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# Workers Compensation Exposure Rating

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150 YEARS

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# Excess Loss Factors

■ National Council on Compensation Insurance

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## NCCI ELFs Key Proposed 2013-14 Changes

- Source of Data
  - Policy Periods 2000-05 @ 6<sup>th</sup>-10<sup>th</sup> reports (2005 @ 6<sup>th</sup> only)
  - Was Policy Periods 1995-97 (Fatal, PT) and 1995 @ 5<sup>th</sup> report (TT, PT, MO)
- Determination of Claim Grouping
  - Permanent Partial and Temporary Total now split between Likely to Develop and Not Likely to Develop
  - New groupings based on injured body part and claim status
- Loss Development by Size of Loss
  - Based on annual LDFs observed during a ten year period
  - Ultimate LDFs extrapolated based on exponential mortality
  - Rescaled LDFs are applied to open claims in order to balance to overall ratemaking dollars by state, claim group and report level

Source: NCCI Actuarial Committee Meeting Minutes - January 30, 2013

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## NCCI ELFs Key Proposed 2013-14 Changes

- Dispersion Method
  - Ultimate LDFs distributed log normally
- Form of Body of Curve
  - Empirical distribution replaced by mixed lognormal fits
- Form of Tail of Curve
  - Mixed exponential tail replaced by Generalized Pareto
- Curves by State by Claim Group
  - Data pooled to calculate countrywide curve for each claim group
  - Adjusted to state level based on relative CVs

Source: NCCI Actuarial Committee Meeting Minutes - January 30, 2013

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## NCCI ELFs Key Proposed 2013-14 Changes

- Calculation of Loss Weights by State and Hazard Group for Each Claim Group
  - Multi-level models are used to separately estimate severities and claim counts
  - Models capture state, hazard group and claim group effects
  - Minimal tempering of empirical severities
  - Estimated claim counts and severities are combined to produce loss weights
- Stabilizing ELFs for Annual Updates

Source: NCCI Actuarial Committee Meeting Minutes - January 30, 2013

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# Loss Elimination Ratios

■ Workers Compensation Insurance Rating Bureau of California

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## Key 2011 Changes to WCIRB LERs

- Source of Data
  - PYs 2004 and 2005, skipped 2002 and 2003 because of the reform
- Adjustments by Injury Type
  - Loss Development
    - "Re-opening rates for the largest claim size layers are 12-15%"
  - Benefit Levels
  - Trend
  - Off-Balance

Source: WCIRB 2011 California Retrospective Rating Plan Technical Documentation - January 1, 2011

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## Key 2011 Changes to WCIRB LERs

- Hazard Groups
  - "The revised weighting scheme was selected as it corresponded closely with the interests of practitioners."
  - Substituted classification severities with aggregate severities for the largest size of loss layers
  - 7 HGs, but classes assigned differently from NCCI
    - 8810 → A for California, C for NCCI
- Form of Tail of Curve (above \$2M)
  - Empirical frequency
  - Pareto severity

Source: WCIRB 2011 California Retrospective Rating Plan Technical Documentation - January 1, 2011

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**Key 2013 Changes to WCIRB LERs**

- Source of Data
  - PYs 2005 (AY 2006), 2006-07
- Retro HGs used for Class Ratemaking
- Truncated Pareto used for Tail
- Continued Shift to Medical
- Loss Development
  - "Developments on older claims are often larger than expected because of the rate of inflation."
  - E.g. new prosthetic eye once a decade

Source: WCIRB 2013 California Retrospective Rating Plan Technical Documentation - January 1, 2013

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**Key 2013 Changes to WCIRB LERs**

- Vector Trend – differential trends by incurred medical percentile
  - Trends for the smallest and largest claims tend to be smaller in absolute value
  - Trends for the medium claims tend to be larger
  - Relativities for years with positive or negative aggregate trends tend to be symmetrical opposites

Source: WCIRB 2013 California Retrospective Rating Plan Technical Documentation - January 1, 2013

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**Observations**

- From a Reinsurer's Perspective

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**Observations**

- Bureau ELF's / LERs not Designed for Reinsurers
- Empirical Loss Development
  - Prefer modeling based on First Principles, e.g. longevity, medical inflation, technology
- Limited Observation Period for Loss Development
  - Are carriers adjusting reserves during this time frame?
  - Reserves are not typically payment driven
  - Not forward-looking
- Loss Development by Size of Loss
  - Uncertainty of large loss development adequately reflected?

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**Claim Valuation Model**

■ Swiss Re Proprietary Tool

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**Claim Valuation Model Fundamentals**

- A stochastic model based on the Monte Carlo simulation
  - Quantifies the impact of various factors on large individual workers compensation claims
- Allows claimant to change status (e.g. from disabled to active)
  - Utilizes transition probabilities
  - Recognizes medical costs increase during critical health conditions
- Modifies mortality table based on injury type and comorbidity severity
  - Expected lifetime decreases with severe injuries and conditions such as heart disease, cancer, diabetes
- Models the probability of settlement
  - After Maximum Medical Improvement (MMI) the probability of settlement decreases over time

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### Claim Valuation Model Medical Inflation

- CVM ties medical inflation to a calendar year index (Personal Consumption Expenditures-Health Care)
  - applied to all medical maintenance payments
  - In addition to price changes in consumer goods and services, PCE captures corresponding changes in utilization.
  - PCE includes all expenditures made on behalf of households by consumers, government and employers and is adjusted for population growth.
  - Produced by the BLS (Bureau of Labor Statistics) price indices and other data sources
  - PCE tracks medical cost components that align with our big medical claim spends. (Ophthalmic products and orthopedic appliances, drug preparations and sundries, medical care, other professional services, hospitals, nursing homes and health services)
  - Unlike CPI, it accounts for technological advancements and obsolescence.

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### Claim Valuation Model Components

**Main Life Components:**

- Gender
- Date of Birth
- Date of Injury
- Kind of Injury

**Paid to Date:**

- Medical
- Indemnity

**Cedent Reserves:**

- Medical
- Indemnity

**Loss of Income Benefits:**

- Inforce or Settled?
- State of Adjudication

**Medical:**

- Inforce or Settled?

Non-recurring medical costs – year 1  
 Non-recurring medical costs – year 2  
 Nursing care – cost per year  
 Nursing care – years until start  
 Chronic meds – cost per year  
 Chronic meds – years until start  
 Surgery event – cost  
 Surgery event – years until repeat (0 = no recurrence)

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### Claim Valuation Model Impact

- Large Loss Examples
  - Example 1:  
 This was a \$1.9M ground-up claim from a worker who was hit by a car while unloading a truck from the rear. The worker's legs were injured, requiring amputation. Claimant was 44 yrs. old when injured. Expected remaining lifetime is 23 years. Indemnity benefit is \$107 per week. Annual medical expense (before growth) is \$82,000 per year. Layer is \$9.5M xs \$500k. Swiss Re ACR\* of \$3.3M was posted in September 2012. ACR\* increased to \$4.1M in March 2013 as annual medical expense is averaging \$118,000 per year.
  - Example 2:  
 This was a \$916k ground-up claim involving a slip and fall off of a crane. Claimant was 50 yrs. old when injured. Expected remaining lifetime is 22 years. Lifetime indemnity benefit is \$485 per week. Annual medical expense (before growth) is \$5,650 per year. Layer is \$750k xs \$250k. Swiss Re ACR\* of -\$95k was posted in September 2009. Claim closed in November 2010.

\* Additional Case Reserve suggested by the Claim Valuation Model

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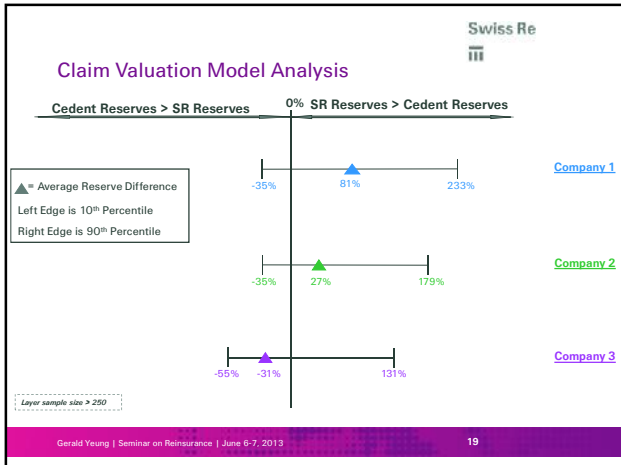
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