

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	0.523	0.638	0.016
5 Point	Linear	0.759	0.817	0.336
6 Point	Linear	0.009	0.073	0.218
7 Point	Linear	0.262	0.415	0.091
8 Point	Linear	0.508	0.607	0.381
9 Point	Linear	0.644	0.715	0.548
10 Point	Linear	0.735	0.788	0.661
4 Point	Expon'l	0.522	0.638	0.018
5 Point	Expon'l	0.758	0.815	0.342
6 Point	Expon'l	0.006	0.077	0.208
7 Point	Expon'l	0.282	0.421	0.114
8 Point	Expon'l	0.518	0.603	0.407
9 Point	Expon'l	0.655	0.715	0.572
10 Point	Expon'l	0.746	0.791	0.684
MEDICAL		(Average)	(Incur)	(Pd-20)
r ²				
4 Point	Linear	0.999	0.996	0.996
5 Point	Linear	0.990	0.983	0.993
6 Point	Linear	0.814	0.740	0.865
7 Point	Linear	0.876	0.805	0.915
8 Point	Linear	0.906	0.856	0.938
9 Point	Linear	0.932	0.896	0.957
10 Point	Linear	0.950	0.923	0.968
4 Point	Expon'l	0.997	0.998	0.991
5 Point	Expon'l	0.978	0.972	0.981
6 Point	Expon'l	0.794	0.718	0.849
7 Point	Expon'l	0.849	0.768	0.904
8 Point	Expon'l	0.867	0.815	0.911
9 Point	Expon'l	0.895	0.856	0.931
10 Point	Expon'l	0.923	0.895	0.947

INDEMNITY Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2002	0.5128	0.5291	0.4963
	2003	0.5181	0.5391	0.4970
	2004	0.5234	0.5490	0.4977
	2005	0.5287	0.5589	0.4983
5 Point	2001	0.4982	0.5082	0.4882
	2002	0.5066	0.5218	0.4914
	2003	0.5150	0.5354	0.4945
	2004	0.5234	0.5490	0.4977
	2005	0.5317	0.5626	0.5008
6 Point	2000	0.5245	0.5315	0.5173
	2001	0.5234	0.5350	0.5117
	2002	0.5223	0.5385	0.5060
	2003	0.5213	0.5421	0.5004
	2004	0.5202	0.5456	0.4947
	2005	0.5191	0.5492	0.4891
7 Point	1999	0.4768	0.4773	0.4761
	2000	0.4870	0.4925	0.4813
	2001	0.4971	0.5077	0.4864
	2002	0.5073	0.5230	0.4916
	2003	0.5175	0.5382	0.4968
	2004	0.5277	0.5534	0.5019
	2005	0.5379	0.5686	0.5071
8 Point	1998	0.4175	0.4161	0.4188
	1999	0.4375	0.4405	0.4344
	2000	0.4575	0.4650	0.4500
	2001	0.4775	0.4894	0.4656
	2002	0.4975	0.5138	0.4812
	2003	0.5175	0.5382	0.4968
	2004	0.5375	0.5626	0.5124
	2005	0.5575	0.5870	0.5280
9 Point	1997	0.3803	0.3791	0.3816
	1998	0.4034	0.4058	0.4010
	1999	0.4264	0.4324	0.4204
	2000	0.4494	0.4590	0.4398
	2001	0.4725	0.4857	0.4592
	2002	0.4955	0.5123	0.4786
	2003	0.5185	0.5389	0.4980
	2004	0.5416	0.5656	0.5175
	2005	0.5646	0.5922	0.5369
10 Point	1996	0.3465	0.3443	0.3488
	1997	0.3713	0.3722	0.3704
	1998	0.3960	0.4001	0.3919
	1999	0.4207	0.4281	0.4134
	2000	0.4455	0.4560	0.4349
	2001	0.4702	0.4839	0.4564
	2002	0.4949	0.5119	0.4779
	2003	0.5197	0.5398	0.4994
	2004	0.5444	0.5677	0.5210
	2005	0.5691	0.5957	0.5425

INDEMNITY Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2002	0.5128	0.5293	0.4963
	2003	0.5180	0.5390	0.4969
	2004	0.5233	0.5488	0.4976
	2005	0.5286	0.5588	0.4983
5 Point	2001	0.4982	0.5083	0.4882
	2002	0.5065	0.5215	0.4913
	2003	0.5148	0.5350	0.4945
	2004	0.5233	0.5488	0.4976
	2005	0.5319	0.5630	0.5008
6 Point	2000	0.5236	0.5308	0.5164
	2001	0.5227	0.5344	0.5109
	2002	0.5219	0.5380	0.5055
	2003	0.5210	0.5417	0.5001
	2004	0.5202	0.5454	0.4948
	2005	0.5193	0.5491	0.4896
7 Point	1999	0.4733	0.4738	0.4729
	2000	0.4839	0.4889	0.4786
	2001	0.4946	0.5045	0.4845
	2002	0.5057	0.5206	0.4904
	2003	0.5169	0.5372	0.4963
	2004	0.5284	0.5544	0.5024
	2005	0.5402	0.5721	0.5085
8 Point	1998	0.4115	0.4109	0.4122
	1999	0.4307	0.4336	0.4278
	2000	0.4508	0.4574	0.4440
	2001	0.4718	0.4826	0.4608
	2002	0.4939	0.5092	0.4782
	2003	0.5169	0.5372	0.4963
	2004	0.5410	0.5668	0.5151
	2005	0.5663	0.5981	0.5346
9 Point	1997	0.3771	0.3774	0.3770
	1998	0.3976	0.4004	0.3948
	1999	0.4192	0.4248	0.4136
	2000	0.4420	0.4507	0.4332
	2001	0.4661	0.4782	0.4538
	2002	0.4914	0.5073	0.4753
	2003	0.5182	0.5382	0.4979
	2004	0.5464	0.5710	0.5215
	2005	0.5761	0.6058	0.5462
10 Point	1996	0.3464	0.3462	0.3469
	1997	0.3671	0.3689	0.3655
	1998	0.3890	0.3930	0.3851
	1999	0.4123	0.4188	0.4057
	2000	0.4369	0.4462	0.4274
	2001	0.4630	0.4754	0.4503
	2002	0.4906	0.5066	0.4744
	2003	0.5199	0.5398	0.4998
	2004	0.5510	0.5752	0.5266
	2005	0.5839	0.6128	0.5547

MEDICAL Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2002	0.6404	0.6916	0.5892
	2003	0.6870	0.7321	0.6420
	2004	0.7337	0.7726	0.6949
	2005	0.7803	0.8131	0.7477
5 Point	2001	0.5783	0.6333	0.5233
	2002	0.6301	0.6797	0.5805
	2003	0.6819	0.7261	0.6377
	2004	0.7337	0.7726	0.6949
	2005	0.7855	0.8190	0.7521
6 Point	2000	0.5810	0.6433	0.5187
	2001	0.6180	0.6744	0.5615
	2002	0.6549	0.7054	0.6044
	2003	0.6918	0.7364	0.6472
	2004	0.7287	0.7674	0.6901
	2005	0.7656	0.7985	0.7330
7 Point	1999	0.5150	0.5612	0.4687
	2000	0.5586	0.6040	0.5132
	2001	0.6023	0.6468	0.5577
	2002	0.6459	0.6897	0.6022
	2003	0.6896	0.7325	0.6467
	2004	0.7332	0.7753	0.6912
	2005	0.7768	0.8181	0.7357
8 Point	1998	0.4396	0.4753	0.4040
	1999	0.4896	0.5267	0.4525
	2000	0.5396	0.5781	0.5011
	2001	0.5896	0.6296	0.5496
	2002	0.6396	0.6810	0.5982
	2003	0.6896	0.7325	0.6467
	2004	0.7395	0.7839	0.6953
	2005	0.7895	0.8354	0.7438
9 Point	1997	0.3715	0.3954	0.3475
	1998	0.4247	0.4519	0.3974
	1999	0.4779	0.5083	0.4474
	2000	0.5311	0.5648	0.4973
	2001	0.5842	0.6212	0.5473
	2002	0.6374	0.6777	0.5972
	2003	0.6906	0.7342	0.6472
	2004	0.7438	0.7906	0.6971
	2005	0.7970	0.8471	0.7471
10 Point	1996	0.3174	0.3372	0.2976
	1997	0.3708	0.3939	0.3476
	1998	0.4241	0.4507	0.3975
	1999	0.4774	0.5074	0.4474
	2000	0.5307	0.5641	0.4974
	2001	0.5841	0.6209	0.5473
	2002	0.6374	0.6776	0.5972
	2003	0.6907	0.7343	0.6472
	2004	0.7440	0.7911	0.6971
	2005	0.7974	0.8478	0.7470

MEDICAL Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2002	0.6417	0.6927	0.5907
	2003	0.6855	0.7310	0.6398
	2004	0.7322	0.7715	0.6929
	2005	0.7820	0.8141	0.7504
5 Point	2001	0.5809	0.6352	0.5268
	2002	0.6275	0.6777	0.5772
	2003	0.6778	0.7230	0.6324
	2004	0.7322	0.7715	0.6929
	2005	0.7909	0.8231	0.7591
6 Point	2000	0.5846	0.6455	0.5239
	2001	0.6172	0.6736	0.5607
	2002	0.6517	0.7031	0.6001
	2003	0.6882	0.7338	0.6423
	2004	0.7266	0.7658	0.6875
	2005	0.7672	0.7992	0.7358
7 Point	1999	0.5188	0.5615	0.4758
	2000	0.5561	0.5992	0.5126
	2001	0.5960	0.6395	0.5522
	2002	0.6388	0.6825	0.5949
	2003	0.6847	0.7283	0.6409
	2004	0.7339	0.7773	0.6905
	2005	0.7866	0.8295	0.7439
8 Point	1998	0.4448	0.4765	0.4128
	1999	0.4849	0.5187	0.4508
	2000	0.5286	0.5647	0.4922
	2001	0.5762	0.6147	0.5375
	2002	0.6281	0.6691	0.5870
	2003	0.6847	0.7283	0.6409
	2004	0.7464	0.7928	0.6999
	2005	0.8137	0.8630	0.7642
9 Point	1997	0.3816	0.4017	0.3609
	1998	0.4209	0.4440	0.3974
	1999	0.4643	0.4907	0.4375
	2000	0.5122	0.5423	0.4816
	2001	0.5650	0.5993	0.5302
	2002	0.6232	0.6624	0.5838
	2003	0.6874	0.7320	0.6427
	2004	0.7583	0.8090	0.7076
	2005	0.8365	0.8941	0.7790
10 Point	1996	0.3352	0.3529	0.3172
	1997	0.3716	0.3919	0.3510
	1998	0.4119	0.4351	0.3885
	1999	0.4567	0.4831	0.4299
	2000	0.5063	0.5364	0.4758
	2001	0.5612	0.5956	0.5266
	2002	0.6222	0.6613	0.5827
	2003	0.6897	0.7343	0.6449
	2004	0.7646	0.8153	0.7137
	2005	0.8476	0.9052	0.7899

INDEMNITY Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2002	-0.0010	0.0031	-0.0051
	2003	0.0060	0.0023	0.0096
	2004	-0.0087	-0.0139	-0.0039
	2005	0.0039	0.0085	-0.0006
5 Point	2001	-0.0061	-0.0074	-0.0049
	2002	0.0051	0.0104	-0.0002
	2003	0.0090	0.0060	0.0121
	2004	-0.0087	-0.0139	-0.0039
	2005	0.0008	0.0048	-0.0031
6 Point	2000	0.0314	0.0335	0.0293
	2001	-0.0313	-0.0342	-0.0284
	2002	-0.0106	-0.0063	-0.0148
	2003	0.0027	-0.0007	0.0062
	2004	-0.0056	-0.0105	-0.0009
	2005	0.0134	0.0182	0.0086
7 Point	1999	-0.0563	-0.0584	-0.0541
	2000	0.0690	0.0725	0.0653
	2001	-0.0050	-0.0069	-0.0031
	2002	0.0044	0.0092	-0.0004
	2003	0.0065	0.0032	0.0098
	2004	-0.0131	-0.0183	-0.0081
	2005	-0.0054	-0.0012	-0.0094
8 Point	1998	-0.0687	-0.0643	-0.0729
	1999	-0.0170	-0.0216	-0.0124
	2000	0.0984	0.1000	0.0966
	2001	0.0146	0.0114	0.0177
	2002	0.0142	0.0184	0.0100
	2003	0.0065	0.0032	0.0098
	2004	-0.0229	-0.0275	-0.0186
	2005	-0.0250	-0.0196	-0.0303
9 Point	1997	-0.0282	-0.0207	-0.0357
	1998	-0.0546	-0.0540	-0.0551
	1999	-0.0059	-0.0135	0.0016
	2000	0.1065	0.1060	0.1068
	2001	0.0196	0.0151	0.0241
	2002	0.0162	0.0199	0.0126
	2003	0.0055	0.0025	0.0086
	2004	-0.0270	-0.0305	-0.0237
	2005	-0.0321	-0.0248	-0.0392
10 Point	1996	-0.0204	-0.0156	-0.0252
	1997	-0.0192	-0.0138	-0.0245
	1998	-0.0472	-0.0483	-0.0460
	1999	-0.0002	-0.0092	0.0086
	2000	0.1104	0.1090	0.1117
	2001	0.0219	0.0169	0.0269
	2002	0.0168	0.0203	0.0133
	2003	0.0043	0.0016	0.0072
	2004	-0.0298	-0.0326	-0.0272
	2005	-0.0366	-0.0283	-0.0448

INDEMNITY Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2002	-0.0011	0.0029	-0.0051
	2003	0.0060	0.0024	0.0097
	2004	-0.0087	-0.0137	-0.0038
	2005	0.0039	0.0086	-0.0006
5 Point	2001	-0.0061	-0.0075	-0.0049
	2002	0.0052	0.0107	-0.0001
	2003	0.0092	0.0064	0.0121
	2004	-0.0087	-0.0137	-0.0038
	2005	0.0006	0.0044	-0.0031
6 Point	2000	0.0323	0.0342	0.0302
	2001	-0.0306	-0.0336	-0.0276
	2002	-0.0102	-0.0058	-0.0143
	2003	0.0030	-0.0003	0.0065
	2004	-0.0056	-0.0103	-0.0010
	2005	0.0132	0.0183	0.0081
7 Point	1999	-0.0528	-0.0549	-0.0509
	2000	0.0720	0.0761	0.0680
	2001	-0.0025	-0.0037	-0.0012
	2002	0.0060	0.0116	0.0008
	2003	0.0071	0.0042	0.0103
	2004	-0.0138	-0.0193	-0.0086
	2005	-0.0077	-0.0047	-0.0108
8 Point	1998	-0.0627	-0.0591	-0.0663
	1999	-0.0102	-0.0147	-0.0058
	2000	0.1051	0.1076	0.1026
	2001	0.0203	0.0182	0.0225
	2002	0.0178	0.0230	0.0130
	2003	0.0071	0.0042	0.0103
	2004	-0.0264	-0.0317	-0.0213
	2005	-0.0338	-0.0307	-0.0369
9 Point	1997	-0.0250	-0.0190	-0.0311
	1998	-0.0488	-0.0486	-0.0489
	1999	0.0013	-0.0059	0.0084
	2000	0.1139	0.1143	0.1134
	2001	0.0260	0.0226	0.0295
	2002	0.0203	0.0249	0.0159
	2003	0.0058	0.0032	0.0087
	2004	-0.0318	-0.0359	-0.0277
	2005	-0.0436	-0.0384	-0.0485
10 Point	1996	-0.0203	-0.0175	-0.0233
	1997	-0.0150	-0.0105	-0.0196
	1998	-0.0402	-0.0412	-0.0392
	1999	0.0082	0.0001	0.0163
	2000	0.1190	0.1188	0.1192
	2001	0.0291	0.0254	0.0330
	2002	0.0211	0.0256	0.0168
	2003	0.0041	0.0016	0.0068
	2004	-0.0364	-0.0401	-0.0328
	2005	-0.0514	-0.0454	-0.0570

MEDICAL Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2002	-0.0015	0.0008	-0.0039
	2003	0.0032	0.0010	0.0054
	2004	-0.0019	-0.0046	0.0008
	2005	0.0002	0.0027	-0.0023
5 Point	2001	-0.0103	-0.0119	-0.0086
	2002	0.0088	0.0127	0.0048
	2003	0.0083	0.0070	0.0097
	2004	-0.0019	-0.0046	0.0008
	2005	-0.0050	-0.0032	-0.0067
6 Point	2000	0.0496	0.0514	0.0477
	2001	-0.0500	-0.0530	-0.0468
	2002	-0.0160	-0.0130	-0.0191
	2003	-0.0016	-0.0033	0.0002
	2004	0.0031	0.0006	0.0056
	2005	0.0149	0.0173	0.0124
7 Point	1999	-0.0336	-0.0590	-0.0082
	2000	0.0720	0.0907	0.0532
	2001	-0.0343	-0.0254	-0.0430
	2002	-0.0070	0.0027	-0.0169
	2003	0.0006	0.0006	0.0007
	2004	-0.0014	-0.0073	0.0045
	2005	0.0037	-0.0023	0.0097
8 Point	1998	-0.0444	-0.0604	-0.0284
	1999	-0.0082	-0.0245	0.0080
	2000	0.0910	0.1166	0.0654
	2001	-0.0216	-0.0082	-0.0349
	2002	-0.0007	0.0114	-0.0128
	2003	0.0006	0.0006	0.0007
	2004	-0.0077	-0.0159	0.0004
	2005	-0.0090	-0.0196	0.0016
9 Point	1997	-0.0299	-0.0467	-0.0131
	1998	-0.0295	-0.0370	-0.0218
	1999	0.0035	-0.0061	0.0131
	2000	0.0995	0.1299	0.0691
	2001	-0.0162	0.0002	-0.0326
	2002	0.0015	0.0147	-0.0119
	2003	-0.0004	-0.0011	0.0002
	2004	-0.0120	-0.0226	-0.0014
	2005	-0.0165	-0.0313	-0.0017
10 Point	1996	-0.0016	-0.0034	0.0003
	1997	-0.0292	-0.0452	-0.0132
	1998	-0.0289	-0.0358	-0.0219
	1999	0.0040	-0.0052	0.0131
	2000	0.0999	0.1306	0.0690
	2001	-0.0161	0.0005	-0.0326
	2002	0.0015	0.0148	-0.0119
	2003	-0.0005	-0.0012	0.0002
	2004	-0.0122	-0.0231	-0.0014
	2005	-0.0169	-0.0320	-0.0016

MEDICAL Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2002	-0.0028	-0.0003	-0.0054
	2003	0.0047	0.0021	0.0076
	2004	-0.0004	-0.0035	0.0028
	2005	-0.0015	0.0017	-0.0050
5 Point	2001	-0.0129	-0.0138	-0.0121
	2002	0.0114	0.0147	0.0081
	2003	0.0124	0.0101	0.0150
	2004	-0.0004	-0.0035	0.0028
	2005	-0.0104	-0.0073	-0.0137
6 Point	2000	0.0460	0.0492	0.0425
	2001	-0.0492	-0.0522	-0.0460
	2002	-0.0128	-0.0107	-0.0148
	2003	0.0020	-0.0007	0.0051
	2004	0.0052	0.0022	0.0082
	2005	0.0133	0.0166	0.0096
7 Point	1999	-0.0374	-0.0593	-0.0153
	2000	0.0745	0.0955	0.0538
	2001	-0.0280	-0.0181	-0.0375
	2002	0.0001	0.0099	-0.0096
	2003	0.0055	0.0048	0.0065
	2004	-0.0021	-0.0093	0.0052
	2005	-0.0061	-0.0137	0.0015
8 Point	1998	-0.0496	-0.0616	-0.0372
	1999	-0.0035	-0.0165	0.0097
	2000	0.1020	0.1300	0.0742
	2001	-0.0082	0.0067	-0.0228
	2002	0.0108	0.0233	-0.0017
	2003	0.0055	0.0048	0.0065
	2004	-0.0146	-0.0248	-0.0042
	2005	-0.0332	-0.0472	-0.0188
9 Point	1997	-0.0400	-0.0530	-0.0265
	1998	-0.0257	-0.0291	-0.0218
	1999	0.0171	0.0115	0.0230
	2000	0.1184	0.1524	0.0848
	2001	0.0030	0.0221	-0.0155
	2002	0.0157	0.0300	0.0015
	2003	0.0028	0.0011	0.0047
	2004	-0.0265	-0.0410	-0.0119
	2005	-0.0560	-0.0783	-0.0336
10 Point	1996	-0.0194	-0.0191	-0.0193
	1997	-0.0300	-0.0432	-0.0166
	1998	-0.0167	-0.0202	-0.0129
	1999	0.0247	0.0191	0.0306
	2000	0.1243	0.1583	0.0906
	2001	0.0068	0.0258	-0.0119
	2002	0.0167	0.0311	0.0026
	2003	0.0005	-0.0012	0.0025
	2004	-0.0328	-0.0473	-0.0180
	2005	-0.0671	-0.0894	-0.0445