

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	0.012	0.020	0.027
5 Point	Linear	0.067	0.281	0.037
6 Point	Linear	0.278	0.583	0.135
7 Point	Linear	0.211	0.238	0.179
8 Point	Linear	0.068	0.072	0.062
9 Point	Linear	0.313	0.316	0.305
10 Point	Linear	0.467	0.462	0.468
4 Point	Expon'l	0.012	0.020	0.027
5 Point	Expon'l	0.066	0.281	0.036
6 Point	Expon'l	0.278	0.582	0.133
7 Point	Expon'l	0.202	0.230	0.171
8 Point	Expon'l	0.091	0.096	0.082
9 Point	Expon'l	0.346	0.350	0.337
10 Point	Expon'l	0.499	0.494	0.499
MEDICAL		(Average)	(Incur)	(Pd-20)
r^2				
4 Point	Linear	0.823	0.803	0.800
5 Point	Linear	0.902	0.881	0.899
6 Point	Linear	0.934	0.925	0.932
7 Point	Linear	0.815	0.732	0.864
8 Point	Linear	0.847	0.770	0.901
9 Point	Linear	0.881	0.823	0.926
10 Point	Linear	0.906	0.863	0.942
4 Point	Expon'l	0.814	0.798	0.793
5 Point	Expon'l	0.895	0.874	0.894
6 Point	Expon'l	0.923	0.916	0.921
7 Point	Expon'l	0.797	0.713	0.850
8 Point	Expon'l	0.813	0.731	0.878
9 Point	Expon'l	0.843	0.782	0.899
10 Point	Expon'l	0.865	0.819	0.910

INDEMNITY Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2003	0.5794	0.5811	0.5779
	2004	0.5787	0.5814	0.5761
	2005	0.5780	0.5816	0.5743
	2006	0.5773	0.5819	0.5724
5 Point	2002	0.5740	0.5790	0.5692
	2003	0.5753	0.5799	0.5709
	2004	0.5767	0.5807	0.5726
	2005	0.5780	0.5816	0.5743
	2006	0.5793	0.5825	0.5759
6 Point	2001	0.5685	0.5731	0.5642
	2002	0.5710	0.5754	0.5668
	2003	0.5734	0.5776	0.5694
	2004	0.5759	0.5798	0.5720
	2005	0.5784	0.5821	0.5746
	2006	0.5809	0.5843	0.5772
7 Point	2000	0.6013	0.6066	0.5963
	2001	0.5957	0.6006	0.5909
	2002	0.5900	0.5946	0.5855
	2003	0.5843	0.5886	0.5800
	2004	0.5786	0.5826	0.5746
	2005	0.5729	0.5766	0.5692
	2006	0.5673	0.5706	0.5638
8 Point	1999	0.5554	0.5576	0.5532
	2000	0.5600	0.5626	0.5575
	2001	0.5647	0.5676	0.5618
	2002	0.5693	0.5726	0.5661
	2003	0.5740	0.5776	0.5704
	2004	0.5786	0.5826	0.5746
	2005	0.5833	0.5876	0.5789
2006	0.5879	0.5926	0.5832	
9 Point	1998	0.5043	0.5052	0.5036
	1999	0.5171	0.5185	0.5159
	2000	0.5300	0.5319	0.5282
	2001	0.5428	0.5453	0.5404
	2002	0.5557	0.5586	0.5527
	2003	0.5685	0.5720	0.5650
	2004	0.5814	0.5854	0.5773
	2005	0.5942	0.5987	0.5896
2006	0.6070	0.6121	0.6019	
10 Point	1997	0.4719	0.4745	0.4696
	1998	0.4879	0.4906	0.4853
	1999	0.5038	0.5067	0.5010
	2000	0.5197	0.5228	0.5167
	2001	0.5356	0.5389	0.5325
	2002	0.5516	0.5550	0.5482
	2003	0.5675	0.5711	0.5639
	2004	0.5834	0.5872	0.5796
	2005	0.5993	0.6033	0.5953
	2006	0.6153	0.6194	0.6110

INDEMNITY Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2003	0.5794	0.5811	0.5778
	2004	0.5787	0.5814	0.5760
	2005	0.5779	0.5816	0.5741
	2006	0.5772	0.5819	0.5722
5 Point	2002	0.5740	0.5790	0.5691
	2003	0.5753	0.5798	0.5708
	2004	0.5766	0.5807	0.5724
	2005	0.5779	0.5816	0.5741
	2006	0.5793	0.5825	0.5758
6 Point	2001	0.5685	0.5731	0.5641
	2002	0.5709	0.5753	0.5667
	2003	0.5734	0.5776	0.5693
	2004	0.5758	0.5798	0.5718
	2005	0.5783	0.5821	0.5744
	2006	0.5808	0.5844	0.5770
7 Point	2000	0.6002	0.6054	0.5951
	2001	0.5947	0.5996	0.5899
	2002	0.5892	0.5938	0.5847
	2003	0.5838	0.5881	0.5795
	2004	0.5784	0.5824	0.5744
	2005	0.5731	0.5768	0.5693
	2006	0.5679	0.5713	0.5643
8 Point	1999	0.5512	0.5530	0.5495
	2000	0.5566	0.5588	0.5544
	2001	0.5620	0.5646	0.5593
	2002	0.5674	0.5705	0.5643
	2003	0.5729	0.5764	0.5693
	2004	0.5784	0.5824	0.5744
	2005	0.5840	0.5885	0.5795
2006	0.5897	0.5947	0.5846	
9 Point	1998	0.4979	0.4983	0.4977
	1999	0.5110	0.5119	0.5101
	2000	0.5244	0.5259	0.5229
	2001	0.5381	0.5402	0.5361
	2002	0.5522	0.5550	0.5495
	2003	0.5667	0.5701	0.5633
	2004	0.5816	0.5857	0.5774
	2005	0.5968	0.6017	0.5919
2006	0.6125	0.6181	0.6068	
10 Point	1997	0.4672	0.4696	0.4650
	1998	0.4823	0.4849	0.4799
	1999	0.4979	0.5007	0.4953
	2000	0.5141	0.5170	0.5112
	2001	0.5307	0.5338	0.5276
	2002	0.5479	0.5512	0.5446
	2003	0.5656	0.5691	0.5620
	2004	0.5839	0.5877	0.5801
	2005	0.6028	0.6068	0.5987
	2006	0.6223	0.6266	0.6179

MEDICAL Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2003	0.8410	0.8901	0.7919
	2004	0.8717	0.9161	0.8274
	2005	0.9024	0.9420	0.8628
	2006	0.9330	0.9680	0.8983
5 Point	2002	0.7878	0.8367	0.7388
	2003	0.8260	0.8718	0.7802
	2004	0.8642	0.9069	0.8215
	2005	0.9024	0.9420	0.8628
	2006	0.9406	0.9771	0.9042
6 Point	2001	0.7277	0.7820	0.6735
	2002	0.7719	0.8225	0.7214
	2003	0.8160	0.8629	0.7692
	2004	0.8602	0.9034	0.8171
	2005	0.9043	0.9438	0.8650
	2006	0.9485	0.9843	0.9129
7 Point	2000	0.7280	0.7916	0.6645
	2001	0.7619	0.8205	0.7034
	2002	0.7958	0.8494	0.7423
	2003	0.8297	0.8783	0.7812
	2004	0.8636	0.9072	0.8201
	2005	0.8975	0.9361	0.8590
	2006	0.9314	0.9650	0.8979
8 Point	1999	0.6503	0.7012	0.5993
	2000	0.6929	0.7424	0.6435
	2001	0.7356	0.7836	0.6876
	2002	0.7783	0.8248	0.7318
	2003	0.8209	0.8660	0.7760
	2004	0.8636	0.9072	0.8201
	2005	0.9063	0.9484	0.8643
	2006	0.9489	0.9896	0.9085
9 Point	1998	0.5714	0.6093	0.5335
	1999	0.6204	0.6594	0.5815
	2000	0.6695	0.7096	0.6295
	2001	0.7186	0.7597	0.6775
	2002	0.7676	0.8099	0.7254
	2003	0.8167	0.8601	0.7734
	2004	0.8657	0.9102	0.8214
	2005	0.9148	0.9604	0.8694
	2006	0.9639	1.0105	0.9174
10 Point	1997	0.4912	0.5168	0.4657
	1998	0.5452	0.5736	0.5168
	1999	0.5992	0.6305	0.5679
	2000	0.6531	0.6873	0.6190
	2001	0.7071	0.7442	0.6701
	2002	0.7611	0.8010	0.7212
	2003	0.8150	0.8578	0.7724
	2004	0.8690	0.9147	0.8235
	2005	0.9230	0.9715	0.8746
	2006	0.9770	1.0283	0.9257

MEDICAL Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2003	0.8407	0.8899	0.7914
	2004	0.8708	0.9154	0.8260
	2005	0.9019	0.9417	0.8622
	2006	0.9342	0.9687	0.8999
5 Point	2002	0.7881	0.8368	0.7394
	2003	0.8243	0.8704	0.7782
	2004	0.8622	0.9054	0.8191
	2005	0.9019	0.9417	0.8622
	2006	0.9434	0.9795	0.9075
6 Point	2001	0.7292	0.7832	0.6753
	2002	0.7696	0.8206	0.7185
	2003	0.8122	0.8598	0.7644
	2004	0.8571	0.9009	0.8133
	2005	0.9046	0.9440	0.8653
	2006	0.9547	0.9891	0.9206
7 Point	2000	0.7307	0.7932	0.6684
	2001	0.7612	0.8198	0.7027
	2002	0.7931	0.8473	0.7388
	2003	0.8263	0.8757	0.7767
	2004	0.8608	0.9051	0.8165
	2005	0.8968	0.9354	0.8584
	2006	0.9344	0.9668	0.9025
8 Point	1999	0.6521	0.6998	0.6041
	2000	0.6893	0.7368	0.6417
	2001	0.7287	0.7756	0.6815
	2002	0.7703	0.8166	0.7238
	2003	0.8143	0.8597	0.7688
	2004	0.8608	0.9051	0.8165
	2005	0.9100	0.9528	0.8672
2006	0.9620	1.0031	0.9211	
9 Point	1998	0.5748	0.6083	0.5409
	1999	0.6152	0.6506	0.5796
	2000	0.6585	0.6957	0.6211
	2001	0.7049	0.7440	0.6656
	2002	0.7545	0.7956	0.7132
	2003	0.8076	0.8508	0.7642
	2004	0.8644	0.9098	0.8189
	2005	0.9252	0.9729	0.8776
2006	0.9903	1.0404	0.9404	
10 Point	1997	0.4982	0.5192	0.4768
	1998	0.5397	0.5633	0.5156
	1999	0.5845	0.6111	0.5575
	2000	0.6331	0.6630	0.6028
	2001	0.6857	0.7193	0.6517
	2002	0.7427	0.7804	0.7047
	2003	0.8044	0.8467	0.7620
	2004	0.8713	0.9186	0.8239
	2005	0.9437	0.9966	0.8908
2006	1.0221	1.0812	0.9632	

INDEMNITY Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2003	0.0044	0.0015	0.0073
	2004	-0.0010	-0.0008	-0.0012
	2005	-0.0112	-0.0029	-0.0195
	2006	0.0078	0.0022	0.0134
5 Point	2002	-0.0041	-0.0013	-0.0070
	2003	0.0085	0.0028	0.0143
	2004	0.0010	-0.0001	0.0023
	2005	-0.0112	-0.0029	-0.0195
	2006	0.0058	0.0016	0.0099
6 Point	2001	-0.0038	-0.0045	-0.0031
	2002	-0.0011	0.0023	-0.0046
	2003	0.0104	0.0050	0.0158
	2004	0.0018	0.0008	0.0029
	2005	-0.0116	-0.0034	-0.0198
	2006	0.0042	-0.0002	0.0086
7 Point	2000	0.0408	0.0413	0.0400
	2001	-0.0310	-0.0320	-0.0298
	2002	-0.0201	-0.0169	-0.0232
	2003	-0.0005	-0.0060	0.0052
	2004	-0.0009	-0.0020	0.0003
	2005	-0.0061	0.0021	-0.0144
	2006	0.0178	0.0135	0.0220
8 Point	1999	-0.0723	-0.0770	-0.0678
	2000	0.0821	0.0853	0.0788
	2001	0.0000	0.0010	-0.0007
	2002	0.0006	0.0051	-0.0039
	2003	0.0098	0.0050	0.0148
	2004	-0.0009	-0.0020	0.0003
	2005	-0.0165	-0.0089	-0.0241
2006	-0.0028	-0.0085	0.0026	
9 Point	1998	-0.0765	-0.0782	-0.0747
	1999	-0.0340	-0.0379	-0.0305
	2000	0.1121	0.1160	0.1081
	2001	0.0219	0.0233	0.0207
	2002	0.0142	0.0191	0.0095
	2003	0.0153	0.0106	0.0202
	2004	-0.0037	-0.0048	-0.0024
	2005	-0.0274	-0.0200	-0.0348
2006	-0.0219	-0.0280	-0.0161	
10 Point	1997	-0.0369	-0.0329	-0.0411
	1998	-0.0601	-0.0636	-0.0564
	1999	-0.0207	-0.0261	-0.0156
	2000	0.1224	0.1251	0.1196
	2001	0.0291	0.0297	0.0286
	2002	0.0183	0.0227	0.0140
	2003	0.0163	0.0115	0.0213
	2004	-0.0057	-0.0066	-0.0047
	2005	-0.0325	-0.0246	-0.0405
	2006	-0.0302	-0.0353	-0.0252

INDEMNITY Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2003	0.0044	0.0015	0.0074
	2004	-0.0010	-0.0008	-0.0011
	2005	-0.0111	-0.0029	-0.0193
	2006	0.0079	0.0022	0.0136
5 Point	2002	-0.0041	-0.0013	-0.0069
	2003	0.0085	0.0028	0.0144
	2004	0.0011	-0.0001	0.0025
	2005	-0.0111	-0.0029	-0.0193
	2006	0.0058	0.0016	0.0100
6 Point	2001	-0.0038	-0.0045	-0.0030
	2002	-0.0010	0.0024	-0.0045
	2003	0.0104	0.0050	0.0159
	2004	0.0019	0.0008	0.0031
	2005	-0.0115	-0.0034	-0.0196
	2006	0.0043	-0.0003	0.0088
7 Point	2000	0.0419	0.0425	0.0412
	2001	-0.0300	-0.0310	-0.0288
	2002	-0.0193	-0.0161	-0.0225
	2003	0.0000	-0.0055	0.0057
	2004	-0.0007	-0.0018	0.0005
	2005	-0.0063	0.0019	-0.0145
	2006	0.0172	0.0128	0.0215
8 Point	1999	-0.0681	-0.0724	-0.0641
	2000	0.0855	0.0891	0.0819
	2001	0.0027	0.0040	0.0018
	2002	0.0025	0.0072	-0.0021
	2003	0.0109	0.0062	0.0159
	2004	-0.0007	-0.0018	0.0005
	2005	-0.0172	-0.0098	-0.0247
	2006	-0.0046	-0.0106	0.0012
9 Point	1998	-0.0701	-0.0713	-0.0688
	1999	-0.0279	-0.0313	-0.0247
	2000	0.1177	0.1220	0.1134
	2001	0.0266	0.0284	0.0250
	2002	0.0177	0.0227	0.0127
	2003	0.0171	0.0125	0.0219
	2004	-0.0039	-0.0051	-0.0025
	2005	-0.0300	-0.0230	-0.0371
	2006	-0.0274	-0.0340	-0.0210
10 Point	1997	-0.0322	-0.0280	-0.0365
	1998	-0.0545	-0.0579	-0.0510
	1999	-0.0148	-0.0201	-0.0099
	2000	0.1280	0.1309	0.1251
	2001	0.0340	0.0348	0.0335
	2002	0.0220	0.0265	0.0176
	2003	0.0182	0.0135	0.0232
	2004	-0.0062	-0.0071	-0.0052
	2005	-0.0360	-0.0281	-0.0439
	2006	-0.0372	-0.0425	-0.0321

MEDICAL Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2003	-0.0174	-0.0141	-0.0207
	2004	0.0235	0.0240	0.0228
	2005	0.0052	-0.0058	0.0165
	2006	-0.0113	-0.0041	-0.0186
5 Point	2002	-0.0151	-0.0182	-0.0117
	2003	-0.0024	0.0042	-0.0090
	2004	0.0310	0.0332	0.0287
	2005	0.0052	-0.0058	0.0165
	2006	-0.0189	-0.0132	-0.0245
6 Point	2001	-0.0198	-0.0178	-0.0219
	2002	0.0008	-0.0040	0.0057
	2003	0.0076	0.0131	0.0020
	2004	0.0350	0.0367	0.0331
	2005	0.0033	-0.0076	0.0143
	2006	-0.0268	-0.0204	-0.0332
7 Point	2000	0.0513	0.0578	0.0449
	2001	-0.0540	-0.0563	-0.0518
	2002	-0.0231	-0.0309	-0.0152
	2003	-0.0061	-0.0023	-0.0100
	2004	0.0316	0.0329	0.0301
	2005	0.0101	0.0001	0.0203
	2006	-0.0097	-0.0011	-0.0182
8 Point	1999	-0.0614	-0.0861	-0.0368
	2000	0.0864	0.1070	0.0659
	2001	-0.0277	-0.0194	-0.0360
	2002	-0.0056	-0.0063	-0.0047
	2003	0.0027	0.0100	-0.0048
	2004	0.0316	0.0329	0.0301
	2005	0.0013	-0.0122	0.0150
2006	-0.0272	-0.0257	-0.0287	
9 Point	1998	-0.0597	-0.0836	-0.0356
	1999	-0.0315	-0.0443	-0.0190
	2000	0.1098	0.1398	0.0799
	2001	-0.0107	0.0045	-0.0259
	2002	0.0051	0.0086	0.0017
	2003	0.0069	0.0159	-0.0022
	2004	0.0295	0.0299	0.0288
	2005	-0.0072	-0.0242	0.0099
2006	-0.0422	-0.0466	-0.0377	
10 Point	1997	-0.0589	-0.0802	-0.0377
	1998	-0.0335	-0.0479	-0.0189
	1999	-0.0103	-0.0154	-0.0054
	2000	0.1262	0.1621	0.0904
	2001	0.0008	0.0200	-0.0185
	2002	0.0116	0.0175	0.0059
	2003	0.0086	0.0182	-0.0012
	2004	0.0262	0.0254	0.0267
	2005	-0.0154	-0.0353	0.0047
2006	-0.0553	-0.0644	-0.0460	

MEDICAL Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2003	-0.0171	-0.0139	-0.0202
	2004	0.0244	0.0247	0.0242
	2005	0.0057	-0.0055	0.0171
	2006	-0.0125	-0.0048	-0.0202
5 Point	2002	-0.0154	-0.0183	-0.0123
	2003	-0.0007	0.0056	-0.0070
	2004	0.0330	0.0347	0.0311
	2005	0.0057	-0.0055	0.0171
	2006	-0.0217	-0.0156	-0.0278
6 Point	2001	-0.0213	-0.0190	-0.0237
	2002	0.0031	-0.0021	0.0086
	2003	0.0114	0.0162	0.0068
	2004	0.0381	0.0392	0.0369
	2005	0.0030	-0.0078	0.0140
	2006	-0.0330	-0.0252	-0.0409
7 Point	2000	0.0486	0.0562	0.0410
	2001	-0.0533	-0.0556	-0.0511
	2002	-0.0204	-0.0288	-0.0117
	2003	-0.0027	0.0003	-0.0055
	2004	0.0344	0.0350	0.0337
	2005	0.0108	0.0008	0.0209
	2006	-0.0127	-0.0029	-0.0228
8 Point	1999	-0.0632	-0.0847	-0.0416
	2000	0.0900	0.1126	0.0677
	2001	-0.0208	-0.0114	-0.0299
	2002	0.0024	0.0019	0.0033
	2003	0.0093	0.0163	0.0024
	2004	0.0344	0.0350	0.0337
	2005	-0.0024	-0.0166	0.0121
2006	-0.0403	-0.0392	-0.0414	
9 Point	1998	-0.0631	-0.0826	-0.0430
	1999	-0.0263	-0.0355	-0.0171
	2000	0.1208	0.1537	0.0883
	2001	0.0030	0.0202	-0.0140
	2002	0.0182	0.0229	0.0139
	2003	0.0160	0.0252	0.0070
	2004	0.0308	0.0303	0.0313
	2005	-0.0176	-0.0367	0.0017
2006	-0.0686	-0.0765	-0.0607	
10 Point	1997	-0.0659	-0.0826	-0.0488
	1998	-0.0280	-0.0376	-0.0177
	1999	0.0044	0.0040	0.0050
	2000	0.1462	0.1864	0.1066
	2001	0.0222	0.0449	-0.0001
	2002	0.0300	0.0381	0.0224
	2003	0.0192	0.0293	0.0092
	2004	0.0239	0.0215	0.0263
	2005	-0.0361	-0.0604	-0.0115
2006	-0.1004	-0.1173	-0.0835	