3.66 | **0.00263** | 3.15 | 0.00223 | 0.00263 | **0.00486** |
| 2 | 60 | 1,237.488 | 5.0 | 0.00404 | 0.00428 | 0.00244 | 0.00160 | 3.02 | 0.00160 | 1,237.5 | 0.00153 | 0.000 | 0.000000 | 0.00298 | 3.68 | **0.00256** | 3.17 | 0.00244 | 0.00256 | **0.00500** |
| 2 | 61 | 1,282.115 | 4.0 | 0.00312 | 0.00470 | 0.00268 | 0.00044 | 3.44 | 0.00044 | 1,282.1 | 0.00097 | 0.000 | 0.000000 | 0.00290 | 3.71 | **0.00249** | 3.20 | 0.00268 | 0.00249 | **0.00517** |
| 2 | 62 | 1,321.405 | 6.0 | 0.00454 | 0.00518 | 0.00295 | 0.00159 | 3.90 | 0.00159 | 1,321.4 | 0.00128 | 0.000 | 0.000000 | 0.00282 | 3.72 | **0.00242** | 3.20 | 0.00295 | 0.00242 | **0.00538** |
| 2 | 63 | 1,322.956 | 4.0 | 0.00302 | 0.00573 | 0.00327 | - | 4.32 | - | 1,323.0 | 0.00113 | 0.002 | 0.000004 | 0.00274 | 3.62 | **0.00236** | 3.12 | 0.00327 | 0.00236 | **0.00563** |
| 2 | 64 | 1,315.885 | 11.0 | 0.00836 | 0.00635 | 0.00362 | 0.00474 | 4.76 | 0.00474 | 1,315.9 | 0.00303 | 0.004 | 0.000002 | 0.00266 | 3.51 | **0.00229** | 3.02 | 0.00362 | 0.00229 | **0.00591** |
| 2 | 65 | 1,301.879 | 7.0 | 0.00538 | 0.00702 | 0.00400 | 0.00138 | 5.21 | 0.00138 | 1,301.9 | 0.00172 | 0.000 | 0.000000 | 0.00259 | 3.37 | **0.00223** | 2.90 | 0.00400 | 0.00223 | **0.00623** |
| 2 | 66 | 1,292.433 | 7.0 | 0.00542 | 0.00773 | 0.00441 | 0.00101 | 5.70 | 0.00101 | 1,292.4 | 0.00111 | 0.000 | 0.000000 | 0.00252 | 3.25 | **0.00217** | 2.80 | 0.00441 | 0.00217 | **0.00658** |

## Appendix A

# Table Construction

Study 6

| | Experience Data | | | | Remarriage Adjustment | | | | Graduation Data | | | | | Remarry Results | | | | Final Tables | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| StudyNum | Age | Exposure | Deaths | Qx | 1996 US Annuity 2000 Basic, Female q | New Base q Table | (Fm) Remarriage Factor (Q-q) | Exposure * qx | Qx = Ux | Weights (nx) | Vx | (Vx-Ux)^2 | Z Difference ^2 | Pre Adjusted Remarry Table | Predicted Remarry | Final Remarry Table | Final Predicted Remarry | Final Mortality Table | Final Remarry Table | Total Decrement |
| 2 | 67 | 1,283.151 | 5.0 | 0.00390 | 0.00849 | 0.00484 | - | 6.21 | - | 1,283.2 | 0.00060 | 0.000 | 0.000000 | 0.00245 | 3.14 | **0.00210** | 2.70 | 0.00484 | 0.00210 | **0.00695** |
| 2 | 68 | 1,266.367 | 9.0 | 0.00711 | 0.00929 | 0.00530 | 0.00181 | 6.71 | 0.00181 | 1,266.4 | 0.00127 | 0.000 | 0.000000 | 0.00238 | 3.01 | **0.00204** | 2.59 | 0.00530 | 0.00204 | **0.00734** |
| 2 | 69 | 1,258.679 | 5.0 | 0.00397 | 0.01016 | 0.00580 | - | 7.29 | - | 1,258.7 | 0.00089 | 0.001 | 0.000002 | 0.00231 | 2.90 | **0.00199** | 2.50 | 0.00580 | 0.00199 | **0.00778** |
| 2 | 70 | 1,227.847 | 11.0 | 0.00896 | 0.01117 | 0.00637 | 0.00259 | 7.82 | 0.00259 | 1,227.8 | 0.00217 | 0.000 | 0.000000 | 0.00224 | 2.75 | **0.00193** | 2.37 | 0.00637 | 0.00193 | **0.00829** |
| 2 | 71 | 1,186.622 | 12.0 | 0.01011 | 0.01234 | 0.00704 | 0.00308 | 8.35 | 0.00308 | 1,186.6 | 0.00265 | 0.000 | 0.000000 | 0.00217 | 2.58 | **0.001[illegible]** | 2.22 | 0.00704 | 0.00187 | **0.00891** |
| 2 | 72 | 1,123.137 | 9.0 | 0.00801 | 0.01373 | 0.00783 | 0.00018 | 8.80 | 0.00018 | 1,123.1 | 0.00246 | 0.006 | 0.000012 | 0.00211 | 2.37 | **0.00182** | 2.04 | 0.00783 | 0.00182 | **0.00965** |
| 2 | 73 | 1,066.211 | 19.0 | 0.01782 | 0.01539 | 0.00878 | 0.00904 | 9.36 | 0.00904 | 1,066.2 | 0.00591 | 0.010 | 0.000002 | 0.00205 | 2.18 | **0.00176** | 1.88 | 0.00878 | 0.00176 | **0.01054** |
| 2 | 74 | 989.485 | 14.0 | 0.01415 | 0.01733 | 0.00988 | 0.00427 | 9.78 | 0.00427 | 989.5 | 0.00455 | 0.000 | 0.000001 | 0.00198 | 1.96 | **0.00171** | 1.69 | 0.00988 | 0.00171 | **0.01159** |
| 2 | 75 | 917.910 | 12.0 | 0.01307 | 0.01955 | 0.01115 | 0.00192 | 10.23 | 0.00192 | 917.9 | 0.00365 | 0.003 | 0.000002 | 0.00192 | 1.76 | **0.00165** | 1.52 | 0.01115 | 0.00165 | **0.01280** |
| 2 | 76 | 846.247 | 16.0 | 0.01891 | 0.02208 | 0.01259 | 0.00632 | 10.65 | 0.00632 | 846.2 | 0.00496 | 0.002 | 0.000000 | 0.00186 | 1.57 | **0.00160** | 1.36 | 0.01259 | 0.00160 | **0.01419** |
| 2 | 77 | 769.227 | 14.0 | 0.01820 | 0.02491 | 0.01421 | 0.00399 | 10.93 | 0.00399 | 769.2 | 0.00469 | 0.000 | 0.000000 | 0.00180 | 1.39 | **0.00155** | 1.19 | 0.01421 | 0.00155 | **0.01576** |
| 2 | 78 | 689.342 | 16.0 | 0.02321 | 0.02807 | 0.01601 | 0.00720 | 11.04 | 0.00720 | 689.3 | 0.00513 | 0.003 | 0.000002 | 0.00174 | 1.20 | **0.00150** | 1.03 | 0.01601 | 0.00150 | **0.01751** |
| 2 | 79 | 616.885 | 10.0 | 0.01621 | 0.03161 | 0.01803 | - | 11.12 | - | 616.9 | 0.00358 | 0.008 | 0.000002 | 0.00168 | 1.04 | **0.00145** | 0.89 | 0.01803 | 0.00145 | **0.01948** |
| 2 | 80 | 546.581 | 15.0 | 0.02744 | 0.03558 | 0.02029 | 0.00715 | 11.09 | 0.00715 | 546.6 | 0.00512 | 0.002 | 0.000000 | 0.00163 | 0.89 | **0.00140** | 0.77 | 0.02029 | 0.00140 | **0.02169** |
| 2 | 81 | 481.501 | 14.0 | 0.02908 | 0.04003 | 0.02283 | 0.00625 | 10.99 | 0.00625 | 481.5 | 0.00513 | 0.001 | 0.000001 | 0.00157 | 0.76 | **0.00135** | 0.65 | 0.02283 | 0.00135 | **0.02418** |
| 2 | 82 | 415.945 | 10.0 | 0.02404 | 0.04502 | 0.02567 | - | 10.68 | - | 415.9 | 0.00432 | 0.008 | 0.000003 | 0.00152 | 0.63 | **0.00131** | 0.54 | 0.02567 | 0.00131 | **0.02698** |
| 2 | 83 | 365.068 | 14.0 | 0.03835 | 0.05060 | 0.02886 | 0.00949 | 10.53 | 0.00949 | 365.1 | 0.00610 | 0.004 | - | 0.00146 | 0.53 | **0.00126** | 0.46 | 0.02886 | 0.00126 | **0.03012** |
| 2 | 84 | 310.227 | 9.0 | 0.02901 | 0.05687 | 0.03243 | - | 10.06 | - | - | - | - | - | - | - | - | - | 0.03243 | - | **0.03243** |
| 2 | 85 | 265.238 | 16.0 | 0.06032 | 0.06391 | 0.03644 | 0.02388 | 9.67 | - | - | - | - | - | - | - | - | - | 0.03644 | - | **0.03644** |
| 2 | 86 | 219.718 | 6.0 | 0.02731 | 0.07182 | 0.04095 | - | 9.00 | - | - | - | - | - | - | - | - | - | 0.04095 | - | **0.04095** |
| 2 | 87 | 192.641 | 18.0 | 0.09344 | 0.08068 | 0.04601 | 0.04743 | 8.86 | - | - | - | - | - | - | - | - | - | 0.04601 | - | **0.04601** |
| 2 | 88 | 152.556 | 5.0 | 0.03277 | 0.09056 | 0.05164 | - | 7.88 | - | - | - | - | - | - | - | - | - | 0.05164 | - | **0.05164** |
| 2 | 89 | 121.901 | 4.0 | 0.03281 | 0.10131 | 0.05777 | - | 7.04 | - | - | - | - | - | - | - | - | - | 0.05777 | - | **0.05777** |
| 2 | 90 | 101.912 | 6.0 | 0.05887 | 0.11276 | 0.06430 | - | 6.55 | - | - | - | - | - | - | - | - | - | 0.06430 | - | **0.06430** |
| 2 | 91 | 79.989 | 4.0 | 0.05001 | 0.12473 | 0.07113 | - | 5.69 | - | - | - | - | - | - | - | - | - | 0.07113 | - | **0.07113** |
| 2 | 92 | 62.340 | 1.0 | 0.01604 | 0.13705 | 0.07816 | - | 4.87 | - | - | - | - | - | - | - | - | - | 0.07816 | - | **0.07816** |
| 2 | 93 | 54.348 | 2.0 | 0.03680 | 0.14955 | 0.08529 | - | 4.64 | - | - | - | - | - | - | - | - | - | 0.08529 | - | **0.08529** |
| 2 | 94 | 47.405 | 2.0 | 0.04219 | 0.16208 | 0.09243 | - | 4.38 | - | - | - | - | - | - | - | - | - | 0.09243 | - | **0.09243** |
| 2 | 95 | 40.868 | 6.0 | 0.14681 | 0.17449 | 0.09951 | 0.04730 | 4.07 | - | - | - | - | - | - | - | - | - | 0.09951 | - | **0.09951** |
| 2 | 96 | 31.814 | - | - | 0.18665 | 0.10644 | - | 3.39 | - | - | - | - | - | - | - | - | - | 0.10644 | - | **0.10644** |
| 2 | 97 | 30.740 | 2.0 | 0.06506 | 0.19840 | 0.11314 | - | 3.48 | - | - | - | - | - | - | - | - | - | 0.11314 | - | **0.11314** |
| 2 | 98 | 24.279 | 2.0 | 0.08237 | 0.21034 | 0.11995 | - | 2.91 | - | - | - | - | - | - | - | - | - | 0.11995 | - | **0.11995** |
| 2 | 99 | 18.518 | 3.0 | 0.16201 | 0.22303 | 0.12719 | 0.03482 | 2.36 | - | - | - | - | - | - | - | - | - | 0.12719 | - | **0.12719** |
| 2 | 100 | 13.795 | 1.0 | 0.07249 | 0.23705 | 0.13518 | - | 1.86 | - | - | - | - | - | - | - | - | - | 0.13518 | - | **0.13518** |
| 2 | 101 | 10.526 | - | - | 0.25299 | 0.14427 | - | 1.52 | - | - | - | - | - | - | - | - | - | 0.14427 | - | **0.14427** |
| 2 | 102 | 6.101 | - | - | 0.27141 | 0.15478 | - | 0.94 | - | - | - | - | - | - | - | - | - | 0.15478 | - | **0.15478** |
| 2 | 103 | 5.200 | - | - | 0.29289 | 0.16703 | - | 0.87 | - | - | - | - | - | - | - | - | - | 0.16703 | - | **0.16703** |
| 2 | 104 | 5.619 | - | - | 0.31802 | 0.18136 | - | 1.02 | - | - | - | - | - | - | - | - | - | 0.18136 | - | **0.18136** |
| 2 | 105 | 4.904 | - | - | 0.34737 | 0.19810 | - | 0.97 | - | - | - | - | - | - | - | - | - | 0.19810 | - | **0.19810** |
| 2 | 106 | 3.293 | - | - | 0.38152 | 0.21757 | - | 0.72 | - | - | - | - | - | - | - | - | - | 0.21757 | - | **0.21757** |
| 2 | 107 | 4.000 | - | - | 0.42104 | 0.24011 | - | 0.96 | - | - | - | - | - | - | - | - | - | 0.24011 | - | **0.24011** |
| 2 | 108 | 4.000 | - | - | 0.46652 | 0.26604 | - | 1.06 | - | - | - | - | - | - | - | - | - | 0.26604 | - | **0.26604** |
| 2 | 109 | 4.233 | 1.0 | 0.23625 | 0.51852 | 0.29570 | - | 1.25 | - | - | - | - | - | - | - | - | - | 0.29570 | - | **0.29570** |
| 2 | 110 | 4.000 | - | - | 0.57763 | 0.32941 | - | 1.32 | - | - | - | - | - | - | - | - | - | 0.32941 | - | **0.32941** |
| 2 | 111 | 4.000 | - | - | 0.64443 | 0.36750 | - | 1.47 | - | - | - | - | - | - | - | - | - | 0.36750 | - | **0.36750** |
| 2 | 112 | 4.386 | - | - | 0.71948 | 0.41030 | - | 1.80 | - | - | - | - | - | - | - | - | - | 0.41030 | - | **0.41030** |
| 2 | 113 | 5.000 | - | - | 0.80338 | 0.45815 | - | 2.29 | - | - | - | - | - | - | - | - | - | 0.45815 | - | **0.45815** |
| 2 | 114 | 5.000 | 1.0 | 0.20000 | 0.89669 | 0.51136 | - | 2.56 | - | - | - | - | - | - | - | - | - | 0.51136 | - | **0.51136** |
| 2 | 115 | 4.000 | 1.0 | 0.25000 | 1.00000 | 0.57027 | - | 2.28 | - | - | - | - | - | - | - | - | - | 0.57027 | - | **0.57027** |
| 2 | 116 | 3.956 | - | - | 1.00000 | 0.57027 | - | 2.26 | - | - | - | - | - | - | - | - | - | 0.57027 | - | **0.57027** |
| 2 | 117 | 4.000 | - | - | 1.00000 | 0.57027 | - | 2.28 | - | - | - | - | - | - | - | - | - | 0.57027 | - | **0.57027** |
| 2 | 118 | 4.000 | - | - | 1.00000 | 0.57027 | - | 2.28 | - | - | - | - | - | - | - | - | - | 0.57027 | - | **0.57027** |
| 2 | 119 | 3.334 | - | - | 1.00000 | 0.57027 | - | 1.90 | - | - | - | - | - | - | - | - | - | 0.57027 | - | **0.57027** |
| 2 | 120 | 3.000 | - | - | 1.00000 | 0.57027 | - | 3.00 | - | - | - | - | - | - | - | - | - | 0.57027 | - | **0.57027** |
| | | 49,167.49 | 443.0 | | | | | 343.5 | 0.350 | 47,202.8 | 0.320 | 0.373 | 0.000095 | | | | | | | |
| | | | | | | | | 129.0% | | | | | | | | | | | | |

| | |
|---|---|
| Exposure 80-100 | |
| Total Expected | 245.5 |
| Actual Deaths | 140.0 |
| Ratio | 0.570 |

| | | |
|---|---|---|
| Predicted | 161.51 | 139.0 |
| Actual | 139.01 | 139.0 |
| Ratio | 0.86 | |

Predicted Deaths 214.0

| | Final Tables | | | Annuity Benefit | | | Children Data | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | Final Mortality Table | Final Remarry Table | Total Decrement | Base Annuity Benefit | Additional Remarry Benefit | Total Benefit | Children Annuity Factor | Probability No Children | Remarry - No Kids | Total Factor |
| 0 | 0.00102 | - | **0.00102** | 14.737 | 0.188 | 14.925 | - | | | |
| 1 | 0.00043 | - | **0.00043** | 14.713 | 0.202 | 14.915 | - | | | |
| 2 | 0.00022 | - | **0.00022** | 14.679 | 0.216 | 14.895 | - | | | |
| 3 | 0.00017 | - | **0.00017** | 14.640 | 0.231 | 14.871 | - | | | |
| 4 | 0.00013 | - | **0.00013** | 14.598 | 0.247 | 14.845 | - | | | |
| 5 | 0.00011 | - | **0.00011** | 14.551 | 0.264 | 14.816 | - | | | |
| 6 | 0.00009 | - | **0.00009** | 14.501 | 0.283 | 14.784 | - | | | |
| 7 | 0.00007 | - | **0.00007** | 14.448 | 0.303 | 14.751 | - | | | |
| 8 | 0.00007 | - | **0.00007** | 14.390 | 0.324 | 14.714 | - | | | |
| 9 | 0.00008 | - | **0.00008** | 14.329 | 0.347 | 14.675 | - | | | |
| 10 | 0.00008 | - | **0.00008** | 14.263 | 0.371 | 14.634 | - | | | |
| 11 | 0.00008 | - | **0.00008** | 14.192 | 0.397 | 14.589 | - | | | |
| 12 | 0.00009 | - | **0.00009** | 14.117 | 0.425 | 14.542 | - | | | |
| 13 | 0.00010 | - | **0.00010** | 14.036 | 0.454 | 14.491 | - | | | |
| 14 | 0.00010 | - | **0.00010** | 13.950 | 0.486 | 14.437 | - | | | |
| 15 | 0.00011 | - | **0.00011** | 13.858 | 0.520 | 14.379 | - | | | |
| 16 | 0.00012 | - | **0.00012** | 13.760 | 0.557 | 14.317 | - | | | |
| 17 | 0.00013 | 0.01429 | **0.01442** | 13.655 | 0.605 | 14.259 | ***3.82949*** | ***58.8%*** | 1.1754 | 5.00490 |
| 18 | 0.00014 | 0.01214 | **0.01228** | 13.739 | 0.583 | 14.321 | 4.64724 | 51.2% | 1.0238 | 5.67099 |
| 19 | 0.00015 | 0.01088 | **0.01103** | 13.800 | 0.561 | 14.361 | 5.46498 | 43.6% | 0.8721 | 6.33709 |
| 20 | 0.00016 | 0.00999 | **0.01015** | 13.849 | 0.536 | 14.385 | ***6.28518*** | ***36.0%*** | 0.7200 | 7.00518 |
| 21 | 0.00017 | 0.00930 | **0.00947** | 13.889 | 0.509 | 14.398 | 6.32531 | 34.8% | 0.6953 | 7.02060 |
| 22 | 0.00018 | 0.00874 | **0.00891** | 13.923 | 0.483 | 14.406 | 6.36544 | 33.5% | 0.6706 | 7.03602 |
| 23 | 0.00019 | 0.00826 | **0.00845** | 13.952 | 0.460 | 14.412 | 6.40556 | 32.3% | 0.6459 | 7.05144 |
| 24 | 0.00020 | 0.00784 | **0.00804** | 13.977 | 0.437 | 14.414 | 6.44569 | 31.1% | 0.6212 | 7.06686 |
| 25 | 0.00021 | 0.00748 | **0.00769** | 13.998 | 0.416 | 14.413 | ***6.48582*** | ***29.8%*** | 0.5965 | 7.08228 |
| 26 | 0.00022 | 0.00715 | **0.00737** | 14.015 | 0.395 | 14.410 | 6.59064 | 27.7% | 0.5549 | 7.14549 |
| 27 | 0.00023 | 0.00686 | **0.00709** | 14.030 | 0.374 | 14.403 | 6.69546 | 25.7% | 0.5132 | 7.20870 |
| 28 | 0.00024 | 0.00659 | **0.00683** | 14.041 | 0.353 | 14.394 | 6.80028 | 23.6% | 0.4716 | 7.27191 |
| 29 | 0.00025 | 0.00634 | **0.00659** | 14.050 | 0.332 | 14.382 | 6.90510 | 21.5% | 0.4300 | 7.33511 |
| 30 | 0.00026 | 0.00611 | **0.00637** | 14.056 | 0.311 | 14.367 | ***7.00992*** | ***19.4%*** | 0.3884 | 7.39832 |
| 31 | 0.00026 | 0.00590 | **0.00616** | 14.060 | 0.289 | 14.349 | 6.86426 | 18.2% | 0.3645 | 7.22873 |
| 32 | 0.00027 | 0.00570 | **0.00597** | 14.060 | 0.268 | 14.328 | 6.71859 | 17.0% | 0.3406 | 7.05915 |
| 33 | 0.00028 | 0.00551 | **0.00579** | 14.059 | 0.248 | 14.307 | 6.57292 | 15.8% | 0.3166 | 6.88956 |
| 34 | 0.00029 | 0.00533 | **0.00562** | 14.054 | 0.229 | 14.283 | 6.42726 | 14.6% | 0.2927 | 6.71997 |
| 35 | 0.00029 | 0.00516 | **0.00546** | 14.047 | 0.210 | 14.257 | ***6.28159*** | ***13.4%*** | 0.2688 | 6.55038 |
| 36 | 0.00030 | 0.00501 | **0.00531** | 14.037 | 0.192 | 14.229 | 5.96442 | 13.7% | 0.2731 | 6.23754 |
| 37 | 0.00032 | 0.00485 | **0.00517** | 14.024 | 0.175 | 14.199 | 5.64725 | 13.9% | 0.2775 | 5.92470 |
| 38 | 0.00034 | 0.00471 | **0.00505** | 14.008 | 0.159 | 14.167 | 5.33008 | 14.1% | 0.2818 | 5.61186 |
| 39 | 0.00036 | 0.00457 | **0.00493** | 13.989 | 0.145 | 14.134 | 5.01291 | 14.3% | 0.2861 | 5.29903 |
| 40 | 0.00039 | 0.00444 | **0.00483** | 13.967 | 0.131 | 14.098 | ***4.69574*** | ***14.5%*** | 0.2904 | 4.98619 |
| 41 | 0.00042 | 0.00431 | **0.00473** | 13.942 | 0.119 | 14.061 | 4.15439 | 19.3% | 0.3867 | 4.54109 |
| 42 | 0.00045 | 0.00419 | **0.00465** | 13.914 | 0.108 | 14.022 | 3.61303 | 24.1% | 0.4830 | 4.09600 |
| 43 | 0.00049 | 0.00408 | **0.00457** | 13.882 | 0.099 | 13.981 | 3.07168 | 29.0% | 0.5792 | 3.65091 |
| 44 | 0.00054 | 0.00396 | **0.00450** | 13.847 | 0.092 | 13.939 | 2.53032 | 33.8% | 0.6755 | 3.20581 |
| 45 | 0.00059 | 0.00385 | **0.00445** | 13.809 | 0.086 | 13.894 | ***1.98897*** | ***38.6%*** | 0.7718 | 2.76072 |
| 46 | 0.00065 | 0.00375 | **0.00440** | 13.767 | 0.081 | 13.848 | 1.83013 | 42.8% | 0.8551 | 2.68521 |
| 47 | 0.00072 | 0.00365 | **0.00437** | 13.721 | 0.077 | 13.798 | 1.67130 | 46.9% | 0.9384 | 2.60969 |
| 48 | 0.00080 | 0.00355 | **0.00435** | 13.671 | 0.074 | 13.744 | 1.51246 | 51.1% | 1.0217 | 2.53418 |
| 49 | 0.00088 | 0.00345 | **0.00434** | 13.617 | 0.070 | 13.687 | 1.35362 | 55.3% | 1.1050 | 2.45867 |
| 50 | 0.00098 | 0.00336 | **0.00434** | 13.559 | 0.067 | 13.626 | 1.19479 | 59.4% | 1.1884 | 2.38315 |
| 51 | 0.00108 | 0.00327 | **0.00435** | 13.497 | 0.064 | 13.560 | 1.03595 | 63.6% | 1.2717 | 2.30764 |
| 52 | 0.00119 | 0.00318 | **0.00437** | 13.430 | 0.061 | 13.491 | 0.87712 | 67.8% | 1.3550 | 2.23212 |
| 53 | 0.00130 | 0.00310 | **0.00440** | 13.358 | 0.058 | 13.416 | 0.71828 | 71.9% | 1.4383 | 2.15661 |
| 54 | 0.00143 | 0.00302 | **0.00445** | 13.282 | 0.056 | 13.338 | 0.55945 | 76.1% | 1.5217 | 2.08110 |
| 55 | 0.00157 | 0.00294 | **0.00450** | 13.200 | 0.054 | 13.254 | ***0.40061*** | ***80.2%*** | 1.6050 | 2.00558 |
| 56 | 0.00171 | 0.00286 | **0.00457** | 13.113 | 0.052 | 13.165 | 0.36717 | 81.9% | 1.6372 | 2.00442 |
| 57 | 0.00187 | 0.00278 | **0.00465** | 13.021 | 0.050 | 13.071 | 0.33373 | 83.5% | 1.6695 | 2.00325 |
| 58 | 0.00204 | 0.00271 | **0.00475** | 12.922 | 0.048 | 12.970 | 0.30029 | 85.1% | 1.7018 | 2.00208 |
| 59 | 0.00223 | 0.00263 | **0.00486** | 12.818 | 0.046 | 12.864 | 0.26685 | 86.7% | 1.7341 | 2.00091 |
| 60 | 0.00244 | 0.00256 | **0.00500** | 12.707 | 0.045 | 12.751 | 0.23341 | 88.3% | 1.7663 | 2.00000 |
| 61 | 0.00268 | 0.00249 | **0.00517** | 12.589 | 0.043 | 12.632 | 0.19998 | 89.9% | 1.7986 | 2.00000 |
| 62 | 0.00295 | 0.00242 | **0.00538** | 12.465 | 0.041 | 12.506 | 0.16654 | 91.5% | 1.8309 | 2.00000 |

| | Final Tables | | | Annuity Benefit | | | Children Data | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | Final Mortality Table | Final Remarry Table | Total Decrement | Base Annuity Benefit | Additional Remarry Benefit | Total Benefit | Children Annuity Factor | Probability No Children | Remarry - No Kids | Total Factor |
| 63 | 0.00327 | 0.00236 | **0.00563** | 12.333 | 0.039 | 12.373 | 0.13310 | 93.2% | 1.8631 | 2.00000 |
| 64 | 0.00362 | 0.00229 | **0.00591** | 12.195 | 0.037 | 12.233 | 0.09966 | 94.8% | 1.8954 | 2.00000 |
| 65 | 0.00400 | 0.00223 | **0.00623** | 12.050 | 0.036 | 12.086 | ***0.06622*** | ***96.4%*** | 1.9277 | 2.00000 |
| 66 | 0.00441 | 0.00217 | **0.00658** | 11.898 | 0.034 | 11.932 | 0.06285 | 96.7% | 1.9333 | 2.00000 |
| 67 | 0.00484 | 0.00210 | **0.00695** | 11.738 | 0.032 | 11.770 | 0.05948 | 96.9% | 1.9389 | 2.00000 |
| 68 | 0.00530 | 0.00204 | **0.00734** | 11.570 | 0.030 | 11.601 | 0.05611 | 97.2% | 1.9445 | 2.00062 |
| 69 | 0.00580 | 0.00199 | **0.00778** | 11.394 | 0.029 | 11.422 | 0.05273 | 97.5% | 1.9501 | 2.00286 |
| 70 | 0.00637 | 0.00193 | **0.00829** | 11.208 | 0.027 | 11.235 | 0.04936 | 97.8% | 1.9557 | 2.00510 |
| 71 | 0.00704 | 0.00187 | **0.00891** | 11.014 | 0.025 | 11.040 | 0.04599 | 98.1% | 1.9613 | 2.00733 |
| 72 | 0.00783 | 0.00182 | **0.00965** | 10.812 | 0.023 | 10.835 | 0.04262 | 98.3% | 1.9670 | 2.00957 |
| 73 | 0.00878 | 0.00176 | **0.01054** | 10.601 | 0.022 | 10.623 | 0.03925 | 98.6% | 1.9726 | 2.01181 |
| 74 | 0.00988 | 0.00171 | **0.01159** | 10.382 | 0.020 | 10.402 | 0.03588 | 98.9% | 1.9782 | 2.01405 |
| 75 | 0.01115 | 0.00165 | **0.01280** | 10.157 | 0.018 | 10.175 | ***0.03251*** | ***99.2%*** | 1.9838 | 2.01629 |
| 76 | 0.01259 | 0.00160 | **0.01419** | 9.925 | 0.016 | 9.941 | | | | 2.00000 |
| 77 | 0.01421 | 0.00155 | **0.01576** | 9.687 | 0.014 | 9.701 | | | | 2.00000 |
| 78 | 0.01601 | 0.00150 | **0.01751** | 9.444 | 0.013 | 9.456 | | | | 2.00000 |
| 79 | 0.01803 | 0.00145 | **0.01948** | 9.196 | 0.011 | 9.207 | | | | 2.00000 |
| 80 | 0.02029 | 0.00140 | **0.02169** | 8.944 | 0.009 | 8.953 | | | | 2.00000 |
| 81 | 0.02283 | 0.00135 | **0.02418** | 8.688 | 0.007 | 8.695 | | | | 2.00000 |
| 82 | 0.02567 | 0.00131 | **0.02698** | 8.430 | 0.005 | 8.435 | | | | 2.00000 |
| 83 | 0.02886 | 0.00126 | **0.03012** | 8.171 | 0.002 | 8.173 | | | | 2.00000 |
| 84 | 0.03243 | - | **0.03243** | 7.911 | - | 7.911 | | | | 2.00000 |
| 85 | 0.03644 | - | **0.03644** | 7.643 | - | 7.643 | | | | 2.00000 |
| 86 | 0.04095 | - | **0.04095** | 7.377 | - | 7.377 | | | | 2.00000 |
| 87 | 0.04601 | - | **0.04601** | 7.115 | - | 7.115 | | | | 2.00000 |
| 88 | 0.05164 | - | **0.05164** | 6.858 | - | 6.858 | | | | 2.00000 |
| 89 | 0.05777 | - | **0.05777** | 6.609 | - | 6.609 | | | | 2.00000 |
| 90 | 0.06430 | - | **0.06430** | 6.370 | - | 6.370 | | | | 2.00000 |
| 91 | 0.07113 | - | **0.07113** | 6.141 | - | 6.141 | | | | 2.00000 |
| 92 | 0.07816 | - | **0.07816** | 5.922 | - | 5.922 | | | | 2.00000 |
| 93 | 0.08529 | - | **0.08529** | 5.713 | - | 5.713 | | | | 2.00000 |
| 94 | 0.09243 | - | **0.09243** | 5.513 | - | 5.513 | | | | 2.00000 |
| 95 | 0.09951 | - | **0.09951** | 5.321 | - | 5.321 | | | | 2.00000 |
| 96 | 0.10644 | - | **0.10644** | 5.134 | - | 5.134 | | | | 2.00000 |
| 97 | 0.11314 | - | **0.11314** | 4.951 | - | 4.951 | | | | 2.00000 |
| 98 | 0.11995 | - | **0.11995** | 4.767 | - | 4.767 | | | | 2.00000 |
| 99 | 0.12719 | - | **0.12719** | 4.580 | - | 4.580 | | | | 2.00000 |
| 100 | 0.13518 | - | **0.13518** | 4.388 | - | 4.388 | | | | 2.00000 |
| 101 | 0.14427 | - | **0.14427** | 4.192 | - | 4.192 | | | | 2.00000 |
| 102 | 0.15478 | - | **0.15478** | 3.992 | - | 3.992 | | | | 2.00000 |
| 103 | 0.16703 | - | **0.16703** | 3.787 | - | 3.787 | | | | 2.00000 |
| 104 | 0.18136 | - | **0.18136** | 3.580 | - | 3.580 | | | | 2.00000 |
| 105 | 0.19810 | - | **0.19810** | 3.372 | - | 3.372 | | | | 2.00000 |
| 106 | 0.21757 | - | **0.21757** | 3.166 | - | 3.166 | | | | 2.00000 |
| 107 | 0.24011 | - | **0.24011** | 2.962 | - | 2.962 | | | | 2.00000 |
| 108 | 0.26604 | - | **0.26604** | 2.762 | | 2.762 | | | | 2.00000 |
| 109 | 0.29570 | - | **0.29570** | 2.569 | | 2.569 | | | | 2.00000 |
| 110 | 0.32941 | - | **0.32941** | 2.384 | | 2.384 | | | | 2.00000 |
| 111 | 0.36750 | - | **0.36750** | 2.208 | | 2.208 | | | | 2.00000 |
| 112 | 0.41030 | - | **0.41030** | 2.043 | | 2.043 | | | | 2.00000 |
| 113 | 0.45815 | - | **0.45815** | 1.892 | | 1.892 | | | | 2.00000 |
| 114 | 0.51136 | - | **0.51136** | 1.762 | | 1.762 | | | | 2.00000 |
| 115 | 0.57027 | - | **0.57027** | 1.668 | | 1.668 | | | | 2.00000 |
| 116 | 0.57027 | - | **0.57027** | 1.664 | | 1.664 | | | | 2.00000 |
| 117 | 0.57027 | - | **0.57027** | 1.654 | | 1.654 | | | | 2.00000 |
| 118 | 0.57027 | - | **0.57027** | 1.628 | | 1.628 | | | | 2.00000 |
| 119 | 0.57027 | - | **0.57027** | 1.563 | | 1.563 | | | | 2.00000 |
| 120 | 0.57027 | - | **0.57027** | 1.402 | | 1.402 | | | | 2.00000 |

# Appendix C

## Base Family Household Data

Table F1. Family Households/1, by Type, Age of Own Children, Age of Family Members, and Age, Race and Hispanic Origin/2 of Householder: March 2000

Source: U.S. Census Bureau Internet Release date: June 29, 2001

(Numbers in thousands, except for averages.)

| Total Family Households AND All Races | Total | Age of Householder | | | | | | | | | | Mean age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Under 20 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-54 years | 55-64 years | 65-74 years | 75+ years | |
| ALL FAMILIES | 72,025 | 553 | 2,800 | 5,489 | 7,518 | 9,100 | 9,606 | 15,803 | 9,569 | 7,025 | 4,562 | 47.2 |
| SIZE OF FAMILY | | | | | | | | | | | | |
| Two members | 31,455 | 234 | 1,277 | 2,059 | 1,856 | 1,771 | 2,097 | 6,237 | 6,397 | 5,638 | 3,889 | 53.9 |
| Three members | 16,073 | 160 | 820 | 1,539 | 2,009 | 2,073 | 2,299 | 3,989 | 1,875 | 856 | 452 | 43.7 |
| Four members | 14,496 | 82 | 460 | 1,150 | 2,192 | 2,958 | 2,981 | 3,470 | 796 | 297 | 110 | 40.9 |
| Five members | 6,526 | 41 | 149 | 481 | 952 | 1,546 | 1,510 | 1,387 | 271 | 134 | 55 | 40.6 |
| Six members | 2,226 | 19 | 61 | 166 | 339 | 519 | 465 | 465 | 119 | 39 | 35 | 40.8 |
| Seven or more members | 1,249 | 16 | 33 | 94 | 169 | 234 | 253 | 256 | 110 | 61 | 22 | 42.5 |
| AGE OF OWN CHILDREN | | | | | | | | | | | | |
| With own children, any age | 44,826 | 230 | 1,793 | 3,853 | 6,064 | 7,894 | 8,244 | 10,509 | 3,396 | 1,669 | 1,172 | 42.5 |
| With own children under 25 years | 39,904 | 228 | 1,792 | 3,852 | 6,058 | 7,877 | 8,211 | 9,705 | 1,890 | 254 | 37 | 39.6 |
| With own children under 18 years | 34,605 | 216 | 1,784 | 3,844 | 6,042 | 7,701 | 7,403 | 6,617 | 865 | 108 | 25 | 38.1 |
| With own children under 12 years | 25,885 | 206 | 1,776 | 3,805 | 5,784 | 6,353 | 4,851 | 2,766 | 294 | 36 | 15 | 35.7 |
| With own children under 6 years | 14,986 | 203 | 1,686 | 3,071 | 4,097 | 3,418 | 1,720 | 688 | 89 | 9 | 7 | 32.9 |
| With own children under 5 years | 13,035 | 195 | 1,615 | 2,763 | 3,606 | 2,854 | 1,390 | 532 | 69 | 6 | 5 | 32.4 |
| With own children under 3 years | 8,786 | 180 | 1,300 | 2,022 | 2,521 | 1,750 | 697 | 267 | 46 | 0 | 2 | 31.5 |
| With own children under 1 year | 2,939 | 81 | 501 | 731 | 842 | 519 | 192 | 61 | 11 | 0 | 0 | 30.6 |
| With own children 3-5 years | 9,206 | 29 | 818 | 1,758 | 2,516 | 2,337 | 1,204 | 484 | 47 | 9 | 5 | 33.7 |
| With own children 6-11 years | 16,964 | 9 | 262 | 1,853 | 3,385 | 4,739 | 4,063 | 2,370 | 239 | 31 | 12 | 37.8 |
| With own children 12-17 years | 15,768 | 16 | 23 | 205 | 1,287 | 3,522 | 4,774 | 5,158 | 690 | 82 | 11 | 42.9 |
| With own children 6-17 years | 26,524 | 23 | 277 | 1,922 | 3,788 | 6,388 | 6,831 | 6,349 | 817 | 106 | 23 | 40.3 |
| FAMILIES W/OWN CHILDREN, SPECIFIC | | | | | | | | | | | | |
| No own children under 25 | 32,157 | 325 | 1,008 | 1,639 | 1,460 | 1,229 | 1,406 | 6,112 | 7,683 | 6,771 | 4,525 | 56.6 |
| Own children, more than one age group | 17,412 | 16 | 576 | 1,732 | 3,114 | 4,344 | 4,027 | 3,250 | 305 | 42 | 5 | 38.3 |
| Own children 18-24 only | 5,263 | 11 | 8 | 6 | 15 | 170 | 797 | 3,075 | 1,022 | 146 | 12 | 50.0 |
| Own children 12-17 only | 5,943 | 10 | 8 | 39 | 240 | 1,100 | 1,685 | 2,385 | 420 | 45 | 11 | 44.6 |
| Own children 6-11 only | 5,294 | 3 | 85 | 642 | 1,073 | 1,358 | 1,235 | 774 | 98 | 19 | 7 | 37.9 |
| Own children 3-5 only | 2,215 | 18 | 321 | 538 | 580 | 393 | 228 | 120 | 15 | 2 | - | 32.2 |
| Own children under 3 only | 3,741 | 169 | 794 | 893 | 1,035 | 505 | 227 | 88 | 26 | - | 2 | 29.9 |

# Appendix C

## Child's Age by Age of Householder

| Total Family Households | | | Age of Householder | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Childs Age | | Total | Under 20 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-54 years | 55-64 years | 65-74 years | 75+ years | Total |
| | 24 | 757 | 1.7 | 1.1 | 1.1 | 2.3 | 25.1 | 115.4 | 441.1 | 146.4 | 20.9 | 1.7 | 757 |
| | 23 | 757 | 1.7 | 1.1 | 1.1 | 2.3 | 25.1 | 115.4 | 441.1 | 146.4 | 20.9 | 1.7 | 757 |
| | 22 | 757 | 1.7 | 1.1 | 1.1 | 2.3 | 25.1 | 115.4 | 441.1 | 146.4 | 20.9 | 1.7 | 757 |
| | 21 | 757 | 1.7 | 1.1 | 1.1 | 2.3 | 25.1 | 115.4 | 441.1 | 146.4 | 20.9 | 1.7 | 757 |
| | 20 | 757 | 1.7 | 1.1 | 1.1 | 2.3 | 25.1 | 115.4 | 441.1 | 146.4 | 20.9 | 1.7 | 757 |
| | 19 | 757 | 1.7 | 1.1 | 1.1 | 2.3 | 25.1 | 115.4 | 441.1 | 146.4 | 20.9 | 1.7 | 757 |
| | 18 | 757 | 1.7 | 1.1 | 1.1 | 2.3 | 25.1 | 115.4 | 441.1 | 146.4 | 20.9 | 1.7 | 757 |
| | 17 | 1,453 | 1.7 | 1.3 | 6.5 | 43.0 | 224.7 | 425.3 | 641.8 | 95.2 | 12.0 | 1.7 | 1,453 |
| | 16 | 1,453 | 1.7 | 1.3 | 6.5 | 43.0 | 224.7 | 425.3 | 641.8 | 95.2 | 12.0 | 1.7 | 1,453 |
| | 15 | 1,453 | 1.7 | 1.3 | 6.5 | 43.0 | 224.7 | 425.3 | 641.8 | 95.2 | 12.0 | 1.7 | 1,453 |
| | 14 | 1,453 | 1.7 | 1.3 | 6.5 | 43.0 | 224.7 | 425.3 | 641.8 | 95.2 | 12.0 | 1.7 | 1,453 |
| | 13 | 1,453 | 1.7 | 1.3 | 6.5 | 43.0 | 224.7 | 425.3 | 641.8 | 95.2 | 12.0 | 1.7 | 1,453 |
| | 12 | 1,453 | 1.7 | 1.3 | 6.5 | 43.0 | 224.7 | 425.3 | 641.8 | 95.2 | 12.0 | 1.7 | 1,453 |
| | 11 | 1,817 | 0.5 | 15.0 | 122.3 | 281.2 | 489.2 | 521.8 | 346.3 | 34.2 | 4.5 | 1.3 | 1,816 |
| | 10 | 1,817 | 0.5 | 15.0 | 122.3 | 281.2 | 489.2 | 521.8 | 346.3 | 34.2 | 4.5 | 1.3 | 1,816 |
| | 9 | 1,817 | 0.5 | 15.0 | 122.3 | 281.2 | 489.2 | 521.8 | 346.3 | 34.2 | 4.5 | 1.3 | 1,816 |
| | 8 | 1,817 | 0.5 | 15.0 | 122.3 | 281.2 | 489.2 | 521.8 | 346.3 | 34.2 | 4.5 | 1.3 | 1,816 |
| | 7 | 1,817 | 0.5 | 15.0 | 122.3 | 281.2 | 489.2 | 521.8 | 346.3 | 34.2 | 4.5 | 1.3 | 1,816 |
| | 6 | 1,817 | 0.5 | 15.0 | 122.3 | 281.2 | 489.2 | 521.8 | 346.3 | 34.2 | 4.5 | 1.3 | 1,816 |
| | 5 | 1,951 | 8.0 | 71.0 | 308.0 | 491.0 | 564.0 | 330.0 | 156.0 | 20.0 | 3.0 | 2.0 | 1,953 |
| | 4 | 2,125 | 7.5 | 157.5 | 370.5 | 542.5 | 552.0 | 346.5 | 132.5 | 11.5 | 3.0 | 1.5 | 2,125 |
| | 3 | 2,125 | 7.5 | 157.5 | 370.5 | 542.5 | 552.0 | 346.5 | 132.5 | 11.5 | 3.0 | 1.5 | 2,125 |
| | 2 | 2,924 | 49.5 | 399.5 | 645.5 | 839.5 | 615.5 | 252.5 | 103.0 | 17.5 | - | 1.0 | 2,924 |
| | 1 | 2,924 | 49.5 | 399.5 | 645.5 | 839.5 | 615.5 | 252.5 | 103.0 | 17.5 | - | 1.0 | 2,924 |
| | 0 | 2,939 | 81.0 | 501.0 | 731.0 | 842.0 | 519.0 | 192.0 | 61.0 | 11.0 | - | - | 2,938 |
| | Total | 39,904 | 228 | 1,792 | 3,852 | 6,058 | 7,877 | 8,211 | 9,705 | 1,890 | 254 | 37 | 39,904 |
| Total Families | | 72,025 | 553 | 2,800 | 5,489 | 7,518 | 9,100 | 9,606 | 15,803 | 9,569 | 7,025 | 4,562 | 72,025 |

# Appendix C

## Distribution of Children by Age of Householder

| Total Family Households | | Age of Householder | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Childs Age | Total | Under 20 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-54 years | 55-64 years | 65-74 years | 75+ years | Total |
| 24 | 1.05% | 0.31% | 0.04% | 0.02% | 0.03% | 0.28% | 1.20% | 2.79% | 1.53% | 0.30% | 0.04% | 1.05% |
| 23 | 1.05% | 0.31% | 0.04% | 0.02% | 0.03% | 0.28% | 1.20% | 2.79% | 1.53% | 0.30% | 0.04% | 1.05% |
| 22 | 1.05% | 0.31% | 0.04% | 0.02% | 0.03% | 0.28% | 1.20% | 2.79% | 1.53% | 0.30% | 0.04% | 1.05% |
| 21 | 1.05% | 0.31% | 0.04% | 0.02% | 0.03% | 0.28% | 1.20% | 2.79% | 1.53% | 0.30% | 0.04% | 1.05% |
| 20 | 1.05% | 0.31% | 0.04% | 0.02% | 0.03% | 0.28% | 1.20% | 2.79% | 1.53% | 0.30% | 0.04% | 1.05% |
| 19 | 1.05% | 0.31% | 0.04% | 0.02% | 0.03% | 0.28% | 1.20% | 2.79% | 1.53% | 0.30% | 0.04% | 1.05% |
| 18 | 1.05% | 0.31% | 0.04% | 0.02% | 0.03% | 0.28% | 1.20% | 2.79% | 1.53% | 0.30% | 0.04% | 1.05% |
| 17 | 2.02% | 0.30% | 0.05% | 0.12% | 0.57% | 2.47% | 4.43% | 4.06% | 0.99% | 0.17% | 0.04% | 2.02% |
| 16 | 2.02% | 0.30% | 0.05% | 0.12% | 0.57% | 2.47% | 4.43% | 4.06% | 0.99% | 0.17% | 0.04% | 2.02% |
| 15 | 2.02% | 0.30% | 0.05% | 0.12% | 0.57% | 2.47% | 4.43% | 4.06% | 0.99% | 0.17% | 0.04% | 2.02% |
| 14 | 2.02% | 0.30% | 0.05% | 0.12% | 0.57% | 2.47% | 4.43% | 4.06% | 0.99% | 0.17% | 0.04% | 2.02% |
| 13 | 2.02% | 0.30% | 0.05% | 0.12% | 0.57% | 2.47% | 4.43% | 4.06% | 0.99% | 0.17% | 0.04% | 2.02% |
| 12 | 2.02% | 0.30% | 0.05% | 0.12% | 0.57% | 2.47% | 4.43% | 4.06% | 0.99% | 0.17% | 0.04% | 2.02% |
| 11 | 2.52% | 0.09% | 0.54% | 2.23% | 3.74% | 5.38% | 5.43% | 2.19% | 0.36% | 0.06% | 0.03% | 2.52% |
| 10 | 2.52% | 0.09% | 0.54% | 2.23% | 3.74% | 5.38% | 5.43% | 2.19% | 0.36% | 0.06% | 0.03% | 2.52% |
| 9 | 2.52% | 0.09% | 0.54% | 2.23% | 3.74% | 5.38% | 5.43% | 2.19% | 0.36% | 0.06% | 0.03% | 2.52% |
| 8 | 2.52% | 0.09% | 0.54% | 2.23% | 3.74% | 5.38% | 5.43% | 2.19% | 0.36% | 0.06% | 0.03% | 2.52% |
| 7 | 2.52% | 0.09% | 0.54% | 2.23% | 3.74% | 5.38% | 5.43% | 2.19% | 0.36% | 0.06% | 0.03% | 2.52% |
| 6 | 2.52% | 0.09% | 0.54% | 2.23% | 3.74% | 5.38% | 5.43% | 2.19% | 0.36% | 0.06% | 0.03% | 2.52% |
| 5 | 2.71% | 1.45% | 2.54% | 5.61% | 6.53% | 6.20% | 3.44% | 0.99% | 0.21% | 0.04% | 0.04% | 2.71% |
| 4 | 2.95% | 1.36% | 5.63% | 6.75% | 7.22% | 6.07% | 3.61% | 0.84% | 0.12% | 0.04% | 0.03% | 2.95% |
| 3 | 2.95% | 1.36% | 5.63% | 6.75% | 7.22% | 6.07% | 3.61% | 0.84% | 0.12% | 0.04% | 0.03% | 2.95% |
| 2 | 4.06% | 8.95% | 14.27% | 11.76% | 11.17% | 6.76% | 2.63% | 0.65% | 0.18% | 0.00% | 0.02% | 4.06% |
| 1 | 4.06% | 8.95% | 14.27% | 11.76% | 11.17% | 6.76% | 2.63% | 0.65% | 0.18% | 0.00% | 0.02% | 4.06% |
| 0 | 4.08% | 14.65% | 17.89% | 13.32% | 11.20% | 5.70% | 2.00% | 0.39% | 0.11% | 0.00% | 0.00% | 4.08% |
| Total | 55.40% | 41.23% | 64.00% | 70.18% | 80.58% | 86.56% | 85.48% | 61.41% | 19.75% | 3.62% | 0.81% | 55.40% |
| None | 44.60% | 58.77% | 36.00% | 29.82% | 19.42% | 13.44% | 14.52% | 38.59% | 80.25% | 96.38% | 99.19% | 44.60% |

# Appendix C

## Annuity Factors by Age of Householder

Interest Rate 7.00%

| Total Family Households<br>Childs Age | Avg Ben Years | Age of Householder<br>Under 20 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-54 years | 55-64 years | 65-74 years | 75+ years | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | - | - | - | - | - | - | - | - | - | - | - | - |
| 23 | - | - | - | - | - | - | - | - | - | - | - | - |
| 22 | - | - | - | - | - | - | - | - | - | - | - | - |
| 21 | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - |
| 19 | - | - | - | - | - | - | - | - | - | - | - | - |
| 18 | - | - | - | - | - | - | - | - | - | - | - | - |
| 17 | 0.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.02 | 0.02 | 0.01 | 0.00 | 0.00 | 0.07 |
| 16 | 1.5 | 0.00 | 0.00 | 0.00 | 0.01 | 0.04 | 0.07 | 0.06 | 0.01 | 0.00 | 0.00 | 0.19 |
| 15 | 2.5 | 0.01 | 0.00 | 0.00 | 0.01 | 0.06 | 0.11 | 0.10 | 0.02 | 0.00 | 0.00 | 0.31 |
| 14 | 3.5 | 0.01 | 0.00 | 0.00 | 0.02 | 0.08 | 0.14 | 0.13 | 0.03 | 0.01 | 0.00 | 0.43 |
| 13 | 4.5 | 0.01 | 0.00 | 0.00 | 0.02 | 0.10 | 0.18 | 0.16 | 0.04 | 0.01 | 0.00 | 0.53 |
| 12 | 5.5 | 0.01 | 0.00 | 0.01 | 0.03 | 0.12 | 0.21 | 0.19 | 0.05 | 0.01 | 0.00 | 0.63 |
| 11 | 6.5 | 0.00 | 0.03 | 0.12 | 0.20 | 0.29 | 0.30 | 0.12 | 0.02 | 0.00 | 0.00 | 1.09 |
| 10 | 7.5 | 0.01 | 0.03 | 0.14 | 0.23 | 0.33 | 0.33 | 0.13 | 0.02 | 0.00 | 0.00 | 1.22 |
| 9 | 8.5 | 0.01 | 0.04 | 0.15 | 0.25 | 0.36 | 0.36 | 0.15 | 0.02 | 0.00 | 0.00 | 1.34 |
| 8 | 9.5 | 0.01 | 0.04 | 0.16 | 0.27 | 0.39 | 0.39 | 0.16 | 0.03 | 0.00 | 0.00 | 1.45 |
| 7 | 10.5 | 0.01 | 0.04 | 0.17 | 0.29 | 0.42 | 0.42 | 0.17 | 0.03 | 0.00 | 0.00 | 1.56 |
| 6 | 11.5 | 0.01 | 0.04 | 0.18 | 0.31 | 0.44 | 0.45 | 0.18 | 0.03 | 0.01 | 0.00 | 1.66 |
| 5 | 12.5 | 0.13 | 0.22 | 0.49 | 0.57 | 0.54 | 0.30 | 0.09 | 0.02 | 0.00 | 0.00 | 2.36 |
| 4 | 13.5 | 0.12 | 0.51 | 0.62 | 0.66 | 0.56 | 0.33 | 0.08 | 0.01 | 0.00 | 0.00 | 2.90 |
| 3 | 14.5 | 0.13 | 0.54 | 0.64 | 0.69 | 0.58 | 0.34 | 0.08 | 0.01 | 0.00 | 0.00 | 3.02 |
| 2 | 15.5 | 0.89 | 1.42 | 1.17 | 1.11 | 0.67 | 0.26 | 0.06 | 0.02 | - | 0.00 | 5.60 |
| 1 | 16.5 | 0.92 | 1.47 | 1.21 | 1.15 | 0.70 | 0.27 | 0.07 | 0.02 | - | 0.00 | 5.80 |
| 0 | 17.5 | 1.55 | 1.90 | 1.41 | 1.19 | 0.60 | 0.21 | 0.04 | 0.01 | - | - | 6.92 |
| Total | | 3.83 | 6.29 | 6.49 | 7.01 | 6.28 | 4.70 | 1.99 | 0.40 | 0.07 | 0.03 | 37.08 |

# Appendix D

## Whole Life Annuity Factors

Interest 7.00%
Multiplier 52.00 (52 for Weekly, 1 for Annual)

| Age | Study 1 | Study 2 | Study 3 | Study 4 | Study 5 | Study 6 |
|---|---|---|---|---|---|---|
| 0 | 723.97 | 723.97 | 700.41 | 723.97 | 750.09 | 750.09 |
| 1 | 730.69 | 730.69 | 711.35 | 730.69 | 749.57 | 749.57 |
| 2 | 731.89 | 731.89 | 713.52 | 731.89 | 748.55 | 748.55 |
| 3 | 731.46 | 731.46 | 713.08 | 731.46 | 747.30 | 747.30 |
| 4 | 730.58 | 730.58 | 711.96 | 730.58 | 745.92 | 745.92 |
| 5 | 729.42 | 729.42 | 710.40 | 729.42 | 744.41 | 744.41 |
| 6 | 728.04 | 728.04 | 708.51 | 728.04 | 742.78 | 742.78 |
| 7 | 726.46 | 726.46 | 706.32 | 726.46 | 741.03 | 741.03 |
| 8 | 724.71 | 724.71 | 703.87 | 724.71 | 739.14 | 739.14 |
| 9 | 723.00 | 723.00 | 701.52 | 723.00 | 737.11 | 737.11 |
| 10 | 721.32 | 721.32 | 699.23 | 721.32 | 734.95 | 734.95 |
| 11 | 719.63 | 719.63 | 696.96 | 719.63 | 732.64 | 732.64 |
| 12 | 717.92 | 717.92 | 694.68 | 717.92 | 730.16 | 730.16 |
| 13 | 716.16 | 716.16 | 692.34 | 716.16 | 727.52 | 727.52 |
| 14 | 714.33 | 714.33 | 689.93 | 714.33 | 724.70 | 724.70 |
| 15 | 712.42 | 712.42 | 687.43 | 712.42 | 721.69 | 721.69 |
| 16 | 710.42 | 710.42 | 684.81 | 710.42 | 718.47 | 718.47 |
| 17 | 708.32 | 708.32 | 682.07 | 708.32 | 715.49 | 715.49 |
| 18 | 706.13 | 706.13 | 679.22 | 706.13 | 718.70 | 718.70 |
| 19 | 703.84 | 703.84 | 676.25 | 703.84 | 720.75 | 720.75 |
| 20 | 701.44 | 701.44 | 673.16 | 701.44 | 722.02 | 722.02 |
| 21 | 698.94 | 698.94 | 669.94 | 698.94 | 722.68 | 722.68 |
| 22 | 696.33 | 696.33 | 666.61 | 696.33 | 723.13 | 723.13 |
| 23 | 693.62 | 693.62 | 663.16 | 693.62 | 723.41 | 723.41 |
| 24 | 690.81 | 690.81 | 659.60 | 690.81 | 723.52 | 723.52 |
| 25 | 687.88 | 687.88 | 655.92 | 687.88 | 723.48 | 723.48 |
| 26 | 684.84 | 684.84 | 652.12 | 684.84 | 723.31 | 723.31 |
| 27 | 681.66 | 681.66 | 648.15 | 681.66 | 722.98 | 722.98 |
| 28 | 678.31 | 678.31 | 644.00 | 678.31 | 722.50 | 722.50 |
| 29 | 674.77 | 674.77 | 639.61 | 674.77 | 721.86 | 721.86 |
| 30 | 671.01 | 671.01 | 634.94 | 671.01 | 721.07 | 721.07 |
| 31 | 666.98 | 666.98 | 629.94 | 666.98 | 720.12 | 720.12 |
| 32 | 662.66 | 662.66 | 624.55 | 662.66 | 719.08 | 719.08 |
| 33 | 657.98 | 657.98 | 618.72 | 657.98 | 717.94 | 717.94 |
| 34 | 652.95 | 652.95 | 612.40 | 652.95 | 716.70 | 716.70 |
| 35 | 647.53 | 647.53 | 605.58 | 647.53 | 715.35 | 715.35 |
| 36 | 641.68 | 641.68 | 598.20 | 641.68 | 713.88 | 713.88 |
| 37 | 635.39 | 635.39 | 590.24 | 635.39 | 712.33 | 712.33 |
| 38 | 628.71 | 628.71 | 581.77 | 628.71 | 710.69 | 710.69 |
| 39 | 621.66 | 621.66 | 572.86 | 621.66 | 708.95 | 708.95 |
| 40 | 614.30 | 614.30 | 563.58 | 614.30 | 707.11 | 707.11 |
| 41 | 606.66 | 606.66 | 553.98 | 606.66 | 705.17 | 705.17 |
| 42 | 598.80 | 598.80 | 544.16 | 598.80 | 703.14 | 703.14 |
| 43 | 590.77 | 590.77 | 534.19 | 590.77 | 701.02 | 701.02 |
| 44 | 582.62 | 582.62 | 524.15 | 582.62 | 698.81 | 698.81 |

# Appendix D

## Whole Life Annuity Factors

Interest 7.00%
Multiplier 52.00 (52 for Weekly, 1 for Annual)

| Age | Study 1 | Study 2 | Study 3 | Study 4 | Study 5 | Study 6 |
|---|---|---|---|---|---|---|
| 45 | 574.40 | 574.40 | 514.11 | 574.40 | 696.50 | 696.50 |
| 46 | 566.14 | 566.14 | 504.11 | 566.14 | 694.09 | 694.09 |
| 47 | 557.85 | 557.85 | 494.19 | 557.85 | 691.49 | 691.49 |
| 48 | 549.55 | 549.55 | 484.35 | 549.55 | 688.70 | 688.70 |
| 49 | 541.23 | 541.23 | 474.60 | 541.23 | 685.72 | 685.72 |
| 50 | 532.90 | 532.90 | 464.93 | 532.90 | 682.53 | 682.53 |
| 51 | 524.54 | 524.54 | 455.33 | 524.54 | 679.13 | 679.13 |
| 52 | 516.17 | 516.17 | 445.82 | 516.17 | 675.51 | 675.51 |
| 53 | 507.78 | 507.78 | 436.39 | 507.78 | 671.65 | 671.65 |
| 54 | 499.38 | 499.38 | 427.06 | 499.38 | 667.55 | 667.55 |
| 55 | 490.97 | 490.97 | 417.82 | 490.97 | 663.20 | 663.20 |
| 56 | 482.53 | 482.53 | 408.66 | 482.53 | 658.58 | 658.58 |
| 57 | 474.05 | 474.05 | 399.54 | 474.05 | 653.67 | 653.67 |
| 58 | 465.49 | 465.49 | 390.44 | 465.49 | 648.45 | 648.45 |
| 59 | 456.82 | 456.82 | 381.30 | 456.82 | 642.92 | 642.92 |
| 60 | 448.04 | 448.04 | 372.14 | 448.04 | 637.05 | 637.05 |
| 61 | 439.32 | 439.32 | 363.17 | 439.32 | 630.85 | 630.85 |
| 62 | 430.42 | 430.42 | 354.08 | 430.42 | 624.29 | 624.29 |
| 63 | 421.50 | 421.50 | 345.09 | 421.50 | 617.38 | 617.38 |
| 64 | 412.05 | 412.05 | 335.51 | 412.05 | 610.11 | 610.11 |
| 65 | 402.30 | 402.30 | 325.64 | 402.30 | 602.48 | 602.48 |
| 66 | 392.33 | 392.33 | 315.58 | 392.33 | 594.46 | 594.46 |
| 67 | 382.45 | 382.45 | 305.76 | 382.45 | 586.06 | 586.06 |
| 68 | 372.20 | 372.20 | 295.55 | 372.20 | 577.23 | 577.23 |
| 69 | 362.21 | 362.21 | 285.78 | 362.21 | 567.97 | 567.97 |
| 70 | 352.04 | 352.04 | 275.88 | 352.04 | 558.24 | 558.24 |
| 71 | 342.67 | 342.67 | 267.15 | 342.67 | 548.06 | 548.06 |
| 72 | 333.17 | 333.17 | 258.37 | 333.17 | 537.43 | 537.43 |
| 73 | 322.76 | 322.76 | 248.53 | 322.76 | 526.37 | 526.37 |
| 74 | 312.39 | 312.39 | 238.82 | 312.39 | 514.92 | 514.92 |
| 75 | 301.85 | 301.85 | 228.98 | 301.85 | 503.09 | 503.09 |
| 76 | 291.16 | 291.16 | 219.00 | 291.16 | 490.94 | 490.94 |
| 77 | 280.42 | 280.42 | 209.00 | 280.42 | 478.47 | 478.47 |
| 78 | 270.14 | 270.14 | 199.64 | 270.14 | 465.73 | 465.73 |
| 79 | 259.93 | 259.93 | 190.38 | 259.93 | 452.74 | 452.74 |
| 80 | 249.90 | 249.90 | 181.38 | 249.90 | 439.53 | 439.53 |
| 81 | 240.06 | 240.06 | 172.61 | 240.06 | 426.14 | 426.14 |
| 82 | 230.54 | 230.54 | 164.25 | 230.54 | 412.62 | 412.62 |
| 83 | 220.94 | 220.94 | 155.76 | 220.94 | 399.01 | 399.01 |
| 84 | 211.55 | 211.55 | 147.47 | 211.55 | 385.38 | 385.38 |
| 85 | 202.61 | 202.61 | 139.64 | 202.61 | 371.43 | 371.43 |
| 86 | 194.12 | 194.12 | 132.23 | 194.12 | 357.59 | 357.59 |
| 87 | 186.19 | 186.19 | 125.40 | 186.19 | 343.95 | 343.95 |
| 88 | 179.22 | 179.22 | 119.64 | 179.22 | 330.61 | 330.61 |
| 89 | 172.74 | 172.74 | 114.43 | 172.74 | 317.69 | 317.69 |

# Appendix D

## Whole Life Annuity Factors

Interest 7.00%
Multiplier 52.00 (52 for Weekly, 1 for Annual)

| Age | Study 1 | Study 2 | Study 3 | Study 4 | Study 5 | Study 6 |
|---|---|---|---|---|---|---|
| **90** | 166.71 | 166.71 | 109.80 | 166.71 | 305.24 | 305.24 |
| **91** | 160.89 | 160.89 | 105.51 | 160.89 | 293.32 | 293.32 |
| **92** | 154.77 | 154.77 | 100.97 | 154.77 | 281.94 | 281.94 |
| **93** | 147.81 | 147.81 | 95.41 | 147.81 | 271.07 | 271.07 |
| **94** | 141.22 | 141.22 | 90.23 | 141.22 | 260.68 | 260.68 |
| **95** | 134.95 | 134.95 | 85.38 | 134.95 | 250.68 | 250.68 |
| **96** | 128.93 | 128.93 | 80.83 | 128.93 | 240.97 | 240.97 |
| **97** | 123.09 | 123.09 | 76.50 | 123.09 | 231.42 | 231.42 |
| **98** | 117.28 | 117.28 | 72.26 | 117.28 | 221.84 | 221.84 |
| **99** | 111.44 | 111.44 | 68.03 | 111.44 | 212.11 | 212.11 |
| **100** | 105.50 | 105.50 | 63.76 | 105.50 | 202.16 | 202.16 |
| **101** | 99.46 | 99.46 | 59.42 | 99.46 | 191.95 | 191.95 |
| **102** | 93.34 | 93.34 | 55.02 | 93.34 | 181.51 | 181.51 |
| **103** | 87.16 | 87.16 | 50.58 | 87.16 | 170.86 | 170.86 |
| **104** | 80.97 | 80.97 | 46.14 | 80.97 | 160.08 | 160.08 |
| **105** | 74.81 | 74.81 | 41.73 | 74.81 | 149.25 | 149.25 |
| **106** | 68.75 | 68.75 | 37.40 | 68.75 | 138.46 | 138.46 |
| **107** | 62.83 | 62.83 | 33.19 | 62.83 | 127.79 | 127.79 |
| **108** | 57.10 | 57.10 | 29.17 | 57.10 | 117.33 | 117.33 |
| **109** | 51.60 | 51.60 | 26.00 | 51.60 | 107.15 | 107.15 |
| **110** | 46.34 | 46.34 | 26.00 | 46.34 | 97.29 | 97.29 |
| **111** | 41.37 | 41.37 | 26.00 | 41.37 | 87.75 | 87.75 |
| **112** | 36.68 | 36.68 | 26.00 | 36.68 | 78.46 | 78.46 |
| **113** | 32.30 | 32.30 | 26.00 | 32.30 | 69.19 | 69.19 |
| **114** | 28.27 | 28.27 | 26.00 | 28.27 | 59.28 | 59.28 |
| **115** | 26.00 | 26.00 | 26.00 | 26.00 | 46.88 | 46.88 |