

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	0.560	0.582	0.509
5 Point	Linear	0.777	0.783	0.755
6 Point	Linear	0.863	0.851	0.859
7 Point	Linear	0.864	0.846	0.871
8 Point	Linear	0.902	0.878	0.914
9 Point	Linear	0.897	0.874	0.909
10 Point	Linear	0.895	0.870	0.912
4 Point	Expon'l	0.565	0.588	0.512
5 Point	Expon'l	0.782	0.792	0.754
6 Point	Expon'l	0.872	0.866	0.859
7 Point	Expon'l	0.876	0.865	0.875
8 Point	Expon'l	0.917	0.904	0.915
9 Point	Expon'l	0.917	0.906	0.916
10 Point	Expon'l	0.922	0.909	0.925

MEDICAL		(Average)	(Incur)	(Pd-20)
r^2				
4 Point	Linear	0.773	0.739	0.849
5 Point	Linear	0.855	0.796	0.920
6 Point	Linear	0.901	0.828	0.949
7 Point	Linear	0.921	0.848	0.968
8 Point	Linear	0.935	0.862	0.979
9 Point	Linear	0.935	0.871	0.975
10 Point	Linear	0.929	0.868	0.970
4 Point	Expon'l	0.793	0.766	0.853
5 Point	Expon'l	0.887	0.849	0.913
6 Point	Expon'l	0.934	0.895	0.933
7 Point	Expon'l	0.957	0.923	0.957
8 Point	Expon'l	0.971	0.943	0.968
9 Point	Expon'l	0.977	0.956	0.975
10 Point	Expon'l	0.977	0.960	0.978

INDEMNITY		Severity	Severity	Severity
Linear	Policy	Ratio	Ratio	Ratio
<b>FITTED</b>	Year	(Average)	(Incur)	(Pd-20)
4 Point	1999	0.5673	0.5683	0.5663
	2000	0.6050	0.6195	0.5906
	2001	0.6428	0.6706	0.6150
	2002	0.6805	0.7217	0.6393
5 Point	1998	0.4969	0.4874	0.5065
	1999	0.5456	0.5485	0.5427
	2000	0.5942	0.6095	0.5788
	2001	0.6428	0.6706	0.6150
	2002	0.6914	0.7316	0.6511
6 Point	1997	0.4455	0.4358	0.4553
	1998	0.4949	0.4943	0.4955
	1999	0.5443	0.5528	0.5358
	2000	0.5937	0.6113	0.5761
	2001	0.6430	0.6697	0.6163
	2002	0.6924	0.7282	0.6566
7 Point	1996	0.4214	0.4102	0.4326
	1997	0.4650	0.4611	0.4688
	1998	0.5085	0.5120	0.5050
	1999	0.5521	0.5629	0.5412
	2000	0.5956	0.6138	0.5774
	2001	0.6391	0.6647	0.6136
	2002	0.6827	0.7156	0.6498
8 Point	1995	0.3812	0.3718	0.3906
	1996	0.4241	0.4202	0.4279
	1997	0.4670	0.4686	0.4653
	1998	0.5098	0.5170	0.5027
	1999	0.5527	0.5654	0.5401
	2000	0.5956	0.6138	0.5774
	2001	0.6385	0.6622	0.6148
	2002	0.6814	0.7106	0.6522
9 Point	1994	0.3603	0.3492	0.3714
	1995	0.3993	0.3931	0.4056
	1996	0.4383	0.4369	0.4397
	1997	0.4773	0.4808	0.4739
	1998	0.5163	0.5246	0.5080
	1999	0.5553	0.5684	0.5422
	2000	0.5943	0.6123	0.5764
	2001	0.6333	0.6561	0.6105
	2002	0.6723	0.6999	0.6447
10 Point	1993	0.3405	0.3292	0.3517
	1994	0.3764	0.3693	0.3835
	1995	0.4124	0.4094	0.4154
	1996	0.4484	0.4494	0.4473
	1997	0.4844	0.4895	0.4792
	1998	0.5203	0.5296	0.5111
	1999	0.5563	0.5697	0.5430
	2000	0.5923	0.6098	0.5748
	2001	0.6283	0.6498	0.6067
	2002	0.6642	0.6899	0.6386

INDEMNITY Expon'l <b>FITTED</b>	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	1999	0.5662	0.5661	0.5660
	2000	0.6024	0.6147	0.5895
	2001	0.6408	0.6674	0.6140
	2002	0.6818	0.7246	0.6395
5 Point	1998	0.4972	0.4884	0.5062
	1999	0.5411	0.5420	0.5399
	2000	0.5889	0.6014	0.5757
	2001	0.6408	0.6674	0.6140
	2002	0.6974	0.7406	0.6547
6 Point	1997	0.4496	0.4424	0.4570
	1998	0.4914	0.4902	0.4924
	1999	0.5371	0.5432	0.5306
	2000	0.5871	0.6020	0.5718
	2001	0.6418	0.6671	0.6161
	2002	0.7015	0.7392	0.6638
7 Point	1996	0.4291	0.4212	0.4373
	1997	0.4645	0.4610	0.4679
	1998	0.5027	0.5046	0.5006
	1999	0.5442	0.5523	0.5356
	2000	0.5890	0.6045	0.5731
	2001	0.6376	0.6616	0.6132
	2002	0.6902	0.7241	0.6561
8 Point	1995	0.3920	0.3867	0.3975
	1996	0.4252	0.4229	0.4277
	1997	0.4613	0.4624	0.4601
	1998	0.5005	0.5056	0.4951
	1999	0.5430	0.5528	0.5327
	2000	0.5890	0.6045	0.5731
	2001	0.6390	0.6610	0.6166
	2002	0.6933	0.7227	0.6634
9 Point	1994	0.3742	0.3676	0.3812
	1995	0.4035	0.3992	0.4079
	1996	0.4350	0.4335	0.4365
	1997	0.4690	0.4708	0.4670
	1998	0.5057	0.5113	0.4997
	1999	0.5452	0.5553	0.5346
	2000	0.5878	0.6031	0.5720
	2001	0.6338	0.6550	0.6121
	2002	0.6833	0.7113	0.6549
10 Point	1993	0.3571	0.3504	0.3640
	1994	0.3833	0.3785	0.3881
	1995	0.4114	0.4088	0.4139
	1996	0.4415	0.4416	0.4414
	1997	0.4739	0.4769	0.4707
	1998	0.5087	0.5151	0.5019
	1999	0.5460	0.5564	0.5352
	2000	0.5861	0.6009	0.5708
	2001	0.6291	0.6490	0.6087
	2002	0.6752	0.7010	0.6491

MEDICAL		Severity	Severity	Severity
Linear	Policy	Ratio	Ratio	Ratio
<b>FITTED</b>	Year	(Average)	(Incur)	(Pd-20)
4 Point	1999	0.7109	0.7141	0.7078
	2000	0.8152	0.8741	0.7563
	2001	0.9195	1.0341	0.8049
	2002	1.0238	1.1941	0.8534
5 Point	1998	0.6252	0.6170	0.6335
	1999	0.7233	0.7560	0.6906
	2000	0.8214	0.8950	0.7477
	2001	0.9195	1.0341	0.8049
	2002	1.0176	1.1731	0.8620
6 Point	1997	0.5443	0.5360	0.5527
	1998	0.6377	0.6592	0.6163
	1999	0.7311	0.7824	0.6799
	2000	0.8246	0.9056	0.7434
	2001	0.9180	1.0288	0.8070
	2002	1.0114	1.1520	0.8706
7 Point	1996	0.4758	0.4650	0.4866
	1997	0.5635	0.5762	0.5508
	1998	0.6511	0.6873	0.6149
	1999	0.7388	0.7985	0.6791
	2000	0.8265	0.9096	0.7433
	2001	0.9141	1.0208	0.8074
	2002	1.0018	1.1319	0.8716
8 Point	1995	0.4112	0.4010	0.4215
	1996	0.4943	0.5027	0.4859
	1997	0.5773	0.6044	0.5502
	1998	0.6604	0.7062	0.6146
	1999	0.7434	0.8079	0.6789
	2000	0.8265	0.9096	0.7433
	2001	0.9095	1.0113	0.8076
	2002	0.9926	1.1131	0.8720
9 Point	1994	0.3607	0.3442	0.3773
	1995	0.4380	0.4380	0.4381
	1996	0.5153	0.5318	0.4989
	1997	0.5926	0.6256	0.5597
	1998	0.6699	0.7194	0.6205
	1999	0.7472	0.8132	0.6813
	2000	0.8245	0.9070	0.7421
	2001	0.9018	1.0008	0.8028
	2002	0.9792	1.0946	0.8636
10 Point	1993	0.3200	0.3006	0.3394
	1994	0.3915	0.3865	0.3966
	1995	0.4630	0.4724	0.4537
	1996	0.5346	0.5582	0.5109
	1997	0.6061	0.6441	0.5681
	1998	0.6776	0.7300	0.6253
	1999	0.7492	0.8158	0.6825
	2000	0.8207	0.9017	0.7397
	2001	0.8922	0.9875	0.7968
	2002	0.9638	1.0734	0.8540

MEDICAL Expon'l <b>FITTED</b>	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	1999	0.7205	0.7356	0.7092
	2000	0.8094	0.8623	0.7546
	2001	0.9093	1.0109	0.8029
	2002	1.0214	1.1851	0.8543
5 Point	1998	0.6391	0.6461	0.6359
	1999	0.7188	0.7501	0.6873
	2000	0.8085	0.8708	0.7429
	2001	0.9093	1.0109	0.8029
	2002	1.0227	1.1735	0.8678
6 Point	1997	0.5639	0.5732	0.5577
	1998	0.6356	0.6601	0.6116
	1999	0.7163	0.7602	0.6708
	2000	0.8073	0.8755	0.7357
	2001	0.9099	1.0082	0.8068
	2002	1.0255	1.1611	0.8849
7 Point	1996	0.5023	0.5103	0.4968
	1997	0.5656	0.5843	0.5478
	1998	0.6369	0.6691	0.6040
	1999	0.7172	0.7661	0.6660
	2000	0.8076	0.8771	0.7344
	2001	0.9094	1.0043	0.8097
	2002	1.0240	1.1499	0.8928
8 Point	1995	0.4450	0.4545	0.4377
	1996	0.5013	0.5183	0.4854
	1997	0.5648	0.5912	0.5383
	1998	0.6363	0.6743	0.5970
	1999	0.7168	0.7691	0.6622
	2000	0.8076	0.8771	0.7344
	2001	0.9098	1.0004	0.8145
	2002	1.0250	1.1410	0.9033
9 Point	1994	0.4022	0.4058	0.4006
	1995	0.4517	0.4614	0.4431
	1996	0.5072	0.5245	0.4901
	1997	0.5696	0.5963	0.5421
	1998	0.6397	0.6779	0.5997
	1999	0.7184	0.7707	0.6633
	2000	0.8067	0.8762	0.7337
	2001	0.9059	0.9961	0.8116
	2002	1.0174	1.1325	0.8977
10 Point	1993	0.3686	0.3699	0.3691
	1994	0.4121	0.4182	0.4070
	1995	0.4606	0.4728	0.4489
	1996	0.5150	0.5344	0.4950
	1997	0.5757	0.6042	0.5459
	1998	0.6436	0.6830	0.6021
	1999	0.7194	0.7722	0.6640
	2000	0.8043	0.8729	0.7323
	2001	0.8991	0.9868	0.8075
	2002	1.0051	1.1156	0.8906

INDEMNITY Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	1999	-0.0248	-0.0348	-0.0146
	2000	0.0574	0.0762	0.0384
	2001	-0.0404	-0.0480	-0.0329
	2002	0.0078	0.0066	0.0091
5 Point	1998	-0.0217	-0.0198	-0.0236
	1999	-0.0030	-0.0150	0.0090
	2000	0.0682	0.0862	0.0502
	2001	-0.0404	-0.0480	-0.0329
	2002	-0.0031	-0.0033	-0.0027
6 Point	1997	-0.0025	0.0086	-0.0138
	1998	-0.0197	-0.0267	-0.0126
	1999	-0.0018	-0.0193	0.0159
	2000	0.0687	0.0844	0.0529
	2001	-0.0406	-0.0471	-0.0342
	2002	-0.0041	0.0001	-0.0082
7 Point	1996	0.0292	0.0379	0.0204
	1997	-0.0220	-0.0167	-0.0273
	1998	-0.0333	-0.0444	-0.0221
	1999	-0.0096	-0.0294	0.0105
	2000	0.0668	0.0819	0.0516
	2001	-0.0367	-0.0421	-0.0315
	2002	0.0056	0.0127	-0.0014
8 Point	1995	0.0046	0.0176	-0.0082
	1996	0.0265	0.0279	0.0251
	1997	-0.0240	-0.0242	-0.0238
	1998	-0.0346	-0.0494	-0.0198
	1999	-0.0102	-0.0319	0.0117
	2000	0.0668	0.0819	0.0516
	2001	-0.0361	-0.0396	-0.0327
	2002	0.0069	0.0177	-0.0038
9 Point	1994	0.0363	0.0425	0.0301
	1995	-0.0135	-0.0037	-0.0233
	1996	0.0123	0.0112	0.0133
	1997	-0.0343	-0.0364	-0.0324
	1998	-0.0411	-0.0570	-0.0251
	1999	-0.0128	-0.0349	0.0095
	2000	0.0681	0.0834	0.0526
	2001	-0.0309	-0.0335	-0.0284
	2002	0.0160	0.0284	0.0037
10 Point	1993	0.0362	0.0451	0.0272
	1994	0.0202	0.0224	0.0180
	1995	-0.0266	-0.0200	-0.0331
	1996	0.0022	-0.0013	0.0057
	1997	-0.0414	-0.0451	-0.0377
	1998	-0.0451	-0.0620	-0.0282
	1999	-0.0138	-0.0362	0.0087
	2000	0.0701	0.0859	0.0542
	2001	-0.0259	-0.0272	-0.0246
	2002	0.0241	0.0384	0.0098

INDEMNITY Expon'l <b>RESIDUALS</b>	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	1999	-0.0237	-0.0326	-0.0143
	2000	0.0600	0.0810	0.0395
	2001	-0.0384	-0.0448	-0.0319
	2002	0.0065	0.0037	0.0089
5 Point	1998	-0.0220	-0.0208	-0.0233
	1999	0.0014	-0.0085	0.0118
	2000	0.0735	0.0943	0.0533
	2001	-0.0384	-0.0448	-0.0319
	2002	-0.0091	-0.0123	-0.0063
6 Point	1997	-0.0066	0.0020	-0.0155
	1998	-0.0162	-0.0226	-0.0095
	1999	0.0054	-0.0097	0.0211
	2000	0.0753	0.0937	0.0572
	2001	-0.0394	-0.0445	-0.0340
	2002	-0.0132	-0.0109	-0.0154
7 Point	1996	0.0215	0.0269	0.0157
	1997	-0.0215	-0.0166	-0.0264
	1998	-0.0275	-0.0370	-0.0177
	1999	-0.0017	-0.0188	0.0161
	2000	0.0734	0.0912	0.0559
	2001	-0.0352	-0.0390	-0.0311
	2002	-0.0019	0.0042	-0.0077
8 Point	1995	-0.0062	0.0027	-0.0152
	1996	0.0254	0.0252	0.0253
	1997	-0.0183	-0.0180	-0.0186
	1998	-0.0253	-0.0380	-0.0122
	1999	-0.0005	-0.0193	0.0190
	2000	0.0734	0.0912	0.0559
	2001	-0.0366	-0.0384	-0.0345
	2002	-0.0050	0.0056	-0.0150
9 Point	1994	0.0224	0.0241	0.0203
	1995	-0.0177	-0.0098	-0.0256
	1996	0.0156	0.0146	0.0165
	1997	-0.0260	-0.0264	-0.0255
	1998	-0.0305	-0.0437	-0.0168
	1999	-0.0027	-0.0218	0.0171
	2000	0.0746	0.0926	0.0570
	2001	-0.0314	-0.0324	-0.0300
	2002	0.0050	0.0170	-0.0065
10 Point	1993	0.0196	0.0239	0.0149
	1994	0.0133	0.0132	0.0134
	1995	-0.0256	-0.0194	-0.0316
	1996	0.0091	0.0065	0.0116
	1997	-0.0309	-0.0325	-0.0292
	1998	-0.0335	-0.0475	-0.0190
	1999	-0.0035	-0.0229	0.0165
	2000	0.0763	0.0948	0.0582
	2001	-0.0267	-0.0264	-0.0266
	2002	0.0131	0.0273	-0.0007



MEDICAL Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	1999	0.0168	0.0388	-0.0053
	2000	0.0277	0.0300	0.0253
	2001	-0.1056	-0.1765	-0.0348
	2002	0.0612	0.1076	0.0148
5 Point	1998	0.0124	0.0419	-0.0172
	1999	0.0044	-0.0031	0.0119
	2000	0.0215	0.0091	0.0339
	2001	-0.1056	-0.1765	-0.0348
	2002	0.0674	0.1286	0.0062
6 Point	1997	0.0157	0.0527	-0.0215
	1998	-0.0001	-0.0003	0.0000
	1999	-0.0034	-0.0295	0.0226
	2000	0.0183	-0.0015	0.0382
	2001	-0.1041	-0.1712	-0.0369
	2002	0.0736	0.1497	-0.0024
7 Point	1996	0.0287	0.0603	-0.0029
	1997	-0.0035	0.0125	-0.0196
	1998	-0.0135	-0.0284	0.0014
	1999	-0.0111	-0.0456	0.0234
	2000	0.0164	-0.0055	0.0384
	2001	-0.1002	-0.1632	-0.0373
	2002	0.0832	0.1698	-0.0034
8 Point	1995	0.0323	0.0660	-0.0013
	1996	0.0102	0.0226	-0.0022
	1997	-0.0173	-0.0157	-0.0190
	1998	-0.0228	-0.0473	0.0018
	1999	-0.0157	-0.0550	0.0236
	2000	0.0164	-0.0055	0.0384
	2001	-0.0956	-0.1537	-0.0375
	2002	0.0924	0.1887	-0.0037
9 Point	1994	0.0537	0.0740	0.0333
	1995	0.0055	0.0290	-0.0179
	1996	-0.0108	-0.0065	-0.0152
	1997	-0.0326	-0.0369	-0.0285
	1998	-0.0323	-0.0605	-0.0042
	1999	-0.0195	-0.0603	0.0212
	2000	0.0184	-0.0029	0.0395
	2001	-0.0879	-0.1432	-0.0327
	2002	0.1058	0.2071	0.0046
10 Point	1993	0.0692	0.0952	0.0432
	1994	0.0229	0.0317	0.0140
	1995	-0.0195	-0.0054	-0.0335
	1996	-0.0301	-0.0329	-0.0272
	1997	-0.0461	-0.0554	-0.0369
	1998	-0.0400	-0.0711	-0.0090
	1999	-0.0215	-0.0629	0.0200
	2000	0.0222	0.0024	0.0419
	2001	-0.0783	-0.1299	-0.0267
	2002	0.1212	0.2283	0.0142

MEDICAL Expon'l <b>RESIDUALS</b>	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	1999	0.0072	0.0173	-0.0067
	2000	0.0335	0.0418	0.0270
	2001	-0.0954	-0.1533	-0.0328
	2002	0.0636	0.1166	0.0139
5 Point	1998	-0.0015	0.0128	-0.0196
	1999	0.0089	0.0028	0.0152
	2000	0.0344	0.0333	0.0387
	2001	-0.0954	-0.1533	-0.0328
	2002	0.0623	0.1282	0.0004
6 Point	1997	-0.0039	0.0155	-0.0265
	1998	0.0020	-0.0012	0.0047
	1999	0.0114	-0.0073	0.0317
	2000	0.0356	0.0286	0.0459
	2001	-0.0960	-0.1506	-0.0367
	2002	0.0595	0.1406	-0.0167
7 Point	1996	0.0022	0.0150	-0.0131
	1997	-0.0056	0.0044	-0.0166
	1998	0.0007	-0.0102	0.0123
	1999	0.0105	-0.0132	0.0365
	2000	0.0353	0.0270	0.0472
	2001	-0.0955	-0.1467	-0.0396
	2002	0.0610	0.1518	-0.0246
8 Point	1995	-0.0015	0.0125	-0.0175
	1996	0.0032	0.0070	-0.0017
	1997	-0.0048	-0.0025	-0.0071
	1998	0.0013	-0.0154	0.0193
	1999	0.0109	-0.0162	0.0403
	2000	0.0353	0.0270	0.0472
	2001	-0.0959	-0.1428	-0.0444
	2002	0.0600	0.1607	-0.0351
9 Point	1994	0.0122	0.0124	0.0100
	1995	-0.0082	0.0056	-0.0229
	1996	-0.0027	0.0008	-0.0064
	1997	-0.0096	-0.0076	-0.0109
	1998	-0.0021	-0.0190	0.0166
	1999	0.0093	-0.0178	0.0392
	2000	0.0362	0.0279	0.0479
	2001	-0.0920	-0.1385	-0.0415
	2002	0.0676	0.1692	-0.0295
10 Point	1993	0.0206	0.0259	0.0135
	1994	0.0023	0.0000	0.0036
	1995	-0.0171	-0.0058	-0.0287
	1996	-0.0105	-0.0091	-0.0113
	1997	-0.0157	-0.0155	-0.0147
	1998	-0.0060	-0.0241	0.0142
	1999	0.0083	-0.0193	0.0385
	2000	0.0386	0.0312	0.0493
	2001	-0.0852	-0.1292	-0.0374
	2002	0.0799	0.1861	-0.0224