



Continuous Monitoring – Workers Compensation

City of Tulsa Internal Auditing
February 2012



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City of Tulsa Internal Auditing

A handwritten signature in black ink that reads 'Ron Maxwell'.

Ron Maxwell, CIA, CFE
Chief Internal Auditor

A handwritten signature in black ink that reads 'Clift Richards'.

Clift Richards, CPA
City Auditor

AUDIT TEAM:

Cecilia Ackley, CPA, Internal Audit Manager
Nathan Pickard, CIA, CISA, IT Auditor

INTRODUCTION:

Based on the City's interest in reducing workers compensation costs, Internal Auditing initiated a continuous monitoring project. Continuous monitoring processes can examine 100% of transactions and data processed in different applications and databases. The continuous monitoring processes can test for inconsistencies, duplication, errors, policy violations, missing approvals, incomplete data, dollar or volume limit errors, or other possible breakdowns in internal controls. Continuous monitoring is becoming a necessary tool in any organization's risk mitigation. Internal Auditing created data analytic scripts to provide value-added data analysis and monitoring capabilities that will be useful to Workers Compensation Claims Processing, Safety, and individual departments. These data analytic scripts provide enhanced management information that is not currently available from the workers compensation claims processing software, Risk Envision.

PROCEDURES:

Internal Auditing obtained read only access to Risk Envision. With this access we were able to download the entire claims database into Audit Command Language (ACL), a computer assisted audit techniques tool that can process large amounts of data. ACL's scripting capability allows data analytics to be easily repeatable.

SCOPE AND RESULTS:

Using data downloaded into ACL for the period January 1, 2001 through December 7, 2011, we were able to provide information to monitor workers compensation claims that met our project objectives and that we could share with management. After reviewing the reports that Internal Audit generated, management requested additional monitoring reports that Internal Audit was able to provide. Internal Audit has added the scripts listed below to the continuous monitoring repository and included the results in the appendix of this report:

- Total claim amount by calendar year—Appendix A
- Top ten most expensive injuries—Appendix B
- Claims by type—Appendix C
- Claims by cause—Appendix D
- Number of injuries per department per capita—Appendix E
- Analysis of repeat claimants—Appendix F
- Departments with the most repeat claimants—Appendix G
- Ages of city employees at time of workers compensation claims—Appendix H
- Outliers over three standard deviations above the average by injury type—Appendix I
- Payout for litigated claims verses non-litigated claims—Appendix J
- Amount of payments for motor vehicle accident related claims—Appendix K

The following scripts have also been added to the continuous monitoring repository:

- Types of injuries by department
- Number of claims each adjuster processes per year in total and by claim type
- Employees in payroll database compared with workers compensation claimants
- Duplicate addresses among claimants

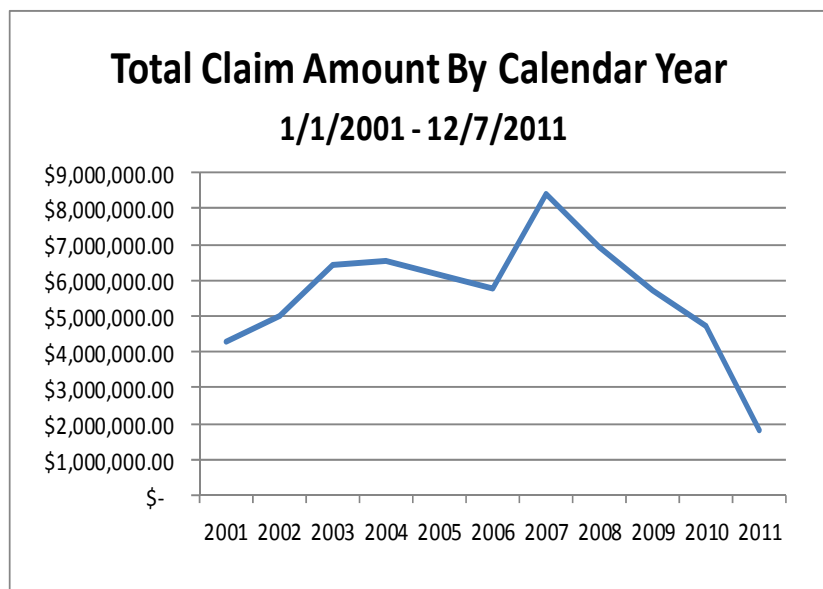
We look forward to providing management with reports using these scripts that can assist them in achieving their goals.

Appendix A:

All data in the reports included in these appendices is from Risk Envision workers compensation software and uses the following scope:

- Scope period January 1, 2001 through December 7, 2011
- Dollar amount—\$61,838,959.41
- Number of claims—17,794

All payments recorded in Risk Envision are reflected in the year the claim was initiated. When reviewing the appendices the reader should not assume that workers compensation claims have declined in current years. Additional payments for prior years' claims may be made in succeeding years. 24.3% of claims for calendar year 2011 were still open at December 7, 2011.



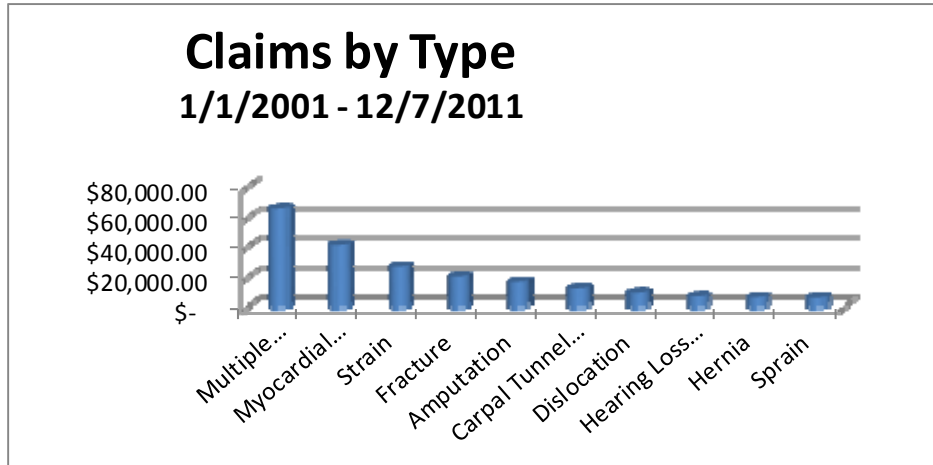
| Calendar Year | Total Claim Amount | Number of Claims | Percent of Claims Remaining Open |
|----------------------|----------------------|------------------|----------------------------------|
| 1/1/2011 - 12/7/2011 | 1,809,285.73 | 1,402 | 24.3% |
| 2010 | 4,725,684.84 | 1,477 | 6.5% |
| 2009 | 5,724,363.56 | 1,659 | 1.8% |
| 2008 | 6,928,889.89 | 1,522 | 1.5% |
| 2007 | 8,429,339.76 | 1,988 | 1.2% |
| 2006 | 5,771,537.24 | 1,776 | .6% |
| 2005 | 6,181,484.71 | 1,702 | .5% |
| 2004 | 6,558,719.21 | 1,553 | .5% |
| 2003 | 6,422,488.40 | 1,512 | .7% |
| 2002 | 4,992,469.66 | 1,636 | .1% |
| 2001 | 4,294,696.41 | 1,747 | .1% |
| Total: | 61,838,959.41 | 17,974 | |

Appendix B:

Top Ten Most Expensive Injuries 1/1/2001 – 12/7/2011

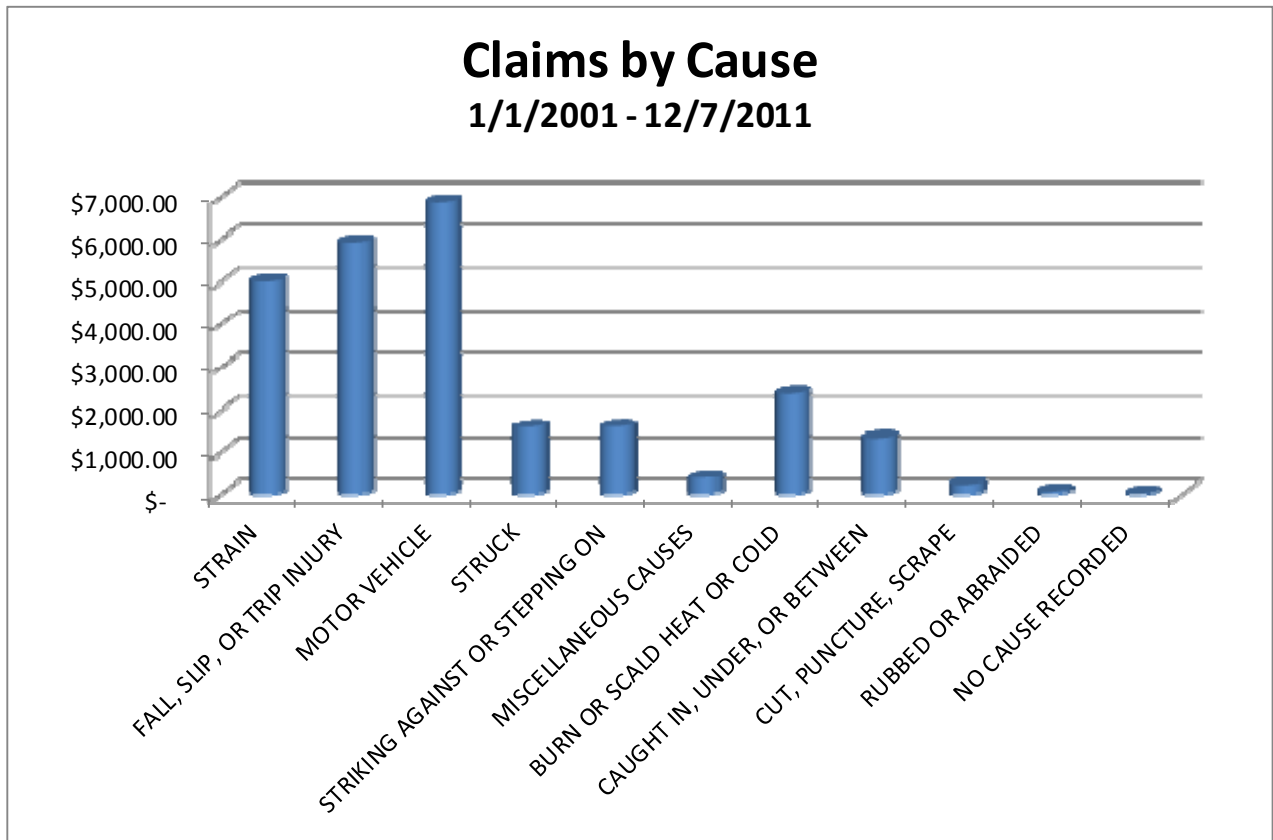
| Num | Last Name | Department | Amount |
|------------|------------------|----------------------|---------------|
| 1 | Redacted | Fire | 477,619.12 |
| 2 | Redacted | Parks | 417,677.14 |
| 3 | Redacted | Streets & Stormwater | 314,934.75 |
| 4 | Redacted | Streets & Stormwater | 299,464.92 |
| 5 | Redacted | Police | 294,045.25 |
| 6 | Redacted | Water & Sewer | 282,126.03 |
| 7 | Redacted | Human Resources | 262,311.68 |
| 8 | Redacted | Fire | 247,819.89 |
| 9 | Redacted | Engineering | 234,079.14 |
| 10 | Redacted | Streets & Stormwater | 214,849.86 |

Appendix C:



| Claim Type | Total Spent on Claims | Number of Claims | Average Dollar Amount |
|---------------------------------|-----------------------|------------------|-----------------------|
| Multiple Physical Injuries only | 65,831.46 | 1 | 65,831.46 |
| Myocardial Infarction | 608,925.77 | 15 | 40,595.05 |
| Strain | 160,969.83 | 6 | 26,828.31 |
| Fracture | 1,605,828.27 | 80 | 20,072.85 |
| Amputation | 48,952.27 | 3 | 16,317.42 |
| Carpal Tunnel Syndrome | 367,199.40 | 31 | 11,845.14 |
| Dislocation | 142,033.89 | 16 | 8,877.12 |
| Hearing Loss or Impairment | 686,138.37 | 109 | 6,294.85 |
| Hernia | 115,927.85 | 20 | 5,796.39 |
| Sprain | 46,695,533.17 | 8,603 | 5,427.82 |
| Burn | 608,945.51 | 218 | 2,793.33 |
| Contusion | 6,303,063.54 | 2,398 | 2,628.47 |
| Poisoning - Chemical | 5,820.77 | 4 | 1,455.19 |
| Concussion | 11,690.55 | 12 | 974.21 |
| Heat Prostration | 58,352.97 | 64 | 911.77 |
| All other specific injuries | 2,519,574.42 | 3,128 | 805.49 |
| Respiratory Disorders | 165,427.84 | 224 | 738.52 |
| No Type Recorded | 62,499.20 | 87 | 718.38 |
| Puncture | 912,102.77 | 1,309 | 696.79 |
| Electric Shock | 8,448.55 | 15 | 563.24 |
| All other Occup. Disease Injury | 442,211.09 | 790 | 559.76 |
| Laceration | 110,156.57 | 288 | 382.49 |
| Foreign Body | 124,122.87 | 416 | 298.37 |
| Freezing | 1,020.38 | 5 | 204.08 |
| No Physical Injury | 224.36 | 2 | 112.18 |
| Vision Loss | 459.35 | 5 | 91.87 |
| Dermatitis | 6,372.20 | 77 | 82.76 |
| Mental Disorder | 476.19 | 12 | 39.68 |
| AIDS | 22.00 | 1 | 22.00 |
| Inflammation | 22.00 | 1 | 22.00 |
| Mental Stress | 20.00 | 1 | 20.00 |
| Contagious Disease | 574.50 | 32 | 17.95 |
| Vascular | 11.50 | 1 | 11.50 |
| Total: | 61,838,959.41 | 17,974 | |

Appendix D:



| Claim Cause | Total Spent on Claims | Number of Claims | Average Dollar Amount |
|---------------------------------|-----------------------|------------------|-----------------------|
| STRAIN | 38,573,370.23 | 7,721 | 4,995.90 |
| FALL, SLIP OR TRIP INJURY | 10,831,534.24 | 1,826 | 5,931.84 |
| MOTOR VEHICLE | 5,084,698.18 | 739 | 6,880.51 |
| STRUCK | 2,856,599.38 | 1,801 | 1,586.12 |
| STRIKING AGAINST OR STEPPING ON | 1,863,138.21 | 1,168 | 1,595.15 |
| MISCELLANEOUS CAUSES | 1,575,005.79 | 4,024 | 391.40 |
| BURN OR SCALD HEAT OR COLD | 625,843.75 | 262 | 2,388.72 |
| CAUGHT IN, UNDER, OR BETWEEN | 404,115.27 | 306 | 1,320.64 |
| CUT, PUNCTURE, SCRAPE | 23,371.75 | 104 | 224.73 |
| RUBBED OR ABRAIDED | 1,168.61 | 17 | 68.74 |
| NO CAUSE RECORDED | 114.00 | 6 | 19.00 |
| Total: | 61,838,959.41 | 17,974 | |

Appendix E:

Number of Injuries by Department and Per Capita 1/1/2001 – 12/7/2011

| Department | Claims | Loss Amount | Average Loss Per Claim | Average Number of Positions | Loss Per Capita for Ten Years | Average Loss Per Capita Per Year |
|-------------------------------|---------------|----------------------|------------------------|-----------------------------|-------------------------------|----------------------------------|
| Fire | 6,231 | 19,470,940.76 | 3,124.85 | 710 | 27,417.00 | 2,742.00 |
| Public Works Groups | 4,098 | 17,509,296.01 | 4,272.64 | 1,176 | 14,888.86 | 1,488.89 |
| Police | 4,736 | 15,075,189.22 | 3,183.11 | 886 | 17,021.00 | 1,702.00 |
| Parks | 1,213 | 3,109,849.42 | 2,563.77 | 190 | 16,382.00 | 1,638.00 |
| Airport | 526 | 2,025,588.28 | 3,850.93 | 165 | 12,289.00 | 1,229.00 |
| ITD Administration & Planning | 243 | 1,312,714.03 | 5,402.12 | 266 | 4,935.00 | 494.00 |
| Equipment Management | 295 | 1,161,631.14 | 3,937.73 | 82 | 14,223.00 | 1,422.00 |
| Public Events | 71 | 548,033.65 | 7,718.78 | - | - | - |
| Working in Neighborhoods | 176 | 480,593.61 | 2,730.65 | 80 | 6,007.00 | 601.00 |
| Human Resources | 71 | 429,704.97 | 6,052.18 | 43 | 9,917.00 | 992.00 |
| Municipal Court | 62 | 217,278.30 | 3,504.49 | 43 | 5,015.00 | 501.00 |
| Finance | 77 | 188,074.57 | 2,442.53 | 94 | 2,008.00 | 201.00 |
| Economic Development | 72 | 127,624.62 | 1,772.56 | 15 | 8,508.00 | 851.00 |
| Legal | 23 | 55,239.88 | 2,401.73 | 32 | 1,726.00 | 173.00 |
| General Government | 3 | 54,209.45 | 18,069.82 | - | - | - |
| Development Services | 32 | 28,479.61 | 889.99 | 89 | 319.00 | 32.00 |
| Gilcrease | 20 | 22,319.26 | 1,115.96 | 20 | 1,135.00 | 113.00 |
| PAC | 6 | 14,364.20 | 2,394.03 | 37 | 392.00 | 39.00 |
| Planning | 3 | 3,176.71 | 1,058.90 | 120 | 26.00 | 3.00 |
| Public Information | 3 | 2,568.21 | 856.07 | - | - | - |
| Park & Recreation | 4 | 1,951.35 | 487.84 | - | - | - |
| City Auditor's Office | 1 | 44.66 | 44.66 | 11 | 4.00 | - |
| Human Rights | 4 | 43.00 | 10.75 | 9 | 5.00 | 1.00 |
| Mayor | 3 | 33.00 | 11.00 | - | - | - |
| Department of Grants | 1 | 11.50 | 11.50 | 12 | 1.00 | - |
| Total: | 17,974 | 61,838,959.41 | | | | |

Appendix F:

Analysis of Repeat Claimants 1/1/2001 to 12/7/2011

| Number of Claimants | Number of Claims Per Claimant | Total Amount of Claims | Percent of Total Claims |
|----------------------------------|-------------------------------|------------------------|-------------------------|
| 1 | 51 | 1,241.70 | 0.02% |
| 2 | 36 | 18,287.96 | 0.05% |
| 1 | 34 | 3,719.76 | 0.02% |
| 1 | 28 | 38,582.68 | 0.02% |
| 3 | 27 | 301,151.35 | 0.07% |
| 1 | 26 | 42,253.01 | 0.02% |
| 1 | 25 | 9,120.29 | 0.02% |
| 2 | 24 | 202,154.06 | 0.05% |
| 4 | 23 | 140,772.83 | 0.09% |
| 3 | 22 | 49,211.40 | 0.07% |
| 6 | 21 | 94,332.40 | 0.14% |
| 4 | 20 | 276,220.57 | 0.09% |
| 4 | 19 | 190,062.12 | 0.09% |
| 12 | 18 | 280,792.53 | 0.28% |
| 17 | 17 | 655,862.11 | 0.39% |
| 29 | 16 | 919,225.62 | 0.67% |
| 20 | 15 | 805,348.60 | 0.46% |
| 42 | 14 | 1,311,114.51 | 0.97% |
| 50 | 13 | 1,721,617.27 | 1.15% |
| 55 | 12 | 1,949,052.50 | 1.27% |
| 76 | 11 | 3,197,911.81 | 1.75% |
| 98 | 10 | 2,445,263.28 | 2.26% |
| 94 | 9 | 2,984,080.19 | 2.16% |
| 139 | 8 | 4,292,148.44 | 3.20% |
| 203 | 7 | 4,306,361.52 | 4.67% |
| 248 | 6 | 4,568,634.51 | 5.71% |
| 317 | 5 | 6,372,175.78 | 7.30% |
| 373 | 4 | 6,593,941.29 | 8.59% |
| 511 | 3 | 6,401,687.48 | 11.77% |
| 683 | 2 | 6,388,909.36 | 15.73% |
| 1,343 | 1 | 5,277,722.48 | 30.92% |
| Total of Repeat Claimants | | | |
| 3,000 | 16,631 | 56,561,236.93 | 69.08% |
| Non-Repeat Claimants | | | |
| 1,343 | 1,343 | 5,277,722.48 | 30.92% |
| Total of all Claims | | | |
| 4,343 | 17,974 | 61,838,959.41 | 100.00% |

Appendix G:

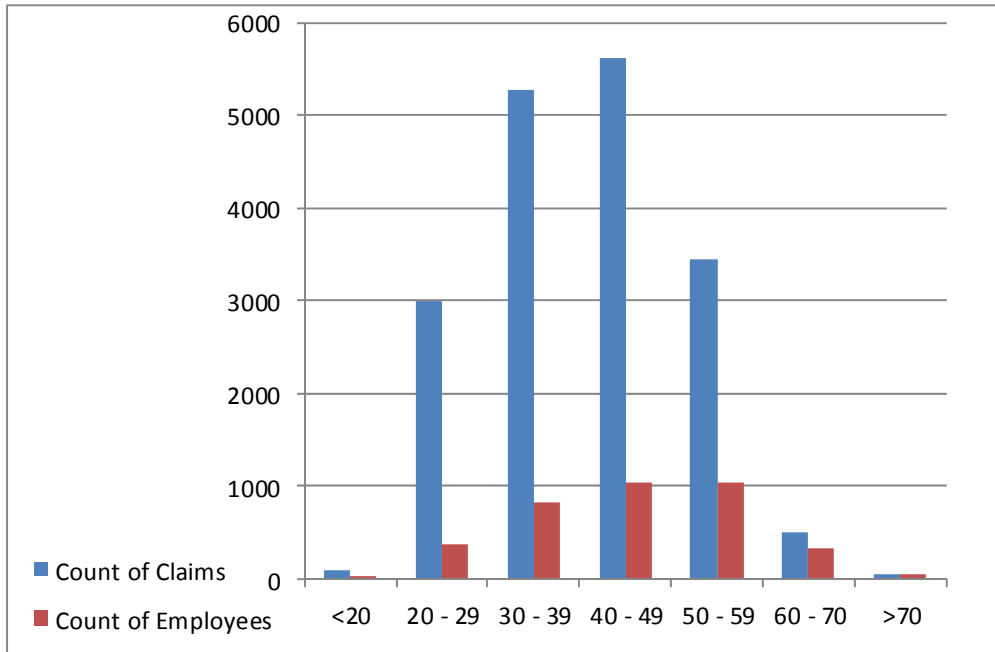
Departments with the Most Repeat Claimants

1/1/2001 – 12/7/2011

| Department | Number of Repeat Claimants | Total Amount of Claims | Percent of Total Claims |
|-------------------------------|----------------------------|------------------------|-------------------------|
| Fire | 862 | 19,156,449.81 | 33.87% |
| Police | 781 | 14,808,488.68 | 26.18% |
| Streets & Stormwater | 336 | 7,140,563.30 | 12.62% |
| Water & Sewer | 412 | 6,760,593.43 | 11.95% |
| Parks | 247 | 2,663,926.28 | 4.71% |
| Airport | 94 | 1,686,511.25 | 2.98% |
| Engineering | 48 | 1,259,437.23 | 2.23% |
| Equipment Management | 65 | 1,058,707.38 | 1.87% |
| ITD Administration & Planning | 49 | 892,919.24 | 1.58% |
| Human Resources | 17 | 371,277.56 | 0.66% |
| Finance | 20 | 235,133.32 | 0.42% |
| Public Events | 13 | 196,577.53 | 0.35% |
| Municipal Court | 13 | 171,254.27 | 0.30% |
| PAC | 4 | 73,776.59 | 0.13% |
| Legal | 4 | 31,561.41 | 0.06% |
| Development Services | 6 | 26,265.11 | 0.05% |
| Economic Development | 11 | 22,536.94 | 0.04% |
| Working in Neighborhoods | 11 | 3,695.01 | 0.01% |
| Gilcrease | 5 | 1,488.57 | 0.00% |
| Park & Recreation | 1 | 52.52 | 0.00% |
| Human Rights | 1 | 21.50 | 0.00% |

Appendix H:

Age of City Employees at Time of Workers Compensation Claims 1/1/2001 – 12/7/2011



| Age At Claim | Count of WC Claims | Count of Current Employee Population | Percent of Count for Workers Comp Claims | Percent of Count for Current Employee Population |
|---------------|--------------------|--------------------------------------|--|--|
| <20 | 91 | 22 | 0.51% | 0.60% |
| 20 - 29 | 3,003 | 363 | 16.71% | 9.88% |
| 30 - 39 | 5,279 | 830 | 29.37% | 22.59% |
| 40 - 49 | 5,614 | 1,045 | 31.23% | 28.44% |
| 50 - 59 | 3,436 | 1,035 | 19.12% | 28.16% |
| 60 - 70 | 499 | 324 | 2.78% | 8.82% |
| >70 | 52 | 56 | 0.29% | 1.52% |
| Total: | 17,974 | 3,675 | 100% | 100% |

Appendix I:

Top Ten Outlier Claim Amounts 1/1/2001 – 12/7/2011

| Num | Name | Type of Claim | Average Claim Amount for Type of Claim | Standard Deviation for Type of Claim | Amount of Claim |
|------------|-------------|----------------------|---|---|------------------------|
| 1 | Redacted | Sprain | 14,779.60 | 27,966.48 | 417,677.14 |
| 2 | Redacted | Burn | 9,048.06 | 38,276.25 | 314,934.75 |
| 3 | Redacted | Sprain | 14,779.60 | 27,966.48 | 299,464.92 |
| 4 | Redacted | Fracture | 25,483.85 | 50,480.73 | 294,045.25 |
| 5 | Redacted | Sprain | 14,779.60 | 27,966.48 | 282,126.03 |
| 6 | Redacted | Sprain | 14,779.60 | 27,966.48 | 262,311.68 |
| 7 | Redacted | Contusion | 9,088.06 | 22,192.63 | 247,819.89 |
| 8 | Redacted | Sprain | 14,779.60 | 27,966.48 | 234,079.14 |
| 9 | Redacted | Fracture | 25,483.85 | 50,480.73 | 214,849.86 |
| 10 | Redacted | Sprain | 14,779.60 | 27,966.48 | 214,657.85 |

This is a sample of the 105 claims with claim amounts paid out that were over three standard deviations from the mean for that type of claim.

Appendix J:

Payout for Litigated Claims Verses Non-Litigated Claims

1/1/2001 – 12/7/2011

| Type of Claim | Average Litigated Amount | Average Non-Litigated Amount | Increase for Litigated on Average |
|----------------------------------|--------------------------|------------------------------|-----------------------------------|
| No Type Listed | 21,647.14 | 475.02 | 21,172.12 |
| AIDS | 0.00 | 22.00 | (22.00) |
| All other Occup. Dis. | 56,433.52 | 60.25 | 56,373.27 |
| All other specific | 24,283.16 | 205.08 | 24,078.08 |
| Amputation | 16,317.42 | 0.00 | 16,317.42 |
| Burn | 25,120.45 | 413.28 | 24,707.17 |
| Carpal Tunnel Synd. | 23,232.33 | 1,169.65 | 22,062.68 |
| Concussion | 0.00 | 974.21 | (974.21) |
| Contagious Disease | 0.00 | 17.95 | (17.95) |
| Contusion | 31,809.39 | 542.25 | 31,267.14 |
| Dermatitis | 1,479.79 | 64.37 | 1,415.42 |
| Dislocation | 62,184.23 | 1,261.82 | 60,922.41 |
| Electric Shock | 0.00 | 563.24 | (563.24) |
| Foreign Body | 21,770.72 | 142.40 | 21,628.32 |
| Fracture | 42,476.71 | 4,342.49 | 38,134.22 |
| Freezing | 0.00 | 204.08 | (204.08) |
| Hearing Loss or Imp. | 12,130.65 | 565.15 | 11,565.50 |
| Heat Prostration | 0.00 | 911.77 | (911.77) |
| Hernia | 6,797.69 | 5,546.07 | 1,251.62 |
| Inflammation | 0.00 | 22.00 | (22.00) |
| Laceration | 13,230.22 | 62.44 | 13,167.78 |
| Mental Disorder | 0.00 | 39.68 | (39.68) |
| Mental Stress | 0.00 | 20.00 | (20.00) |
| Multiple Physical In | 65,831.46 | 0.00 | 65,831.46 |
| Myocardial Infarction | 24,877.58 | 48,453.79 | (23,576.21) |
| No Physical Injury | | 112.18 | (112.18) |
| Poisoning - Chemical | | 1,455.19 | (1,455.19) |
| Puncture | 13,909.05 | 226.42 | 13,682.63 |
| Respiratory Disorder | 17,904.34 | 102.75 | 17,801.59 |
| Sprain | 38,672.73 | 931.11 | 37,741.62 |
| Strain | 68,153.95 | 6,165.49 | 61,988.46 |
| Vascular | 0.00 | 11.50 | (11.50) |
| Vision Loss | 0.00 | 91.87 | (91.87) |
| Average for Total Claims: | 34,866.58 | 630.99 | 34,235.59 |

Appendix K:

Motor Vehicle Accidents Compared with All Other Claims 1/1/2001 – 12/7/2011

| Calendar Year | Total Claim Amount | Total Number of Claims | MVA Claims Amount | MVA Number of Claims | Percent of MVA Claims Remaining Open | Non-MVA Claims Amount | Non-MVA Number of Claims | Percent of Non-MVA Claims Remaining Open | Percent of MVA Claim Amount Vs. Total |
|---------------|----------------------|------------------------|---------------------|----------------------|--------------------------------------|-----------------------|--------------------------|--|---------------------------------------|
| 2001 | 4,294,696.41 | 1,747 | 489,325.68 | 100 | 0.0% | 3,805,370.73 | 1,647 | 0.1% | 11.4% |
| 2002 | 4,992,469.66 | 1,636 | 244,098.65 | 57 | 0.0% | 4,748,371.01 | 1,579 | 0.1% | 4.9% |
| 2003 | 6,422,488.40 | 1,512 | 494,622.67 | 56 | 1.8% | 5,927,865.73 | 1,456 | 0.7% | 7.7% |
| 2004 | 6,558,719.21 | 1,553 | 689,655.65 | 73 | 0.0% | 5,869,063.56 | 1,480 | 0.5% | 10.5% |
| 2005 | 6,181,484.71 | 1,702 | 366,874.50 | 63 | 1.6% | 5,814,610.21 | 1,639 | 0.4% | 5.9% |
| 2006 | 5,771,537.24 | 1,776 | 515,882.44 | 69 | 2.9% | 5,255,654.80 | 1,707 | 0.5% | 8.9% |
| 2007 | 8,429,339.76 | 1,988 | 579,441.81 | 77 | 0.0% | 7,849,897.95 | 1,911 | 1.2% | 6.9% |
| 2008 | 6,928,889.89 | 1,522 | 715,906.22 | 73 | 2.7% | 6,212,983.67 | 1,449 | 1.4% | 10.3% |
| 2009 | 5,724,363.56 | 1,659 | 489,270.11 | 66 | 9.1% | 5,235,093.45 | 1,593 | 1.5% | 8.5% |
| 2010 | 4,725,684.84 | 1,477 | 369,487.81 | 55 | 9.1% | 4,356,197.03 | 1,422 | 6.4% | 7.8% |
| 2011 | 1,809,285.73 | 1,402 | 130,132.64 | 50 | 30.0% | 1,679,153.09 | 1,352 | 24.0% | 7.2% |
| Total: | 61,838,959.41 | 17,974 | 5,084,698.18 | 739 | 57.2% | 56,754,261.23 | 17,235 | 36.8% | 8.2% |