

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	0.564	0.469	0.516
5 Point	Linear	0.201	0.254	0.126
6 Point	Linear	0.538	0.571	0.485
7 Point	Linear	0.691	0.702	0.665
8 Point	Linear	0.759	0.771	0.733
9 Point	Linear	0.821	0.831	0.799
10 Point	Linear	0.852	0.860	0.833
4 Point	Expon'l	0.562	0.460	0.512
5 Point	Expon'l	0.226	0.279	0.149
6 Point	Expon'l	0.558	0.588	0.509
7 Point	Expon'l	0.710	0.717	0.687
8 Point	Expon'l	0.778	0.788	0.752
9 Point	Expon'l	0.841	0.850	0.820
10 Point	Expon'l	0.876	0.884	0.858
MEDICAL		(Average)	(Incur)	(Pd-20)
r^2				
4 Point	Linear	0.631	0.688	0.581
5 Point	Linear	0.675	0.607	0.758
6 Point	Linear	0.806	0.772	0.847
7 Point	Linear	0.877	0.858	0.893
8 Point	Linear	0.917	0.902	0.929
9 Point	Linear	0.940	0.929	0.949
10 Point	Linear	0.950	0.940	0.960
4 Point	Expon'l	0.628	0.685	0.578
5 Point	Expon'l	0.658	0.594	0.745
6 Point	Expon'l	0.790	0.760	0.830
7 Point	Expon'l	0.860	0.848	0.869
8 Point	Expon'l	0.907	0.899	0.911
9 Point	Expon'l	0.934	0.929	0.938
10 Point	Expon'l	0.952	0.947	0.955

INDEMNITY Linear <b>FITTED</b>	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2000	0.5501	0.5675	0.5329
	2001	0.5387	0.5569	0.5206
	2002	0.5272	0.5463	0.5083
	2003	0.5158	0.5357	0.4960
5 Point	1999	0.4897	0.4969	0.4827
	2000	0.5022	0.5133	0.4913
	2001	0.5147	0.5298	0.4998
	2002	0.5272	0.5463	0.5083
	2003	0.5397	0.5628	0.5168
6 Point	1998	0.4189	0.4190	0.4188
	1999	0.4473	0.4522	0.4425
	2000	0.4757	0.4854	0.4661
	2001	0.5041	0.5187	0.4897
	2002	0.5325	0.5519	0.5133
	2003	0.5609	0.5851	0.5369
7 Point	1997	0.3756	0.3777	0.3735
	1998	0.4074	0.4128	0.4021
	1999	0.4393	0.4479	0.4308
	2000	0.4711	0.4829	0.4594
	2001	0.5030	0.5180	0.4880
	2002	0.5348	0.5531	0.5167
	2003	0.5667	0.5882	0.5453
8 Point	1996	0.3482	0.3464	0.3501
	1997	0.3792	0.3807	0.3777
	1998	0.4101	0.4151	0.4053
	1999	0.4411	0.4494	0.4328
	2000	0.4720	0.4837	0.4604
	2001	0.5030	0.5180	0.4880
	2002	0.5339	0.5524	0.5156
	2003	0.5649	0.5867	0.5432
9 Point	1995	0.3157	0.3100	0.3216
	1996	0.3470	0.3447	0.3493
	1997	0.3782	0.3794	0.3771
	1998	0.4094	0.4141	0.4048
	1999	0.4406	0.4488	0.4326
	2000	0.4719	0.4835	0.4603
	2001	0.5031	0.5182	0.4881
	2002	0.5343	0.5529	0.5158
	2003	0.5655	0.5876	0.5436
10 Point	1994	0.2915	0.2829	0.3000
	1995	0.3216	0.3164	0.3268
	1996	0.3517	0.3499	0.3536
	1997	0.3818	0.3834	0.3803
	1998	0.4120	0.4169	0.4071
	1999	0.4421	0.4504	0.4339
	2000	0.4722	0.4839	0.4607
	2001	0.5023	0.5174	0.4874
	2002	0.5325	0.5508	0.5142
	2003	0.5626	0.5843	0.5410

INDEMNITY Exponl <b>FITTED</b>	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2000	0.5498	0.5673	0.5324
	2001	0.5383	0.5566	0.5201
	2002	0.5271	0.5461	0.5081
	2003	0.5161	0.5358	0.4964
5 Point	1999	0.4863	0.4926	0.4801
	2000	0.4996	0.5098	0.4892
	2001	0.5131	0.5277	0.4986
	2002	0.5271	0.5461	0.5081
	2003	0.5415	0.5652	0.5178
6 Point	1998	0.4137	0.4131	0.4142
	1999	0.4409	0.4444	0.4372
	2000	0.4698	0.4780	0.4614
	2001	0.5007	0.5142	0.4871
	2002	0.5336	0.5532	0.5141
	2003	0.5687	0.5951	0.5426
7 Point	1997	0.3740	0.3766	0.3713
	1998	0.4020	0.4070	0.3970
	1999	0.4321	0.4398	0.4244
	2000	0.4645	0.4752	0.4537
	2001	0.4993	0.5135	0.4850
	2002	0.5367	0.5548	0.5185
	2003	0.5769	0.5995	0.5543
8 Point	1996	0.3507	0.3499	0.3515
	1997	0.3764	0.3778	0.3749
	1998	0.4039	0.4079	0.3998
	1999	0.4335	0.4404	0.4264
	2000	0.4652	0.4756	0.4547
	2001	0.4993	0.5135	0.4850
	2002	0.5358	0.5544	0.5172
	2003	0.5751	0.5986	0.5516
9 Point	1995	0.3216	0.3173	0.3260
	1996	0.3461	0.3439	0.3483
	1997	0.3725	0.3727	0.3722
	1998	0.4009	0.4039	0.3977
	1999	0.4315	0.4377	0.4250
	2000	0.4643	0.4744	0.4542
	2001	0.4997	0.5141	0.4853
	2002	0.5379	0.5572	0.5186
	2003	0.5789	0.6038	0.5541
10 Point	1994	0.3008	0.2944	0.3074
	1995	0.3234	0.3188	0.3281
	1996	0.3477	0.3452	0.3501
	1997	0.3738	0.3737	0.3737
	1998	0.4019	0.4047	0.3988
	1999	0.4321	0.4382	0.4257
	2000	0.4645	0.4745	0.4543
	2001	0.4994	0.5138	0.4849
	2002	0.5369	0.5564	0.5175
	2003	0.5772	0.6025	0.5524

MEDICAL		Severity	Severity	Severity
Linear	Policy	Ratio	Ratio	Ratio
<b>FITTED</b>	Year	(Average)	(Incur)	(Pd-20)
4 Point	2000	0.6988	0.8013	0.5961
	2001	0.7106	0.8102	0.6109
	2002	0.7224	0.8191	0.6257
	2003	0.7342	0.8280	0.6405
5 Point	1999	0.6150	0.6869	0.5430
	2000	0.6508	0.7310	0.5706
	2001	0.6866	0.7750	0.5981
	2002	0.7224	0.8191	0.6257
	2003	0.7582	0.8631	0.6532
6 Point	1998	0.5334	0.5823	0.4843
	1999	0.5817	0.6429	0.5204
	2000	0.6300	0.7035	0.5564
	2001	0.6783	0.7640	0.5925
	2002	0.7266	0.8246	0.6285
	2003	0.7749	0.8851	0.6646
7 Point	1997	0.4564	0.4925	0.4202
	1998	0.5113	0.5598	0.4627
	1999	0.5662	0.6272	0.5053
	2000	0.6212	0.6945	0.5478
	2001	0.6761	0.7618	0.5903
	2002	0.7310	0.8291	0.6328
	2003	0.7859	0.8964	0.6754
8 Point	1996	0.3959	0.4217	0.3700
	1997	0.4519	0.4897	0.4140
	1998	0.5080	0.5577	0.4581
	1999	0.5640	0.6257	0.5022
	2000	0.6200	0.6938	0.5462
	2001	0.6761	0.7618	0.5903
	2002	0.7321	0.8298	0.6344
	2003	0.7882	0.8978	0.6785
9 Point	1995	0.3410	0.3555	0.3265
	1996	0.3968	0.4232	0.3705
	1997	0.4527	0.4909	0.4144
	1998	0.5085	0.5586	0.4584
	1999	0.5643	0.6263	0.5024
	2000	0.6202	0.6940	0.5463
	2001	0.6760	0.7617	0.5903
	2002	0.7318	0.8294	0.6342
	2003	0.7877	0.8971	0.6782
10 Point	1994	0.2960	0.3038	0.2883
	1995	0.3502	0.3690	0.3314
	1996	0.4043	0.4341	0.3744
	1997	0.4584	0.4993	0.4175
	1998	0.5125	0.5645	0.4605
	1999	0.5666	0.6296	0.5036
	2000	0.6207	0.6948	0.5466
	2001	0.6749	0.7600	0.5897
	2002	0.7290	0.8251	0.6327
	2003	0.7831	0.8903	0.6758

MEDICAL Expon'l <b>FITTED</b>	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2000	0.6990	0.8014	0.5965
	2001	0.7105	0.8101	0.6107
	2002	0.7222	0.8190	0.6252
	2003	0.7341	0.8279	0.6401
5 Point	1999	0.6125	0.6818	0.5426
	2000	0.6471	0.7248	0.5689
	2001	0.6836	0.7704	0.5964
	2002	0.7222	0.8190	0.6252
	2003	0.7629	0.8706	0.6555
6 Point	1998	0.5319	0.5788	0.4844
	1999	0.5753	0.6328	0.5171
	2000	0.6222	0.6917	0.5520
	2001	0.6730	0.7562	0.5892
	2002	0.7279	0.8266	0.6290
	2003	0.7873	0.9037	0.6715
7 Point	1997	0.4587	0.4954	0.4218
	1998	0.5041	0.5500	0.4580
	1999	0.5541	0.6105	0.4972
	2000	0.6090	0.6777	0.5397
	2001	0.6694	0.7523	0.5859
	2002	0.7357	0.8352	0.6361
	2003	0.8086	0.9271	0.6906
8 Point	1996	0.4048	0.4338	0.3760
	1997	0.4477	0.4843	0.4109
	1998	0.4950	0.5406	0.4490
	1999	0.5474	0.6036	0.4907
	2000	0.6053	0.6739	0.5362
	2001	0.6694	0.7523	0.5859
	2002	0.7402	0.8399	0.6403
	2003	0.8185	0.9377	0.6997
9 Point	1995	0.3572	0.3769	0.3377
	1996	0.3967	0.4230	0.3703
	1997	0.4406	0.4748	0.4060
	1998	0.4893	0.5329	0.4451
	1999	0.5434	0.5982	0.4880
	2000	0.6036	0.6715	0.5350
	2001	0.6703	0.7537	0.5866
	2002	0.7445	0.8460	0.6431
	2003	0.8269	0.9496	0.7051
10 Point	1994	0.3199	0.3352	0.3050
	1995	0.3556	0.3763	0.3349
	1996	0.3952	0.4225	0.3678
	1997	0.4393	0.4744	0.4038
	1998	0.4884	0.5326	0.4435
	1999	0.5428	0.5980	0.4870
	2000	0.6034	0.6714	0.5347
	2001	0.6707	0.7538	0.5872
	2002	0.7456	0.8463	0.6448
	2003	0.8287	0.9502	0.7081

INDEMNITY Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2000	0.0119	0.0098	0.0141
	2001	-0.0137	-0.0058	-0.0216
	2002	-0.0084	-0.0178	0.0008
	2003	0.0102	0.0138	0.0066
5 Point	1999	-0.0478	-0.0542	-0.0416
	2000	0.0598	0.0640	0.0557
	2001	0.0103	0.0213	-0.0008
	2002	-0.0084	-0.0178	0.0008
	2003	-0.0137	-0.0133	-0.0142
6 Point	1998	-0.0530	-0.0558	-0.0503
	1999	-0.0054	-0.0095	-0.0014
	2000	0.0863	0.0919	0.0809
	2001	0.0209	0.0324	0.0093
	2002	-0.0137	-0.0234	-0.0042
	2003	-0.0349	-0.0356	-0.0343
7 Point	1997	-0.0173	-0.0094	-0.0251
	1998	-0.0415	-0.0496	-0.0336
	1999	0.0026	-0.0052	0.0103
	2000	0.0909	0.0944	0.0876
	2001	0.0220	0.0331	0.0110
	2002	-0.0160	-0.0246	-0.0075
	2003	-0.0407	-0.0387	-0.0427
8 Point	1996	0.0064	0.0054	0.0073
	1997	-0.0209	-0.0124	-0.0293
	1998	-0.0442	-0.0519	-0.0368
	1999	0.0008	-0.0067	0.0083
	2000	0.0900	0.0936	0.0866
	2001	0.0220	0.0331	0.0110
	2002	-0.0151	-0.0239	-0.0065
	2003	-0.0389	-0.0372	-0.0406
9 Point	1995	-0.0025	-0.0035	-0.0015
	1996	0.0076	0.0071	0.0081
	1997	-0.0199	-0.0111	-0.0287
	1998	-0.0435	-0.0509	-0.0363
	1999	0.0013	-0.0061	0.0085
	2000	0.0901	0.0938	0.0867
	2001	0.0219	0.0329	0.0109
	2002	-0.0155	-0.0244	-0.0067
	2003	-0.0395	-0.0381	-0.0410
10 Point	1994	0.0131	0.0145	0.0118
	1995	-0.0084	-0.0099	-0.0067
	1996	0.0029	0.0019	0.0038
	1997	-0.0235	-0.0151	-0.0319
	1998	-0.0461	-0.0537	-0.0386
	1999	-0.0002	-0.0077	0.0072
	2000	0.0898	0.0934	0.0863
	2001	0.0227	0.0337	0.0116
	2002	-0.0137	-0.0223	-0.0051
	2003	-0.0366	-0.0348	-0.0384

INDEMNITY Exponl RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2000	0.0122	0.0100	0.0146
	2001	-0.0133	-0.0055	-0.0211
	2002	-0.0083	-0.0176	0.0010
	2003	0.0099	0.0137	0.0062
5 Point	1999	-0.0444	-0.0499	-0.0390
	2000	0.0624	0.0675	0.0578
	2001	0.0119	0.0234	0.0004
	2002	-0.0083	-0.0176	0.0010
	2003	-0.0155	-0.0157	-0.0152
6 Point	1998	-0.0478	-0.0499	-0.0457
	1999	0.0010	-0.0017	0.0039
	2000	0.0922	0.0993	0.0856
	2001	0.0243	0.0369	0.0119
	2002	-0.0148	-0.0247	-0.0050
	2003	-0.0427	-0.0456	-0.0400
7 Point	1997	-0.0157	-0.0083	-0.0229
	1998	-0.0361	-0.0438	-0.0285
	1999	0.0098	0.0029	0.0167
	2000	0.0975	0.1021	0.0933
	2001	0.0257	0.0376	0.0140
	2002	-0.0179	-0.0263	-0.0094
	2003	-0.0509	-0.0500	-0.0517
8 Point	1996	0.0039	0.0019	0.0059
	1997	-0.0181	-0.0095	-0.0265
	1998	-0.0380	-0.0447	-0.0313
	1999	0.0084	0.0023	0.0147
	2000	0.0968	0.1017	0.0923
	2001	0.0257	0.0376	0.0140
	2002	-0.0170	-0.0259	-0.0081
	2003	-0.0491	-0.0491	-0.0490
9 Point	1995	-0.0084	-0.0108	-0.0059
	1996	0.0085	0.0079	0.0091
	1997	-0.0142	-0.0044	-0.0238
	1998	-0.0350	-0.0407	-0.0292
	1999	0.0104	0.0050	0.0161
	2000	0.0977	0.1029	0.0928
	2001	0.0253	0.0370	0.0137
	2002	-0.0191	-0.0287	-0.0095
	2003	-0.0529	-0.0543	-0.0515
10 Point	1994	0.0038	0.0030	0.0044
	1995	-0.0102	-0.0123	-0.0080
	1996	0.0069	0.0066	0.0073
	1997	-0.0155	-0.0054	-0.0253
	1998	-0.0360	-0.0415	-0.0303
	1999	0.0098	0.0045	0.0154
	2000	0.0975	0.1028	0.0927
	2001	0.0256	0.0373	0.0141
	2002	-0.0181	-0.0279	-0.0084
	2003	-0.0512	-0.0530	-0.0498



MEDICAL Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2000	0.0108	0.0073	0.0144
	2001	-0.0127	-0.0102	-0.0151
	2002	-0.0071	-0.0016	-0.0129
	2003	0.0090	0.0044	0.0136
5 Point	1999	-0.0479	-0.0703	-0.0255
	2000	0.0588	0.0776	0.0399
	2001	0.0113	0.0250	-0.0023
	2002	-0.0071	-0.0016	-0.0129
	2003	-0.0150	-0.0307	0.0009
6 Point	1998	-0.0417	-0.0550	-0.0283
	1999	-0.0146	-0.0263	-0.0029
	2000	0.0796	0.1051	0.0541
	2001	0.0196	0.0360	0.0033
	2002	-0.0113	-0.0071	-0.0157
	2003	-0.0317	-0.0527	-0.0105
7 Point	1997	-0.0331	-0.0337	-0.0324
	1998	-0.0196	-0.0325	-0.0067
	1999	0.0009	-0.0105	0.0122
	2000	0.0884	0.1141	0.0627
	2001	0.0218	0.0382	0.0055
	2002	-0.0157	-0.0116	-0.0200
	2003	-0.0427	-0.0640	-0.0213
8 Point	1996	-0.0079	-0.0049	-0.0108
	1997	-0.0286	-0.0309	-0.0262
	1998	-0.0162	-0.0304	-0.0021
	1999	0.0031	-0.0091	0.0153
	2000	0.0896	0.1148	0.0643
	2001	0.0218	0.0382	0.0055
	2002	-0.0168	-0.0123	-0.0216
	2003	-0.0450	-0.0654	-0.0244
9 Point	1995	0.0019	0.0029	0.0010
	1996	-0.0088	-0.0064	-0.0113
	1997	-0.0294	-0.0321	-0.0266
	1998	-0.0168	-0.0313	-0.0024
	1999	0.0028	-0.0097	0.0151
	2000	0.0894	0.1146	0.0642
	2001	0.0219	0.0383	0.0055
	2002	-0.0165	-0.0119	-0.0214
	2003	-0.0445	-0.0647	-0.0241
10 Point	1994	0.0207	0.0303	0.0109
	1995	-0.0073	-0.0106	-0.0039
	1996	-0.0163	-0.0173	-0.0152
	1997	-0.0351	-0.0405	-0.0297
	1998	-0.0208	-0.0372	-0.0045
	1999	0.0005	-0.0130	0.0139
	2000	0.0889	0.1138	0.0639
	2001	0.0230	0.0400	0.0061
	2002	-0.0137	-0.0076	-0.0199
	2003	-0.0399	-0.0579	-0.0217

MEDICAL Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2000	0.0106	0.0072	0.0140
	2001	-0.0126	-0.0101	-0.0149
	2002	-0.0069	-0.0015	-0.0124
	2003	0.0091	0.0045	0.0140
5 Point	1999	-0.0454	-0.0652	-0.0251
	2000	0.0625	0.0838	0.0416
	2001	0.0143	0.0296	-0.0006
	2002	-0.0069	-0.0015	-0.0124
	2003	-0.0197	-0.0382	-0.0014
6 Point	1998	-0.0402	-0.0515	-0.0284
	1999	-0.0082	-0.0162	0.0004
	2000	0.0874	0.1169	0.0585
	2001	0.0249	0.0438	0.0066
	2002	-0.0126	-0.0091	-0.0162
	2003	-0.0441	-0.0713	-0.0174
7 Point	1997	-0.0354	-0.0366	-0.0340
	1998	-0.0124	-0.0227	-0.0020
	1999	0.0130	0.0061	0.0203
	2000	0.1006	0.1309	0.0708
	2001	0.0285	0.0477	0.0099
	2002	-0.0204	-0.0177	-0.0233
	2003	-0.0654	-0.0947	-0.0365
8 Point	1996	-0.0168	-0.0170	-0.0168
	1997	-0.0244	-0.0255	-0.0231
	1998	-0.0033	-0.0133	0.0070
	1999	0.0197	0.0130	0.0268
	2000	0.1043	0.1347	0.0743
	2001	0.0285	0.0477	0.0099
	2002	-0.0249	-0.0224	-0.0275
	2003	-0.0753	-0.1053	-0.0456
9 Point	1995	-0.0143	-0.0185	-0.0102
	1996	-0.0087	-0.0062	-0.0111
	1997	-0.0173	-0.0160	-0.0182
	1998	0.0024	-0.0056	0.0109
	1999	0.0237	0.0184	0.0295
	2000	0.1060	0.1371	0.0755
	2001	0.0276	0.0463	0.0092
	2002	-0.0292	-0.0285	-0.0303
	2003	-0.0837	-0.1172	-0.0510
10 Point	1994	-0.0032	-0.0011	-0.0058
	1995	-0.0127	-0.0179	-0.0074
	1996	-0.0072	-0.0057	-0.0086
	1997	-0.0160	-0.0156	-0.0160
	1998	0.0033	-0.0053	0.0125
	1999	0.0243	0.0186	0.0305
	2000	0.1062	0.1372	0.0758
	2001	0.0272	0.0462	0.0086
	2002	-0.0303	-0.0288	-0.0320
	2003	-0.0855	-0.1178	-0.0540