Career-Accomplishment-Summary

Loss Development Model - Damped Harmonic Oscilator

Over Damped: Cummulative Development

$$Factor = 1 - (C)e^{(-at)} - (1 - C)e^{(-bt)}$$

Under Damped: Cummulative Development

$$Factor = 1 - (C)sin(at)e^{(-bt)} - cos(at)e^{(-bt)}$$

1

Critically Damped: Cummulative Development

$$Factor = 1 - (C)te^{(-at)} - e^{(-at)}$$

Amount of insurance model factors

$$Factor(L) = rac{(e^{(1-e^{(rac{-L}{S}))}}-1)}{(e^{(1-e^{(rac{-L(b)}{S})})}-1)}$$

Deductibles by amount of insurance factors

$$(1-rac{(e^{(1-e^{(rac{-D}{S})})}-1)}{(e^{(1-e^{(rac{-L}{S})})}-1)}) \ (1-rac{(e^{(1-e^{(rac{-L}{S})})}-1)}{(e^{(1-e^{(rac{-D(b)}{S})})}-1)}) \ (e^{(1-e^{(rac{-D(b)}{S})})-1)})$$

Increased Limits Model

Occurance Limit = Claim Limit ex 500/500 or 500CSL

$$ILF = e^{(1-e^{(rac{-L}{S})})} - 1$$

Occurance Limit = 2xClaim Limit ex 250/500

$$ILF = (e^{(1-e^{(rac{-2L}{S})})}-1) - (e^{(rac{-L}{S})}-e^{(rac{-2L}{S})})*(e^{(e^{(rac{-L}{S})}-e^{(rac{-2L}{S})})})$$

Occurance Limit = 3xClaim Limit ex 100/300

$$ILF = (e^{(1 - e^{(\frac{-3L}{S})})} - 1) - (e^{(\frac{-L}{S})} - e^{(\frac{-3L}{S})}) * (e^{(e^{(\frac{-L}{S})} - e^{(\frac{-3L}{S})})}) + \frac{1}{2} ((e^{(\frac{-L}{S})} - e^{(\frac{-2L}{S})})^2) * (e^{(e^{(-LS)} - e^{(-2LS)})})$$

Homeowners Catastrophe Model (aggregate)

Mean of aggregate distribution = mean(f)*mean(s)

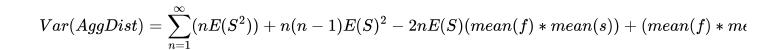
$$mean(f)*mean(s) = rac{rp}{1-p}(lpha AOI)(\Gamma(1+rac{1}{d})).$$

Assume:

The frequency follows a negative binomial distribution.

The severity follows a weibull distribution - behaves like a fractal.

Variance of aggregate distribution



Where:

E(S) = Mean of Severity distribution.

 $E(S^2)$ = Second Moment of the Severity Distribution about the origin.

n = number of events

r = number of successes.

Price implementation model

Many times we can only move toward the proposed from current due to disruption.

The following optimizes it and assumes that the rates will be in effect for a year.

$$FiledFactor = rac{(PC)}{(C + (P - C)e^{(-lpha)})}$$

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