

**Workers' compensation:
what about frequency?**

Moderator: Michael Dolan, FCAS, MAAA
Presenters: Arthur Cohen, ACAS, MAAA
Ian Sterling, FCAS, MAAA

CAS Casualty Loss Reserve Seminar
21–22 September 2010

Agenda

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

Page 1 Workers' compensation: what about frequency?

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

Page 2 Workers' compensation: what about frequency?

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

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

Example — no frequency trend

Determination of loss per payroll for BF method

Accident year	Ultimate loss	Benefit level trend	Loss trend	Trended ultimate loss	Trended payroll	Loss per payroll
2000	7,000	1.035	1.493	10,817	163,190	0.066
2001	6,500	1.030	1.408	9,427	178,100	0.053
2002	7,250	1.025	1.329	9,872	189,400	0.052
2003	7,000	1.019	1.254	8,945	176,800	0.051
2004	6,000	1.016	1.184	7,219	181,300	0.040
2005	5,000	1.013	1.119	5,667	179,700	0.032
2006	4,500	1.010	1.058	4,806	176,700	0.027
All yr wtd						0.046
5 yr wtd						0.040
2004 and prior						0.052
Selection						0.046

Frequency trend

Loss time injuries per 100 workers

Source: Bureau of Labor Statistics, 2010 (www.bls.gov)

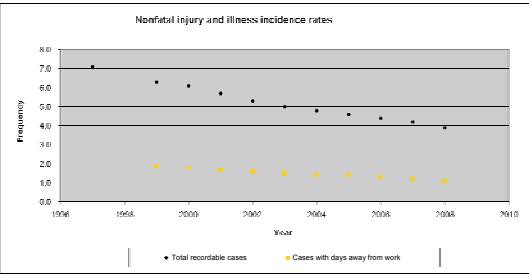
Total recordable cases

- ▶ 1997: 7.1
- ▶ 2008: 3.9
- Average annual change: -5.3%

Total cases with days away from work

- ▶ 1999: 1.9
- ▶ 2008: 1.1
- Average annual change: -5.9%

Frequency trend — BLS



Source: Bureau of Labor Statistics, "Table 1: Incidence rate of nonfatal occupational injuries and illnesses by industry and case types," 2010 (www.bls.gov)

Example — countrywide frequency trend

Determination of loss per payroll for BF method

Accident year	Trended ultimate loss (no freq consideration)	Frequency trend	Trended ultimate loss	Trended payroll	Loss per payroll
2000	10,817	0.751	8,129	163,190	0.050
2001	9,427	0.783	7,379	178,100	0.041
2002	9,872	0.815	8,050	189,400	0.043
2003	8,945	0.849	7,597	176,800	0.043
2004	7,219	0.885	6,387	181,300	0.035
2005	5,687	0.922	5,223	179,700	0.029
2006	4,806	0.960	4,614	176,700	0.026
All yr wtd					0.038
5 yr wtd					0.035
2004 and prior					0.042
Selection					0.038

Major state reforms — California

- ▶ Legislation
- ▶ Experience
- ▶ Drivers

Indemnity claim frequency trend by accident year per \$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

Determination of loss per payroll for BF method

Accident year	Trended ultimate loss (no freq consideration)	Frequency trend	Trended ultimate loss	Trended payroll	Loss per payroll
2000	10,817	0.478	5,174	163,190	0.032
2001	9,427	0.531	5,010	178,100	0.028
2002	9,872	0.590	5,830	189,400	0.031
2003	8,945	0.656	5,869	176,800	0.033
2004	7,219	0.729	5,263	181,300	0.029
2005	5,667	0.810	4,590	179,700	0.026
2006	4,806	0.900	4,326	176,700	0.024
All yr wtd					0.029
5 yr wtd					0.029
2004 and prior					0.031
Selection					0.029

Example — summary

Loss per payroll

Accident year	No frequency	Countrywide frequency	Major reform state frequency
2000	0.066	0.050	0.032
2001	0.053	0.041	0.028
2002	0.052	0.043	0.031
2003	0.051	0.043	0.033
2004	0.040	0.035	0.029
2005	0.032	0.029	0.026
2006	0.027	0.026	0.024
All yr wtd			0.038
5 yr wtd			0.035
2004 and prior			0.042
Selection			0.038

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”
