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Introduction

Aon's Actuarial and Analytics professionals are pleased to introduce the inaugural study of workers compensation ("WC") for the health care industry.

This study is designed with health care risk managers in mind, to enable them to measure, maintain and reduce their workers compensation exposure. “Measure” themselves against their peers, “maintain” standards of practice and safety levels and “reduce” their overall cost of risk. Because of the unique demographic of hospitals, a benchmark that enables risk managers to compare to their health care peers is valuable for controlling the probability and/or impact of unfortunate events.

All participants were asked to submit a historical loss run, valued on or after December 31, 2011, historical payroll, and complete a benchmark survey. Fifty-three health care systems responded representing roughly 1,000 health care facilities.

The health care workers compensation database consists of 311,000 non-zero claims, representing $1.96 billion in incurred loss dollars from 50 states (including the District of Columbia). The database contains historical claim information for ten accident years (2002 through 2011). The estimated payroll for all states, for the 2011 year totals $35 billion.

The study explores trends in frequency, severity and overall loss rates related to workers compensation for health care systems. Unless otherwise noted, these statistics can be defined as follows:

- Frequency – number of claims per $100,000 of payroll.
- Severity (limited to $500,000 per occurrence) – average loss per claim, where loss includes medical, indemnity and expense.
- Loss Rate (limited to $500,000 per occurrence) – annual incurred dollars per $100 of payroll.

The study aggregates participants’ responses to the benchmark survey questions. The survey questions were designed to provide additional insights into important issues including:

- Identifying the top concerns of health care risk managers,
- Use and age of patient handling devices,
- Workers compensation program design characteristics (limits, claims handling, collateral),
- Workers compensation program risk management responsibilities.

Participation in the health care workers compensation benchmark was open to Aon clients and non-clients. Aon is solely responsible for the design, conduct and interpretation of the barometer analysis and holds the copyright thereto.
Executive Summary

Key Findings

Based on our actuarial analysis of the workers compensation claim data we find the following:

Workers Compensation Trends

• For the upcoming 2013 accident year, we project health care systems will experience an annual loss rate of $0.79 per $100 of payroll. This projection applies at the countrywide level and is made assuming a $500,000 per occurrence limit. We project that loss rates are increasing at a 1% annual rate.
• The frequency of workers compensation claims has been slowly and consistently decreasing over the ten year experience period studied. We project claim frequency to decrease at an annual trend rate of 1%.
• Claim severity, including medical, indemnity and expense costs, has been slowly increasing at a trend rate of 2% per year.

Managing Workers Compensation Costs

• Patient handling has been identified as the number one concern by risk managers participating in our benchmark survey. Patient handling claims have the highest average indemnity payouts and account for twenty-five percent of all health care workers compensation claim payments.
• Seventy-five percent of respondents self-insure their workers compensation risks.
• Retentions between $500,000 and $750,000 are the most popular. Only twenty percent of respondents have retentions greater than $750,000.
• Two-thirds of the survey respondents either (1) do not have a return to work program or (2) do not have any way to test the effectiveness of their return to work program. Of respondents with metrics in place to test the effectiveness of their return to work program, 100% of them deem it to be effective.
• One-third of respondents discount medical services performed on injured employees in their facilities. Of those who provide discounted medical service, the most common discount was fifty percent.
• Employee turnover is at the bottom of the list of concerns. Not so long ago a shortage of nurses was a top concern for health care providers. The economic condition of the last several years has changed the employment landscape for nurses with important implications for workers compensation results.

State Trends

• Frequency, severity and loss rate benchmark statistics vary by state. We have separately analyzed ten individual states. These ten states account for roughly 35% of our database.
Executive Summary

Countrywide Advisory Benchmarks

The following table presents a summary of our findings for health care workers compensation.

Health Care WC Results and Annual Trends for Losses Limited to $500,000 per Occurrence

<table>
<thead>
<tr>
<th>Advisory Benchmark</th>
<th>Projected 2013 Benchmark</th>
<th>Selected Annual Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency*</td>
<td>0.097</td>
<td>-1.00%</td>
</tr>
<tr>
<td>Severity</td>
<td>$8,220</td>
<td>2.00%</td>
</tr>
<tr>
<td>Loss Rate**</td>
<td>$0.79</td>
<td>1.00%</td>
</tr>
</tbody>
</table>

*per $100,000 of payroll
**per $100 of payroll

State Advisory Benchmarks

The health care workers compensation database includes claims from 50 states, including District of Columbia. In this report, we provide benchmark statistics for states having the necessary volume of experience to make the resulting benchmark statistics credible. In measuring credibility, we reviewed payroll, claim counts and volatility of the results.

The following table provides benchmark statistics by state for individually reviewed states in the database. The database participation percentage for each state is determined using 2011 payroll.

Health Care WC Loss Rates by State for Losses Limited to $500,000 per Occurrence

<table>
<thead>
<tr>
<th>Advisory Benchmark</th>
<th>Aon Database</th>
<th>Projected 2013 Loss Rate*</th>
<th>Selected Annual Loss Rate Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>5.9%</td>
<td>$1.81</td>
<td>1.00%</td>
</tr>
<tr>
<td>Colorado</td>
<td>3.4%</td>
<td>$0.89</td>
<td>0.00%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>1.5%</td>
<td>$1.06</td>
<td>0.00%</td>
</tr>
<tr>
<td>Maryland</td>
<td>0.8%</td>
<td>$0.72</td>
<td>1.00%</td>
</tr>
<tr>
<td>Missouri</td>
<td>1.8%</td>
<td>$0.85</td>
<td>1.00%</td>
</tr>
<tr>
<td>New Jersey</td>
<td>4.9%</td>
<td>$0.70</td>
<td>0.00%</td>
</tr>
<tr>
<td>New York</td>
<td>2.7%</td>
<td>$1.33</td>
<td>0.00%</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>5.0%</td>
<td>$1.16</td>
<td>0.00%</td>
</tr>
<tr>
<td>Tennessee</td>
<td>5.1%</td>
<td>$0.57</td>
<td>0.00%</td>
</tr>
<tr>
<td>Virginia</td>
<td>4.7%</td>
<td>$0.83</td>
<td>0.00%</td>
</tr>
<tr>
<td>All Other States</td>
<td>64.3%</td>
<td>$0.65</td>
<td>1.00%</td>
</tr>
</tbody>
</table>

*per $100 of Payroll
Additional sections of this report present detailed findings of our barometer analysis. Please contact us, should you have any questions regarding this report.

Respectfully submitted,

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Countrywide Benchmark Statistics

The cost of workers compensation risk is subject to a complicated set of influences.

The analysis of historical data provides a basis for estimating the cost of current and future risk. Frequency, severity and loss rates are the fundamental statistics used within this report to describe workers compensation risk.
Accident Year Results

The following graphs present various benchmark statistics on an accident year basis. The darker bar, labeled 2012, represents a forecast based on the 2011 bar and our selected trend factors.

Loss Rate

The health care industry experienced improvements in the workers compensation loss rates through 2008. The loss rates have been very stable since.
Countrywide Benchmark Statistics

**Claim Frequency**

The improvement in workers compensation loss rates has been driven by frequency. There are several factors likely responsible for the consistent decrease in frequency.

First, the health care industries intense focus on patient safety has direct implications for workers safety. Patient and worker safety programs share many of the same characteristics. That is to say, an environment that is safe for patients is also an environment that is safe for employees.

Additionally, the landscape for nursing employment has changed rapidly in the last five years. With nursing staff turnover at the lowest levels in years, the average experience and competency has risen dramatically with favorable implications for workers compensation.

Lastly, the use of new technology, including beds and patient lifting devices, has helped to make the workplace safer.

**Severity**

Claim severity has been subject to a constant inflationary trend throughout the historical period. The severity amounts shown in the graph have been limited to $500,000 per occurrence. Limiting large claims reduces the effect of “outlier” events. The $500,000 limit is chosen because it is a common retention for workers compensation, and the most prevalent seen in the data in this barometer study.
Closed Year Results

Liability payments are reported separately by indemnity, medical, and expense. In this section, we present average payments by type for closed claims between years 2006 and 2011. Results are based on closed claims only and are organized by the year that the claim was closed or settled.

Average Indemnity Paid

This graph presents average indemnity paid from the health care workers compensation database. Indemnity amounts for closed workers compensation claims have increased over the years, spiking in 2010 at $13,580.

Average Medical Paid

This graph presents average medical paid from the health care workers compensation database. Medical amounts for closed workers compensation claims have increased over the years and averages at $2,800 in 2011.

Average Expense Paid

This graph presents average expense paid from the health care workers compensation database. Expense amounts for closed workers compensation claims have increased over the years to a high of $650 in 2011, which is a 91% increase over 2006.
Claim Statistics

The average report lag time is defined as the number of days between the date of loss and the claim reported date. The graph below shows that 28% of the claims were reported immediately (zero days), 60% were reported within the first three days (0-3 days), and 75% of all claims were reported within the first week (0-7 days).

Countrywide Report Lag (Incident to Report) - Percent of Claims Reported

Countrywide Report Lag (Incident to Report) - Average Severity
Lag time statistics are important because as the lag time increases, so does the average severity. A loss reported with 0 days lag had an average severity of $3,300 whereas a claim that was reported after 30 days had an average severity of over $6,200. A claim reported more than one month after the incident occurred is roughly 88% more costly than a claim reported immediately.

We examined the distribution of non-zero claims and determined the following loss stratification:

**Distribution of Claim Counts and Incurred Dollars by Size of Loss**

<table>
<thead>
<tr>
<th>Size of Loss</th>
<th>% of Claim Counts</th>
<th>% of Total Incurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $5,000</td>
<td>87.5%</td>
<td>11.0%</td>
</tr>
<tr>
<td>$5,001 to $50,000</td>
<td>9.8%</td>
<td>26.1%</td>
</tr>
<tr>
<td>$50,001 to $100,000</td>
<td>1.4%</td>
<td>15.8%</td>
</tr>
<tr>
<td>$100,001 to $250,000</td>
<td>0.9%</td>
<td>23.0%</td>
</tr>
<tr>
<td>$250,001 to $500,000</td>
<td>0.3%</td>
<td>14.1%</td>
</tr>
<tr>
<td>Greater than $500,000</td>
<td>0.1%</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

Interestingly, more than 80% of the losses contributed only 11% to the total incurred cost.
Survey Results

To better understand the concerns, characteristics, risk maturity, and resources available to participating risk managers we provided a survey with the benchmark data call.

In addition to the loss run and exposure data, we also asked our participants to complete a brief benchmark survey, consisting of 25 questions. Our goal was to highlight the specific concerns/issues that the health care industry faces. As an example, patient handling is a unique exposure that health care employees face. According to the Centers for Disease Control and Prevention (CDC), patient handling can cause injury rates higher than those seen in the construction and manufacturing industries.

The results of these survey questions are provided on the following pages.
1. What is your number one concern/risk?

Reason this is important:
To highlight issues that are the most important to risk managers.

Aon Interpretation
Patient handling is the leading concern selected by survey participants, followed by absence management and managing costs.

Patient handling is a cause of loss that is unique to health care and accounts for 25% of all claims. It has the highest average indemnity payment for all causes of loss. Push/Pull injuries are also a concern because they have the second highest average indemnity payment.
2. What is your number one, two and three concern/risk?

Reason this is important
To highlight all issues important to risk managers.

Survey Result: Number One, Two and Three Concerns

<table>
<thead>
<tr>
<th>Risk</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing Costs</td>
<td>24%</td>
</tr>
<tr>
<td>Patient Lifting</td>
<td>23%</td>
</tr>
<tr>
<td>Aging Workforce</td>
<td>18%</td>
</tr>
<tr>
<td>Return to Work Program</td>
<td>15%</td>
</tr>
<tr>
<td>Absence Management</td>
<td>8%</td>
</tr>
<tr>
<td>Regulatory or Legislative Changes</td>
<td>6%</td>
</tr>
<tr>
<td>Amount of Collateral</td>
<td>3%</td>
</tr>
<tr>
<td>Workers Comp Fraud</td>
<td>3%</td>
</tr>
<tr>
<td>Employee Turnover</td>
<td>3%</td>
</tr>
</tbody>
</table>

Note: The scores for one, two and three are added together.

Aon Interpretation

When combining all the scores for first, second and third concerns, managing cost moves to the top. Patient handling is still a primary concern while aging workforce moves into the third position followed by return to work program.

It is interesting to note that employee turnover is at the bottom of this list. The economic condition of the last several years has dramatically changed the employment landscape for nurses. Older nurses are working when they would rather retire, part-time nurses are working full-time and nurses that left the profession for other industries are coming back to nursing.

The bright side for health care providers is that they are now able to select the best and brightest to join their staff. The availability of registered nurses has allowed health care systems to decrease their reliance on unlicensed personnel. While employee turnover may be low on the list of concerns the shift in the overall experience and competency of nurses has important considerations for workers compensation results.

Absence management was ranked high as a number one risk but falls when all results were combined. There is an increased focus on the coordination of benefits (i.e., short term disability, FMLA, work comp, long term disability) and the ability to manage employee’s time away from work. Ultimately, risk managers are trying to decide if a single source disability management program, which would include workers compensation into their overall disability management program, would produce system wide savings.
3. Do your employees use mechanical lifting devices? 
If so, what is the average age of your lifting equipment?

Reason this is important:
Patient handling was identified as the number one concern amongst health care risk managers. Mechanical lifting devices can assist the health care worker and decrease worker injury.

Aon Interpretation
While it would appear that almost 80% of the respondents have lifting equipment available, and more than half have equipment that is less than five years old, the question becomes “is the staff using the equipment effectively?”

There has been considerable effort put forth to encourage hospitals and nursing homes to adopt “zero-lift” or “no-lift” programs in order to prevent injuries to health care workers. Such programs are often difficult to implement. This is in part due to the time and effort required to safely use lift equipment. Lift manufacturers continue to emphasize that any added time it takes to use lifts is worthwhile since mechanical lifting aids improve caregiver and patient safety while also preventing patient falls.

Survey Result: Use Mechanical Lifting Devices?
- Yes: 79%
- No: 21%

Survey Result: Average Age of Lifting Equipment
- 0 to 5 years: 19%
- 5 to 10 years: 52%
- 10+ years: 29%
4. Do you have metrics in place to test the effectiveness of your return to work program?

Reason this is important:
Absence Management and Return to Work are identified as top concerns amongst health care risk managers.

Aon Interpretation
One-third of the survey respondents have metrics in place to test the effectiveness of their return to work program. This would imply a full two-third of the survey respondents either (1) do not have a return to work program or (2) do not have any way to test its effectiveness.

It has been illustrated time and again that return to work programs help keep business and premium costs down and benefit injured workers. It’s a win-win for both the health care system and injured worker.

All respondents (100%) who do have metrics in place say it’s effective. Risk Managers understand the positive impact that an effective return to work program can have on improving the health and productivity of their workforce.
5. Do you purchase insurance or self-insure? Do you self administer claims or use a TPA? What is your current deductible or retention?

Reason this is important:
Managing Costs is identified as a top concern amongst health care risk managers.

Aon Interpretation
Twenty-five percent of participants purchase insurance while the remaining seventy-five percent choose to self-insure.

Thirteen percent self administer workers compensation claims while eighty-seven percent use a third party administrator (TPA).

Of those who are self-insured, ninety-five percent have a program that is “Qualified” within their state.

Roughly fifty percent of the respondents had a retention/deductible between $500,000 and $749,999.

We also asked our survey respondents about deductible payments. Are they funded in advance or paid as you go? Seventy percent of deductible payments are “pay as you go”, while thirty percent are pre-funded.
6. Which department administers the workers compensation program?

Reason this is important:
Managing Costs is identified as a top concern amongst health care risk managers.

Aon Interpretation
Results showed an even split between Risk Management, and Human Resources or Legal.
7. How are internal medical expenses for employee injuries accounted for? Do you provide any discount for WC services performed on injured employees at your own facility?

Reason this is important:
Managing costs is identified as a top concern amongst health care risk managers.

Aon Interpretation
Sixty-eight percent of respondents said that medical expenses are reported to insurer for fee schedule application.

Roughly one-third of the respondents provide a discount for medical services provided at the facility for injured employees. Of those who provide a discount, the prevailing response was a discount of fifty percent or more. This would imply a large incentive to utilize facility services for employees’ injuries.

We were able to compare the average medical claim for those facilities that provide a discount versus those who do not. The average medical claim, in the most recent four years, is 60% lower in facilities where a discount is provided.
8. Do you allocate cost back to a specific department or location?

Reason this is important:
Managing Costs is identified as a top concern amongst health care risk managers.

Aon Interpretation
Allocation has proven to be a significant tool in assigning personal responsibility for controlling claims, and instilling greater accountability within employees. While thirty-seven percent of the respondents allocate costs back to a specific department or location it is interesting to find that sixty-three percent do not.

Survey Result: Do You Allocate Cost?
- Yes: 63%
- No: 37%

9. How often are workers compensation safety meetings held?

Reason this is important:
Managing Costs is identified as a top concern amongst health care risk managers.

Aon Interpretation
One half of the respondents indicated workers compensation safety meeting were held once per month. More than three-fourths of the respondents have safety meetings a minimum of four times per year. Safety is contributing factor in many of the concerns highlighted in the “ranking of concerns” portion of the results: patient handling, absence management and return to work.

Survey Result: How Often are Safety Meetings Held?
- Every Month: 50%
- Every 3 Months: 36%
- 2 times per year: 10%
- 1 time per year: 4%
10. What type of collateral do you secure?

Reason this is important:
Managing Costs is identified as a top concern amongst health care risk managers.

Aon Interpretation
Letter of Credit (LOC) is the most popular type of collateral with forty-eight percent of the responses.
Database

Fifty-three health care organizations representing approximately 1,000 facilities provided loss and exposure data for this Barometer study. These participants ranged in size, from small community hospitals to large multi-state systems.

In total, the workers compensation database included 311,000 non-zero claims representing $1.96 billion of incurred loss dollars. We have considered any zero dollar claims (incurred claims with a zero reported dollar amount) to be incident or record only entries and excluded them from consideration. The database included historical claims data for ten accident years (2002 through 2011).

All workers compensation analysis results published in this report are based on total incurred losses (medical, indemnity and expense dollars), and are limited to $500,000 per occurrence unless otherwise noted. This limit was applied on a per claim basis, and we did not analyze the data for multiple claimant events.
Data Collection

The data call for the 2012 Aon Health Care Workers Compensation Cost Barometer was issued, via email, on May 24th, 2012 internally to Aon Risk Solutions and Aon Global Risk Consulting. Participation from clients and non-clients was requested. The deadline for participation was July 20, 2012 and the database was finalized and closed on August 10, 2012.

The following data items were collected from participants and used in our analysis:

Loss Data

Participants submitted individual loss (claim level) detail, valued on or after December 31, 2011, in a Microsoft Excel compatible format. Unless otherwise noted, it was assumed that all losses are on a first dollar, unlimited basis. “Claim level detail” includes all items of the loss run, including “claims”, “events”, “incidents”, and “notice only”. Ten years of accident-year loss data was collected where feasible. Both closed and open claims were included.

Required fields included: facility name, state, occurrence date, report date, close date, total incurred loss, total paid loss, and total outstanding reserve.

Additional fields (if available) included: indemnity incurred, medical incurred, expense incurred, indemnity paid, medical paid, expense paid, indemnity outstanding, medical outstanding, expense outstanding, description of Injury/nature of Injury/cause of Injury, body part(s) involved in injury and date of birth of claimant.

Exposure Data

Participants submitted a listing of payroll, by calendar or policy year. Multi-facility and multi-state systems were asked to provide payroll by facility and/or by state.

Survey Data

Participants were asked a series of survey questions pertaining to their workers compensation program and risk management departments. Over sixty percent of participants responded to the survey.
Actuarial Analysis

The accident year statistics presented in this report are based on an actuarial analysis of the underlying loss and exposure databases. The actuarial analysis estimates the ultimate cost of workers compensation in a given accident year by accounting for both late reported claims and additional “development” on existing claims. We have assumed there are no multiple claimant occurrences.

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

The following actuarial methods were employed in developing the results contained in this report:

Paid and Incurred Loss Development Methods

The development method tracks the changes in paid or reported losses over time (e.g., in annual evaluations). The Paid and Incurred Loss Development Methods are based on the assumption that losses from a group of claims are reported or paid in a sufficiently consistent pattern such that prior experience can be used to predict future development. The term “loss development” is used to describe the changes in loss amounts, either paid or reported, that occur over time in a group of claims. In order to reflect loss development arithmetically, incremental loss development factors are calculated by dividing loss amounts at a given evaluation date by those values in the immediately preceding evaluation date. A multiplicative process is then used to calculate a cumulative loss development factor.

The Loss Development Methods can be applied using either cumulative paid losses or incurred losses (cumulative paid losses plus case reserves). For a given group of claims (grouped by accident year, report year, or on some other basis), cumulative paid or incurred losses are multiplied by the appropriate cumulative loss development factor to estimate ultimate losses.

The Paid and Incurred Loss Development Methods rely heavily on data as of the most recent evaluation date and assume past patterns are predictive of future development. The Incurred Loss Development Method assumes that claim reporting and case reserving practices remain relatively consistent over time. One advantage of the incurred development method is that it uses the greatest amount of data available by including payments and case reserve estimates. A potential disadvantage is that estimates can be distorted by changes in reserving philosophy.

The Paid Loss Development Method assumes that claim payment and settlement patterns remain relatively consistent over time. A primary advantage of this method is that estimates are not distorted by changes in reserving philosophy since case reserves are not used in the calculation. However, the estimates can be influenced by unusual large settlements or changes in payment pattern.

If the program under study has inadequate history to develop predictive loss development patterns, then other sources of loss development information may be considered.
Outstanding Loss Development Method

The Outstanding Loss Development Method is similar to the Paid and Incurred Loss Development Methods. The difference is that the projected values are “unpaid losses” and not ultimate losses. It uses assumed paid and reported loss development factors to derive the development factor for case outstanding. The following presents the formula for the case outstanding development factor:

\[
\frac{\text{Reported LDF to Ultimate} - 1.00}{\text{Paid LDF to Ultimate} - \text{Reported LDF to Ultimate}} \times \frac{\text{ Paid LDF to Ultimate}}{\text{Reported LDF to Ultimate}} + 1.00
\]

The resulting case development factor includes provisions for case reserves and IBNR (the broad definition of IBNR, which includes development on known claims). The ultimate loss estimate equals paid loss plus (case reserve times reserve development factor).

Since the Outstanding Loss Development Method relies on both the payout and reporting patterns to determine the future changes in case reserves, this method is susceptible to distortion due to changes in case reserving practices and payment patterns.

Paid and Incurred Bornhuetter-Ferguson (BF) Methods

The BF method is a combination of the paid or incurred development method and an \textit{a priori} expected loss figure estimated from other alternative sources. Effectively, a “credibility” weight, which is equivalent to the inverse of the selected development factor, is given to the development method, and the complement of the weight is given to the \textit{a priori} expected amount. The BF method avoids potential distortions caused by random variations in paid or incurred amounts at early development ages. In our analysis, \textit{a priori} expected loss rates (ELRs) are selected from experience of more mature years. The assumed ELRs are then applied to the subject exposure to arrive at the expected loss amounts.

As the weight assigned to the Loss Development Methods is equal to the percent of losses paid or reported, estimates for immature periods will principally be based on the \textit{a priori} expected amount. For more mature periods, the BF Method estimates will principally be based on the Loss Development Methods. Thus, the BF Methods are less responsive than the Loss Development Methods and more responsive than the assumed \textit{a priori} loss estimate.

Incurred/Paid Cape Cod Methods

In the incurred Cape Cod method, the expected amount of unreported loss and ALAE is calculated directly. The estimate of unreported loss and ALAE is determined based on a measure of expected total loss and the reporting pattern associated with the selected incurred development factors. The unreported amount is added to the incurred loss and ALAE as of the average valuation date to produce the ultimate loss and ALAE estimate.

The paid Cape Cod method is similar to the incurred Cape Cod method except that the expected amount of unpaid loss and ALAE is calculated rather than the expected unreported amount. The unpaid amount is added to the paid loss and ALAE as of the average valuation date to produce the ultimate loss and ALAE estimate.

The Cape Cod methods are particularly effective in estimating ultimate loss and ALAE for the more recent policy periods. One advantage of the Cape Cod methods is the stability of their estimates over time. A potential disadvantage is that they do not react quickly to changes in the claims handling environment.
Frequency-Severity Method

In the frequency-severity method, the ultimate loss is estimated as the product of average claim cost (i.e., severity) and number of claims. The ultimate loss is separately derived for reported and unreported claims. For reported claims, the ultimate loss is derived by multiplying the number of reported claims by the ultimate average cost of reported claims. The ultimate loss for unreported claims equals the product of the estimated number of unreported claims and the average severity of these claims. The number of unreported claims is calculated as the ultimate claim counts (using the claim development method similar to the loss development method described earlier) minus the number of reported claims. The average severity for unreported claims is calculated as the weighted average of ultimate severity from all prior years, adjusted for claim cost inflation.
Conditions and Limitations

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

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

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

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

**Accident Year**
Accident year (also called occurrence year) is the year in which an incident giving rise to a claim occurred. All of the loss rate, frequency, and severity analyses are grouped by accident year, unless specifically noted otherwise.

**Claim**
A claim is a demand by an individual to recover for a loss. It provides wage replacement and medical benefits to employees injured in the course of employment.

**Closed Year**
Closed year (also called date of settlement) is the year in which a claim is settled or closed.

**Expense**
Refers to costs, in addition to indemnity and medical payments, that are incurred in handling claims.

**Exposure**
Actuaries select an exposure base such that the incident of claims will tend to vary directly with the exposure of the entity at risk. Consideration must be taken to both the historical loss level and corresponding exposures in evaluating historical claim liabilities and expected future costs. It is important to choose an exposure base that is relevant to the situation of each risk group. Exposures may be measured by payroll (per $100), sales, revenues, receipts (per $1000), or per employee or vehicle, among others.

For this study, we used an exposure base of payroll.

**Frequency (or Claim Frequency)**
The mean number of loss events occurring during a time period relative to an exposure base. For this study, the frequency is measured on an annual basis as the ultimate number of claims projected for the given time period divided by $100,000 of payroll.

**Indemnity**
Compensation for a particular loss suffered. In the case of workers compensation, indemnity is the wage replacement for the injured worker while they recover/rehabilitate.

**Incurred Losses (also called Reported Losses)**
The total of actual paid losses, paid expense and all outstanding reserves.

**Loss Development**
Loss development refers to the change in the estimated value of losses attributable to a body of claims or to a time period until all the claims are closed.

**Limit of Loss**
The amount by which an individual loss is capped. In this study, the limit of loss was $500,000 per occurrence. This means that any individual loss in excess of this limit, was capped or restricted to a maximum of $500,000.

**Loss Rate**
Rating technique to establish the prospective rate to be applied to an exposure base. The rate is arrived at by dividing the expected or ultimate losses by the estimated exposure. In the case of workers compensation, that rate is expressed per $100 of payroll.

**Loss Trend**
Loss trend is the change in claim frequency and/or severity from one time period to the next. Factors that affect the frequency and severity of claims are constantly changing over time. Examples of causes include inflation, societal attitudes toward legal action, and changes in laws. Actuaries use trend factors to adjust historical loss experience to comparable levels.

**Medical**
This is the portion of benefits to the injured employee that covers all costs related to diagnosis, treatment and recovery from a work-related injury.

**Non-Zero Claims**
Any claim that has an incurred loss amount greater than zero.

**Paid Losses**
Those losses where dollars have been paid, including expense payments.
Severity
Severity refers to the average total dollar amount of claim, including indemnity and expense. In this report, we measure the average severity for a given year by multiplying the loss rate by the frequency rate, to get the average size of an individual claim.

TPA
Third Party Administrator of claims.

Workers Compensation (WC)
A form of insurance providing wage replacement and medical benefits to employees injured in the course of employment in exchange for mandatory relinquishment of the employee’s right to sue his or her employer for the tort of negligence.