

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	0.320	0.540	0.132
5 Point	Linear	0.025	0.114	0.000
6 Point	Linear	0.021	0.089	0.000
7 Point	Linear	0.011	0.067	0.002
8 Point	Linear	0.203	0.144	0.261
9 Point	Linear	0.009	0.027	0.000
10 Point	Linear	0.168	0.200	0.136
4 Point	Expon'l	0.307	0.536	0.120
5 Point	Expon'l	0.021	0.106	0.001
6 Point	Expon'l	0.017	0.081	0.001
7 Point	Expon'l	0.008	0.060	0.004
8 Point	Expon'l	0.200	0.140	0.259
9 Point	Expon'l	0.017	0.041	0.003
10 Point	Expon'l	0.201	0.235	0.167
MEDICAL		(Average)	(Incur)	(Pd-20)
r ²				
4 Point	Linear	0.648	0.650	0.640
5 Point	Linear	0.810	0.805	0.810
6 Point	Linear	0.890	0.889	0.885
7 Point	Linear	0.931	0.930	0.928
8 Point	Linear	0.863	0.838	0.881
9 Point	Linear	0.895	0.873	0.913
10 Point	Linear	0.920	0.898	0.936
4 Point	Expon'l	0.651	0.652	0.643
5 Point	Expon'l	0.819	0.814	0.818
6 Point	Expon'l	0.897	0.892	0.895
7 Point	Expon'l	0.932	0.932	0.927
8 Point	Expon'l	0.861	0.834	0.879
9 Point	Expon'l	0.873	0.845	0.897
10 Point	Expon'l	0.890	0.859	0.917

INDEMNITY Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.7005	0.6860	0.7149
	2005	0.7155	0.7062	0.7248
	2006	0.7305	0.7265	0.7346
	2007	0.7455	0.7468	0.7445
5 Point	2003	0.7211	0.7062	0.7359
	2004	0.7242	0.7130	0.7355
	2005	0.7274	0.7197	0.7351
	2006	0.7305	0.7265	0.7346
	2007	0.7336	0.7333	0.7342
6 Point	2002	0.7215	0.7076	0.7352
	2003	0.7236	0.7122	0.7351
	2004	0.7258	0.7167	0.7350
	2005	0.7280	0.7212	0.7348
	2006	0.7302	0.7258	0.7347
	2007	0.7323	0.7303	0.7346
7 Point	2001	0.7233	0.7093	0.7373
	2002	0.7246	0.7124	0.7367
	2003	0.7258	0.7155	0.7361
	2004	0.7271	0.7186	0.7356
	2005	0.7283	0.7217	0.7350
	2006	0.7295	0.7248	0.7344
	2007	0.7308	0.7279	0.7338
8 Point	2000	0.7704	0.7570	0.7837
	2001	0.7620	0.7500	0.7739
	2002	0.7536	0.7429	0.7642
	2003	0.7451	0.7358	0.7545
	2004	0.7367	0.7288	0.7447
	2005	0.7283	0.7217	0.7350
	2006	0.7199	0.7146	0.7253
	2007	0.7115	0.7076	0.7155
9 Point	1999	0.7199	0.7036	0.7361
	2000	0.7219	0.7072	0.7365
	2001	0.7239	0.7108	0.7369
	2002	0.7259	0.7145	0.7373
	2003	0.7278	0.7181	0.7376
	2004	0.7298	0.7217	0.7380
	2005	0.7318	0.7253	0.7384
	2006	0.7337	0.7289	0.7387
10 Point	1998	0.6671	0.6525	0.6816
	1999	0.6771	0.6636	0.6906
	2000	0.6871	0.6747	0.6995
	2001	0.6971	0.6858	0.7084
	2002	0.7071	0.6969	0.7173
	2003	0.7171	0.7081	0.7262
	2004	0.7271	0.7192	0.7351
	2005	0.7371	0.7303	0.7441
	2006	0.7471	0.7414	0.7530
2007	0.7571	0.7525	0.7619	

INDEMNITY Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.7010	0.6867	0.7152
	2005	0.7152	0.7059	0.7244
	2006	0.7297	0.7257	0.7338
	2007	0.7444	0.7460	0.7432
5 Point	2003	0.7212	0.7064	0.7359
	2004	0.7240	0.7128	0.7352
	2005	0.7268	0.7192	0.7345
	2006	0.7297	0.7257	0.7338
	2007	0.7325	0.7322	0.7330
6 Point	2002	0.7216	0.7079	0.7353
	2003	0.7236	0.7121	0.7350
	2004	0.7255	0.7164	0.7346
	2005	0.7274	0.7206	0.7342
	2006	0.7294	0.7249	0.7339
	2007	0.7313	0.7293	0.7335
7 Point	2001	0.7236	0.7096	0.7375
	2002	0.7246	0.7124	0.7367
	2003	0.7256	0.7153	0.7359
	2004	0.7267	0.7182	0.7352
	2005	0.7277	0.7211	0.7344
	2006	0.7288	0.7240	0.7336
	2007	0.7298	0.7269	0.7328
8 Point	2000	0.7686	0.7550	0.7821
	2001	0.7602	0.7481	0.7723
	2002	0.7520	0.7413	0.7626
	2003	0.7438	0.7345	0.7531
	2004	0.7357	0.7278	0.7437
	2005	0.7277	0.7211	0.7344
	2006	0.7198	0.7145	0.7252
	2007	0.7120	0.7080	0.7161
9 Point	1999	0.7148	0.6980	0.7315
	2000	0.7175	0.7024	0.7326
	2001	0.7203	0.7068	0.7336
	2002	0.7230	0.7113	0.7347
	2003	0.7258	0.7158	0.7357
	2004	0.7285	0.7203	0.7368
	2005	0.7313	0.7248	0.7378
	2006	0.7341	0.7294	0.7389
10 Point	1998	0.6597	0.6452	0.6742
	1999	0.6702	0.6567	0.6837
	2000	0.6809	0.6685	0.6934
	2001	0.6918	0.6804	0.7033
	2002	0.7029	0.6926	0.7133
	2003	0.7142	0.7050	0.7234
	2004	0.7256	0.7176	0.7337
	2005	0.7372	0.7304	0.7441
	2006	0.7490	0.7434	0.7546
	2007	0.7610	0.7567	0.7653

MEDICAL Linear FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	1.1065	1.1586	1.0544
	2005	1.1593	1.2126	1.1060
	2006	1.2121	1.2665	1.1577
	2007	1.2649	1.3205	1.2093
5 Point	2003	1.0390	1.0948	0.9830
	2004	1.0967	1.1521	1.0412
	2005	1.1544	1.2093	1.0995
	2006	1.2121	1.2665	1.1577
	2007	1.2698	1.3238	1.2159
6 Point	2002	0.9687	1.0164	0.9209
	2003	1.0299	1.0794	0.9802
	2004	1.0910	1.1424	1.0395
	2005	1.1521	1.2055	1.0988
	2006	1.2132	1.2685	1.1580
	2007	1.2744	1.3315	1.2173
7 Point	2001	0.8935	0.9445	0.8423
	2002	0.9578	1.0096	0.9060
	2003	1.0222	1.0747	0.9698
	2004	1.0866	1.1397	1.0335
	2005	1.1510	1.2048	1.0973
	2006	1.2154	1.2698	1.1610
	2007	1.2798	1.3349	1.2248
8 Point	2000	0.8846	0.9426	0.8267
	2001	0.9379	0.9950	0.8808
	2002	0.9912	1.0475	0.9349
	2003	1.0445	1.0999	0.9890
	2004	1.0977	1.1523	1.0431
	2005	1.1510	1.2048	1.0973
	2006	1.2043	1.2572	1.1514
	2007	1.2576	1.3097	1.2055
9 Point	1999	0.7935	0.8422	0.7449
	2000	0.8535	0.9031	0.8039
	2001	0.9134	0.9640	0.8629
	2002	0.9734	1.0249	0.9219
	2003	1.0333	1.0858	0.9809
	2004	1.0933	1.1467	1.0399
	2005	1.1532	1.2076	1.0989
	2006	1.2132	1.2685	1.1579
10 Point	1998	0.7031	0.7370	0.6694
	1999	0.7679	0.8049	0.7310
	2000	0.8326	0.8728	0.7926
	2001	0.8974	0.9407	0.8542
	2002	0.9622	1.0086	0.9158
	2003	1.0269	1.0765	0.9774
	2004	1.0917	1.1444	1.0390
	2005	1.1565	1.2123	1.1006
	2006	1.2212	1.2802	1.1622
2007	1.2860	1.3481	1.2238	

MEDICAL Expon'l FITTED	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	1.1090	1.1609	1.0570
	2005	1.1582	1.2113	1.1049
	2006	1.2094	1.2640	1.1549
	2007	1.2630	1.3189	1.2072
5 Point	2003	1.0422	1.0979	0.9862
	2004	1.0952	1.1507	1.0395
	2005	1.1509	1.2060	1.0957
	2006	1.2094	1.2640	1.1549
	2007	1.2710	1.3247	1.2174
6 Point	2002	0.9736	1.0209	0.9261
	2003	1.0283	1.0775	0.9789
	2004	1.0860	1.1373	1.0347
	2005	1.1470	1.2004	1.0937
	2006	1.2115	1.2669	1.1560
	2007	1.2795	1.3372	1.2219
7 Point	2001	0.9008	0.9518	0.8495
	2002	0.9564	1.0083	0.9044
	2003	1.0156	1.0682	0.9628
	2004	1.0783	1.1317	1.0249
	2005	1.1450	1.1989	1.0911
	2006	1.2158	1.2701	1.1615
	2007	1.2909	1.3455	1.2365
8 Point	2000	0.8941	0.9514	0.8367
	2001	0.9394	0.9965	0.8824
	2002	0.9871	1.0436	0.9305
	2003	1.0371	1.0930	0.9812
	2004	1.0897	1.1447	1.0347
	2005	1.1450	1.1989	1.0911
	2006	1.2031	1.2556	1.1506
	2007	1.2641	1.3150	1.2133
9 Point	1999	0.8036	0.8506	0.7565
	2000	0.8529	0.9013	0.8045
	2001	0.9053	0.9549	0.8555
	2002	0.9608	1.0118	0.9098
	2003	1.0198	1.0720	0.9675
	2004	1.0824	1.1359	1.0289
	2005	1.1489	1.2035	1.0941
	2006	1.2194	1.2752	1.1636
10 Point	1998	0.7165	0.7475	0.6852
	1999	0.7671	0.8010	0.7329
	2000	0.8213	0.8583	0.7841
	2001	0.8794	0.9197	0.8388
	2002	0.9415	0.9855	0.8973
	2003	1.0080	1.0561	0.9599
	2004	1.0793	1.1316	1.0268
	2005	1.1556	1.2126	1.0985
	2006	1.2372	1.2994	1.1751
2007	1.3247	1.3923	1.2571	

INDEMNITY Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.0118	0.0090	0.0148
	2005	0.0021	0.0037	0.0005
	2006	-0.0398	-0.0344	-0.0453
	2007	0.0258	0.0217	0.0300
5 Point	2003	0.0238	0.0270	0.0206
	2004	-0.0119	-0.0180	-0.0058
	2005	-0.0098	-0.0098	-0.0098
	2006	-0.0398	-0.0344	-0.0453
	2007	0.0377	0.0352	0.0403
6 Point	2002	0.0031	0.0075	-0.0011
	2003	0.0213	0.0210	0.0214
	2004	-0.0135	-0.0217	-0.0053
	2005	-0.0104	-0.0113	-0.0095
	2006	-0.0395	-0.0337	-0.0454
	2007	0.0390	0.0382	0.0399
7 Point	2001	0.0047	0.0071	0.0023
	2002	0.0000	0.0027	-0.0026
	2003	0.0191	0.0177	0.0204
	2004	-0.0148	-0.0236	-0.0059
	2005	-0.0107	-0.0118	-0.0097
	2006	-0.0388	-0.0327	-0.0451
	2007	0.0405	0.0406	0.0407
8 Point	2000	0.0676	0.0712	0.0641
	2001	-0.0340	-0.0336	-0.0343
	2002	-0.0289	-0.0278	-0.0301
	2003	-0.0002	-0.0026	0.0020
	2004	-0.0244	-0.0338	-0.0150
	2005	-0.0107	-0.0118	-0.0097
	2006	-0.0292	-0.0225	-0.0360
	2007	0.0598	0.0609	0.0590
9 Point	1999	-0.0969	-0.0995	-0.0943
	2000	0.1161	0.1210	0.1113
	2001	0.0041	0.0056	0.0027
	2002	-0.0013	0.0006	-0.0032
	2003	0.0171	0.0151	0.0189
	2004	-0.0175	-0.0267	-0.0083
	2005	-0.0142	-0.0154	-0.0131
	2006	-0.0430	-0.0368	-0.0494
10 Point	1998	-0.0964	-0.0900	-0.1025
	1999	-0.0541	-0.0595	-0.0488
	2000	0.1509	0.1535	0.1483
	2001	0.0309	0.0306	0.0312
	2002	0.0175	0.0182	0.0168
	2003	0.0278	0.0251	0.0303
	2004	-0.0148	-0.0242	-0.0054
	2005	-0.0195	-0.0204	-0.0188
	2006	-0.0564	-0.0493	-0.0637
	2007	0.0142	0.0160	0.0126

INDEMNITY Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.0113	0.0083	0.0145
	2005	0.0024	0.0040	0.0009
	2006	-0.0390	-0.0336	-0.0445
	2007	0.0269	0.0225	0.0313
5 Point	2003	0.0237	0.0268	0.0206
	2004	-0.0117	-0.0178	-0.0055
	2005	-0.0092	-0.0093	-0.0092
	2006	-0.0390	-0.0336	-0.0445
	2007	0.0388	0.0363	0.0415
6 Point	2002	0.0030	0.0072	-0.0012
	2003	0.0213	0.0211	0.0215
	2004	-0.0132	-0.0214	-0.0049
	2005	-0.0098	-0.0107	-0.0089
	2006	-0.0387	-0.0328	-0.0446
	2007	0.0400	0.0392	0.0410
7 Point	2001	0.0044	0.0068	0.0021
	2002	0.0000	0.0027	-0.0026
	2003	0.0193	0.0179	0.0206
	2004	-0.0144	-0.0232	-0.0055
	2005	-0.0101	-0.0112	-0.0091
	2006	-0.0381	-0.0319	-0.0443
	2007	0.0415	0.0416	0.0417
8 Point	2000	0.0694	0.0732	0.0657
	2001	-0.0322	-0.0317	-0.0327
	2002	-0.0274	-0.0262	-0.0285
	2003	0.0011	-0.0013	0.0034
	2004	-0.0234	-0.0328	-0.0140
	2005	-0.0101	-0.0112	-0.0091
	2006	-0.0291	-0.0224	-0.0359
	2007	0.0593	0.0605	0.0584
9 Point	1999	-0.0918	-0.0939	-0.0897
	2000	0.1205	0.1258	0.1152
	2001	0.0077	0.0096	0.0060
	2002	0.0016	0.0038	-0.0006
	2003	0.0191	0.0174	0.0208
	2004	-0.0162	-0.0253	-0.0071
	2005	-0.0137	-0.0149	-0.0125
	2006	-0.0434	-0.0373	-0.0496
2007	0.0344	0.0345	0.0346	
10 Point	1998	-0.0890	-0.0827	-0.0951
	1999	-0.0472	-0.0526	-0.0419
	2000	0.1571	0.1597	0.1544
	2001	0.0362	0.0360	0.0363
	2002	0.0217	0.0225	0.0208
	2003	0.0307	0.0282	0.0331
	2004	-0.0133	-0.0226	-0.0040
	2005	-0.0196	-0.0205	-0.0188
	2006	-0.0583	-0.0513	-0.0653
	2007	0.0103	0.0118	0.0092

MEDICAL Linear RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.0177	0.0128	0.0226
	2005	0.0094	0.0177	0.0009
	2006	-0.0718	-0.0739	-0.0697
	2007	0.0447	0.0434	0.0462
5 Point	2003	-0.0098	-0.0065	-0.0131
	2004	0.0275	0.0193	0.0358
	2005	0.0143	0.0210	0.0074
	2006	-0.0718	-0.0739	-0.0697
	2007	0.0398	0.0401	0.0396
6 Point	2002	-0.0114	-0.0192	-0.0035
	2003	-0.0007	0.0089	-0.0103
	2004	0.0332	0.0290	0.0375
	2005	0.0166	0.0248	0.0081
	2006	-0.0729	-0.0759	-0.0700
	2007	0.0352	0.0324	0.0382
7 Point	2001	-0.0164	-0.0102	-0.0224
	2002	-0.0005	-0.0124	0.0114
	2003	0.0070	0.0136	0.0001
	2004	0.0376	0.0317	0.0435
	2005	0.0177	0.0255	0.0096
	2006	-0.0751	-0.0772	-0.0730
	2007	0.0298	0.0290	0.0307
8 Point	2000	0.0778	0.0883	0.0674
	2001	-0.0608	-0.0607	-0.0609
	2002	-0.0339	-0.0503	-0.0175
	2003	-0.0153	-0.0116	-0.0191
	2004	0.0265	0.0191	0.0339
	2005	0.0177	0.0255	0.0096
	2006	-0.0640	-0.0646	-0.0634
	2007	0.0520	0.0542	0.0500
9 Point	1999	-0.0623	-0.0789	-0.0456
	2000	0.1089	0.1278	0.0902
	2001	-0.0363	-0.0297	-0.0430
	2002	-0.0161	-0.0277	-0.0045
	2003	-0.0041	0.0025	-0.0110
	2004	0.0309	0.0247	0.0371
	2005	0.0155	0.0227	0.0080
	2006	-0.0729	-0.0759	-0.0699
10 Point	1998	-0.0577	-0.0841	-0.0313
	1999	-0.0367	-0.0416	-0.0317
	2000	0.1298	0.1581	0.1015
	2001	-0.0203	-0.0064	-0.0343
	2002	-0.0049	-0.0114	0.0016
	2003	0.0023	0.0118	-0.0075
	2004	0.0325	0.0270	0.0380
	2005	0.0122	0.0180	0.0063
	2006	-0.0809	-0.0876	-0.0742
	2007	0.0236	0.0158	0.0317

MEDICAL Expon'l RESIDUALS	Policy Year	Severity Ratio (Average)	Severity Ratio (Incur)	Severity Ratio (Pd-20)
4 Point	2004	0.0152	0.0105	0.0200
	2005	0.0105	0.0190	0.0020
	2006	-0.0691	-0.0714	-0.0669
	2007	0.0466	0.0450	0.0483
5 Point	2003	-0.0130	-0.0096	-0.0163
	2004	0.0290	0.0207	0.0375
	2005	0.0178	0.0243	0.0112
	2006	-0.0691	-0.0714	-0.0669
	2007	0.0386	0.0392	0.0381
6 Point	2002	-0.0163	-0.0237	-0.0087
	2003	0.0009	0.0108	-0.0090
	2004	0.0382	0.0341	0.0423
	2005	0.0217	0.0299	0.0132
	2006	-0.0712	-0.0743	-0.0680
	2007	0.0301	0.0267	0.0336
7 Point	2001	-0.0237	-0.0175	-0.0296
	2002	0.0009	-0.0111	0.0130
	2003	0.0136	0.0201	0.0071
	2004	0.0459	0.0397	0.0521
	2005	0.0237	0.0314	0.0158
	2006	-0.0755	-0.0775	-0.0735
	2007	0.0187	0.0184	0.0190
8 Point	2000	0.0683	0.0795	0.0574
	2001	-0.0623	-0.0622	-0.0625
	2002	-0.0298	-0.0464	-0.0131
	2003	-0.0079	-0.0047	-0.0113
	2004	0.0345	0.0267	0.0423
	2005	0.0237	0.0314	0.0158
	2006	-0.0628	-0.0630	-0.0626
	2007	0.0455	0.0489	0.0422
9 Point	1999	-0.0724	-0.0873	-0.0572
	2000	0.1095	0.1296	0.0896
	2001	-0.0282	-0.0206	-0.0356
	2002	-0.0035	-0.0146	0.0076
	2003	0.0094	0.0163	0.0024
	2004	0.0418	0.0355	0.0481
	2005	0.0198	0.0268	0.0128
	2006	-0.0791	-0.0826	-0.0756
10 Point	1998	-0.0711	-0.0946	-0.0471
	1999	-0.0359	-0.0377	-0.0336
	2000	0.1411	0.1726	0.1100
	2001	-0.0023	0.0146	-0.0189
	2002	0.0158	0.0117	0.0201
	2003	0.0212	0.0322	0.0100
	2004	0.0449	0.0398	0.0502
	2005	0.0131	0.0177	0.0084
	2006	-0.0969	-0.1068	-0.0871
	2007	-0.0151	-0.0284	-0.0016