

DELAWARE COMPENSATION RATING BUREAU, INC.

Measures of Goodness of Fit in Trend Calculations Using Severity Ratios – Unlimited Losses

Estimates of trended severity ratios using from 4 to 10 data points for each loss development technique are shown in Exhibit 2.

The first page of the attachment shows R^2 values for the regressions producing those trended severity ratios.

Pages 2 through 5 show fitted values for the curves used in the trend projections. Page 2 shows indemnity results using linear regression, page 3 is for indemnity-exponential, page 4 for medical-linear, and page 5 for medical-exponential.

Pages 6 through 9 show residuals resulting from the comparison of actual and fitted (actual minus fitted) values for the curves used in the trend projections. Page 6 shows indemnity results using linear regression, page 7 is for indemnity-exponential, page 8 for medical-linear, and page 9 for medical-exponential.

INDEMNITY		(Average)	(Incur)	(Pd-20)
r ²				
4 Point	Linear	0.054	0.040	0.066
5 Point	Linear	0.007	0.029	0.000
6 Point	Linear	0.062	0.074	0.049
7 Point	Linear	0.000	0.003	0.001
8 Point	Linear	0.190	0.162	0.216
9 Point	Linear	0.025	0.041	0.010
10 Point	Linear	0.215	0.236	0.190
4 Point	Expon'l	0.046	0.034	0.057
5 Point	Expon'l	0.004	0.023	0.000
6 Point	Expon'l	0.066	0.076	0.054
7 Point	Expon'l	0.000	0.003	0.003
8 Point	Expon'l	0.185	0.154	0.213
9 Point	Expon'l	0.036	0.058	0.017
10 Point	Expon'l	0.246	0.270	0.219
MEDICAL		(Average)	(Incur)	(Pd-20)
r ²				
4 Point	Linear	0.254	0.037	0.628
5 Point	Linear	0.554	0.308	0.797
6 Point	Linear	0.655	0.441	0.832
7 Point	Linear	0.783	0.644	0.885
8 Point	Linear	0.760	0.595	0.876
9 Point	Linear	0.826	0.712	0.911
10 Point	Linear	0.868	0.785	0.934
4 Point	Expon'l	0.232	0.026	0.629
5 Point	Expon'l	0.552	0.301	0.807
6 Point	Expon'l	0.661	0.439	0.847
7 Point	Expon'l	0.780	0.648	0.874
8 Point	Expon'l	0.753	0.589	0.870
9 Point	Expon'l	0.805	0.694	0.895
10 Point	Expon'l	0.838	0.755	0.914

INDEMNITY Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.7503	0.7513	0.7495
	2005	0.7567	0.7565	0.7570
	2006	0.7631	0.7617	0.7644
	2007	0.7695	0.7669	0.7719
5 Point	2003	0.7582	0.7523	0.7641
	2004	0.7598	0.7554	0.7642
	2005	0.7615	0.7586	0.7643
	2006	0.7631	0.7617	0.7644
	2007	0.7648	0.7648	0.7646
6 Point	2002	0.7778	0.7776	0.7782
	2003	0.7737	0.7730	0.7744
	2004	0.7695	0.7683	0.7707
	2005	0.7654	0.7637	0.7669
	2006	0.7612	0.7591	0.7631
	2007	0.7570	0.7545	0.7594
7 Point	2001	0.7632	0.7585	0.7679
	2002	0.7633	0.7594	0.7674
	2003	0.7635	0.7602	0.7669
	2004	0.7637	0.7611	0.7664
	2005	0.7639	0.7619	0.7658
	2006	0.7641	0.7627	0.7653
	2007	0.7643	0.7636	0.7648
8 Point	2000	0.8027	0.7986	0.8069
	2001	0.7950	0.7913	0.7987
	2002	0.7872	0.7839	0.7905
	2003	0.7794	0.7766	0.7823
	2004	0.7717	0.7692	0.7740
	2005	0.7639	0.7619	0.7658
	2006	0.7561	0.7546	0.7576
	2007	0.7484	0.7472	0.7494
9 Point	1999	0.7469	0.7371	0.7567
	2000	0.7504	0.7419	0.7588
	2001	0.7538	0.7467	0.7609
	2002	0.7573	0.7515	0.7630
	2003	0.7607	0.7563	0.7651
	2004	0.7642	0.7611	0.7672
	2005	0.7676	0.7659	0.7693
	2006	0.7711	0.7707	0.7713
2007	0.7745	0.7756	0.7734	
10 Point	1998	0.6873	0.6766	0.6981
	1999	0.6996	0.6902	0.7091
	2000	0.7119	0.7038	0.7201
	2001	0.7243	0.7174	0.7311
	2002	0.7366	0.7310	0.7421
	2003	0.7489	0.7446	0.7532
	2004	0.7612	0.7582	0.7642
	2005	0.7736	0.7718	0.7752
	2006	0.7859	0.7854	0.7862
	2007	0.7982	0.7990	0.7973

INDEMNITY Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.7505	0.7513	0.7496
	2005	0.7563	0.7561	0.7565
	2006	0.7623	0.7609	0.7635
	2007	0.7682	0.7658	0.7705
5 Point	2003	0.7584	0.7525	0.7642
	2004	0.7597	0.7553	0.7640
	2005	0.7610	0.7581	0.7637
	2006	0.7623	0.7609	0.7635
	2007	0.7636	0.7637	0.7633
6 Point	2002	0.7778	0.7774	0.7783
	2003	0.7734	0.7726	0.7742
	2004	0.7691	0.7678	0.7702
	2005	0.7647	0.7631	0.7662
	2006	0.7604	0.7584	0.7622
	2007	0.7561	0.7537	0.7583
7 Point	2001	0.7630	0.7581	0.7680
	2002	0.7631	0.7589	0.7673
	2003	0.7631	0.7597	0.7666
	2004	0.7632	0.7605	0.7659
	2005	0.7633	0.7613	0.7651
	2006	0.7633	0.7621	0.7644
	2007	0.7634	0.7629	0.7637
8 Point	2000	0.8014	0.7969	0.8058
	2001	0.7936	0.7897	0.7975
	2002	0.7859	0.7825	0.7893
	2003	0.7783	0.7753	0.7811
	2004	0.7707	0.7683	0.7731
	2005	0.7633	0.7613	0.7651
	2006	0.7559	0.7543	0.7573
	2007	0.7485	0.7475	0.7495
9 Point	1999	0.7415	0.7306	0.7524
	2000	0.7458	0.7364	0.7551
	2001	0.7500	0.7421	0.7578
	2002	0.7543	0.7479	0.7605
	2003	0.7585	0.7538	0.7632
	2004	0.7629	0.7597	0.7660
	2005	0.7672	0.7656	0.7687
	2006	0.7715	0.7716	0.7715
2007	0.7759	0.7776	0.7742	
10 Point	1998	0.6790	0.6675	0.6905
	1999	0.6918	0.6816	0.7020
	2000	0.7049	0.6959	0.7137
	2001	0.7181	0.7106	0.7257
	2002	0.7317	0.7255	0.7378
	2003	0.7455	0.7408	0.7501
	2004	0.7595	0.7564	0.7626
	2005	0.7739	0.7723	0.7754
	2006	0.7885	0.7885	0.7883
	2007	0.8033	0.8051	0.8015

MEDICAL Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	1.3929	1.4907	1.2951
	2005	1.4356	1.5092	1.3620
	2006	1.4783	1.5277	1.4290
	2007	1.5210	1.5462	1.4959
5 Point	2003	1.2948	1.3799	1.2097
	2004	1.3560	1.4292	1.2828
	2005	1.4172	1.4785	1.3559
	2006	1.4783	1.5277	1.4290
	2007	1.5395	1.5770	1.5021
6 Point	2002	1.2474	1.3294	1.1652
	2003	1.3048	1.3790	1.2305
	2004	1.3622	1.4286	1.2958
	2005	1.4196	1.4782	1.3611
	2006	1.4771	1.5278	1.4264
	2007	1.5345	1.5775	1.4917
7 Point	2001	1.1305	1.2120	1.0490
	2002	1.2017	1.2772	1.1260
	2003	1.2728	1.3425	1.2031
	2004	1.3439	1.4078	1.2801
	2005	1.4151	1.4730	1.3572
	2006	1.4862	1.5383	1.4342
	2007	1.5574	1.6035	1.5113
8 Point	2000	1.1124	1.2097	1.0151
	2001	1.1730	1.2624	1.0835
	2002	1.2335	1.3150	1.1519
	2003	1.2940	1.3677	1.2203
	2004	1.3546	1.4204	1.2887
	2005	1.4151	1.4730	1.3572
	2006	1.4756	1.5257	1.4256
	2007	1.5361	1.5783	1.4940
9 Point	1999	0.9932	1.0707	0.9155
	2000	1.0641	1.1386	0.9894
	2001	1.1350	1.2065	1.0634
	2002	1.2059	1.2744	1.1373
	2003	1.2768	1.3423	1.2112
	2004	1.3476	1.4102	1.2851
	2005	1.4185	1.4781	1.3590
	2006	1.4894	1.5460	1.4329
10 Point	1998	0.8704	0.9233	0.8173
	1999	0.9494	1.0037	0.8951
	2000	1.0285	1.0842	0.9728
	2001	1.1076	1.1646	1.0506
	2002	1.1867	1.2451	1.1283
	2003	1.2658	1.3256	1.2061
	2004	1.3449	1.4060	1.2838
	2005	1.4240	1.4865	1.3616
	2006	1.5031	1.5669	1.4393
	2007	1.5822	1.6474	1.5170

MEDICAL Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	1.3952	1.4910	1.2987
	2005	1.4341	1.5067	1.3604
	2006	1.4741	1.5225	1.4252
	2007	1.5153	1.5385	1.4930
5 Point	2003	1.2968	1.3791	1.2141
	2004	1.3534	1.4254	1.2808
	2005	1.4125	1.4731	1.3510
	2006	1.4741	1.5225	1.4252
	2007	1.5385	1.5735	1.5034
6 Point	2002	1.2515	1.3312	1.1719
	2003	1.3036	1.3767	1.2302
	2004	1.3578	1.4238	1.2913
	2005	1.4143	1.4725	1.3555
	2006	1.4732	1.5228	1.4229
	2007	1.5344	1.5749	1.4936
7 Point	2001	1.1346	1.2135	1.0559
	2002	1.1976	1.2722	1.1227
	2003	1.2640	1.3337	1.1938
	2004	1.3341	1.3982	1.2693
	2005	1.4081	1.4658	1.3497
	2006	1.4862	1.5367	1.4351
	2007	1.5686	1.6110	1.5259
8 Point	2000	1.1202	1.2141	1.0266
	2001	1.1726	1.2607	1.0843
	2002	1.2275	1.3091	1.1453
	2003	1.2850	1.3594	1.2098
	2004	1.3451	1.4116	1.2778
	2005	1.4081	1.4658	1.3497
	2006	1.4740	1.5221	1.4256
	2007	1.5430	1.5806	1.5058
9 Point	1999	1.0009	1.0717	0.9298
	2000	1.0602	1.1301	0.9898
	2001	1.1230	1.1916	1.0537
	2002	1.1895	1.2566	1.1217
	2003	1.2600	1.3250	1.1941
	2004	1.3346	1.3972	1.2712
	2005	1.4136	1.4733	1.3532
	2006	1.4974	1.5536	1.4406
	2007	1.5861	1.6383	1.5335
10 Point	1998	0.8811	0.9245	0.8367
	1999	0.9437	0.9895	0.8968
	2000	1.0107	1.0592	0.9611
	2001	1.0824	1.1337	1.0301
	2002	1.1593	1.2135	1.1041
	2003	1.2416	1.2989	1.1833
	2004	1.3297	1.3903	1.2683
	2005	1.4241	1.4881	1.3593
	2006	1.5252	1.5928	1.4569
	2007	1.6334	1.7049	1.5615

INDEMNITY Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.0136	0.0143	0.0128
	2005	0.0042	0.0016	0.0066
	2006	-0.0490	-0.0463	-0.0517
	2007	0.0313	0.0303	0.0323
5 Point	2003	0.0095	0.0042	0.0147
	2004	0.0041	0.0102	-0.0019
	2005	-0.0006	-0.0005	-0.0007
	2006	-0.0490	-0.0463	-0.0517
	2007	0.0360	0.0324	0.0396
6 Point	2002	0.0194	0.0258	0.0129
	2003	-0.0060	-0.0165	0.0044
	2004	-0.0056	-0.0027	-0.0084
	2005	-0.0045	-0.0056	-0.0033
	2006	-0.0471	-0.0437	-0.0504
	2007	0.0438	0.0427	0.0448
7 Point	2001	-0.0218	-0.0273	-0.0161
	2002	0.0339	0.0440	0.0237
	2003	0.0042	-0.0037	0.0119
	2004	0.0002	0.0045	-0.0041
	2005	-0.0030	-0.0038	-0.0022
	2006	-0.0500	-0.0473	-0.0526
	2007	0.0365	0.0336	0.0394
8 Point	2000	0.0557	0.0573	0.0538
	2001	-0.0536	-0.0601	-0.0469
	2002	0.0100	0.0195	0.0006
	2003	-0.0117	-0.0201	-0.0035
	2004	-0.0078	-0.0036	-0.0117
	2005	-0.0030	-0.0038	-0.0022
	2006	-0.0420	-0.0392	-0.0449
	2007	0.0524	0.0500	0.0548
9 Point	1999	-0.1047	-0.1133	-0.0961
	2000	0.1080	0.1140	0.1019
	2001	-0.0124	-0.0155	-0.0091
	2002	0.0399	0.0519	0.0281
	2003	0.0070	0.0002	0.0137
	2004	-0.0003	0.0045	-0.0049
	2005	-0.0067	-0.0078	-0.0057
	2006	-0.0570	-0.0553	-0.0586
10 Point	2007	0.0263	0.0216	0.0308
	1998	-0.1065	-0.1057	-0.1073
	1999	-0.0574	-0.0664	-0.0485
	2000	0.1465	0.1521	0.1406
	2001	0.0171	0.0138	0.0207
	2002	0.0606	0.0724	0.0490
	2003	0.0188	0.0119	0.0256
	2004	0.0027	0.0074	-0.0019
	2005	-0.0127	-0.0137	-0.0116
	2006	-0.0718	-0.0700	-0.0735
2007	0.0026	-0.0018	0.0069	

INDEMNITY Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.0134	0.0143	0.0127
	2005	0.0046	0.0020	0.0071
	2006	-0.0482	-0.0455	-0.0508
	2007	0.0326	0.0314	0.0337
5 Point	2003	0.0093	0.0040	0.0146
	2004	0.0042	0.0103	-0.0017
	2005	-0.0001	0.0000	-0.0001
	2006	-0.0482	-0.0455	-0.0508
	2007	0.0372	0.0335	0.0409
6 Point	2002	0.0194	0.0260	0.0128
	2003	-0.0057	-0.0161	0.0046
	2004	-0.0052	-0.0022	-0.0079
	2005	-0.0038	-0.0050	-0.0026
	2006	-0.0463	-0.0430	-0.0495
	2007	0.0447	0.0435	0.0459
7 Point	2001	-0.0216	-0.0269	-0.0162
	2002	0.0341	0.0445	0.0238
	2003	0.0046	-0.0032	0.0122
	2004	0.0007	0.0051	-0.0036
	2005	-0.0024	-0.0032	-0.0015
	2006	-0.0492	-0.0467	-0.0517
	2007	0.0374	0.0343	0.0405
8 Point	2000	0.0570	0.0590	0.0549
	2001	-0.0522	-0.0585	-0.0457
	2002	0.0113	0.0209	0.0018
	2003	-0.0106	-0.0188	-0.0023
	2004	-0.0068	-0.0027	-0.0108
	2005	-0.0024	-0.0032	-0.0015
	2006	-0.0418	-0.0389	-0.0446
	2007	0.0523	0.0497	0.0547
9 Point	1999	-0.0993	-0.1068	-0.0918
	2000	0.1126	0.1195	0.1056
	2001	-0.0086	-0.0109	-0.0060
	2002	0.0429	0.0555	0.0306
	2003	0.0092	0.0027	0.0156
	2004	0.0010	0.0059	-0.0037
	2005	-0.0063	-0.0075	-0.0051
	2006	-0.0574	-0.0562	-0.0588
10 Point	2007	0.0249	0.0196	0.0300
	1998	-0.0982	-0.0966	-0.0997
	1999	-0.0496	-0.0578	-0.0414
	2000	0.1535	0.1600	0.1470
	2001	0.0233	0.0206	0.0261
	2002	0.0655	0.0779	0.0533
	2003	0.0222	0.0157	0.0287
	2004	0.0044	0.0092	-0.0003
	2005	-0.0130	-0.0142	-0.0118
	2006	-0.0744	-0.0731	-0.0756
2007	-0.0025	-0.0079	0.0027	

MEDICAL Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.0442	0.0619	0.0265
	2005	-0.0008	-0.0091	0.0073
	2006	-0.1308	-0.1674	-0.0942
	2007	0.0875	0.1147	0.0604
5 Point	2003	-0.0369	-0.0615	-0.0123
	2004	0.0811	0.1234	0.0388
	2005	0.0176	0.0216	0.0134
	2006	-0.1308	-0.1674	-0.0942
	2007	0.0690	0.0839	0.0542
6 Point	2002	0.0124	-0.0012	0.0261
	2003	-0.0469	-0.0606	-0.0331
	2004	0.0749	0.1240	0.0258
	2005	0.0152	0.0219	0.0082
	2006	-0.1296	-0.1675	-0.0916
	2007	0.0740	0.0834	0.0646
7 Point	2001	-0.0685	-0.0782	-0.0589
	2002	0.0581	0.0510	0.0653
	2003	-0.0149	-0.0241	-0.0057
	2004	0.0932	0.1448	0.0415
	2005	0.0197	0.0271	0.0121
	2006	-0.1387	-0.1780	-0.0994
	2007	0.0512	0.0574	0.0450
8 Point	2000	0.0743	0.0882	0.0604
	2001	-0.1110	-0.1286	-0.0934
	2002	0.0263	0.0132	0.0394
	2003	-0.0361	-0.0493	-0.0229
	2004	0.0825	0.1322	0.0329
	2005	0.0197	0.0271	0.0121
	2006	-0.1281	-0.1654	-0.0908
	2007	0.0724	0.0826	0.0623
9 Point	1999	-0.0967	-0.1422	-0.0512
	2000	0.1226	0.1593	0.0861
	2001	-0.0730	-0.0727	-0.0733
	2002	0.0539	0.0538	0.0540
	2003	-0.0189	-0.0239	-0.0138
	2004	0.0895	0.1424	0.0365
	2005	0.0163	0.0220	0.0103
	2006	-0.1419	-0.1857	-0.0981
2007	0.0482	0.0470	0.0495	
10 Point	1998	-0.0985	-0.1507	-0.0460
	1999	-0.0529	-0.0752	-0.0308
	2000	0.1582	0.2137	0.1027
	2001	-0.0456	-0.0308	-0.0605
	2002	0.0731	0.0831	0.0630
	2003	-0.0079	-0.0072	-0.0087
	2004	0.0922	0.1466	0.0378
	2005	0.0108	0.0136	0.0077
	2006	-0.1556	-0.2066	-0.1045
	2007	0.0263	0.0135	0.0393

MEDICAL Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.0419	0.0616	0.0229
	2005	0.0007	-0.0066	0.0089
	2006	-0.1266	-0.1622	-0.0904
	2007	0.0932	0.1224	0.0633
5 Point	2003	-0.0389	-0.0607	-0.0167
	2004	0.0837	0.1272	0.0408
	2005	0.0223	0.0270	0.0183
	2006	-0.1266	-0.1622	-0.0904
	2007	0.0700	0.0874	0.0529
6 Point	2002	0.0083	-0.0030	0.0194
	2003	-0.0457	-0.0583	-0.0328
	2004	0.0793	0.1288	0.0303
	2005	0.0205	0.0276	0.0138
	2006	-0.1257	-0.1625	-0.0881
	2007	0.0741	0.0860	0.0627
7 Point	2001	-0.0726	-0.0797	-0.0658
	2002	0.0622	0.0560	0.0686
	2003	-0.0061	-0.0153	0.0036
	2004	0.1030	0.1544	0.0523
	2005	0.0267	0.0343	0.0196
	2006	-0.1387	-0.1764	-0.1003
	2007	0.0399	0.0499	0.0304
8 Point	2000	0.0665	0.0838	0.0489
	2001	-0.1106	-0.1269	-0.0942
	2002	0.0323	0.0191	0.0460
	2003	-0.0271	-0.0410	-0.0124
	2004	0.0920	0.1410	0.0438
	2005	0.0267	0.0343	0.0196
	2006	-0.1265	-0.1618	-0.0908
	2007	0.0655	0.0803	0.0505
9 Point	1999	-0.1044	-0.1432	-0.0655
	2000	0.1265	0.1678	0.0857
	2001	-0.0610	-0.0578	-0.0636
	2002	0.0703	0.0716	0.0696
	2003	-0.0021	-0.0066	0.0033
	2004	0.1025	0.1554	0.0504
	2005	0.0212	0.0268	0.0161
	2006	-0.1499	-0.1933	-0.1058
2007	0.0224	0.0226	0.0228	
10 Point	1998	-0.1092	-0.1519	-0.0654
	1999	-0.0472	-0.0610	-0.0325
	2000	0.1760	0.2387	0.1144
	2001	-0.0204	0.0001	-0.0400
	2002	0.1005	0.1147	0.0872
	2003	0.0163	0.0195	0.0141
	2004	0.1074	0.1623	0.0533
	2005	0.0107	0.0120	0.0100
	2006	-0.1777	-0.2325	-0.1221
	2007	-0.0249	-0.0440	-0.0052