
Intermediate Track III

WC Case Study

September 2009
Chicago, IL

Background Information

WC Insurance Company is a small, stock insurance company that has been insuring businesses against Workers' Compensation exposures for over 15 years. Management of the company has been relatively stable over the years and the company has seen moderate, prudent growth.

Background Information

The insurance department of the company's state of domicile arrived at the company in June 2009 in order to perform its review of statutory financial condition as of December 31, 2008. Its financial examiners began their review of loss reserves by requesting actuarial data triangles of incurred and paid losses as of December 31, 2008. These were provided by the Chief Financial Officer, after being prepared by the company's financial reporting department.

Background Information

You are a recent Associate in the Casualty Actuarial Society and were hired by the Chief Financial Officer in late July to create a small actuarial department at WCIC. The company has been using actuarial consultants for the past few years to fulfill reserve certification requirements; but the CFO has decided that this approach has become too expensive.

Background Information

Your first assignment at WCIC is to follow the progress of the insurance department's review, answer questions and provide any additional data they request, as well as compile additional data and information you think will be necessary to your department in order to estimate reserves in the future.

The insurance department examiners presented you with the results of their review in early August. Their analysis indicated that the company booked a rather large reserve deficiency (15%) in this coverage.

WC Insurance Company

Workers Compensation - Loss Data (\$000)

	Paid Losses									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	580	1,423	1,635	1,764	1,813	1,873	1,908	1,937	1,969	1,991
2000	743	1,656	1,907	2,045	2,100	2,171	2,214	2,246	2,279	
2001	967	2,087	2,398	2,610	2,680	2,756	2,816	2,854		
2002	1,121	2,600	3,041	3,299	3,398	3,506	3,575			
2003	1,531	3,306	3,892	4,197	4,337	4,456				
2004	1,958	4,200	4,892	5,325	5,499					
2005	2,266	4,872	5,697	6,171						
2006	2,608	5,618	6,604							
2007	3,270	7,238								
2008	4,001									

Accident Year	Incurred Losses									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	1,222	1,847	1,959	2,023	2,061	2,081	2,097	2,112	2,167	2,174
2000	1,278	2,128	2,263	2,331	2,378	2,403	2,423	2,497	2,504	
2001	1,682	2,709	2,879	2,961	3,022	3,054	3,158	3,175		
2002	2,213	3,484	3,669	3,767	3,843	3,999	4,017			
2003	2,859	4,390	4,645	4,799	5,060	5,083				
2004	3,524	5,591	5,912	6,316	6,430					
2005	4,232	6,497	7,197	7,305						
2006	4,529	8,023	8,293							
2007	6,794	10,151								
2008	8,590									

WC Insurance Company

Workers Compensation - Loss Development Method Insurance Department Analysis

Accident Year	Paid Loss Development									
	Evaluation Interval in Months									
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120+
1999	2.453	1.149	1.079	1.028	1.033	1.019	1.015	1.017	1.011	
2000	2.229	1.152	1.072	1.027	1.034	1.020	1.014	1.015		
2001	2.158	1.149	1.088	1.027	1.028	1.022	1.013			
2002	2.319	1.170	1.085	1.030	1.032	1.020				
2003	2.159	1.177	1.078	1.033	1.027					
2004	2.145	1.165	1.089	1.033						
2005	2.150	1.169	1.083							
2006	2.154	1.176								
2007	2.213									
2008										
3 Yr Avg	2.173	1.170	1.083	1.032	1.029	1.020	1.014	1.016	1.011	
3 Yr Wtd	2.177	1.170	1.084	1.032	1.029	1.020	1.014	1.016	1.011	
Average	2.220	1.163	1.082	1.030	1.031	1.020	1.014	1.016	1.011	
Wtd Avg	2.194	1.167	1.083	1.031	1.030	1.020	1.014	1.016	1.011	
Select	2.195	1.170	1.085	1.033	1.030	1.020	1.015	1.015	1.010	1.125
Cumulative	3.540	1.613	1.378	1.270	1.230	1.194	1.171	1.153	1.136	1.125

WC Insurance Company

Workers Compensation - Loss Development Method Insurance Department Analysis

Accident Year	Incurred Loss Development									
	Evaluation Interval in Months									
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120+
1999	1.511	1.061	1.033	1.019	1.010	1.008	1.007	1.026	1.003	
2000	1.665	1.063	1.030	1.020	1.011	1.008	1.031	1.003		
2001	1.611	1.063	1.028	1.021	1.011	1.034	1.005			
2002	1.574	1.053	1.027	1.020	1.041	1.005				
2003	1.536	1.058	1.033	1.054	1.005					
2004	1.587	1.057	1.068	1.018						
2005	1.535	1.108	1.015							
2006	1.771	1.034								
2007	1.494									
2008										

3 Yr Avg	1.600	1.066	1.039	1.031	1.019	1.016	1.014	1.014	1.003	
3 Yr Wtd	1.586	1.064	1.038	1.030	1.018	1.015	1.014	1.013	1.003	
Average	1.587	1.062	1.033	1.025	1.015	1.014	1.014	1.014	1.003	
Wtd Avg	1.582	1.062	1.034	1.027	1.016	1.014	1.014	1.013	1.003	
Select	1.600	1.065	1.035	1.030	1.015	1.015	1.015	1.010	1.005	1.030
Cumulative	1.986	1.241	1.165	1.126	1.093	1.077	1.061	1.046	1.035	1.030

WC Insurance Company

Workers Compensation - Ultimate Losses Results of Insurance Department Analysis

(Dollars in Thousands)

Accident Year (1)	Earned Premium (2)	Paid Losses @ 12/31/08 (3) slide 6	Incurred Losses @ 12/31/08 (4) slide 6	Cumulative LDF's		Est. Ultimate Losses		Ultimate Loss Ratio	
				Paid LDM (5) slide 7	Incurred LDM (6) slide 8	Paid LDM (7)=(3)x(5)	Incurred LDM (8)=(4)x(6)	Paid LDM (9)=(7)/(2)	Incurred LDM (10)=(8)/(2)
1999	2,698	1,991	2,174	1.125	1.030	2,240	2,239	83.0%	83.0%
2000	3,029	2,279	2,504	1.136	1.035	2,590	2,592	85.5%	85.6%
2001	3,821	2,854	3,175	1.153	1.046	3,292	3,319	86.1%	86.9%
2002	4,883	3,575	4,017	1.171	1.061	4,185	4,263	85.7%	87.3%
2003	5,981	4,456	5,083	1.194	1.077	5,320	5,475	89.0%	91.5%
2004	7,588	5,499	6,430	1.230	1.093	6,763	7,030	89.1%	92.6%
2005	8,981	6,171	7,305	1.270	1.126	7,840	8,226	87.3%	91.6%
2006	10,725	6,604	8,293	1.378	1.165	9,103	9,665	84.9%	90.1%
2007	14,171	7,238	10,151	1.613	1.241	11,673	12,600	82.4%	88.9%
2008	17,881	4,001	8,590	3.540	1.986	14,163	17,059	79.2%	95.4%
Total	79,758	44,668	57,722			67,168	72,468	84.2%	90.9%

(11)	Insurance Department Selected Ultimate Losses (average of (7)&(8))	69,818	
(12)	Indicated Loss Reserve Need at 12/31/08 ((11) - (3))	25,150	
(13)	Company Booked Reserves at 12/31/08	21,389	
(14)	Insurance Department Indicated Redundancy/(Deficiency) ((13) - (12))	-3,761	-15.0%

Background Information

You know that this large difference will necessitate that you do your own actuarial review, so you begin immediately. You decide to meet with the actuarial consulting firm which signed the current Statement of Actuarial Opinion and then immediately follow up with some interviews of key people in the underwriting and claims departments. Finally, you decide to take a look at the data yourself. You hope that the data processing department will be able to quickly compile some additional information on claim counts and exposures that you think will be helpful....

Actuarial Consultants

1. The company has very qualified management and has been fairly stable over time.
2. Except for the last couple of years, estimating reserves has always been relatively straightforward. Recently, the incurred and paid loss development methods have begun to diverge.
3. The consultants have moved more toward believing the paid loss development estimates, because they suspect a change in case reserve adequacy. The company's booked reserves at year-end were based on the consultant's recommendations.

Claims Vice President

1. Claims management has been relatively stable over the past several years. Staffing has been able to keep up with claim volumes.
2. No specific problems come to mind in the handling of claims. Claim sizes continue to go “through the roof,” especially in medical coverages. Historically, it has been difficult to keep up with the increasing claim sizes.
3. The VP implemented a claim training program in late 2006. It focuses on pension-type (long-term) cases. The main thrust of training was to be better able to take inflation into account when setting case reserves for long-term cases. Both indemnity, but especially medical, reserves have been chronically under-reserved in the past.

Underwriting Vice President

1. The volume of the company's business has grown, but nothing too dramatic. It made a "mild" marketing push in the late 1990's, and started another one about 18 months ago. Most of the effort was geared toward referrals from existing customers, so she finds it unlikely that the character of the overall business has changed very much.
2. Underwriting guidelines and training have remained relatively stable over the last several years. She would characterize the underwriting philosophy as "conservative".
3. Rates have been changed every year to keep up with inflation. Inflation in medical coverage has been atrocious, however, and sometimes hard to keep up with. The company generally follows the rating bureau's rating plan, but has actuarial consultants look over the plan changes every year to make sure the company is following a reasonable path.

WC Insurance Company

Workers Compensation - Claim Count Data

Accident Year	Reported Claim Counts									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	4,233	4,874	4,940	4,979	5,002	5,017	5,026	5,035	5,044	5,050
2000	4,208	4,880	4,958	4,995	5,023	5,039	5,049	5,059	5,070	
2001	4,728	5,405	5,487	5,530	5,554	5,570	5,581	5,593		
2002	5,223	5,983	6,063	6,109	6,138	6,158	6,171			
2003	5,777	6,604	6,696	6,751	6,787	6,809				
2004	6,249	7,282	7,402	7,463	7,505					
2005	6,378	7,324	7,447	7,505						
2006	6,358	7,364	7,482							
2007	7,067	8,149								
2008	7,834									

	Closed Claim Counts									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	2,623	4,126	4,467	4,665	4,742	4,818	4,864	4,906	4,942	4,965
2000	2,646	4,195	4,531	4,701	4,768	4,843	4,888	4,927	4,965	
2001	2,866	4,640	4,993	5,191	5,264	5,352	5,404	5,445		
2002	3,219	5,147	5,522	5,757	5,836	5,917	5,972			
2003	3,447	5,644	6,113	6,337	6,439	6,537				
2004	3,901	6,229	6,752	7,023	7,119					
2005	3,943	6,342	6,807	7,049						
2006	3,714	6,355	6,812							
2007	4,087	6,973								
2008	4,672									

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Workers Compensation - Reported Claim Counts Your Analysis

Accident Year	Reported Claim Count Development									
	Evaluation Interval in Months									
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120+
1999	1.151	1.014	1.008	1.005	1.003	1.002	1.002	1.002	1.001	
2000	1.160	1.016	1.007	1.006	1.003	1.002	1.002	1.002		
2001	1.143	1.015	1.008	1.004	1.003	1.002	1.002			
2002	1.146	1.013	1.008	1.005	1.003	1.002				
2003	1.143	1.014	1.008	1.005	1.003					
2004	1.165	1.016	1.008	1.006						
2005	1.148	1.017	1.008							
2006	1.158	1.016								
2007	1.153									
2008										
3 Yr Avg	1.153	1.016	1.008	1.005	1.003	1.002	1.002	1.002	1.001	
3 Yr Wtd	1.153	1.016	1.008	1.005	1.003	1.002	1.002	1.002	1.001	
Average	1.152	1.015	1.008	1.005	1.003	1.002	1.002	1.002	1.001	
Wtd Avg	1.152	1.015	1.008	1.005	1.003	1.002	1.002	1.002	1.001	
Select	1.153	1.015	1.008	1.005	1.003	1.002	1.002	1.002	1.001	1.005
Cumulative	1.203	1.044	1.028	1.020	1.015	1.012	1.010	1.008	1.006	1.005

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Workers Compensation - Ultimate Claims Your Analysis

Accident Year (1)	Reported Claims @ 12/31/08 (2) slide 14	Cumulative Reported Dev. Factor (3) slide 15	Claims Developed to Ultimate (4)=(2)x(3)	Estimated Exposures (\$100 Payroll) (5)	Est. Ult. Claim Frequency (6)=(4)/(5)
1999	5,050	1.005	5,075	1,859,000	0.273%
2000	5,070	1.006	5,100	1,865,000	0.273%
2001	5,593	1.008	5,638	2,046,000	0.276%
2002	6,171	1.010	6,233	2,232,000	0.279%
2003	6,809	1.012	6,891	2,436,000	0.283%
2004	7,505	1.015	7,618	2,667,000	0.286%
2005	7,505	1.020	7,656	2,647,000	0.289%
2006	7,482	1.028	7,694	2,648,000	0.291%
2007	8,149	1.044	8,506	2,912,000	0.292%
2008	7,834	1.203	9,428	3,220,000	0.293%

Note: Column (5) may be adjusted for wage trend to the current level.

WC Insurance Company

Workers Compensation - Diagnostics Claim Closing Pattern

Accident Year	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	51.7%	81.3%	88.0%	91.9%	93.4%	94.9%	95.8%	96.7%	97.4%	97.8%
2000	51.9%	82.2%	88.8%	92.2%	93.5%	95.0%	95.8%	96.6%	97.3%	
2001	50.8%	82.3%	88.6%	92.1%	93.4%	94.9%	95.9%	96.6%		
2002	51.6%	82.6%	88.6%	92.4%	93.6%	94.9%	95.8%			
2003	50.0%	81.9%	88.7%	92.0%	93.4%	94.9%				
2004	51.2%	81.8%	88.6%	92.2%	93.4%					
2005	51.5%	82.8%	88.9%	92.1%						
2006	48.3%	82.6%	88.5%							
2007	48.1%	82.0%								
2008	49.6%									
Average	50.5%	82.2%	88.6%	92.1%	93.5%	94.9%	95.8%	96.6%	97.4%	97.8%

Closed Claims (slide 14) / Ultimate Claims (slide 16)

WC Insurance Company

Workers Compensation - Diagnostics Paid Loss to Incurred Loss Ratio

Accident Year	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	47.5%	77.0%	83.5%	87.2%	88.0%	90.0%	91.0%	91.7%	90.9%	91.6%
2000	58.1%	77.8%	84.3%	87.7%	88.3%	90.3%	91.4%	89.9%	91.0%	
2001	57.5%	77.0%	83.3%	88.1%	88.7%	90.2%	89.2%	89.9%		
2002	50.7%	74.6%	82.9%	87.6%	88.4%	87.7%	89.0%			
2003	53.6%	75.3%	83.8%	87.5%	85.7%	87.7%				
2004	55.6%	75.1%	82.7%	84.3%	85.5%					
2005	53.5%	75.0%	79.2%	84.5%						
2006	57.6%	70.0%	79.6%							
2007	48.1%	71.3%								
2008	46.6%									

Paid Loss (slide 6) / Incurred Loss (slide 6)

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Workers Compensation - Diagnostics Average Claim Size

Accident Year	Average Incurred Claim Size [Incurred Loss (slide 6) / Reported Claims (slide 14) * 1000]									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	289	379	397	406	412	415	417	419	430	430
2000	304	436	456	467	473	477	480	494	494	
2001	356	501	525	535	544	548	566	568		
2002	424	582	605	617	626	649	651			
2003	495	665	694	711	746	747				
2004	564	768	799	846	857					
2005	664	887	966	973						
2006	712	1,089	1,108							
2007	961	1,246								
2008	1,097									

	Average Paid Claim Size [Paid Loss (slide 6) / Closed Claims (slide 14) * 1000]									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	221	345	366	378	382	389	392	395	398	401
2000	281	395	421	435	440	448	453	456	459	
2001	337	450	480	503	509	515	521	524		
2002	348	505	551	573	582	593	599			
2003	444	586	637	662	674	682				
2004	502	674	725	758	772					
2005	575	768	837	875						
2006	702	884	969							
2007	800	1,038								
2008	856									

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Workers Compensation - Diagnostics Average Claim Size

Accident Year	Average Case Reserve (Case Reserves / Open Claims)									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	399	567	685	825	954	1,045	1,167	1,357	1,941	2,153
2000	343	689	834	973	1,090	1,184	1,298	1,902	2,143	
2001	384	813	974	1,035	1,179	1,367	1,932	2,169		
2002	545	1,057	1,161	1,330	1,474	2,046	2,221			
2003	570	1,129	1,292	1,454	2,078	2,305				
2004	667	1,321	1,569	2,252	2,412					
2005	807	1,655	2,344	2,487						
2006	727	2,384	2,521							
2007	1,183	2,477								
2008	1,451									

Average Case Reserve = (Incurred Loss - Paid Loss) / (Reported Claims - Closed Claims)

(slide 6)

(slide 14)

WC Insurance Company

Workers Compensation - Your Analysis Berquist/Sherman Adjustment for Case Reserve Strengthening

Change over prior AY	Average Case Reserve Trend (slide 20 year over year)									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
2000	-14%	22%	22%	18%	14%	13%	11%	40%	10%	
2001	12%	18%	17%	6%	8%	15%	49%	14%		
2002	42%	30%	19%	28%	25%	50%	15%			
2003	5%	7%	11%	9%	41%	13%				
2004	17%	17%	21%	55%	16%					
2005	21%	25%	49%	10%						
2006	-10%	44%	8%							
2007	63%	4%								
2008	23%									
Selected	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%

Accident Year	Adjusted Average Case Reserve (2000 Actual Average Case Reserve (slide 20) Detrended by 15%)									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	413	810	948	1,075	1,199	1,318	1,460	1,640	1,863	2,153
2000	474	931	1,090	1,236	1,379	1,516	1,679	1,886	2,143	
2001	546	1,071	1,253	1,422	1,586	1,743	1,931	2,169		
2002	627	1,232	1,441	1,635	1,824	2,004	2,221			
2003	722	1,416	1,658	1,880	2,097	2,305				
2004	830	1,629	1,906	2,162	2,412					
2005	954	1,873	2,192	2,487						
2006	1,097	2,154	2,521							
2007	1,262	2,477								
2008	1,451									

1873 = $2,477 \times (1.15)^{-2}$

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Workers Compensation - Your Analysis Berquist/Sherman Adjustment for Case Reserve Strengthening

Accident Year	Adjusted Case Reserves [Adjusted Average Case Reserve (slide 21) * Open Claims (slide 14)] (000's)									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	664	606	448	338	312	262	237	212	190	183
2000	741	638	465	364	352	297	270	249	225	
2001	1,016	819	619	482	460	380	342	321		
2002	1,257	1,030	780	576	551	483	442			
2003	1,681	1,360	966	778	730	627				
2004	1,948	1,715	1,239	951	931					
2005	2,324	1,839	1,403	1,134						
2006	2,901	2,173	1,689							
2007	3,761	2,913								
2008	4,589									

Example: $1,839 = 1,873 \times (7,324 - 6,342) / 1,000$

	Adjusted Incurred Losses [Actual Paid Losses (slide 6) + Adjusted Case Reserves] (000's)									
	Evaluation Age in Months									
	12	24	36	48	60	72	84	96	108	120
1999	1,244	2,029	2,083	2,102	2,125	2,135	2,145	2,149	2,159	2,174
2000	1,484	2,294	2,372	2,409	2,452	2,468	2,484	2,495	2,504	
2001	1,983	2,906	3,017	3,092	3,140	3,136	3,158	3,175		
2002	2,378	3,630	3,821	3,875	3,949	3,989	4,017			
2003	3,212	4,666	4,858	4,975	5,067	5,083				
2004	3,906	5,915	6,131	6,276	6,430					
2005	4,590	6,711	7,100	7,305						
2006	5,509	7,791	8,293							
2007	7,031	10,151								
2008	8,590									

Example: $6,711 = 4,872 + 1,839$

WC Insurance Company

Workers Compensation - Your Analysis Adjusted Incurred Loss Development

Accident Year	Adjusted Incurred Loss Development (slide 22)									
	Evaluation Interval in Months									
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120+
1999	1.631	1.027	1.009	1.011	1.005	1.004	1.002	1.005	1.007	
2000	1.546	1.034	1.015	1.018	1.007	1.007	1.004	1.004		
2001	1.466	1.038	1.025	1.015	0.999	1.007	1.005			
2002	1.526	1.053	1.014	1.019	1.010	1.007				
2003	1.452	1.041	1.024	1.018	1.003					
2004	1.514	1.037	1.024	1.024						
2005	1.462	1.058	1.029							
2006	1.414	1.064								
2007	1.444									
2008										

3 Yr Avg	1.440	1.053	1.026	1.021	1.004	1.007	1.004	1.004	1.007	
3 Yr Wtd	1.439	1.054	1.026	1.021	1.004	1.007	1.004	1.004	1.007	
Average	1.495	1.044	1.020	1.018	1.005	1.006	1.004	1.004	1.007	
Wtd Avg	1.471	1.048	1.022	1.019	1.005	1.006	1.004	1.004	1.007	
Select	1.455	1.050	1.025	1.020	1.005	1.005	1.005	1.005	1.005	1.012
Cumulative	1.657	1.139	1.085	1.058	1.038	1.032	1.027	1.022	1.017	1.012

WC Insurance Company

Workers Compensation - Ultimate Losses Results of Your Analysis (Dollars in Thousands)

Accident Year (1)	Earned Premium (2)	Paid Losses @ 12/31/08 (3) slide 6	Incurred Losses @ 12/31/08 (4) slide 6	Cumulative LDF's		Est. Ultimate Losses		Ultimate Loss Ratio	
				Paid LDM (5) slide 7	Incurred LDM (6) slide 23	Paid LDM (7)=(3)x(5)	Incurred LDM (8)=(4)x(6)	Paid LDM (9)=(7)/(2)	Incurred LDM (10)=(8)/(2)
1999	2,698	1,991	2,174	1.125	1.012	2,240	2,200	83.0%	81.5%
2000	3,029	2,279	2,504	1.136	1.017	2,590	2,547	85.5%	84.1%
2001	3,821	2,854	3,175	1.153	1.022	3,292	3,245	86.1%	84.9%
2002	4,883	3,575	4,017	1.171	1.027	4,185	4,126	85.7%	84.5%
2003	5,981	4,456	5,083	1.194	1.032	5,320	5,248	89.0%	87.7%
2004	7,588	5,499	6,430	1.230	1.038	6,763	6,671	89.1%	87.9%
2005	8,981	6,171	7,305	1.270	1.058	7,840	7,731	87.3%	86.1%
2006	10,725	6,604	8,293	1.378	1.085	9,103	8,996	84.9%	83.9%
2007	14,171	7,238	10,151	1.613	1.139	11,673	11,562	82.4%	81.6%
2008	17,881	4,001	8,590	3.540	1.657	14,163	14,236	79.2%	79.6%
Total	79,758	44,668	57,722			67,168	66,562	84.2%	83.5%

The totals of columns (7) and (8) are much closer now

You decide to try the Bornhuetter-Ferguson Technique on all accident years as an alternative projection method.

WC Insurance Company

Workers Compensation - Ultimate Losses Results of Your Analysis - Paid Bornhuetter-Ferguson (Dollars in Thousands)

Accident Year (1)	Earned Premium (2)	Initial Expected Loss Ratio (3)	Expected Losses (4)=(2)x(3)	Cumulative Paid LDF (5) slide 7	% Unpaid (6)=1-1/(5)	\$ Unpaid (7)=(4)x(6)	Actual Paid @ 12/31/08 (8) slide 6	Estimated Ultimate Losses (9)=(7)+(8)	Ultimate Losses Ratio (10)=(9)/(2)
1999	2,698	84.0%	2,266	1.125	11.1%	252	1,991	2,243	83.1%
2000	3,029	84.0%	2,544	1.136	12.0%	305	2,279	2,584	85.3%
2001	3,821	84.0%	3,210	1.153	13.3%	427	2,854	3,281	85.9%
2002	4,883	84.0%	4,102	1.171	14.6%	598	3,575	4,173	85.5%
2003	5,981	84.0%	5,024	1.194	16.2%	816	4,456	5,272	88.2%
2004	7,588	84.0%	6,374	1.230	18.7%	1,191	5,499	6,690	88.2%
2005	8,981	84.0%	7,544	1.270	21.3%	1,606	6,171	7,777	86.6%
2006	10,725	84.0%	9,009	1.378	27.5%	2,473	6,604	9,077	84.6%
2007	14,171	84.0%	11,904	1.613	38.0%	4,523	7,238	11,761	83.0%
2008	17,881	84.0%	15,020	3.540	71.8%	10,777	4,001	14,778	82.6%
Total	79,758		66,997			22,967	44,668	67,635	

WC Insurance Company

Workers Compensation - Ultimate Losses Results of Your Analysis - Incurred Bornhuetter-Ferguson (Dollars in Thousands)

Accident Year (1)	Earned Premium (2)	Initial Expected Loss Ratio (3)	Expected Losses (4)=(2)x(3)	Cumulative Incurred LDF (5) slide 23	% Unreported (6)=1-1/(5)	\$ Unreported (7)=(4)x(6)	Actual Incurred @ 12/31/08 (8) slide 6	Estimated Ultimate Losses (9)=(7)+(8)	Ultimate Losses Ratio (10)=(9)/(2)
1999	2,698	84.0%	2,266	1.012	1.2%	27	2,174	2,201	81.6%
2000	3,029	84.0%	2,544	1.017	1.7%	43	2,504	2,547	84.1%
2001	3,821	84.0%	3,210	1.022	2.2%	70	3,175	3,245	84.9%
2002	4,883	84.0%	4,102	1.027	2.7%	109	4,017	4,126	84.5%
2003	5,981	84.0%	5,024	1.032	3.1%	158	5,083	5,241	87.6%
2004	7,588	84.0%	6,374	1.038	3.6%	231	6,430	6,661	87.8%
2005	8,981	84.0%	7,544	1.058	5.5%	416	7,305	7,721	86.0%
2006	10,725	84.0%	9,009	1.085	7.8%	704	8,293	8,997	83.9%
2007	14,171	84.0%	11,904	1.139	12.2%	1,453	10,151	11,604	81.9%
2008	17,881	84.0%	15,020	1.657	39.7%	5,957	8,590	14,547	81.4%
Total	79,758		66,997			9,165	57,722	66,887	

WC Insurance Company

Workers Compensation - Ultimate Losses Results of Your Analysis (Dollars in Thousands)

Accident Year (1)	Earned Premium (2)	Paid Losses @ 12/31/08 (3) slide 6	Incurred Losses @ 12/31/08 (4) slide 6	Paid Loss Dev. Method (5) slide 24	Incurred Berquist-Sherman (6) slide 24	Paid Bornhuetter-Ferguson (7) slide 25	Incurred Bornhuetter-Ferguson (8) slide 26	Selected Ultimate (9)=average
1999	2,698	1,991	2,174	2,240	2,200	2,243	2,201	2,221
2000	3,029	2,279	2,504	2,590	2,547	2,584	2,547	2,567
2001	3,821	2,854	3,175	3,292	3,245	3,281	3,245	3,265
2002	4,883	3,575	4,017	4,185	4,126	4,173	4,126	4,152
2003	5,981	4,456	5,083	5,320	5,248	5,272	5,241	5,270
2004	7,588	5,499	6,430	6,763	6,671	6,690	6,661	6,696
2005	8,981	6,171	7,305	7,840	7,731	7,777	7,721	7,767
2006	10,725	6,604	8,293	9,103	8,996	9,077	8,997	9,043
2007	14,171	7,238	10,151	11,673	11,562	11,761	11,604	11,650
2008	17,881	4,001	8,590	14,163	14,236	14,778	14,547	14,431
Total	79,758	44,668	57,722	67,168	66,562	67,635	66,887	67,063

(10)	Your Selected Ultimate Loss Amount	67,063	
(11)	Indicated Loss Reserve Need ((10) - (3))	22,395	
(12)	Company Booked Reserves	21,389	
(13)	Your Indicated Redundancy/(Deficiency) ((12) - (11))	(1,006)	-4.5%

Summary

- Don't just do it - think about it!
- Don't just crank out the numbers - talk to the people who are involved in producing the numbers.
- Better analysis is the product of communication among multiple operating units.