

Analysis of Risk

Section 4

Quantitative Analysis: Forecasting

Claim Development

- Begins on the first day of the policy.
- Ends when all claims are closed.
- Some claims are reported during the policy period.
- Some claims are reported after the policy.
- The policy needs time to “develop.”
- It may take several years for all claims covered by a given policy to be reported and closed.
- Like a photograph.

Claim Development

- A summary of loss values is generally made at least once a year. The change in these values from year to year is called “Loss Development.”
- Loss Development applies to both the number of claims (Frequency), and the value of the claims (Severity).

Claim Development

- Frequency Development addresses the time lag between the occurrence of claims and when they are actually reported
- "Frequency Loss Development Factors" or multipliers are used to project the ultimate number of claims that will be reported and covered by the policy

City of Apopka

Workers Compensation Cost Analysis and Forecast

Policy Start	Payroll	Incurred Losses	Loss Development Factor	Developed Losses	Trend Factor	Trended and Developed Losses	Loss Rate
10/1/2010	20,467,366	119,683	1.00	119,683	1.28	152,749	0.75%
10/1/2011	21,568,660	114,364	1.20	137,237	1.22	166,813	0.77%
10/1/2012	22,023,527	47,585	1.30	61,861	1.16	71,611	0.33%
10/1/2013	23,182,481	73,452	1.50	110,178	1.10	121,471	0.52%
10/1/2014	23,774,380	87,419	2.00	174,838	1.05	183,580	0.77%
10/1/2015	22,684,959					142,508	0.63%

End of Section 4

Things to Know:

1. Loss data must be developed
2. Loss data must be adjusted for
 - Exposure changes
 - Inflation
3. Use Mean and Standard Deviation to calculate Confidence Interval
4. Incident Rate (claims per exposure)
5. Loss Rate (loss dollars per exposure)

End of Section 4

Things to Know (continued):

6. Use triangulation to calculate frequency, severity, and paid development factors
7. Use paid development factors to calculate payout timing
8. Organization data is preferred if...
9. Use industry data if not...

SUMMARY OF ULTIMATE PROJECTIONS - \$250K/\$500K

Occurrence Year	[1] Limited Incurred	[2] Paid LD Method	[3] Incurred LD Method	[4] Paid BF Method	[5] Incurred BF Method	[6] Frequency/ Severity Method	[7] Non-zero Open Claims	[8] Selected Ultimate Losses
2001	75,950	75,967	75,950	75,950	75,950	80,000	0	75,950
2002	540,596	531,996	540,599	531,999	540,599	540,000	1	580,000
2003	782,727	787,597	782,731	789,118	782,732	775,000	0	782,727
2004	1,175,560	1,194,703	1,179,580	1,199,875	1,180,732	1,200,000	0	1,175,560
2005	262,764	272,384	264,981	302,208	272,108	280,000	0	262,764
2006	1,843,956	1,968,806	1,868,811	1,927,859	1,861,553	1,850,000	0	1,843,956
2007	1,817,587	2,037,684	1,860,506	1,963,738	1,848,801	1,860,000	0	1,817,587
2008	759,897	942,161	808,955	1,128,439	856,474	900,000	1	850,000
2009	628,106	922,287	688,715	1,415,709	805,532	770,000	1	800,000
2010	1,010,095	2,914,843	1,329,077	2,103,137	1,435,706	1,380,000	3	1,700,000
2011	494,920	4,408,665	911,697	2,040,918	1,312,570	1,045,000	1	1,700,000
2012	586,600	19,235,552	3,890,097	1,893,975	2,015,543	1,680,000	2	2,000,000
Total	9,978,758	35,292,644	14,201,699	15,372,926	12,988,301	12,360,000	9	13,588,544

FORECAST OF FUTURE LOSSES - \$250K/\$500K LOSS LIMIT

Occurrence Period	[1] Selected Ultimate Losses	[2] Adjusted Bed Equivalentents	[3] Loss Rate Per Exposure	[4] Trend Index	[5] Loss Rate Per Exposure (1/1/13-12/31/13 \$\$)	[6] Benchmark Loss Per Exposure (1/1/13-12/31/13 \$\$)
2001	75,950	445	171		0	
2002	580,000	445	1,303	1.115	1,454	1,500
2003	782,727	891	878	1.166	1,024	1,400
2004	1,175,560	1,214	968	1.193	1,155	1,500
2005	262,764	1,214	216	1.480	320	1,100
2006	1,843,956	1,310	1,408	1.283	1,805	1,200
2007	1,817,587	1,219	1,491	1.193	1,779	1,200
2008	850,000	1,422	598	1.084	648	1,200
2009	800,000	1,575	508	1.231	625	1,400
2010	1,700,000	1,847	920	1.132	1,042	1,000
2011	1,700,000	2,010	846	1.076	911	900
2012	2,000,000	1,829	1,093	1.040	1,137	900
Total	9,888,544	11,582	8,462			

[7] 09-11 Straight Average	859	1,200
[8] 07-12 Ex hi/lo	934	1,150
[9] 07-11 Straight Average	1,001	1,200
[10] 08-11 Straight Average	806	1,200
[11] Selected Loss Rate 1/1/13-12/31/13	1,000	

[12] Projected 1/1/13-12/31/13 Exposures	1,829
[13] Forecasted Losses	1,829,000