Workers’ compensation: what about frequency?

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Presenters: Arthur Cohen, ACAS, MAAA
Ian Sterling, FCAS, MAAA

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Agenda

► Trend considerations, including frequency
► What is trend?
► Exposure
► Loss
► Resources
► Methodologies

What is trend?

► Trendy
  ► Adjective — of or in accord with the latest fashion or fad
  ► Noun — one who is drawn to and represents the latest trends

► Trend
  ► Noun — the general direction in which something tends to move
Exposure

Definition of exposure
“A unit of measure, which represents the extent of risk.”

Factors affecting exposure base selection
1. Correlates with loss
2. Ease of determination
3. Responsiveness to change

Exposure units

No inherent trend
Wage-level trend
Wage level and rate
Other indices

Exposure units — no inherent trend

Man-hours
Full-time equivalents
Head count
Exposure units — wage-level trend

- Payroll
- Considerations
  - Classification mix
  - Limited versus unlimited

Exposure units — wage level and rate

- Premium
- Considerations
  - Pricing

Exposure units — other indices

- Sales
- Lost-time injuries
Workers' compensation: what about frequency?

Loss

► Frequency — number of claims per exposure
► Severity — average cost per claim

Severity

Ways to segregate
► Indemnity, medical, expense
► Injury type
  ► Fatal
  ► PTD
  ► PPD
  ► TTD
  ► Med only

Severity — indemnity, medical and expense drivers

► Indemnity
  ► Wage
  ► Reforms
► Medical
  ► Underlying medical inflation
  ► Reforms
► Expense
  ► Attorney fees
  ► Reforms
  ► Other lines of business (attorney concentration)
**Frequency**

Drivers
- Safety and loss control
- Legislation
- Economic conditions
- Class of business

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**Example — no frequency trend**

**Determination of loss per payroll for BF method**

<table>
<thead>
<tr>
<th>Accident year</th>
<th>Ultimate loss</th>
<th>Trended ultimate loss</th>
<th>Loss trend</th>
<th>Trended payroll loss</th>
<th>Loss per payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>6,500</td>
<td>1.019</td>
<td>1.123</td>
<td>11,058</td>
<td>0.059</td>
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<tr>
<td>2002</td>
<td>6,000</td>
<td>1.018</td>
<td>1.122</td>
<td>10,880</td>
<td>0.058</td>
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<tr>
<td>2003</td>
<td>5,500</td>
<td>1.017</td>
<td>1.121</td>
<td>10,700</td>
<td>0.057</td>
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<tr>
<td>2004</td>
<td>5,000</td>
<td>1.016</td>
<td>1.120</td>
<td>10,520</td>
<td>0.056</td>
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<tr>
<td>2005</td>
<td>4,500</td>
<td>1.015</td>
<td>1.119</td>
<td>10,340</td>
<td>0.055</td>
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<tr>
<td>2006</td>
<td>4,000</td>
<td>1.014</td>
<td>1.118</td>
<td>10,160</td>
<td>0.054</td>
</tr>
<tr>
<td>All yr wtd</td>
<td>5,980</td>
<td>1.018</td>
<td>1.118</td>
<td>10,300</td>
<td>0.052</td>
</tr>
<tr>
<td>5 yr wtd</td>
<td>5,000</td>
<td>1.016</td>
<td>1.116</td>
<td>9,950</td>
<td>0.048</td>
</tr>
</tbody>
</table>

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**Frequency trend**

Loss time injuries per 100 workers


- Total recordable cases
  - 1997: 7.1
  - 2008: 3.9
  - Average annual change: -5.3%

- Total cases with days away from work
  - 1997: 1.9
  - 2008: 1.1
  - Average annual change: -5.9%
Frequency trend — BLS

Example — countrywide frequency trend

Determination of loss per payroll for BF method

Major state reforms — California

► Legislation
► Experience
► Drivers

Indemnity claim frequency trend by accident year per $1 million on-level EP
► 2003–04: -16.5%
► 2004–05: -17.3%

Source: WCIRB January 1, 2010, pure premium rate filing
Major state reforms — Florida

- Legislation reforms
- Experience
- Drivers

- Lost-time claim frequency:
  - 2006: -12.4%
  - 2007: -13.2%

Source: NCCI press release

Example — major reform state frequency trend

<table>
<thead>
<tr>
<th>Accident year</th>
<th>Trended ultimate loss per payroll consideration</th>
<th>Trended Ultimate loss per payroll</th>
<th>Trended payroll</th>
<th>Loss per payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>112,931</td>
<td>127,790</td>
<td>52,790</td>
<td>0.029</td>
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<tr>
<td>2001</td>
<td>9,467</td>
<td>0.531</td>
<td>5,210</td>
<td>178,700</td>
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<td>2002</td>
<td>9,972</td>
<td>0.590</td>
<td>5,330</td>
<td>180,600</td>
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<tr>
<td>2003</td>
<td>9,965</td>
<td>0.560</td>
<td>5,899</td>
<td>178,800</td>
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<tr>
<td>2004</td>
<td>7,219</td>
<td>0.729</td>
<td>5,663</td>
<td>191,300</td>
</tr>
<tr>
<td>2005</td>
<td>6,698</td>
<td>0.580</td>
<td>5,840</td>
<td>178,700</td>
</tr>
</tbody>
</table>

All yr wtd 0.029
5 yr wtd 0.026
2004 and prior 0.021
Selection 0.029

Example — summary

Loss per payroll

<table>
<thead>
<tr>
<th>Accident year</th>
<th>No Frequency</th>
<th>Countrywide Frequency</th>
<th>Major reforms state Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>0.064</td>
<td>0.056</td>
<td>0.031</td>
</tr>
<tr>
<td>2001</td>
<td>0.050</td>
<td>0.041</td>
<td>0.029</td>
</tr>
<tr>
<td>2002</td>
<td>0.064</td>
<td>0.043</td>
<td>0.031</td>
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<tr>
<td>2003</td>
<td>0.051</td>
<td>0.040</td>
<td>0.033</td>
</tr>
<tr>
<td>2004</td>
<td>0.040</td>
<td>0.035</td>
<td>0.029</td>
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<tr>
<td>2005</td>
<td>0.032</td>
<td>0.029</td>
<td>0.024</td>
</tr>
<tr>
<td>2006</td>
<td>0.037</td>
<td>0.036</td>
<td>0.028</td>
</tr>
<tr>
<td>All yr wtd</td>
<td>0.046</td>
<td>0.038</td>
<td>0.029</td>
</tr>
<tr>
<td>5 yr wtd</td>
<td>0.040</td>
<td>0.036</td>
<td>0.029</td>
</tr>
<tr>
<td>2004 and prior</td>
<td>0.032</td>
<td>0.029</td>
<td>0.028</td>
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<td>0.046</td>
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Resources

► Masterson
► Consumer Price Index
► US DOL/BLS
► Insurance Information Institute
► Workers’ Compensation Research Institute
► NCCI (Stat Bulletin)
► Independent rating organizations
► Commercial publications
  ► Conning
  ► Workers’ Compensation Reporter (LRP publication)
  ► Law firms
  ► Others

Resources — Masterson (1968)

Discussion comment:

“Mr. Masterson has made a valuable contribution to the insurance industry by presenting this paper. However, its primary value will be as a stimulant to further advances in the measurement of the effect of economic factors, rather than the specific indexes presented. Unless the indexes are improved through study, the value of the contribution will soon be lost.”

Resources — Consumer Price Index

What consumers spend on medical services, including
  ► Prescription and non-prescription drugs
  ► Non-prescription medical supplies
  ► Hospital services
  ► Physician services
  ► Dental services
  ► Health Insurance
Resources — Workers’ Compensation Research Institute

- Uses multiple resources, not just the insurance industry
- Much of its research is based upon limited sampling
- Read the qualifications

Resources — Bureau of Labor Statistics

- Available by state
- Available by SIC code
- Special extracts available upon request
- Requires care to select proper table

Health care reform — black lung

Section 1556 Equity for Certain Eligible Survivors
- (a) Rebuttable Presumption
  - Miner with 15 years of service who contracted a lung disease, contracted it on the job
- (b) Continuation of Benefits
  - Upon death, continuation of benefits for survivors will be automatic
- (c) Effective Date
  - Claims filed after January 1, 2005, that were pending on or after the date of enactment of this Act (March 23, 2010)
Health care reform — US DOL comment

US DOL:

“Out of approximately 4600 (pending) claims, only 37 involved the fact pattern where the miner had proved 15 or more years of covered coal mine employment and a totally disabling respiratory impairment and were currently in a denied status.”

Health care reform — statistics

US DOL

► Final adjudication: 1/1/1983–6/30/2010
► Number of awards?
► Totally disabling lung disease, 15+ years of exposure, not entitled?

Economic effects — frequency

Recession – schools of thought
► Increase – workers’ compensation may be seen as preferable to unemployment benefits
► Decrease – workforce shifts to more seasoned workers, who have fewer injuries due to on-the-job experience
### Economic effects — severity

- Extended duration
  - Failure of return-to-work programs
- Re-openings
  - Injuries from prior periods "flare up"