

DELAWARE COMPENSATION RATING BUREAU, INC.

Measures of Goodness of Fit in Trend Calculations Using Severity Ratios – Limited 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	0.234	0.095	0.449
5 Point	Linear	0.203	0.119	0.305
6 Point	Linear	0.301	0.196	0.411
7 Point	Linear	0.183	0.139	0.215
8 Point	Linear	0.129	0.069	0.202
9 Point	Linear	0.057	0.094	0.017
10 Point	Linear	0.020	0.002	0.066
4 Point	Expon'l	0.243	0.097	0.455
5 Point	Expon'l	0.205	0.118	0.302
6 Point	Expon'l	0.307	0.199	0.411
7 Point	Expon'l	0.182	0.137	0.210
8 Point	Expon'l	0.126	0.064	0.196
9 Point	Expon'l	0.054	0.091	0.016
10 Point	Expon'l	0.030	0.006	0.079

MEDICAL		(Average)	(Incur)	(Pd-20)
r ²				
4 Point	Linear	0.869	0.828	0.905
5 Point	Linear	0.773	0.731	0.809
6 Point	Linear	0.854	0.818	0.882
7 Point	Linear	0.880	0.853	0.901
8 Point	Linear	0.908	0.885	0.926
9 Point	Linear	0.843	0.811	0.869
10 Point	Linear	0.885	0.862	0.904
4 Point	Expon'l	0.862	0.819	0.902
5 Point	Expon'l	0.767	0.721	0.810
6 Point	Expon'l	0.861	0.825	0.890
7 Point	Expon'l	0.896	0.869	0.917
8 Point	Expon'l	0.928	0.907	0.943
9 Point	Expon'l	0.859	0.827	0.886
10 Point	Expon'l	0.891	0.864	0.913

INDEMNITY Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.7520	0.7431	0.7608
	2006	0.7697	0.7563	0.7831
	2007	0.7874	0.7694	0.8053
	2008	0.8051	0.7825	0.8276
5 Point	2004	0.7519	0.7376	0.7662
	2005	0.7637	0.7482	0.7792
	2006	0.7755	0.7588	0.7923
	2007	0.7874	0.7694	0.8053
	2008	0.7992	0.7800	0.8184
6 Point	2003	0.7409	0.7264	0.7553
	2004	0.7525	0.7372	0.7677
	2005	0.7641	0.7479	0.7802
	2006	0.7757	0.7587	0.7927
	2007	0.7873	0.7694	0.8051
	2008	0.7989	0.7802	0.8176
7 Point	2002	0.7486	0.7312	0.7659
	2003	0.7557	0.7384	0.7730
	2004	0.7629	0.7456	0.7802
	2005	0.7700	0.7527	0.7873
	2006	0.7772	0.7599	0.7944
	2007	0.7843	0.7671	0.8016
	2008	0.7915	0.7742	0.8087
	8 Point	2001	0.7526	0.7392
2002		0.7575	0.7434	0.7716
2003		0.7624	0.7475	0.7773
2004		0.7673	0.7516	0.7830
2005		0.7723	0.7558	0.7887
2006		0.7772	0.7599	0.7944
2007		0.7821	0.7640	0.8001
2008		0.7870	0.7682	0.8058
9 Point		2000	0.8003	0.7966
	2001	0.7959	0.7898	0.8020
	2002	0.7916	0.7831	0.7999
	2003	0.7872	0.7764	0.7979
	2004	0.7828	0.7697	0.7959
	2005	0.7784	0.7630	0.7939
	2006	0.7741	0.7563	0.7919
	2007	0.7697	0.7496	0.7899
	2008	0.7653	0.7428	0.7878
10 Point	1999	0.7596	0.7540	0.7652
	2000	0.7624	0.7551	0.7696
	2001	0.7651	0.7561	0.7741
	2002	0.7678	0.7572	0.7785
	2003	0.7706	0.7583	0.7829
	2004	0.7733	0.7593	0.7873
	2005	0.7761	0.7604	0.7917
	2006	0.7788	0.7615	0.7962
	2007	0.7816	0.7625	0.8006
	2008	0.7843	0.7636	0.8050

INDEMNITY Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.7514	0.7424	0.7607
	2006	0.7687	0.7550	0.7823
	2007	0.7863	0.7678	0.8045
	2008	0.8044	0.7809	0.8274
5 Point	2004	0.7519	0.7376	0.7663
	2005	0.7632	0.7475	0.7788
	2006	0.7747	0.7576	0.7916
	2007	0.7863	0.7678	0.8045
	2008	0.7981	0.7782	0.8177
6 Point	2003	0.7412	0.7268	0.7556
	2004	0.7522	0.7369	0.7675
	2005	0.7634	0.7471	0.7796
	2006	0.7748	0.7574	0.7919
	2007	0.7863	0.7679	0.8044
	2008	0.7980	0.7786	0.8170
7 Point	2002	0.7489	0.7317	0.7661
	2003	0.7556	0.7383	0.7729
	2004	0.7624	0.7450	0.7798
	2005	0.7693	0.7518	0.7867
	2006	0.7763	0.7586	0.7937
	2007	0.7833	0.7655	0.8008
	2008	0.7903	0.7725	0.8079
	8 Point	2001	0.7529	0.7396
2002		0.7576	0.7434	0.7717
2003		0.7622	0.7472	0.7771
2004		0.7668	0.7510	0.7826
2005		0.7715	0.7548	0.7881
2006		0.7763	0.7586	0.7937
2007		0.7810	0.7625	0.7993
2008		0.7858	0.7664	0.8050
9 Point		2000	0.7980	0.7933
	2001	0.7938	0.7868	0.8006
	2002	0.7897	0.7804	0.7987
	2003	0.7855	0.7741	0.7968
	2004	0.7815	0.7677	0.7950
	2005	0.7774	0.7615	0.7931
	2006	0.7733	0.7553	0.7912
	2007	0.7693	0.7491	0.7894
	2008	0.7653	0.7430	0.7875
10 Point	1999	0.7554	0.7487	0.7621
	2000	0.7587	0.7504	0.7668
	2001	0.7619	0.7521	0.7716
	2002	0.7651	0.7537	0.7763
	2003	0.7684	0.7554	0.7811
	2004	0.7717	0.7571	0.7860
	2005	0.7749	0.7588	0.7908
	2006	0.7782	0.7606	0.7957
	2007	0.7815	0.7623	0.8007
	2008	0.7849	0.7640	0.8056

MEDICAL Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	1.1490	1.1734	1.1248
	2006	1.2805	1.3070	1.2540
	2007	1.4119	1.4406	1.3832
	2008	1.5433	1.5742	1.5124
5 Point	2004	1.1276	1.1551	1.1002
	2005	1.2224	1.2502	1.1945
	2006	1.3171	1.3454	1.2889
	2007	1.4119	1.4406	1.3832
	2008	1.5067	1.5358	1.4775
6 Point	2003	1.0362	1.0687	1.0039
	2004	1.1301	1.1615	1.0987
	2005	1.2239	1.2542	1.1936
	2006	1.3177	1.3470	1.2885
	2007	1.4116	1.4398	1.3834
	2008	1.5054	1.5326	1.4782
7 Point	2002	0.9734	1.0055	0.9413
	2003	1.0601	1.0915	1.0287
	2004	1.1468	1.1774	1.1161
	2005	1.2334	1.2634	1.2036
	2006	1.3201	1.3493	1.2910
	2007	1.4068	1.4352	1.3784
	2008	1.4935	1.5212	1.4658
8 Point	2001	0.9029	0.9381	0.8677
	2002	0.9863	1.0203	0.9523
	2003	1.0698	1.1026	1.0370
	2004	1.1532	1.1848	1.1217
	2005	1.2367	1.2671	1.2063
	2006	1.3201	1.3493	1.2910
	2007	1.4036	1.4315	1.3756
	2008	1.4870	1.5138	1.4603
9 Point	2000	0.8955	0.9361	0.8549
	2001	0.9656	1.0042	0.9269
	2002	1.0356	1.0723	0.9989
	2003	1.1056	1.1404	1.0708
	2004	1.1756	1.2084	1.1428
	2005	1.2456	1.2765	1.2148
	2006	1.3156	1.3446	1.2867
	2007	1.3857	1.4126	1.3587
	2008	1.4557	1.4807	1.4307
10 Point	1999	0.8077	0.8410	0.7742
	2000	0.8805	0.9134	0.8476
	2001	0.9533	0.9857	0.9209
	2002	1.0262	1.0581	0.9943
	2003	1.0990	1.1304	1.0676
	2004	1.1718	1.2027	1.1410
	2005	1.2447	1.2751	1.2143
	2006	1.3175	1.3474	1.2877
	2007	1.3904	1.4198	1.3610
	2008	1.4632	1.4921	1.4344

MEDICAL Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	1.1557	1.1794	1.1321
	2006	1.2736	1.2994	1.2477
	2007	1.4035	1.4317	1.3752
	2008	1.5467	1.5775	1.5157
5 Point	2004	1.1375	1.1646	1.1106
	2005	1.2201	1.2476	1.1926
	2006	1.3086	1.3365	1.2807
	2007	1.4035	1.4317	1.3752
	2008	1.5054	1.5338	1.4767
6 Point	2003	1.0494	1.0816	1.0172
	2004	1.1288	1.1603	1.0973
	2005	1.2142	1.2447	1.1836
	2006	1.3061	1.3353	1.2768
	2007	1.4049	1.4324	1.3773
	2008	1.5112	1.5366	1.4857
7 Point	2002	0.9910	1.0227	0.9594
	2003	1.0622	1.0935	1.0308
	2004	1.1384	1.1692	1.1075
	2005	1.2201	1.2502	1.1899
	2006	1.3076	1.3367	1.2785
	2007	1.4015	1.4293	1.3736
	2008	1.5021	1.5282	1.4759
	2008	1.5021	1.5282	1.4759
8 Point	2001	0.9250	0.9596	0.8905
	2002	0.9913	1.0254	0.9573
	2003	1.0624	1.0957	1.0291
	2004	1.1386	1.1708	1.1063
	2005	1.2202	1.2510	1.1893
	2006	1.3076	1.3367	1.2785
	2007	1.4014	1.4283	1.3744
	2008	1.5018	1.5262	1.4775
	2008	1.5018	1.5262	1.4775
9 Point	2000	0.9197	0.9590	0.8804
	2001	0.9746	1.0129	0.9363
	2002	1.0329	1.0699	0.9958
	2003	1.0946	1.1300	1.0590
	2004	1.1600	1.1936	1.1263
	2005	1.2293	1.2607	1.1978
	2006	1.3028	1.3316	1.2739
	2007	1.3806	1.4065	1.3548
	2008	1.4631	1.4855	1.4409
10 Point	1999	0.8341	0.8652	0.8028
	2000	0.8895	0.9209	0.8580
	2001	0.9486	0.9801	0.9169
	2002	1.0116	1.0431	0.9799
	2003	1.0787	1.1102	1.0471
	2004	1.1504	1.1815	1.1191
	2005	1.2268	1.2575	1.1959
	2006	1.3082	1.3383	1.2780
	2007	1.3951	1.4244	1.3658
	2008	1.4877	1.5160	1.4596

INDEMNITY Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	-0.0007	-0.0083	0.0071
	2006	-0.0284	-0.0255	-0.0313
	2007	0.0587	0.0759	0.0414
	2008	-0.0297	-0.0421	-0.0172
5 Point	2004	0.0118	0.0051	0.0184
	2005	-0.0124	-0.0134	-0.0113
	2006	-0.0342	-0.0280	-0.0405
	2007	0.0587	0.0759	0.0414
	2008	-0.0238	-0.0396	-0.0080
6 Point	2003	0.0007	-0.0005	0.0019
	2004	0.0112	0.0055	0.0169
	2005	-0.0128	-0.0131	-0.0123
	2006	-0.0344	-0.0279	-0.0409
	2007	0.0587	0.0759	0.0416
	2008	-0.0235	-0.0398	-0.0072
7 Point	2002	0.0222	0.0180	0.0266
	2003	-0.0141	-0.0125	-0.0158
	2004	0.0008	-0.0029	0.0044
	2005	-0.0187	-0.0179	-0.0194
	2006	-0.0359	-0.0291	-0.0426
	2007	0.0617	0.0783	0.0451
	2008	-0.0161	-0.0338	0.0017
	8 Point	2001	0.0157	0.0212
2002	0.0133	0.0058	0.0209	
2003	-0.0208	-0.0216	-0.0201	
2004	-0.0036	-0.0089	0.0016	
2005	-0.0210	-0.0210	-0.0208	
2006	-0.0359	-0.0291	-0.0426	
2007	0.0639	0.0813	0.0466	
2008	-0.0116	-0.0278	0.0046	
9 Point	2000	0.0866	0.1012	0.0720
	2001	-0.0276	-0.0294	-0.0260
	2002	-0.0208	-0.0339	-0.0074
	2003	-0.0456	-0.0505	-0.0407
	2004	-0.0191	-0.0270	-0.0113
	2005	-0.0271	-0.0282	-0.0260
	2006	-0.0328	-0.0255	-0.0401
	2007	0.0763	0.0957	0.0569
	2008	0.0101	-0.0024	0.0226
10 Point	1999	-0.0853	-0.0934	-0.0772
	2000	0.1245	0.1427	0.1064
	2001	0.0032	0.0043	0.0019
	2002	0.0030	-0.0080	0.0140
	2003	-0.0290	-0.0324	-0.0257
	2004	-0.0096	-0.0166	-0.0027
	2005	-0.0248	-0.0256	-0.0238
	2006	-0.0375	-0.0307	-0.0444
	2007	0.0644	0.0828	0.0461
	2008	-0.0089	-0.0232	0.0054

INDEMNITY Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	-0.0001	-0.0076	0.0072
	2006	-0.0274	-0.0242	-0.0305
	2007	0.0597	0.0775	0.0422
	2008	-0.0290	-0.0405	-0.0170
5 Point	2004	0.0118	0.0051	0.0183
	2005	-0.0119	-0.0127	-0.0109
	2006	-0.0334	-0.0268	-0.0398
	2007	0.0597	0.0775	0.0422
	2008	-0.0227	-0.0378	-0.0073
6 Point	2003	0.0004	-0.0009	0.0016
	2004	0.0115	0.0058	0.0171
	2005	-0.0121	-0.0123	-0.0117
	2006	-0.0335	-0.0266	-0.0401
	2007	0.0597	0.0774	0.0423
	2008	-0.0226	-0.0382	-0.0066
7 Point	2002	0.0219	0.0175	0.0264
	2003	-0.0140	-0.0124	-0.0157
	2004	0.0013	-0.0023	0.0048
	2005	-0.0180	-0.0170	-0.0188
	2006	-0.0350	-0.0278	-0.0419
	2007	0.0627	0.0798	0.0459
	2008	-0.0149	-0.0321	0.0025
	8 Point	2001	0.0154	0.0208
2002	0.0132	0.0058	0.0208	
2003	-0.0206	-0.0213	-0.0199	
2004	-0.0031	-0.0083	0.0020	
2005	-0.0202	-0.0200	-0.0202	
2006	-0.0350	-0.0278	-0.0419	
2007	0.0650	0.0828	0.0474	
2008	-0.0104	-0.0260	0.0054	
9 Point	2000	0.0889	0.1045	0.0735
	2001	-0.0255	-0.0264	-0.0246
	2002	-0.0189	-0.0312	-0.0062
	2003	-0.0439	-0.0482	-0.0396
	2004	-0.0178	-0.0250	-0.0104
	2005	-0.0261	-0.0267	-0.0252
	2006	-0.0320	-0.0245	-0.0394
	2007	0.0767	0.0962	0.0573
	2008	0.0101	-0.0026	0.0229
10 Point	1999	-0.0811	-0.0881	-0.0741
	2000	0.1282	0.1474	0.1092
	2001	0.0064	0.0083	0.0044
	2002	0.0057	-0.0045	0.0162
	2003	-0.0268	-0.0295	-0.0239
	2004	-0.0080	-0.0144	-0.0014
	2005	-0.0236	-0.0240	-0.0229
	2006	-0.0369	-0.0298	-0.0439
	2007	0.0645	0.0830	0.0460
	2008	-0.0095	-0.0236	0.0048

MEDICAL Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.0469	0.0496	0.0440
	2006	-0.0932	-0.1076	-0.0785
	2007	0.0457	0.0664	0.0248
	2008	0.0006	-0.0084	0.0096
5 Point	2004	0.0733	0.0768	0.0698
	2005	-0.0265	-0.0272	-0.0257
	2006	-0.1298	-0.1460	-0.1134
	2007	0.0457	0.0664	0.0248
	2008	0.0372	0.0300	0.0445
6 Point	2003	0.0031	0.0080	-0.0019
	2004	0.0708	0.0704	0.0713
	2005	-0.0280	-0.0312	-0.0248
	2006	-0.1304	-0.1476	-0.1130
	2007	0.0460	0.0672	0.0246
	2008	0.0385	0.0332	0.0438
7 Point	2002	0.0358	0.0342	0.0373
	2003	-0.0208	-0.0148	-0.0267
	2004	0.0541	0.0545	0.0539
	2005	-0.0375	-0.0404	-0.0348
	2006	-0.1328	-0.1499	-0.1155
	2007	0.0508	0.0718	0.0296
	2008	0.0504	0.0446	0.0562
	2008	0.0504	0.0446	0.0562
8 Point	2001	0.0226	0.0259	0.0193
	2002	0.0229	0.0194	0.0263
	2003	-0.0305	-0.0259	-0.0350
	2004	0.0477	0.0471	0.0483
	2005	-0.0408	-0.0441	-0.0375
	2006	-0.1328	-0.1499	-0.1155
	2007	0.0540	0.0755	0.0324
	2008	0.0569	0.0520	0.0617
	2008	0.0569	0.0520	0.0617
9 Point	2000	0.1254	0.1323	0.1185
	2001	-0.0401	-0.0402	-0.0399
	2002	-0.0264	-0.0326	-0.0203
	2003	-0.0663	-0.0637	-0.0688
	2004	0.0253	0.0235	0.0272
	2005	-0.0497	-0.0535	-0.0460
	2006	-0.1283	-0.1452	-0.1112
	2007	0.0719	0.0944	0.0493
	2008	0.0882	0.0851	0.0913
10 Point	1999	-0.0339	-0.0512	-0.0166
	2000	0.1404	0.1550	0.1258
	2001	-0.0278	-0.0217	-0.0339
	2002	-0.0170	-0.0184	-0.0157
	2003	-0.0597	-0.0537	-0.0656
	2004	0.0291	0.0292	0.0290
	2005	-0.0488	-0.0521	-0.0455
	2006	-0.1302	-0.1480	-0.1122
	2007	0.0672	0.0872	0.0470
	2008	0.0807	0.0737	0.0876

MEDICAL Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.0402	0.0436	0.0367
	2006	-0.0863	-0.1000	-0.0722
	2007	0.0541	0.0753	0.0328
	2008	-0.0028	-0.0117	0.0063
5 Point	2004	0.0634	0.0673	0.0594
	2005	-0.0242	-0.0246	-0.0238
	2006	-0.1213	-0.1371	-0.1052
	2007	0.0541	0.0753	0.0328
	2008	0.0385	0.0320	0.0453
6 Point	2003	-0.0101	-0.0049	-0.0152
	2004	0.0721	0.0716	0.0727
	2005	-0.0183	-0.0217	-0.0148
	2006	-0.1188	-0.1359	-0.1013
	2007	0.0527	0.0746	0.0307
	2008	0.0327	0.0292	0.0363
7 Point	2002	0.0182	0.0170	0.0192
	2003	-0.0229	-0.0168	-0.0288
	2004	0.0625	0.0627	0.0625
	2005	-0.0242	-0.0272	-0.0211
	2006	-0.1203	-0.1373	-0.1030
	2007	0.0561	0.0777	0.0344
	2008	0.0418	0.0376	0.0461
	2008	0.0418	0.0376	0.0461
8 Point	2001	0.0005	0.0044	-0.0035
	2002	0.0179	0.0143	0.0213
	2003	-0.0231	-0.0190	-0.0271
	2004	0.0623	0.0611	0.0637
	2005	-0.0243	-0.0280	-0.0205
	2006	-0.1203	-0.1373	-0.1030
	2007	0.0562	0.0787	0.0336
	2008	0.0421	0.0396	0.0445
	2008	0.0421	0.0396	0.0445
9 Point	2000	0.1012	0.1094	0.0930
	2001	-0.0491	-0.0489	-0.0493
	2002	-0.0237	-0.0302	-0.0172
	2003	-0.0553	-0.0533	-0.0570
	2004	0.0409	0.0383	0.0437
	2005	-0.0334	-0.0377	-0.0290
	2006	-0.1155	-0.1322	-0.0984
	2007	0.0770	0.1005	0.0532
	2008	0.0808	0.0803	0.0811
10 Point	1999	-0.0603	-0.0754	-0.0452
	2000	0.1314	0.1475	0.1154
	2001	-0.0231	-0.0161	-0.0299
	2002	-0.0024	-0.0034	-0.0013
	2003	-0.0394	-0.0335	-0.0451
	2004	0.0505	0.0504	0.0509
	2005	-0.0309	-0.0345	-0.0271
	2006	-0.1209	-0.1389	-0.1025
	2007	0.0625	0.0826	0.0422
	2008	0.0562	0.0498	0.0624