

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	0.001	0.955	0.335
5 Point	Linear	0.307	0.028	0.588
6 Point	Linear	0.152	0.432	0.004
7 Point	Linear	0.455	0.645	0.173
8 Point	Linear	0.597	0.726	0.364
9 Point	Linear	0.711	0.805	0.526
10 Point	Linear	0.790	0.858	0.651
4 Point	Expon'l	0.001	0.951	0.348
5 Point	Expon'l	0.299	0.030	0.587
6 Point	Expon'l	0.174	0.439	0.002
7 Point	Expon'l	0.478	0.645	0.198
8 Point	Expon'l	0.617	0.725	0.396
9 Point	Expon'l	0.731	0.807	0.561
10 Point	Expon'l	0.800	0.855	0.681
MEDICAL		(Average)	(Incur)	(Pd-20)
r ²				
4 Point	Linear	0.993	0.984	0.994
5 Point	Linear	0.770	0.748	0.791
6 Point	Linear	0.868	0.853	0.872
7 Point	Linear	0.917	0.907	0.919
8 Point	Linear	0.944	0.938	0.946
9 Point	Linear	0.960	0.955	0.962
10 Point	Linear	0.969	0.964	0.971
4 Point	Expon'l	0.995	0.992	0.986
5 Point	Expon'l	0.759	0.742	0.774
6 Point	Expon'l	0.858	0.835	0.868
7 Point	Expon'l	0.899	0.884	0.909
8 Point	Expon'l	0.925	0.918	0.928
9 Point	Expon'l	0.945	0.941	0.944
10 Point	Expon'l	0.959	0.956	0.958

INDEMNITY Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2001	0.4794	0.4923	0.4662
	2002	0.4797	0.5060	0.4532
	2003	0.4800	0.5197	0.4402
	2004	0.4803	0.5333	0.4272
5 Point	2000	0.5008	0.5137	0.4877
	2001	0.4938	0.5157	0.4719
	2002	0.4869	0.5177	0.4560
	2003	0.4800	0.5197	0.4402
	2004	0.4731	0.5217	0.4244
6 Point	1999	0.4529	0.4558	0.4498
	2000	0.4609	0.4730	0.4486
	2001	0.4689	0.4903	0.4475
	2002	0.4770	0.5075	0.4463
	2003	0.4850	0.5247	0.4451
	2004	0.4930	0.5420	0.4439
7 Point	1998	0.4008	0.3971	0.4046
	1999	0.4190	0.4239	0.4141
	2000	0.4372	0.4507	0.4236
	2001	0.4554	0.4775	0.4332
	2002	0.4736	0.5043	0.4427
	2003	0.4918	0.5311	0.4522
	2004	0.5099	0.5579	0.4618
8 Point	1997	0.3734	0.3719	0.3749
	1998	0.3934	0.3984	0.3885
	1999	0.4135	0.4249	0.4020
	2000	0.4335	0.4513	0.4156
	2001	0.4535	0.4778	0.4291
	2002	0.4736	0.5043	0.4427
	2003	0.4936	0.5308	0.4563
	2004	0.5137	0.5573	0.4698
9 Point	1996	0.3405	0.3362	0.3449
	1997	0.3628	0.3643	0.3614
	1998	0.3851	0.3924	0.3778
	1999	0.4074	0.4205	0.3943
	2000	0.4297	0.4486	0.4107
	2001	0.4520	0.4767	0.4272
	2002	0.4743	0.5049	0.4437
	2003	0.4966	0.5330	0.4601
	2004	0.5189	0.5611	0.4766
10 Point	1995	0.3034	0.2962	0.3106
	1996	0.3280	0.3262	0.3299
	1997	0.3527	0.3562	0.3492
	1998	0.3773	0.3862	0.3684
	1999	0.4020	0.4162	0.3877
	2000	0.4266	0.4461	0.4070
	2001	0.4512	0.4761	0.4263
	2002	0.4759	0.5061	0.4455
	2003	0.5005	0.5361	0.4648
	2004	0.5252	0.5661	0.4841

INDEMNITY Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2001	0.4792	0.4924	0.4666
	2002	0.4795	0.5058	0.4527
	2003	0.4799	0.5195	0.4393
	2004	0.4802	0.5336	0.4263
5 Point	2000	0.5004	0.5132	0.4883
	2001	0.4934	0.5153	0.4714
	2002	0.4866	0.5174	0.4551
	2003	0.4799	0.5195	0.4393
	2004	0.4732	0.5216	0.4241
6 Point	1999	0.4498	0.4524	0.4479
	2000	0.4584	0.4696	0.4470
	2001	0.4671	0.4875	0.4460
	2002	0.4761	0.5060	0.4451
	2003	0.4852	0.5253	0.4442
	2004	0.4944	0.5453	0.4433
7 Point	1998	0.3963	0.3932	0.4004
	1999	0.4140	0.4180	0.4102
	2000	0.4326	0.4443	0.4203
	2001	0.4519	0.4723	0.4307
	2002	0.4721	0.5021	0.4412
	2003	0.4933	0.5337	0.4521
	2004	0.5153	0.5673	0.4632
8 Point	1997	0.3713	0.3717	0.3718
	1998	0.3896	0.3947	0.3847
	1999	0.4088	0.4192	0.3981
	2000	0.4289	0.4452	0.4120
	2001	0.4500	0.4728	0.4264
	2002	0.4721	0.5021	0.4412
	2003	0.4954	0.5332	0.4566
	2004	0.5197	0.5662	0.4725
9 Point	1996	0.3404	0.3387	0.3430
	1997	0.3596	0.3618	0.3579
	1998	0.3799	0.3864	0.3734
	1999	0.4014	0.4128	0.3896
	2000	0.4240	0.4409	0.4064
	2001	0.4479	0.4709	0.4241
	2002	0.4732	0.5030	0.4424
	2003	0.4999	0.5373	0.4616
	2004	0.5281	0.5739	0.4816
10 Point	1995	0.3052	0.3015	0.3098
	1996	0.3252	0.3246	0.3263
	1997	0.3465	0.3495	0.3436
	1998	0.3692	0.3763	0.3619
	1999	0.3934	0.4051	0.3811
	2000	0.4192	0.4362	0.4014
	2001	0.4467	0.4697	0.4227
	2002	0.4759	0.5057	0.4452
	2003	0.5071	0.5445	0.4689
	2004	0.5403	0.5863	0.4938

MEDICAL Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2001	0.6341	0.7341	0.5340
	2002	0.7125	0.8268	0.5981
	2003	0.7908	0.9194	0.6622
	2004	0.8692	1.0121	0.7263
5 Point	2000	0.6381	0.7415	0.5345
	2001	0.6890	0.8008	0.5771
	2002	0.7399	0.8601	0.6196
	2003	0.7908	0.9194	0.6622
	2004	0.8417	0.9787	0.7047
6 Point	1999	0.5633	0.6365	0.4899
	2000	0.6207	0.7083	0.5330
	2001	0.6781	0.7801	0.5761
	2002	0.7356	0.8518	0.6193
	2003	0.7930	0.9236	0.6624
	2004	0.8504	0.9954	0.7055
7 Point	1998	0.4837	0.5342	0.4330
	1999	0.5462	0.6130	0.4793
	2000	0.6088	0.6918	0.5256
	2001	0.6713	0.7707	0.5719
	2002	0.7338	0.8495	0.6182
	2003	0.7964	0.9283	0.6645
	2004	0.8589	1.0071	0.7108
8 Point	1997	0.4090	0.4431	0.3748
	1998	0.4740	0.5244	0.4235
	1999	0.5390	0.6056	0.4722
	2000	0.6039	0.6869	0.5208
	2001	0.6689	0.7682	0.5695
	2002	0.7338	0.8495	0.6182
	2003	0.7988	0.9308	0.6669
	2004	0.8638	1.0120	0.7155
9 Point	1996	0.3442	0.3669	0.3214
	1997	0.4091	0.4473	0.3709
	1998	0.4741	0.5276	0.4204
	1999	0.5390	0.6080	0.4700
	2000	0.6040	0.6884	0.5195
	2001	0.6689	0.7688	0.5690
	2002	0.7338	0.8492	0.6185
	2003	0.7988	0.9296	0.6680
	2004	0.8637	1.0100	0.7175
10 Point	1995	0.2868	0.2978	0.2758
	1996	0.3505	0.3764	0.3247
	1997	0.4143	0.4550	0.3736
	1998	0.4780	0.5336	0.4225
	1999	0.5418	0.6122	0.4714
	2000	0.6055	0.6908	0.5203
	2001	0.6693	0.7694	0.5692
	2002	0.7330	0.8480	0.6181
	2003	0.7968	0.9266	0.6670
	2004	0.8605	1.0052	0.7158

MEDICAL Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2001	0.6381	0.7396	0.5364
	2002	0.7084	0.8222	0.5945
	2003	0.7866	0.9141	0.6590
	2004	0.8733	1.0162	0.7305
5 Point	2000	0.6430	0.7477	0.5381
	2001	0.6877	0.7995	0.5757
	2002	0.7355	0.8549	0.6160
	2003	0.7866	0.9141	0.6590
	2004	0.8412	0.9774	0.7051
6 Point	1999	0.5692	0.6426	0.4951
	2000	0.6179	0.7031	0.5320
	2001	0.6708	0.7693	0.5716
	2002	0.7282	0.8418	0.6142
	2003	0.7905	0.9211	0.6600
	2004	0.8581	1.0079	0.7091
7 Point	1998	0.4924	0.5444	0.4399
	1999	0.5424	0.6062	0.4778
	2000	0.5974	0.6750	0.5189
	2001	0.6580	0.7516	0.5635
	2002	0.7247	0.8369	0.6120
	2003	0.7982	0.9319	0.6647
	2004	0.8791	1.0377	0.7219
8 Point	1997	0.4233	0.4616	0.3848
	1998	0.4713	0.5199	0.4223
	1999	0.5249	0.5857	0.4633
	2000	0.5844	0.6597	0.5084
	2001	0.6508	0.7430	0.5578
	2002	0.7247	0.8369	0.6120
	2003	0.8070	0.9427	0.6715
	2004	0.8986	1.0618	0.7368
9 Point	1996	0.3662	0.3964	0.3363
	1997	0.4105	0.4491	0.3717
	1998	0.4601	0.5089	0.4109
	1999	0.5157	0.5765	0.4542
	2000	0.5781	0.6532	0.5021
	2001	0.6479	0.7401	0.5550
	2002	0.7263	0.8386	0.6135
	2003	0.8141	0.9501	0.6782
	2004	0.9125	1.0765	0.7497
10 Point	1995	0.3176	0.3389	0.2967
	1996	0.3576	0.3859	0.3293
	1997	0.4026	0.4395	0.3654
	1998	0.4533	0.5004	0.4056
	1999	0.5104	0.5698	0.4501
	2000	0.5746	0.6489	0.4995
	2001	0.6470	0.7389	0.5543
	2002	0.7284	0.8414	0.6151
	2003	0.8201	0.9581	0.6827
	2004	0.9234	1.0910	0.7576

INDEMNITY Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2001	-0.0123	-0.0030	-0.0216
	2002	0.0134	0.0025	0.0243
	2003	0.0101	0.0040	0.0162
	2004	-0.0112	-0.0035	-0.0189
5 Point	2000	0.0144	0.0233	0.0057
	2001	-0.0267	-0.0264	-0.0273
	2002	0.0062	-0.0092	0.0215
	2003	0.0101	0.0040	0.0162
	2004	-0.0040	0.0081	-0.0161
6 Point	1999	-0.0498	-0.0508	-0.0488
	2000	0.0543	0.0640	0.0448
	2001	-0.0018	-0.0010	-0.0029
	2002	0.0161	0.0010	0.0312
	2003	0.0051	-0.0010	0.0113
	2004	-0.0239	-0.0122	-0.0356
7 Point	1998	-0.0508	-0.0479	-0.0536
	1999	-0.0159	-0.0189	-0.0131
	2000	0.0780	0.0863	0.0698
	2001	0.0117	0.0118	0.0114
	2002	0.0195	0.0042	0.0348
	2003	-0.0017	-0.0074	0.0042
	2004	-0.0408	-0.0281	-0.0535
8 Point	1997	-0.0130	0.0023	-0.0282
	1998	-0.0434	-0.0492	-0.0375
	1999	-0.0104	-0.0199	-0.0010
	2000	0.0817	0.0857	0.0778
	2001	0.0136	0.0115	0.0155
	2002	0.0195	0.0042	0.0348
	2003	-0.0035	-0.0071	0.0001
	2004	-0.0445	-0.0275	-0.0615
9 Point	1996	-0.0212	-0.0153	-0.0271
	1997	-0.0024	0.0099	-0.0147
	1998	-0.0351	-0.0432	-0.0268
	1999	-0.0043	-0.0155	0.0067
	2000	0.0855	0.0884	0.0827
	2001	0.0151	0.0126	0.0174
	2002	0.0188	0.0036	0.0338
	2003	-0.0065	-0.0093	-0.0037
	2004	-0.0498	-0.0313	-0.0683
10 Point	1995	-0.0280	-0.0223	-0.0338
	1996	-0.0087	-0.0053	-0.0121
	1997	0.0077	0.0180	-0.0025
	1998	-0.0273	-0.0370	-0.0174
	1999	0.0011	-0.0112	0.0133
	2000	0.0886	0.0909	0.0864
	2001	0.0159	0.0132	0.0183
	2002	0.0172	0.0024	0.0320
	2003	-0.0104	-0.0124	-0.0084
	2004	-0.0561	-0.0363	-0.0758

INDEMNITY Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2001	-0.0121	-0.0031	-0.0220
	2002	0.0136	0.0027	0.0248
	2003	0.0102	0.0042	0.0171
	2004	-0.0111	-0.0038	-0.0180
5 Point	2000	0.0148	0.0238	0.0051
	2001	-0.0263	-0.0260	-0.0268
	2002	0.0065	-0.0089	0.0224
	2003	0.0102	0.0042	0.0171
	2004	-0.0041	0.0082	-0.0158
6 Point	1999	-0.0467	-0.0474	-0.0469
	2000	0.0568	0.0674	0.0464
	2001	0.0000	0.0018	-0.0014
	2002	0.0170	0.0025	0.0324
	2003	0.0049	-0.0016	0.0122
	2004	-0.0253	-0.0155	-0.0350
7 Point	1998	-0.0463	-0.0440	-0.0494
	1999	-0.0109	-0.0130	-0.0092
	2000	0.0826	0.0927	0.0731
	2001	0.0152	0.0170	0.0139
	2002	0.0210	0.0064	0.0363
	2003	-0.0032	-0.0100	0.0043
	2004	-0.0462	-0.0375	-0.0549
8 Point	1997	-0.0109	0.0025	-0.0251
	1998	-0.0396	-0.0455	-0.0337
	1999	-0.0057	-0.0142	0.0029
	2000	0.0863	0.0918	0.0814
	2001	0.0171	0.0165	0.0182
	2002	0.0210	0.0064	0.0363
	2003	-0.0053	-0.0095	-0.0002
	2004	-0.0506	-0.0364	-0.0642
9 Point	1996	-0.0211	-0.0178	-0.0252
	1997	0.0008	0.0124	-0.0112
	1998	-0.0299	-0.0372	-0.0224
	1999	0.0017	-0.0078	0.0114
	2000	0.0912	0.0961	0.0870
	2001	0.0192	0.0184	0.0205
	2002	0.0199	0.0055	0.0351
	2003	-0.0098	-0.0136	-0.0052
	2004	-0.0590	-0.0441	-0.0733
10 Point	1995	-0.0298	-0.0276	-0.0330
	1996	-0.0059	-0.0037	-0.0085
	1997	0.0139	0.0247	0.0031
	1998	-0.0192	-0.0271	-0.0109
	1999	0.0097	-0.0001	0.0199
	2000	0.0960	0.1008	0.0920
	2001	0.0204	0.0196	0.0219
	2002	0.0172	0.0028	0.0323
	2003	-0.0170	-0.0208	-0.0125
	2004	-0.0712	-0.0565	-0.0855

MEDICAL Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2001	0.0010	0.0073	-0.0055
	2002	0.0045	-0.0003	0.0096
	2003	-0.0121	-0.0214	-0.0028
	2004	0.0066	0.0144	-0.0014
5 Point	2000	0.0549	0.0668	0.0431
	2001	-0.0539	-0.0594	-0.0486
	2002	-0.0229	-0.0336	-0.0119
	2003	-0.0121	-0.0214	-0.0028
	2004	0.0340	0.0478	0.0202
6 Point	1999	-0.0217	-0.0415	-0.0018
	2000	0.0723	0.1000	0.0446
	2001	-0.0430	-0.0387	-0.0476
	2002	-0.0186	-0.0253	-0.0116
	2003	-0.0143	-0.0256	-0.0030
	2004	0.0253	0.0311	0.0194
7 Point	1998	-0.0257	-0.0353	-0.0160
	1999	-0.0046	-0.0180	0.0088
	2000	0.0842	0.1165	0.0520
	2001	-0.0362	-0.0293	-0.0434
	2002	-0.0168	-0.0230	-0.0105
	2003	-0.0177	-0.0303	-0.0051
	2004	0.0168	0.0194	0.0141
8 Point	1997	-0.0169	-0.0172	-0.0166
	1998	-0.0160	-0.0255	-0.0065
	1999	0.0026	-0.0106	0.0159
	2000	0.0891	0.1214	0.0568
	2001	-0.0338	-0.0268	-0.0410
	2002	-0.0168	-0.0230	-0.0105
	2003	-0.0201	-0.0328	-0.0075
	2004	0.0119	0.0145	0.0094
9 Point	1996	0.0002	0.0083	-0.0077
	1997	-0.0170	-0.0214	-0.0127
	1998	-0.0161	-0.0287	-0.0034
	1999	0.0026	-0.0130	0.0181
	2000	0.0890	0.1199	0.0581
	2001	-0.0338	-0.0274	-0.0405
	2002	-0.0168	-0.0227	-0.0108
	2003	-0.0201	-0.0316	-0.0086
	2004	0.0120	0.0165	0.0074
10 Point	1995	0.0143	0.0213	0.0073
	1996	-0.0061	-0.0012	-0.0110
	1997	-0.0222	-0.0291	-0.0154
	1998	-0.0200	-0.0347	-0.0055
	1999	-0.0002	-0.0172	0.0167
	2000	0.0875	0.1175	0.0573
	2001	-0.0342	-0.0280	-0.0407
	2002	-0.0160	-0.0215	-0.0104
	2003	-0.0181	-0.0286	-0.0076
	2004	0.0152	0.0213	0.0091

MEDICAL Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2001	-0.0030	0.0018	-0.0079
	2002	0.0086	0.0043	0.0132
	2003	-0.0079	-0.0161	0.0004
	2004	0.0024	0.0103	-0.0056
5 Point	2000	0.0500	0.0606	0.0395
	2001	-0.0526	-0.0581	-0.0472
	2002	-0.0185	-0.0284	-0.0083
	2003	-0.0079	-0.0161	0.0004
	2004	0.0345	0.0491	0.0198
6 Point	1999	-0.0276	-0.0476	-0.0070
	2000	0.0751	0.1052	0.0456
	2001	-0.0357	-0.0279	-0.0431
	2002	-0.0112	-0.0153	-0.0065
	2003	-0.0118	-0.0231	-0.0006
	2004	0.0176	0.0186	0.0158
7 Point	1998	-0.0344	-0.0455	-0.0229
	1999	-0.0008	-0.0112	0.0103
	2000	0.0956	0.1333	0.0587
	2001	-0.0229	-0.0102	-0.0350
	2002	-0.0077	-0.0104	-0.0043
	2003	-0.0195	-0.0339	-0.0053
	2004	-0.0034	-0.0112	0.0030
8 Point	1997	-0.0312	-0.0357	-0.0266
	1998	-0.0133	-0.0210	-0.0053
	1999	0.0167	0.0093	0.0248
	2000	0.1086	0.1486	0.0692
	2001	-0.0157	-0.0016	-0.0293
	2002	-0.0077	-0.0104	-0.0043
	2003	-0.0283	-0.0447	-0.0121
	2004	-0.0229	-0.0353	-0.0119
9 Point	1996	-0.0218	-0.0212	-0.0226
	1997	-0.0184	-0.0232	-0.0135
	1998	-0.0021	-0.0100	0.0061
	1999	0.0259	0.0185	0.0339
	2000	0.1149	0.1551	0.0755
	2001	-0.0128	0.0013	-0.0265
	2002	-0.0093	-0.0121	-0.0058
	2003	-0.0354	-0.0521	-0.0188
	2004	-0.0368	-0.0500	-0.0248
10 Point	1995	-0.0165	-0.0198	-0.0136
	1996	-0.0132	-0.0107	-0.0156
	1997	-0.0105	-0.0136	-0.0072
	1998	0.0047	-0.0015	0.0114
	1999	0.0312	0.0252	0.0380
	2000	0.1184	0.1594	0.0781
	2001	-0.0119	0.0025	-0.0258
	2002	-0.0114	-0.0149	-0.0074
	2003	-0.0414	-0.0601	-0.0233
	2004	-0.0477	-0.0645	-0.0327