

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	0.257	0.259	0.247
5 Point	Linear	0.113	0.093	0.133
6 Point	Linear	0.326	0.303	0.343
7 Point	Linear	0.049	0.038	0.062
8 Point	Linear	0.106	0.075	0.142
9 Point	Linear	0.029	0.061	0.004
10 Point	Linear	0.046	0.020	0.092
4 Point	Expon'l	0.258	0.264	0.244
5 Point	Expon'l	0.108	0.089	0.127
6 Point	Expon'l	0.325	0.305	0.339
7 Point	Expon'l	0.048	0.037	0.060
8 Point	Expon'l	0.103	0.073	0.139
9 Point	Expon'l	0.025	0.054	0.003
10 Point	Expon'l	0.058	0.031	0.104
MEDICAL		(Average)	(Incur)	(Pd-20)
r ²				
4 Point	Linear	0.770	0.678	0.851
5 Point	Linear	0.573	0.347	0.775
6 Point	Linear	0.739	0.572	0.867
7 Point	Linear	0.748	0.609	0.847
8 Point	Linear	0.826	0.726	0.895
9 Point	Linear	0.781	0.666	0.861
10 Point	Linear	0.840	0.755	0.897
4 Point	Expon'l	0.749	0.649	0.841
5 Point	Expon'l	0.544	0.310	0.771
6 Point	Expon'l	0.731	0.557	0.869
7 Point	Expon'l	0.746	0.597	0.855
8 Point	Expon'l	0.830	0.727	0.903
9 Point	Expon'l	0.782	0.658	0.872
10 Point	Expon'l	0.839	0.750	0.905

INDEMNITY Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.7891	0.7753	0.8030
	2006	0.8074	0.7950	0.8199
	2007	0.8257	0.8148	0.8368
	2008	0.8441	0.8345	0.8537
5 Point	2004	0.8000	0.7896	0.8104
	2005	0.8086	0.7980	0.8192
	2006	0.8172	0.8064	0.8280
	2007	0.8257	0.8148	0.8368
	2008	0.8343	0.8232	0.8456
6 Point	2003	0.7746	0.7619	0.7874
	2004	0.7878	0.7756	0.8001
	2005	0.8009	0.7892	0.8128
	2006	0.8141	0.8029	0.8254
	2007	0.8273	0.8165	0.8381
	2008	0.8404	0.8302	0.8508
7 Point	2002	0.8000	0.7898	0.8103
	2003	0.8043	0.7939	0.8148
	2004	0.8085	0.7980	0.8192
	2005	0.8128	0.8020	0.8237
	2006	0.8171	0.8061	0.8282
	2007	0.8213	0.8101	0.8326
	2008	0.8256	0.8142	0.8371
8 Point	2001	0.7905	0.7821	0.7989
	2002	0.7958	0.7869	0.8048
	2003	0.8011	0.7917	0.8106
	2004	0.8064	0.7965	0.8165
	2005	0.8117	0.8013	0.8223
	2006	0.8171	0.8061	0.8282
	2007	0.8224	0.8109	0.8340
	2008	0.8277	0.8157	0.8399
9 Point	2000	0.8333	0.8348	0.8319
	2001	0.8301	0.8295	0.8309
	2002	0.8269	0.8241	0.8299
	2003	0.8238	0.8188	0.8289
	2004	0.8206	0.8134	0.8279
	2005	0.8174	0.8081	0.8269
	2006	0.8142	0.8027	0.8259
	2007	0.8111	0.7973	0.8249
10 Point	1999	0.7888	0.7859	0.7918
	2000	0.7932	0.7891	0.7973
	2001	0.7975	0.7923	0.8028
	2002	0.8019	0.7955	0.8083
	2003	0.8062	0.7988	0.8138
	2004	0.8106	0.8020	0.8192
	2005	0.8149	0.8052	0.8247
	2006	0.8193	0.8084	0.8302
	2007	0.8236	0.8116	0.8357
2008	0.8280	0.8148	0.8412	

INDEMNITY Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.7886	0.7747	0.8025
	2006	0.8065	0.7939	0.8190
	2007	0.8248	0.8137	0.8360
	2008	0.8435	0.8339	0.8533
5 Point	2004	0.7998	0.7893	0.8103
	2005	0.8080	0.7974	0.8187
	2006	0.8164	0.8055	0.8273
	2007	0.8248	0.8137	0.8360
	2008	0.8333	0.8219	0.8447
6 Point	2003	0.7745	0.7617	0.7874
	2004	0.7872	0.7748	0.7996
	2005	0.8000	0.7882	0.8120
	2006	0.8131	0.8017	0.8246
	2007	0.8264	0.8156	0.8374
	2008	0.8399	0.8296	0.8503
7 Point	2002	0.7993	0.7889	0.8098
	2003	0.8035	0.7929	0.8141
	2004	0.8077	0.7969	0.8185
	2005	0.8119	0.8009	0.8229
	2006	0.8161	0.8050	0.8273
	2007	0.8204	0.8090	0.8318
	2008	0.8247	0.8131	0.8363
8 Point	2001	0.7901	0.7816	0.7987
	2002	0.7952	0.7862	0.8043
	2003	0.8004	0.7909	0.8100
	2004	0.8056	0.7955	0.8157
	2005	0.8108	0.8002	0.8215
	2006	0.8161	0.8050	0.8273
	2007	0.8214	0.8097	0.8332
	2008	0.8268	0.8145	0.8391
9 Point	2000	0.8310	0.8315	0.8304
	2001	0.8280	0.8265	0.8295
	2002	0.8251	0.8215	0.8286
	2003	0.8221	0.8165	0.8277
	2004	0.8192	0.8116	0.8269
	2005	0.8163	0.8066	0.8260
	2006	0.8134	0.8018	0.8251
	2007	0.8105	0.7969	0.8242
10 Point	1999	0.7844	0.7799	0.7888
	2000	0.7892	0.7838	0.7945
	2001	0.7940	0.7878	0.8002
	2002	0.7989	0.7917	0.8060
	2003	0.8038	0.7957	0.8119
	2004	0.8087	0.7997	0.8178
	2005	0.8137	0.8037	0.8237
	2006	0.8186	0.8077	0.8297
	2007	0.8237	0.8117	0.8357
2008	0.8287	0.8158	0.8418	

MEDICAL Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	1.5090	1.5275	1.4906
	2006	1.6699	1.6835	1.6563
	2007	1.8308	1.8394	1.8221
	2008	1.9916	1.9954	1.9878
5 Point	2004	1.5295	1.6028	1.4561
	2005	1.6299	1.6817	1.5781
	2006	1.7303	1.7606	1.7001
	2007	1.8308	1.8394	1.8221
	2008	1.9312	1.9183	1.9441
6 Point	2003	1.3827	1.4536	1.3119
	2004	1.4958	1.5516	1.4399
	2005	1.6089	1.6497	1.5680
	2006	1.7219	1.7478	1.6960
	2007	1.8350	1.8458	1.8241
	2008	1.9480	1.9439	1.9522
7 Point	2002	1.3366	1.4084	1.2648
	2003	1.4342	1.4943	1.3742
	2004	1.5319	1.5801	1.4836
	2005	1.6295	1.6660	1.5929
	2006	1.7271	1.7518	1.7023
	2007	1.8247	1.8377	1.8116
	2008	1.9223	1.9235	1.9210
8 Point	2001	1.2179	1.2872	1.1484
	2002	1.3197	1.3801	1.2592
	2003	1.4215	1.4730	1.3700
	2004	1.5234	1.5660	1.4807
	2005	1.6252	1.6589	1.5915
	2006	1.7271	1.7518	1.7023
	2007	1.8289	1.8448	1.8130
	2008	1.9308	1.9377	1.9238
9 Point	2000	1.2041	1.2884	1.1197
	2001	1.2904	1.3647	1.2160
	2002	1.3767	1.4410	1.3123
	2003	1.4630	1.5174	1.4086
	2004	1.5493	1.5937	1.5049
	2005	1.6356	1.6700	1.6012
	2006	1.7219	1.7463	1.6975
	2007	1.8082	1.8226	1.7937
10 Point	1999	1.0895	1.1626	1.0163
	2000	1.1803	1.2468	1.1138
	2001	1.2710	1.3309	1.2112
	2002	1.3618	1.4150	1.3086
	2003	1.4526	1.4991	1.4060
	2004	1.5433	1.5833	1.5034
	2005	1.6341	1.6674	1.6008
	2006	1.7249	1.7515	1.6982
	2007	1.8156	1.8356	1.7956
2008	1.9064	1.9198	1.8930	

MEDICAL Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	1.5165	1.5326	1.5000
	2006	1.6610	1.6733	1.6482
	2007	1.8192	1.8271	1.8110
	2008	1.9926	1.9949	1.9900
5 Point	2004	1.5384	1.6061	1.4696
	2005	1.6268	1.6766	1.5756
	2006	1.7204	1.7502	1.6892
	2007	1.8192	1.8271	1.8110
	2008	1.9238	1.9073	1.9416
6 Point	2003	1.3938	1.4586	1.3287
	2004	1.4912	1.5450	1.4367
	2005	1.5955	1.6364	1.5535
	2006	1.7070	1.7333	1.6797
	2007	1.8263	1.8359	1.8162
	2008	1.9540	1.9446	1.9638
7 Point	2002	1.3532	1.4192	1.2874
	2003	1.4352	1.4928	1.3771
	2004	1.5221	1.5703	1.4731
	2005	1.6143	1.6517	1.5758
	2006	1.7120	1.7374	1.6857
	2007	1.8157	1.8274	1.8032
	2008	1.9256	1.9222	1.9290
8 Point	2001	1.2386	1.3016	1.1760
	2002	1.3215	1.3790	1.2638
	2003	1.4098	1.4610	1.3582
	2004	1.5041	1.5478	1.4596
	2005	1.6047	1.6398	1.5686
	2006	1.7120	1.7374	1.6857
	2007	1.8265	1.8407	1.8116
	2008	1.9486	1.9501	1.9469
9 Point	2000	1.2288	1.3057	1.1524
	2001	1.2979	1.3685	1.2272
	2002	1.3709	1.4344	1.3068
	2003	1.4480	1.5034	1.3916
	2004	1.5294	1.5758	1.4820
	2005	1.6154	1.6516	1.5782
	2006	1.7063	1.7311	1.6806
	2007	1.8023	1.8145	1.7897
10 Point	1999	1.1176	1.1816	1.0541
	2000	1.1880	1.2488	1.1272
	2001	1.2628	1.3199	1.2053
	2002	1.3423	1.3950	1.2889
	2003	1.4268	1.4744	1.3782
	2004	1.5166	1.5584	1.4738
	2005	1.6120	1.6471	1.5760
	2006	1.7135	1.7408	1.6852
	2007	1.8214	1.8399	1.8021
2008	1.9360	1.9446	1.9270	

INDEMNITY Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.0138	0.0091	0.0183
	2006	-0.0449	-0.0419	-0.0477
	2007	0.0484	0.0564	0.0404
	2008	-0.0173	-0.0236	-0.0110
5 Point	2004	0.0195	0.0228	0.0163
	2005	-0.0057	-0.0136	0.0021
	2006	-0.0547	-0.0533	-0.0558
	2007	0.0484	0.0564	0.0404
	2008	-0.0075	-0.0123	-0.0029
6 Point	2003	-0.0153	-0.0176	-0.0129
	2004	0.0317	0.0368	0.0266
	2005	0.0020	-0.0048	0.0085
	2006	-0.0516	-0.0498	-0.0532
	2007	0.0468	0.0547	0.0391
	2008	-0.0136	-0.0193	-0.0081
7 Point	2002	0.0445	0.0480	0.0410
	2003	-0.0450	-0.0496	-0.0403
	2004	0.0110	0.0145	0.0075
	2005	-0.0099	-0.0176	-0.0024
	2006	-0.0546	-0.0530	-0.0560
	2007	0.0528	0.0611	0.0446
	2008	0.0012	-0.0033	0.0056
8 Point	2001	-0.0074	-0.0051	-0.0096
	2002	0.0487	0.0509	0.0465
	2003	-0.0418	-0.0474	-0.0361
	2004	0.0131	0.0159	0.0102
	2005	-0.0088	-0.0169	-0.0010
	2006	-0.0546	-0.0530	-0.0560
	2007	0.0517	0.0603	0.0432
	2008	-0.0009	-0.0048	0.0028
9 Point	2000	0.0793	0.0948	0.0638
	2001	-0.0470	-0.0525	-0.0416
	2002	0.0176	0.0137	0.0214
	2003	-0.0645	-0.0745	-0.0544
	2004	-0.0011	-0.0010	-0.0012
	2005	-0.0145	-0.0237	-0.0056
	2006	-0.0517	-0.0496	-0.0537
	2007	0.0630	0.0739	0.0523
10 Point	2008	0.0189	0.0189	0.0188
	1999	-0.0903	-0.1029	-0.0777
	2000	0.1194	0.1405	0.0984
	2001	-0.0144	-0.0153	-0.0135
	2002	0.0426	0.0423	0.0430
	2003	-0.0469	-0.0545	-0.0393
	2004	0.0089	0.0104	0.0075
	2005	-0.0120	-0.0208	-0.0034
	2006	-0.0568	-0.0553	-0.0580
	2007	0.0505	0.0596	0.0415
2008	-0.0012	-0.0039	0.0015	

INDEMNITY Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.0143	0.0097	0.0188
	2006	-0.0440	-0.0408	-0.0468
	2007	0.0493	0.0575	0.0412
	2008	-0.0167	-0.0230	-0.0106
5 Point	2004	0.0197	0.0231	0.0164
	2005	-0.0051	-0.0130	0.0026
	2006	-0.0539	-0.0524	-0.0551
	2007	0.0493	0.0575	0.0412
	2008	-0.0065	-0.0110	-0.0020
6 Point	2003	-0.0152	-0.0174	-0.0129
	2004	0.0323	0.0376	0.0271
	2005	0.0029	-0.0038	0.0093
	2006	-0.0506	-0.0486	-0.0524
	2007	0.0477	0.0556	0.0398
	2008	-0.0131	-0.0187	-0.0076
7 Point	2002	0.0452	0.0489	0.0415
	2003	-0.0442	-0.0486	-0.0396
	2004	0.0118	0.0155	0.0082
	2005	-0.0090	-0.0165	-0.0016
	2006	-0.0536	-0.0519	-0.0551
	2007	0.0537	0.0622	0.0454
	2008	0.0021	-0.0022	0.0064
8 Point	2001	-0.0070	-0.0046	-0.0094
	2002	0.0493	0.0516	0.0470
	2003	-0.0411	-0.0466	-0.0355
	2004	0.0139	0.0169	0.0110
	2005	-0.0079	-0.0158	-0.0002
	2006	-0.0536	-0.0519	-0.0551
	2007	0.0527	0.0615	0.0440
	2008	0.0000	-0.0036	0.0036
9 Point	2000	0.0816	0.0981	0.0653
	2001	-0.0449	-0.0495	-0.0402
	2002	0.0194	0.0163	0.0227
	2003	-0.0628	-0.0722	-0.0532
	2004	0.0003	0.0008	-0.0002
	2005	-0.0134	-0.0222	-0.0047
	2006	-0.0509	-0.0487	-0.0529
	2007	0.0636	0.0743	0.0530
10 Point	2008	0.0192	0.0188	0.0193
	1999	-0.0859	-0.0969	-0.0747
	2000	0.1234	0.1458	0.1012
	2001	-0.0109	-0.0108	-0.0109
	2002	0.0456	0.0461	0.0453
	2003	-0.0445	-0.0514	-0.0374
	2004	0.0108	0.0127	0.0089
	2005	-0.0108	-0.0193	-0.0024
	2006	-0.0561	-0.0546	-0.0575
2007	0.0504	0.0595	0.0415	
2008	-0.0019	-0.0049	0.0009	

MEDICAL Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.0878	0.0997	0.0758
	2006	-0.1634	-0.1970	-0.1297
	2007	0.0634	0.0949	0.0319
	2008	0.0122	0.0024	0.0220
5 Point	2004	0.1209	0.1542	0.0876
	2005	-0.0331	-0.0545	-0.0117
	2006	-0.2238	-0.2741	-0.1735
	2007	0.0634	0.0949	0.0319
	2008	0.0726	0.0795	0.0657
6 Point	2003	-0.0421	-0.0640	-0.0203
	2004	0.1546	0.2054	0.1038
	2005	-0.0121	-0.0225	-0.0016
	2006	-0.2154	-0.2613	-0.1694
	2007	0.0592	0.0885	0.0299
	2008	0.0558	0.0539	0.0576
7 Point	2002	0.0773	0.0611	0.0935
	2003	-0.0936	-0.1047	-0.0826
	2004	0.1186	0.1769	0.0601
	2005	-0.0327	-0.0388	-0.0265
	2006	-0.2206	-0.2653	-0.1757
	2007	0.0695	0.0966	0.0424
	2008	0.0815	0.0743	0.0888
8 Point	2001	-0.0297	-0.0496	-0.0098
	2002	0.0942	0.0894	0.0991
	2003	-0.0809	-0.0834	-0.0784
	2004	0.1270	0.1910	0.0630
	2005	-0.0284	-0.0317	-0.0251
	2006	-0.2206	-0.2653	-0.1757
	2007	0.0653	0.0895	0.0410
	2008	0.0730	0.0601	0.0860
9 Point	2000	0.1451	0.1551	0.1352
	2001	-0.1022	-0.1271	-0.0774
	2002	0.0372	0.0285	0.0460
	2003	-0.1224	-0.1278	-0.1170
	2004	0.1011	0.1633	0.0388
	2005	-0.0388	-0.0428	-0.0348
	2006	-0.2154	-0.2598	-0.1709
	2007	0.0860	0.1117	0.0603
10 Point	1999	-0.0536	-0.0937	-0.0134
	2000	0.1689	0.1967	0.1411
	2001	-0.0828	-0.0933	-0.0726
	2002	0.0521	0.0545	0.0497
	2003	-0.1120	-0.1095	-0.1144
	2004	0.1071	0.1737	0.0403
	2005	-0.0373	-0.0402	-0.0344
	2006	-0.2184	-0.2650	-0.1716
	2007	0.0786	0.0987	0.0584
	2008	0.0974	0.0780	0.1168

MEDICAL Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2005	0.0803	0.0946	0.0664
	2006	-0.1545	-0.1868	-0.1216
	2007	0.0750	0.1072	0.0430
	2008	0.0112	0.0029	0.0198
5 Point	2004	0.1120	0.1509	0.0741
	2005	-0.0300	-0.0494	-0.0092
	2006	-0.2139	-0.2637	-0.1626
	2007	0.0750	0.1072	0.0430
	2008	0.0800	0.0905	0.0682
6 Point	2003	-0.0532	-0.0690	-0.0371
	2004	0.1592	0.2120	0.1070
	2005	0.0013	-0.0092	0.0129
	2006	-0.2005	-0.2468	-0.1531
	2007	0.0679	0.0984	0.0378
	2008	0.0498	0.0532	0.0460
7 Point	2002	0.0607	0.0503	0.0709
	2003	-0.0946	-0.1032	-0.0855
	2004	0.1283	0.1867	0.0706
	2005	-0.0175	-0.0245	-0.0094
	2006	-0.2055	-0.2509	-0.1591
	2007	0.0785	0.1069	0.0508
	2008	0.0782	0.0756	0.0808
8 Point	2001	-0.0504	-0.0640	-0.0374
	2002	0.0924	0.0905	0.0945
	2003	-0.0692	-0.0714	-0.0666
	2004	0.1463	0.2092	0.0841
	2005	-0.0079	-0.0126	-0.0022
	2006	-0.2055	-0.2509	-0.1591
	2007	0.0677	0.0936	0.0424
	2008	0.0552	0.0477	0.0629
9 Point	2000	0.1204	0.1378	0.1025
	2001	-0.1097	-0.1309	-0.0886
	2002	0.0430	0.0351	0.0515
	2003	-0.1074	-0.1138	-0.1000
	2004	0.1210	0.1812	0.0617
	2005	-0.0186	-0.0244	-0.0118
	2006	-0.1998	-0.2446	-0.1540
	2007	0.0919	0.1198	0.0643
10 Point	1999	-0.0817	-0.1127	-0.0512
	2000	0.1612	0.1947	0.1277
	2001	-0.0746	-0.0823	-0.0667
	2002	0.0716	0.0745	0.0694
	2003	-0.0862	-0.0848	-0.0866
	2004	0.1338	0.1986	0.0699
	2005	-0.0152	-0.0199	-0.0096
	2006	-0.2070	-0.2543	-0.1586
	2007	0.0728	0.0944	0.0519
2008	0.0678	0.0532	0.0828	